THE BEHAVIOURAL INTENTION TO USE FACEBOOK AMONG MALAYSIAN PUBLIC UNIVERSITIES STUDENTS AS TECHNOLOGY ALTERNATIVE TOOL FOR E-LEARNING: THE MEDIATING ROLE OF END USER SATISFACTION

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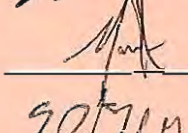
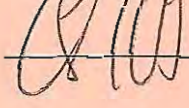
Pemeriksa Luar *(External Examiner)*	: **Prof.Dato' Dr. Mohamed Amin Embi**	Tandatangan *(Signature)*	
Pemeriksa Dalam *(Internal Examiner)*	: **Dr. Mohamad Faizal Ahmad Zaidi**	Tandatangan *(Signature)*	

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ABSTRACT

Nowadays, Facebook is one of the most popular Social Networking Sites (SNS) among the tertiary education students. This site is seen to be used as technology alternative to support the main Learning Management System (LMS) that is provided by the university. However, the real situation nowadays, the students prefer to use Facebook compares to LMS as their e-Learning tool for communicating and sharing knowledge among them. Two well-known models are integrated in this study which is Unified Theory of Acceptance and Use of Technology (UTAUT) and End User Computing Satisfaction (EUCS) for better understanding the vital factors that stimulate students' Behavioural Intention (BI) in using Facebook as e-Learning tool. The sample size comprised of 472 students in Malaysia's Public Universities taken through the quota sampling technique. Thus, the total of 411 usable questionnaires was used for further analysis. Based on data analysis by utilizing PLS SEM method, the results supported the hypothesized of direct effects relationship between all four core factors of UTAUT (Performance Expectancy, Effort Expectancy, Social Influence and Facilitating Conditions) and EUCS on BI. Meanwhile, EUCS mediated the relationship between all four core factors of UTAUT on BI. These findings also supported the view that the integration between satisfaction and acceptance models increases the exploratory power on the users' behaviour of interest in using information technology. Lastly, theoretical, methodological and practical implications are discussed.

Keywords: Acceptance, e-Learning, Facebook, Social Networking Site, Malaysian Universities Students, Satisfaction.

ABSTRAK

Dewasa kini, *Facebook* merupakan salah satu laman rangkaian sosial yang paling terkenal dalam kalangan pelajar pengajian tinggi. Laman rangkaian sosial ini dilihat telah dijadikan sebagai satu teknologi alternatif bagi menyokong Sistem Pengurusan Pembelajaran (SPP) yang disediakan oleh pihak universiti. Namun, hakikat sebenar pada masa kini, para pelajar lebih suka menggunakan *Facebook* sebagai alat e-Pembelajaran mereka yang utama berbanding SPP untuk berkomunikasi dan berkongsi pengetahuan dalam kalangan mereka. Dua model terkenal disepadukan dalam kajian ini iaitu *Unified Theory of Acceptance and Use of Technology (UTAUT)* dan *End User Computing Satisfaction (EUCS)* untuk memahami dengan lebih baik faktor-faktor penting yang merangsang niat pelajar dalam menggunakan Facebook sebagai alat e-Pembelajaran. Saiz sampel terdiri daripada maklum balas 472 pelajar Universiti Awam (UA) Malaysia di kumpul melalui teknik persampelan kuota. Namun hanya 411 data yang digunakan untuk analisis selanjutnya. Berdasarkan analisis data dengan menggunakan kaedah PLS SEM, keputusan hipotesis di sokong iaitu terdapat hubungan langsung di antara keempat-empat faktor teras *UTAUT* (Jangkaan Prestasi, Jangkaan Usaha, Pengaruh Sosial dan Keadaan Kemudahan) serta *EUCS* terhadap niat tingkah laku pelajar dalam menggunakaan *Facebook* sebagai alat e-Pembelajaran. Sementara itu, *EUCS* bertindak sebagai mediator di antara hubungan keempat-empat faktor teras *UTAUT* dan niat tingkah laku pelajar dalam menggunakan *Facebook* sebagai e-Pembelajaran. Penemuan ini juga menyokong pandangan bahawa integrasi di antara model Penerimaan dan model kepuasaan dapat meningkatkan kuasa eksplorasi untuk pemahaman dengan lebih baik terhadap kepentingan tingkah laku pengguna dalam menggunakan sistem maklumat. Akhir sekali, implikasi teori, metodologi dan praktikal dibincangkan.

Kata kunci: Penerimaan, e-Pembelajaran, Facebook, Laman Rangkaian Sosial, Pelajar Universiti Malaysia.

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BI	Behavioural Intention
DOI	Diffusion of Innovation
EE	Effort Expectancy
e-Learning	electronic Learning
ECT	Expectation Confirmation Theory
EDT	Expectation Disconfirmation Theory
EFA	Exploratory Factor Analysis
EUCS	End User Computing Satisfaction
FC	Facilitating Conditions
PE	Performance Expectancy
PLS	Partial Least Squares
HEI	Higher Education Institution
ICT	Information Communication and Technology
IS	Information System
IT	Information Technology
IQ	Information Quality
LMS	Learning Management System
Moodle	Modular Object Oriented Dynamic Learning Environment
MOE	Ministry of Education
SNS	Social Networking Site
SI	Social Influence
SQ	System Quality
ServQual	Service Quality
SEM	Structural Equation Model
TAM	Technology Acceptance Model
TPB	Theory of Planned Behaviour
TRA	Theory of Reasoned Action
UTAUT	Unified Theory of Acceptance and Use of Technology
UniMAP	Universiti Malaysia Perlis
USM	Universiti Sains Malaysia
UUM	Universiti Utara Malaysia

CHAPTER ONE

INTRODUCTION

1.0 Chapter Overview

This chapter begins with the background of the study, a brief explanation about the history of e-Learning and the use of e-Learning tools among Higher Educational Institutions (HEIs) Students' in Malaysia. Then, the discussion is continued by articulating the advent of Web 2.0 tools, especially Social Networking Sites (SNSs) which have threatened the position of Learning Management System (LMS) as the main e-Learning tool in the education world for a long period. Next, the chapter elaborates the problem statement, research questions, research objectives, significance of the study, the scope of the study and finally the organization of study.

1.1 Background of the Study

E-Learning in Malaysia was not a new phenomenon but it was still being the hot topic in the Malaysia education sector (Endut et al., 2012). All the HEIs in Malaysia undoubtedly with the benefit of e-Learning implementation and they used LMS as the main e-learning tool (Embi & Adun, 2010). Currently, the new wave of the advent of Web 2.0 tools had indicated the evolution of virtual learning method from e-Learning 1.0 to e-Learning 2.0 (Othman, Mohamad, Yusuf, Yusof, & Suhaimi, 2012; Wang & Chiu, 2011; Yang, 2014). The use of Web 2.0 tools as a technology alternative to strengthen the implementation of e-Learning meanwhile the LMS still became as the main medium for implementing e-Learning was called as e-Learning 2.0 (Morley, 2014; Soumplis, Koulocheri, Kostaras, Karousos, & Xenos, 2011). The HEIs lecturers utilized Web 2.0 tools as the medium to improve their teaching

instruction besides to encourage active participation in learning among their students (Tess, 2013). Besides, the new trend of adapting Web 2.0 tools as e-Learning tool naturally changed the e-Learning environment for becoming more informal compared to the previous e-Learning environment (Munguatosha, Muyinda, & Lubega, 2011).

Nowadays, there were many different types of Web 2.0 tools for examples blogs, wikis, internet telephony, SNSs, video sharing sites and social bookmarking (Hartshorne & Ajjan, 2009). It was reported that about 3,000 Web 2.0 tools exists in the cyberspace world and so far there were a few of Web 2.0 tools were widely used in HEIs (Dzulkefli, Sin & Mohamad, 2012). Along with the emergence of Web 2.0 tools, the SNSs were the most popular types of Web 2.0 tools used by the university students (Xu, 2011). People employed SNSs as the one of the vital tools to interact each other's (Jalal & Zaidieh, 2012). There were a multitude of empirical studies that clearly proved that the SNSs were the most famous tools have been used compared to the other types of web 2.0 tools as the technology alternative for supporting e-Learning implementation (Askar, 2011). Since the SNSs became a trend, some universities used it as an opportunity to support whether formal or informal learning activities (Falahah & Rosmala, 2012). Meanwhile, Facebook was the most popular among other types of SNSs in virtual world (Boyd & Ellison, 2008; Kitsis, 2008; Lin, Hou, Wang & Chang, 2013; Mahamat-Helou & Rahim, 2011). In higher education world, Facebook was one of the most popular SNSs among the tertiary education students (Hurt, Moss, Bradley, Larnordinson, Lovelace, Prevost, Riley, Domizi & Camus, 2012). The nature of some features on Facebook was not just for socializing but also for learning purpose made the students and lecturers employed this SNS as their favourite e-Learning tool (Ferdig, 2007; Othman, Mohd-Suhaimi,

Yusuf, Yusof & Mohamad, 2012). Because of that, it was clearly exposed that Facebook had a potential to become e-Learning tool in academic field (Couillard, 2009). The potential of Facebook as e-Learning tool stimulated the new attempts among the LMS's designers to integrate the function of LMS inside Facebook or the Facebook functionality with LMS (Sclater, 2008).

As reported by Facebook.com (2015), there were about 864 million active users in using Facebook per daily. In Malaysia, Facebook was reported as the most popular SNS and about 3.5 million Facebook users are the adolescent (18 until 24 years old) from the total of 10.4 million Facebook's users (Subramanian, 2014). Meanwhile, the majority of Facebook's users were in the age range of 18 to 24 years old followed by people in the age range of 25 to 35 years old (Socialbakers, 2014). Meanwhile, the breakdown of users based on gender as the male users (54%) outperformed the female users (46%). Clearly, this age range also included the students from secondary school until tertiary institutions. Based on Hamat, Embi and Hassan (2012), 80.8% (n=6358) Malaysia universities' students had the SNSs accounts and the most of them had Facebook account. Figure 1.1 indicates the breakdown of Facebook users according to age and gender.

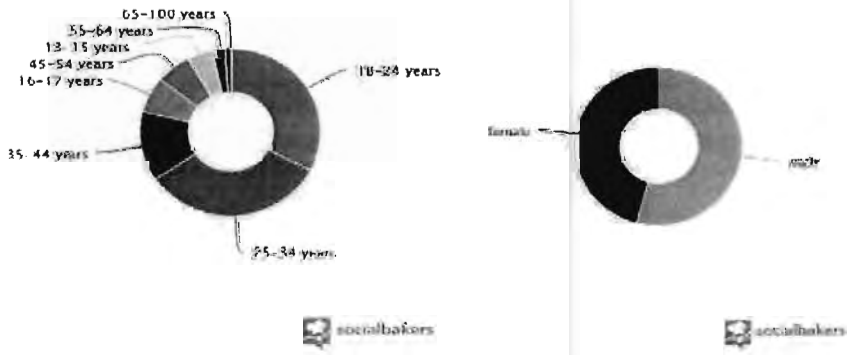

Figure 1.1
The Breakdown of Facebook Users According to Age and Gender
Source: Socialbakers.com (2014)

However, the use of Web 2.0 tools especially SNSs as the technology alternative for virtual learning without the education community realized had directly given negative impact on reduction of LMS usage although it was the primary e-Learning tool for a long duration of time (Alhazmi & AbdulRahman, 2012b). Barnatt (2009) stated that many students preferred to spend more time in surfing SNSs compared to LMS which was provided by institutions inasmuch SNSs were easy to conduct, communicate and assessed the information.

Schreoeder and Greenbowe (2009) revealed that the students posted 400% more on Facebook compared on LMS in their study. Jong, Lai, Hsia, Lin and Liao (2014) conducted a study among the tertiary students revealed that majority of students suggested their instructors to use Facebook compared LMS as the medium to keep their students posted, communicated and shared educational resources of a course. Meanwhile, a study was conducted by Bosch (2009) revealed that the undergraduate students preferred to discuss on Facebook rather than using their own university's Course Management System (CMS). In the line with the findings of study conducted by DiVall and Kirwin (2012) indicated that the students less posted on LMS compared on Facebook. Maleko, Nandi, Hamilton, D'Souza and Harland (2013) evaluated the use of Facebook group compare Blackboard to encourage and support the learning of programming among students revealed that 156 participated students actively participated on the Facebook programming group (1,372 references) while only 247 posting on Blackboard. Facebook was just the technology alternative to support e-Learning process and it was not suitable to replace the traditional LMS. Besides, this site was not suitable to replace LMS due to its own weaknesses especially due to the lack of power control by the institutions, privacy and security issues as well as the nature characteristic of Web 2.0 tools which were very open for

the public (Boulos, Maramba, & Wheeler, 2006; Grosseck, 2009; Harris & Rea, 2009; Jalal & Zaidieh, 2012). However, the real situation nowadays revealed that the students preferred to use Facebook compared LMS to communicate and sharing knowledge among them.

Meanwhile, in the scope of Malaysian education sector, Facebook just same as others Web 2.0 tools also had become a rival towards the utilization of LMS as a main tool to implement e-Learning in Malaysia education sector. This statement was evidenced by the several studies conducted in local setting (Danyaro, Jaafar, Lara & Downe, 2010; Hamat, Embi & Sulaiman, 2011; Thang, Murugaiah, Mohd-Jaafar, Tan & Ahmad-Bukhari, 2016; Zakaria, Watson & Edward, 2010).

Danyaro, Jaafar, Lara and Downe (2010) conducted a study among the 92 students who studied in Malaysian private university revealed that the students accessed Facebook more than surfing the Moodle. Meanwhile, the result of study by Zakaria, Watson and Edwards (2010) among the 217 Malaysian students indicated that majority of students (67.2%) used email attachment, followed by posting on blogs (27%) and only 5.7% students used the file sharing tool in LMS systems to send the digital file with others. A research conducted by Hamat et al. (2011) among the 6301 Malaysian HEIs students as sample size revealed that only 63.4% of them used LMS. Thang, Murugaiah, Mohd-Jaafar, Tan and Ahmad-Bukhari (2016) examined the use of Information Communication Technology (ICT) tools among the 1193 students from four Malaysian Public Universities. The results showed that Facebook was the most commonly tool used by the students compared email, online self-test, blogging, online assessment submission, digital videos in lectures, a subject website and a LMS. Based on the past studies above, firstly, it can be concluded that the

implementation of LMS is not really success as it is not optimally used by the students as a main eLearning tool. Secondly, the emergences of Web 2.0 tools especially the SNSs have given the negative impacts towards the reduction of using LMS among the education communities.

Based on the argument above, Facebook in the world of Malaysia education has become the most important technology alternative to support LMS or substance the main role of LMS. The reduction on LMS usage indicates that the implementation of LMS in Malaysia is not really effective. Meanwhile, it is a loss for the investment provided by the Ministry of Education in order to empower the implementation of existing LMS if the system does not achieve any success and set goals. According to Govindasamy (2002), the success of e-Learning was seen as the vital issue since the success or failure in implementing e-Learning illustrated the return on investment. Another essential point, the acceptance of e-Learning among the students was very crucial as it trigger to the growth of e-Learning (Mason & Rennie, 2006).

The implementation of LMS needs heavily invest in terms of financial and expertise resources in implementing e-Learning, but there were no benefits if the students did not use it (Coates, James and Baldwin, 2005; Pusnik, Sumak & Hericko, 2010). In addition, according to Pituch and Lee (2006), the affordances of e-Learning system cannot be achieved if the learners fail to utilize the LMS meanwhile the educational or business organizations have heavily invested the resources in order to implement the e-Learning system. On the other hand, SNSs were totally can be obtained for free (Mirabolghasemi, Iahad & Rahim, 2016). According to the latest industry statistics report, e-Learning industry in Malaysia has grown approximately 43% per year and was expected beyond RM 27 billion within the next several years and the Malaysian

HEIs heavily invested their LMS in order to constantly make it update (Saba, 2012). All investments provided by the Ministry of Education towards the development of LMS until now either in term of expertness, financial and training were fruitless if the lecturers and students did not optimally use the LMS and even worse did not use the LMS at all.

At the same time, the effectiveness issue of using LMS in improving teaching and learning performance was still being debated by many researchers (Alhazmi & AbdulRahman, 2012a). Numerous studies showed that the functions of LMS were still limited and failed to play its roles as the communication tools between the students and the instructor otherwise it was used more as the administration tools (Malikowsiki, 2010; Vovides, Sanchezalonso, Mitropoulou & Nickmans, 2007). According to Dalsgaard (2006), there were some students and lecturers that still reluctant to use the LMS besides some of them disappointed with the limited and unattractive functions in LMS. Because of that, the high usage of web 2.0 tools has given the ideas to the e-Learning developers to intimate some of Web 2.0 tools interactive functionality to the LMS (Danyaro, Jaafar, Lara & Downe, 2010). However, even though the LMS continually improves the applications to give the additional function, but the LMS still lag behind if comparing with the web 2.0 tools (Hodges & Repman, 2011). Although the LMS had interactive attributes, numerous studies revealed that the engagement of the students and lecturers are still lacking besides it features are not optimally utilized and just used for basic usage such as uploading notes and changing information between the lecturers and students (Alhazmi & Abdul-Rahman, 2012a; Pilli, 2014).

Based on the argument above, it can be proved that there are other possible factors besides just focus and blamed on the LMS features that stimulate the students prefer to use SNSs compare to LMS as the main e-Learning tool. Due to the above fact, it can be predicted that there are other factors which should be investigated stimulate to the acceptance of web 2.0 tools especially SNSs among the students and the lecturers as the medium to deliver learning and teaching. Until now, many studies emphasize on the acceptance of LMS but rarely focus on the acceptance of using Web 2.0 tools among the students. Only a few studies were identified reported that examine the acceptance and use of SNSs in education field (Roblyer, McDaniel, Webb, Herman & Witty, 2010). The studies focused on the acceptance of Web 2.0 tools as the e-Learning tools for learning and teaching purpose were still limited (Cheung & Vogel, 2013).

The ineluctable issue about Facebook was seen as the potential tool to support the implementation of e-Learning was still debated among the education communities (Souleles, 2012). Beyond the advantages of using SNSs were proven by some studies in the education world, there were still some studies exposed the possible risks and disadvantages of using SNSs (Jahan & Zabed-Ahmed, 2012; Jalal & Zaidieh, 2012). As quoted by Tulaboev and Oxley (2012), the educators must reconsidered and be careful of using Facebook as their educational tool for teaching the new generations nowadays as they were also known as net generations (Mark Zuckerberg, 2010). In an attempt to address these short comings, it is very imperative to investigate the factors that stimulate the acceptance of students to use SNSs more than LMS as their main e-Learning tool. The most significant factors that influences the students' acceptance of using SNSs can be emphasized and by the education communities to improve the LMS. As mentioned previously, among the well-known SNSs in the

virtual world, Facebook is the most popular SNS. Because of that, it is important to narrowly investigate on the acceptance of using Facebook among the students as e-Learning tool.

1.2 Problem Statement

Based on the raised issue above, the gaps have aroused the interest of a researcher to undertake a study to investigate the factors that led to the acceptance of the students to use Facebook as e-Learning tool. In order to seek in depth understanding about the acceptance of Facebook as the technology alternative among the students, this study utilizes Unified Theory of Acceptance and Use of Technology Model (UTAUT) (Venkatesh, Moris, Davis & Davis, 2003) as the backbone of theoretical framework in order to evaluate the acceptance of Facebook among the Malaysian's students. There are several reasons of selecting UTAUT as the main theoretical framework. First at all, UTAUT predicted nearly 70% of the acceptance of Information System (IS) compared only 40% prediction from others model (Schaper & Pervan, 2007). Secondly, UTAUT was appropriate to be applied in the large organization such as HEIs since the sample size of original study was conducted among the workers in the organization (Venkatesh et al., 2003). Besides, this theory evaluated the acceptance of IS in the general perspective and also looking at organization and individual factors (Venkatesh, Sykes & Xiaojun, 2011). The variety factors in UTAUT made this model was really suitable to measure the acceptance of Web 2.0 tools and it was suggested to carry out the further studies within the scope of the use of Web 2.0 tool as a medium of teaching and learning (Usluel & Mazman, 2009).

In the original theory, the acceptance was indicated by examining the actual use of using IS. Four independent variables namely, Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI) and Facilitating Conditions (FC) have a

direct effect towards behavioural intention (BI) and actual use of using IS. The actual use and intentionality might have been determined by implementing this model with three intentional beliefs which were PE, EE, SI and FC (Khaled, 2013). Meanwhile, age, experience, gender and voluntary mediated the relationship between all independent variables and dependent variable.

But, it was not really easy to obtain the data on the actual use of technology in education scope due to the data sensitively and this will discourage the education communities to participate (Teo, 2011). The actual usage can be predicted by the BI of the respondents in using IS (Taylor & Todd, 1995; Venkatesh et al., 2003) and its strong linkage to actual usage (Kiraz & Ozdemir, 2006). Hence, in the scope of this study, the student's BI was implied as the dependent variable in order to investigate the acceptance of using Facebook as e-Learning tool.

The PE was defined as the degree to which the users' believe that using IS will help that person to attain and gains their performance (Venkatesh et al., 2003). The need to deploy PE in the scope of this study is to investigate either the usefulness of using Facebook as e-Learning tool in helping the students' study progress is a significant factor that influences the BI of students to use Facebook. Past studies revealed that there was a relationship between PE and BI (Chu, 2013; Lallmahomed, Ab. Rahim & Abdul-Rahman, 2013; Tan, 2013). The usefulness of using Facebook stimulates the students to utilize Facebook as e-Learning tool. EE was also deployed as the aim to investigate the ease of using that particular IS (Venkatesh et al, 2003). The past studies revealed that the students liked Facebook because of its features was easy and convenient to be utilized (Hoe, 2012; Manca & Ranierit, 2013). Many previous

researches indicated that there was a relationship between EE and BI using IS among the users (Berrero, Yousafzai, Javed & Page, 2014; Salim, 2012; Tan, 2013).

Next, SI is also the crucial factor that needs to be investigated either this factor has an effect towards the students' BI in using Facebook. The undergraduate students nowadays can be categorized as generation Z. They were fully technology communicators and easily influenced by the peers (Levickaite, 2010). SI was defined as "*the degree to which an individual perceives that important others believe he or she should use the new system*" (Venkatesh et al., 2003, p.451). The output from previous studies (Raman, Mohd-Sani & Kaur, 2014; Dhaha & Ali, 2014a; Dhaha & Ali, 2014b; Borrero, Yousafzai, Javed & Page, 2014) revealed that SI had an effect towards the student's BI of using IS. SI was also the crucial factor that triggers an individual to use the SNSs (Hoe, 2012). Many past studies deployed SI as the vital predictor to investigate the students' BI of using e-Learning system (Park, 2009). A part of PE, EE, SI, the deployment of FC is also important in order to examine this significant factor towards the students' BI of using Facebook as e-Learning tool. FC was defined as the user' believed of the resources and support available to use Facebook (Borrero, Yousafzai, Javed & Page, 2014). A past study revealed that the availability to access internet facilities and signals inside or outside the universities can be related as FC for the use of Web 2.0 tools among the students as e-Learning tool (Echeng & Usoro, 2014). In addition, the necessary knowledge required among the students to make use of SNS also can be related as FC (Borrero, Yousafzai, Javed & Page, 2014). Because of that, this factor may be significant related to the students' BI of using Facebook as e-learning tool. Past studies showed that FC had an effect towards the user's BI in using IS (Escobar-Rodriguez & Carvajal-Trujillo, 2014; Khechine, Lakhal, Pascot & Bytha, 2014; Raman, Mohd-Sani & Kaur, 2014).

The moderating variable plays an important role in increasing the predictive validity of many modification models surpasses the original model (Sun & Zhang, 2006). Otherwise, these moderator variables are not consider really important in this study as the students sre homogenous population and their experience, voluntary and age is approximately equal. Meanwhile, only gender of the students is posited as the control variable because of reconsidering some previous studies that showed the imbalances acceptance of using IS between the students' gender (Barret & Larry, 1999; Bernand, Mills & Friend, 2000; Colley & Comber, 2005; Hakkarainen & Palonen, 2003; Li, 2002).

At the same time, theoretically, the acceptance of technology is still not enough to explain the factors that influence the students' BI to use Facebook more than LMS as e-Learning tool. It was a matter of fact that the scope of technology acceptance was not same as the scope of technology satisfaction. There were two main streams or methods to understand the IS success (Roca, Chiu & Martinez, 2006; Wixom & Todd, 2005) which is user satisfaction (e.g. Bailey & Pearson, 1983; Doll &Torkzadeh, 1988; DeLone and McLean, 1992; Ives et.al. 1983; Melone, 1990; Seddon, 1997) and technology acceptance (e.g. Davis, 1989; Venkatesh et al., 2003). But, the development of these two main streams were still rarely integrated for better understanding of IS (Ong, Day & Hsu, 2009).

The technology acceptance was a strong predictor of behaviours and ability to link attitude and beliefs to behaviour meanwhile the strength of user satisfaction was in its ability to link information design attributes (Au, Ngai & Cheng, 2002; Lai & Pires, 2010; Miyamoto, Kudo & Iizuka, 2012, Wixom & Todd, 2005). According to Seddon (1997), it was suggested to integrate these two approaches for better

understanding of the factors influence the use of IS. Equally important, the results of current investigations on the student satisfaction with e-Learning were precisely in reflecting the success of IS (Xu, 2011) as well as the important of the technology acceptance issue. In a similar vein, Khaled (2013, p.4) stated that *"psychology and sociology have both focused on behaviours of technology acceptance, while information systems has focused on the characteristics of specific systems in relation to it."*.

As reviewed earlier, the studies in the scope of education focuses on the acceptance of SNSs particularly Facebook as e-Learning tool are still limited. Hew (2011) reviewed 36 past studies revealed that the vast majority of these studies focused on students' Facebook usage profile, effects of using Facebook and students' attitude toward Facebook. Meanwhile, Bosch (2009) stated that there were four topics regarding Facebook that commonly investigated by the researchers i.e. identity formation, privacy concerns, social capital and the purposes of Facebook as the educational tool among academic communities. Most current studies about Facebook in the scope of education evaluate the motivation aspects, the pattern of usage, attitude and the addiction symptoms among the students in using Facebook (Balakrishnan & Shamim, 2013). The review on the past studies by Blanche, O'Bannon, Jeffrey and Virginia (2013) revealed that many studies more focused on motivation, time spent, friends and attitudes of using Facebook.

Meanwhile, in the scope of local setting past studies, the topics that always be investigated related to the students engagement of using Facebook (Sim, Naidu & Apparasamy, 2014), the impact of Facebook usage as e-Learning tools towards academic communities (Ayu & Abrizah, 2011; Omar, Embi & Yunus, 2012; Naeemi,

Tamam, Hassan & Bolong, 2014), the types of students communicate and discuss on Facebook (Jumaat & Tasir, 2013), the perception of using Facebook for learning (Goh, Hong & Goh, 2013; Kabilan, Ahmad, Jafre & Abidin, 2010), the impact of Facebook usage on students' academic performance (Mahamat-Helou & Ab.Rahim, 2014; Mahamat-Helou, Ab. Rahim & Oye, 2012; Lubis et al., 2012) and addiction of using Facebook (Sharifah Sofiah, Omar, Bolong, Osman, 2011; Jafarkarimi, Sim, Saadatdoost & Hee, 2015).

The studies about the acceptance of Facebook as technology alternative in the scope of Malaysia education world are still limited although Facebook become a phenomenon in the Malaysia. Very little studies were identified examined about the acceptance of Facebook as e-Learning tool among the Malaysian students (Al-Rahimi et al., 2013; Ismail, 2010; Haque, Sarwar & Ahmad, 2015; Mali & Syed-Hassan, 2013; Shittu, Basha, AbdulRahman, & Tunku-Ahmad, 2007; Lallmahomed, Zairah, Rahim, Ibrahim & Rahman, 2013).

At the same issue that must be concerned, theoretically, the acceptance of technology is still not enough to determine the factors that influence the students to use Facebook more than LMS as e-Learning tool. This is because the scope of technology acceptance is not same as the scope of technology satisfaction. There were two main streams or methods to understand the IS success (Roca, Chiu & Martinez, 2006; Wixom & Todd, 2005) which were user satisfaction (e.g. Bailey & Pearson, 1983; Doll &Torkzadeh, 1988; DeLone & McLean, 1992; Ives et.al. 1983; Melone, 1990; Seddon, 1997) and technology acceptance (e.g. Davis, 1989; Venkatesh et al., 2003). But, the development of these two main streams were still rarely integrated for better understanding of IS (Ong, Day & Hsu, 2009). The

technology acceptance was a strong predictor of behaviours and ability to link attitude and beliefs to behaviour meanwhile the strength of user satisfaction was in its ability to link information design attributes (Au, Ngai & Cheng, 2002; Lai & Pires, 2010; Miyamoto, Kudo & Iizuka, 2012, Wixom & Todd, 2005). According to Seddon (1997), it was suggested to integrate these two approaches for better understanding the factors that influence the use of IS. Equally important, the result of current investigations on the student satisfaction with e-Learning were precisely in reflecting the success of IT (Xu, 2011) as well as the important of the technology acceptance issue. In a similar vein, Khaled (2013, p.4) stated that *"psychology and sociology have both focused on behaviours of technology acceptance, while information systems has focused on the characteristics of specific systems in relation to it."*

Based on the argument above, the deployment of EUCS for the students' BI of using Facebook as e-Learning tool is also very vital in this study. Therefore, the EUCS need to be integrated into UTAUT as the aim to evaluate the students' BI of using Facebook. Accordance with literature review, EUCS is predicted mediating the relationship between PE, EE, SI, FC and BI. However, the relationship between four core factors of UTAUT on satisfaction in the past studies was still limited. The past studies (e.g. Dhaha & Ali, 2014a; Chan et al., 2010; Maillet et.al, 2015; Napitupulu & Patria, 2013; Ling et al., 2015) only measure satisfaction in term of the level of their satisfaction towards the use of IS and not deeply focusing on the satisfaction towards the design and characteristics of that particular IS. By making this as a basic and fundamental, this study predicts that there is a relationship between PE, EE, SI, FC and BI among the students in using Facebook as e-Learning tool. Meanwhile, the past studies (e.g. Belanche, Casalo & Guinaliu, 2012; Chen, Yen & Hwang, 2012;

Fong & Ho, 2014; Roca, Chiu & Martinez, 2006; Chiu, Chiu & Chang, 2007; Shi, Lee, Cheung & Chen, 2010; Lai & Pires, 2010) revealed that the satisfaction was positively associated with the BI. Also, it was also supported that the EUCS can be predicted as the potential mediator variable since this variable is posited as the mediator variable in the different theories (e.g. Belanche, Casalo, Guinaliu, 2012; Roca, Chiu, Martinez, 2006). Basically, EUCS had five dimensions namely *'Content', 'Format', 'Accuracy', 'Timeliness'* and lastly, *'Ease of Use'* (Doll & Torkzadeh, 1988). This entire dimension except '*Ease of Use'* is retained because this dimension indicates same operational with the EE in UTAUT.

Meanwhile, many previous studies integrated Technology Acceptance Model (TAM), IQ and SQ (Wixom & Todd, 2005; Lai & Pires, 2010), TAM, Expectancy Disconfirmation Theory (EDT) and IS success model (Roca, Chiu & Martinez, 2006), Expectation Confirmation Theory (ECT) and EUCS (Fong & Ho, 2014), Theory Reasoned Action (TRA), TAM, TPB, EUCS (Doll and Torkzadeh, 1988), and Diffusion Of Innovation (DOI) (Ceccucci, Peslak & Sendall, 2010) and UTAUT and IS success model (Ling & Islam, 2015). But, none published studies are identified integrate the acceptance and satisfaction model in order to evaluate the students' actual use or BI of using SNSs particularly Facebook as the technology alternative tool to obtain knowledge and learning. For these reasons, first at all, there needed to investigate the vital factors that influence the students' BI of using Facebook as e-Learning tool as discussed earlier that the past studies related with the acceptance of Facebook as e-Learning in the scope of Malaysian education are still limited. Secondly, based on literature review, EUCS needed to be integrated into UTAUT in order to investigate not only the factors of behavioural belief (i.e. PE, EE,

SI and FC) but also object-based attitudes (i.e. Content, Format, Accuracy and Format) that have an effect towards the student's BI of using Facebook.

1.3 Research Questions

Based on the problem statement, there are three general research questions are derived as follows:

i. Do four core factors of the UTAUT (i.e. PE, EE, SI and FC) have an effect on the students' BI to use Facebook as e-Learning tool?
ii. Do four core factors of the UTAUT have an effect on the EUCS to use Facebook as e-Learning tool?
iii. Does the EUCS have an effect on the students' BI to use Facebook as e-Learning tool?
iv. Does the EUCS mediate the relationship between four core factors of UTAUT and the students' BI to use Facebook as e-Learning tool?

Meanwhile there are thirteen specific research questions in this study are derived as follows:

i. Does PE have an effect on the students' BI to use Facebook as e-Learning tool?
ii. Does EE have an effect on the student's BI to use Facebook as e-Learning tool?
iii. Does SI affect the students' BI to use Facebook as e-Learning tool?
iv. Do FC affect the students' BI to use Facebook as e-Learning tool?
v. Does the EUCS influence the students' BI to use Facebook as e-Learning tool?

vi. Does PE have an effect on the EUCS to use Facebook as e-Learning tool?

vii. Does EE influence the EUCS to use Facebook as e- Learning tool?

viii. Does SI influence affect the EUCS to use Facebook as an e- Learning tool?

ix. Do FCs have an effect on the EUCS to use Facebook as e-Learning tool?

x. Does the EUCS mediate the relationship between PE and BI to use Facebook as e-Learning tool?

xi. Does the EUCS mediate the relationship between EE and BI to use Facebook as e-Learning tool?

xii. Does the EUCS mediate the relationship between SI and BI to use Facebook as e-Learning tool?

xiii. Does the EUCS mediate the relationship between FCs and BI to use Facebook as e-Learning tool?

1.4 Research Objectives

Based on the research questions, it is obvious that the main objective of this research is to recognize the crucial factors that influence the Malaysian Public Universities students' satisfaction and BI to use of the most famous SNSs which is Facebook as an e-learning tool. As mentioned earlier, two well-established models, namely UTAUT by Venkatesh, Morris, Davis and Davis (2003) and EUCS by Doll and Torkzadeh (1988) are integrated in order to achieve this study main purpose objective. These two models are adjusted compatible with the problem statement raised in this study. In the nutshell, the general objectives are:

i. To investigate the effect of four core factors of the UTAUT on the student's BI to use Facebook.

ii. To investigate the effect of four factors of the UTAUT on the EUCS to use Facebook.

iii. To determine the effect of EUCS on the BI to use Facebook as e-Learning tool.

iv. To analyse the mediating effect of the EUCS in the relationship between four core factors of UTAUT and BI to use Facebook as e-Learning tool.

Meanwhile there are 13 specific research objectives in this study are derived as follows:

i. To investigate the effect of PE on the student's BI to use Facebook.

ii. To investigate the effect of EE on the student's BI to use Facebook.

iii. To investigate the effect of SI on the student's BI to use Facebook.

iv. To investigate the effect of FC on the student's BI to use Facebook.

v. To measure EUCS of using Facebook that impacts the student's BI to use Facebook.

vi. To investigate the impact of PE towards the EUCS to use Facebook.

vii. To evaluate the impact of EE towards the EUCS to use Facebook.

viii. To measure the effect of SI towards the EUCS to use Facebook.

ix. To measure the effect of FC towards EUCS to use Facebook.

x. To analyze the mediating effect of the EUCS in the relationship between the students' BI to use Facebook.

xi. To analyze the mediating effect of the EUCS in the relationship between EE and the students' BI to use Facebook.

xii. To measure the mediating effect of the EUCS in the relationship between SI and the students' BI to use Facebook.

xiii. To measure the mediating effect of the EUCS in the relationship between FCs and the students' BI to use Facebook.

1.5 Significant of the Study

The significance of this study contributes to the practical, theoretical and methodology contributions. In terms of practical contributions, this study gives the guidelines for the instructors that have plans to use the Facebook as the technology alternatives and at the same time still use the LMS as the main e-Learning tool. This guidelines are included the approach to encourage the acceptance of the Facebook as the complementation of LMS to support the implementation of e-Learning. Besides, by looking at the most factor that influence the acceptance and satisfaction of SNSs, the academicians and the administrators can emphasize that factor when implementing the LMS in order to increase the level of the students' engagement in using LMS. Meanwhile, this study also gives the beneficial guidelines for the LMS designers such guideline includes the Facebook interactive features that can be included in the design of LMS.

In term of theoretical contribution, this study integrates the UTAUT and EUCS in the general context of the e-Learning system and particularly in the scope of e-Learning system in the education world. In addition, this study overcomes the weakness of UTAUT that not fully emphasized the system design attributes as the EUCS. As mentioned earlier, the previous studies about the acceptance-satisfaction of IS are still limited. This research also contributes a piece of knowledge to the field of the acceptance and satisfaction for better understanding the use of IS. After all, this study uses the high rate items' scale to examine the BI of using Facebook among the students by integrating acceptance and satisfaction model. These multidimensional instrument can be used by the other researchers to evaluate the BI of using IS and these items should be further tested in the different field and scope.

Lastly, in the view of methodology aspect, this study recommended to apply five-point Likert Scales if the sample is the students. As stated by Malhotra (2008), a small number of scale points are enough for who are an ordinary people. In regard with the integration of two models, this study proves the important of employing EFA in order to examine the unidimensionality of each of their construct indicators followed by the utilization of PLS SEM has succeeded in evaluating the measurement and structural model.

1.6 Scope of the Study

Each research has it limitation and this is absolutely unavoidable. The scope of the study is limited by theoretical and the population. Theoretically, the scope of this study is to examine the acceptance and satisfaction of using Facebook mong the students in Malaysian public universities. The underpinning theories of the study are based on two theories, namely, UTAUT (Venkatesh et al., 2003) and EUCS (Doll & Torkzadeh, 1988). Then, this study integrates and makes a slight change towards UTAUT and EUCS model in accordance and suitable with the problems, type of respondents, environment and setting of this research. The UTAUT model is used for evaluating the acceptance of Facebook among the students. Meanwhile, the EUCS model become the mediator variable is used to examine the satisfaction in using Facebook among the students. After integrating these two theories, four core factors namely PE, EE, SI and FC from UTAUT become the independent variables and BI as the dependent variable. Meanwhile, the EUCS model is employed in order to evaluate satisfaction among the students in using Facebook and also become mediator variable. It is predicted that EUCS mediate the relationship between four core factors of UTAUT and BI.

Accordingly, this study only selects the Malaysian public universities in the Northern region of Malaysia that only utilized open source LMS system (Moodle). A matter of fact, LMS was divided into two types which are proprietary (e.g. Blackboard) and open source (e.g. Moodle). Moodle was an example of an open source LMS system which was famous, open source, and widely used (Hamat, Embi & Sulaiman, 2011). In the Northern region of Malaysia, Universiti Utara Malaysia (UUM), Universiti Sains Malaysia (USM) and Universiti Malaysia Perlis (UniMAP) utilized open source LMS system (Moodle). Meanwhile, all UiTM branches on Malaysia Northern Area utilized LMS that purchased from local vendor. Hence, only three universities (UUM, UniMAP and USM) that used open source LMS are selected in this study. The respondents are among the undergraduate students in this three selected universities. This research only focuses on one type of technology alternative which is Facebook because of two reasons firstly; Facebook is the SNSs that have the most users in Malaysia (Alexa.com, 2015). Secondly, majority of Facebook users are 18 until 24 years old followed by 25 to 34 years old (Socialbakers, 2014). In fact, it clearly shows that this age group includes the students in universities. Besides, most students on this age group from 18 to 24 years old are undergraduate students. This study uses quantitative method to analysis the data. The data will obtain by distributing the questionnaire among the students. Times to collect the data for all universities are taken about two months.

1.7 Definitions of Key Terms

The following are the definitions of the most common key terms used in this study

i. PE refers to the degree to which the students' believe that using Facebook as e-Learning tool will help him or her to attain gains in their academic performance (Venkatesh et al., 2003).

ii. EE refers to the extent to which the students are feeling very easy to use the Facebook as e-Learning tool (Venkatesh et al., 2003).

iii. SI refers to the tendency of the students' perceives that their peers and lecturers' believe are very crucial for them to use the Facebook as e-Learning tool (Venkatesh et al., 2003).

iv. FC refers to the extent to which the students' perception of the resources and support available to use Facebook as e-Learning tool (Borrero, Yousafzai, Javed & Page, 2014).

v. BI refers to the extent to which the students' BI to continue use Facebook as the e-Learning tool for learning purpose in the future (Lin & Lu, 2000).

vi. EUCS refers to the affective attitude towards Facebook by the student who interacts with this site directly (Aggelidis & Chatzoglou, 2012).

vii. Content refers to the relevance and completeness of information on Facebook (Deng et al., 2008).

viii. Accuracy refers to the reliability of Facebook's content (Deng et al., 2008).

ix. Format refers to the way the information is presented on the Facebook (Deng et al., 2008).

x. Timeliness refers to the capability of Facebook to facilitate real-time interactivity and instantaneous information exchange among the users (Rauniar, Rawski, Johnson & Yang, 2013).

1.8 Organization of the Thesis

Chapter one consists chapter overview, background of the study, problem statements, research questions, research objectives, significance of the study, scope of the study and last but not least organization of the study.

Chapter two begins with the chapter overview. Next, this chapter reviews about the SNSs, Facebook and previous studies that integrate the acceptance and satisfaction model and theories to evaluate acceptance and satisfaction of IS among the user. This chapter also explains about the underpinning theories, each variable, theoretical framework and the justification of adopting and integrating models/theories. After elaborating about the research hypotheses, this chapter ends up with the summary.

Chapter three starts with the chapter overview. Next, this chapter explains the research design, data collection method, population, sample size and power analysis, sampling technique and operational definitions. Besides, this study also elaborates the development of questionnaire from it design, language, translation and scale. This chapter also includes the explanation of pre-test, face validity test, data analysis technique and lastly the summary of this chapter.

Chapter four begins by reporting the respondent rate. Next, the pre-analysis i.e. the data screening, preliminary analysis, non-response bias assessment and common method variance test are reported. The Exploratory Factor Analysis (EFA) and the reliability test after factor analysis are then discussed. Results of user's descriptive

statistics and descriptive statistics for each variable and dimension are presented next. The next section is continued by presenting the main results. The main results are presented in four sections. In the first section, the assessment of measurement model is discussed the second-order construct establishment is presented in the second section and next, assessment of the structural model is presented in the third section. Lastly, the result of hypotheses testing is discussed before presenting the chapter summary.

Chapter five discusses the study's findings. Besides, the theoretical, methodological and practical implications are explained. Then, this study's limitations, suggestions and conclusions for future research were presented.

CHAPTER TWO

LITERATURE REVIEW

2.0 Chapter Overview

This chapter begins with the discussion about the SNSs as e-learning tools in the eyes of students. Then, this chapter explores the Facebook World by reviewing the history and development of Facebook besides the perception of Facebook as e-Learning tool among the academic community. Next, this chapter also critically reviews about Facebook versus Moodle as an e-Learning Tool in order to find out the nature possible factors that influence the students to utilize Facebook compare Moodle. Next, the integration of acceptance and satisfaction model was discussed in order to evaluate the BI and actual use of IS among the users. Besides, this chapter discusses about the two well-known underpinning theories, each independent variables and dependent variable, theoretical framework, justification of adopting and integrating two well-known theories. This chapter also elaborates the research hypotheses as commonly must have in any studies and end up by summarizing this chapter content.

2.1 The SNSs as e-Learning Tools (In the Eye of Students)

Numerous studies conducted by the researchers worldwide to investigate the advantages and disadvantages of using SNSs as e-Learning tool in the academic world (Madhusudhan, 2012). Despite of facing its debatable benefits in the academic world, the past studies revealed that the students admitted SNSs as e-Learning tool gave the benefits and which in turn they rarely admitted that it had given negative side effects in their learning process. Helou and Ab.Rahim (2011) conducted a

preliminary study among the 30 university students showed that the SNSs were more used as the socialize purpose rather than for education activities. But, they did not assume that the SNSs had given the downside impacts on their academic performance as it could be used for such kind of education purposes as exchanging the academic information and communicating with the peers and the instructors.

In line with this finding, a study conducted by Kabilan et al. (2010) included 300 undergraduate students as a sample. The purpose of this study was to evaluate the students' perception in using Facebook as the useful virtual learning tool in improving their English language. The finding showed that Facebook was considered by the vast majority of students as the platform to enhance their English communication and writing skills as well as motivating their level of confidence to write and communicate in English. Also, Hamat, Embi and Hassan (2012) conducted a study among the 6,358 students as the respondents revealed that the majority of Malaysian HEIs students did not agree that the SNSs usage effected their academic achievement and they also used it for informal learning. 54.10 % respondents agreed that the SNSs usage was very useful in helping their everyday life as the students.

Larue (2012) carried out the qualitative study to discover the nurse trainers' perception in using Facebook as Course Management System (CMS). The students actively involved in discussing about their learning topic after class. Their discussion naturally gained their thinking skills besides it was a good platform to share the ideas, suggestions and also solved their task. Additionally, Facebook directly created the learning community with informal environment. They admitted that Facebook made they become more relaxed in learning together, open minded to share information and closer ties with their peers and instructor. Similar positive results

could be seen in the study of Madhusudhan (2012) among 160 postgraduate students discovered that they used the SNSs to discuss, disseminate and exchange the information with their peers. Besides, the majority of them confessed that the SNSs developed their reading and writing skills, gained their research knowledge as well as their self-esteem and well-being. On the other hand, they admitted that Facebook wasted their time. A study was undertaken by Zanamwe et al. (2013) revealed that the majority of students used the SNSs to carry out group task. Besides, the students admitted that they also got the benefits in using the SNSs as these sites improved their technology proficiency, gained communication, social and research skills and they learned the new approaches to interact with people.

Irwin, Ball, Desbrow and Leveritt (2012) examined the use of Facebook pages among the universities' students (n=135). These pages were created as the medium to conduct their particular course. The results showed that 78% students believed Facebook had the substantial potential to become an e-Learning tool. They attested that Facebook had gained the communication and engagement of students to discuss in the course. Besides, the instructors uploaded the notes meanwhile the students submitted their assignment by using this site. The test results showed that 76.4% students suggested using Facebook as e-Learning tools in their future subjects. Baboo, Pandian, Mustafa, Backer, Subramaniam and Yi (2012) conducted a study regarding the use of Facebook for communicating, learning and gaming among 1,200 Malaysian students within 18 to 22 years old. In term of learning, majority of students agreed that they used Facebook to get and share information with their peer. Besides, they actively discussed with their peers regarding their study and used this site as a medium to create the group, upload materials and get feedback from their peers and teachers/lecturers. In the aim to evaluate the perception of students in using

Facebook for learning, a result of study conducted by Perez, Araiza and Doerfer (2013) showed that the students showed greater acceptance of using Facebook as the medium for e-learning purpose. The potential of Facebook are not only to increase the interaction between teacher and students, but also as the medium to develop students' professional.

Overall, numerous studies indicated that the perception of students is positive towards the use of SNSs as e-Learning tools. These sites usage in the scope of academic intentionally more as the medium for interacting, discussing, sharing knowledge with their instructors and peers besides uploading and downloading the academic materials.

2.2 Facebook: The Most Preference of SNSs among the Students

Although Facebook is still new compare to other SNSs such as MySpace and Friendster, this site has become the main selection among the education community nowadays. The experience of the few years past studies has proven that the education community worldwide prefers to use Facebook compare with other SNSs. As quoted by Hew (2011), the vast majority of British's students used Facebook (Madge, Meek, Wellens & Hooley, 2009). A study carried out by Lee (2012) revealed that 227 out of 232 African American students had a Facebook account. Meanwhile, a result of research conducted by Irwin, Ball, Desbrow and Leveritt (2012) posited that 93.1% (n=161) students actively used Facebook.

Madhusudhan (2012) undertook a study in Delhi University, India reported that the majority of research scholars (142 out of 160 respondents) used the Facebook. It was evident from the findings that 88 out of 160 research scholars visited the SNSs daily. Next, a study was carried out by Embi, Atan, Abd-Aziz, Mohd-Nordin and Hamat

(2012) also reported the same results. This study involved 1,022 instructors from 58 Malaysian Tertiary Education Institutions. It was reported that Facebook was the most familiar (72.5%) and competent (54.6%) compared LMS and other Web 2.0 tools among the instructors. Additionally, Facebook had been the most frequently used by the vast majority of the respondents. Another related study carried out by Hussain (2012) among 600 Pakistan's university students. The results of this study indicated that the most preference of SNSs among students (540 out of 600) was Facebook. Meanwhile, 82% of the students used Facebook daily.

A study of using SNSs among the Zimbabwe's University students showed that about 116 out of 124 students used Facebook, followed by Myspace (83.2%), LinkedIn (43.2%), Twitter (41.6%) and other types of SNSs were less than 6% (Zanamwe, Rupere & Kufandirimbwa, 2013). In addition, the SNSs were the first website visited by the students each time they purposely accessed internet. They spent a most time in surfing Facebook. This parallel with Stone (2009) statement (as cited by Pai and Arnott, 2013) for many internet users commonly started their day by logging on the SNSs and it became a part of their daily habitual attitude.

Almadhoun, Lai and Dominic (2012) studied the use of SNSs among the public and private university students in Malaysia. This study involved 265 students as the respondents. Out of 265 students, the majority of students (97%) attested that they had SNSs accounts. The top three of social networking sites that the most students had used were Facebook (97%), IM (32.1%) and YouTube (28.7%). In a study carried out by Abdelraheem (2013) among 120 undergraduate university students in Turkey. Most students frequently used Facebook (51.7%), followed by YouTube (20%) and Twitter (6.7%). The top three SNSs frequently used by the 387 Taiwan

university students were Facebook (377 students), followed by Plurk (49 students) and Google+ (43 students) (Jong, Lai, Hsia, Lin & Liao, 2014). Chu and Du (2014) examined the SNSs tools among 38 libraries from Europe, North America and Asia. The outputs indicated that majority of libraries (71.1%) used SNSs, 13.1% had intention to use SNSs and 15.8% did not plan to use them at all. Majority of them adopted Facebook and Twitter to help promote library services, enhances reference services, sharing knowledge and information.

2.3 A Chronicle of Facebook.com

Stride in the borderless world, the advent of Web 2.0 tools watched the germination of SNSs more than other types of Web 2.0 tools in the virtual world. Reality, the popularity of Facebook could not be denied from it was birthed until nowadays. Before entering and traversing into the chronicle of Facebook world, it was very pivotal to understand that Facebook was categorized as the friendship SNSs (Othman, Suhaimi, Yusuf, & Mohamad, 2012). Figure 2.1 indicates the types of SNSs.

Boyd and Ellison (2008, p.211) defined the SNSs as *"web-based services that allow individuals to (1) construct a public within a bounded system (2) articulate a list of other users with whom they share a connection and (3) view and traverse their list of connections and those made by others within the system."* According to Grosseck (2009) (Cobbs, 2008, p.479), the SNSs was described as *"event support and continuation, team and community support, aggregation of social media applications, personal learning environments etc."* Facebook (2011) gave the meaning of itself *"as a social utility that helps people communicate more efficiently with their friends, family and co-workers."* (Ayu & Abrizah, 2011). Historically,

Facebook was created by Mark Zuckerberg, Dustin Moskovitz and Chris Hughes in 2004 while they were still the Harvard University's student (Boyd & Ellison, 2008). Previously, Facebook was known as Facemash and then thefacebook before permanently stuck with this well-known name until nowadays (BBC Worldwide, 2013).

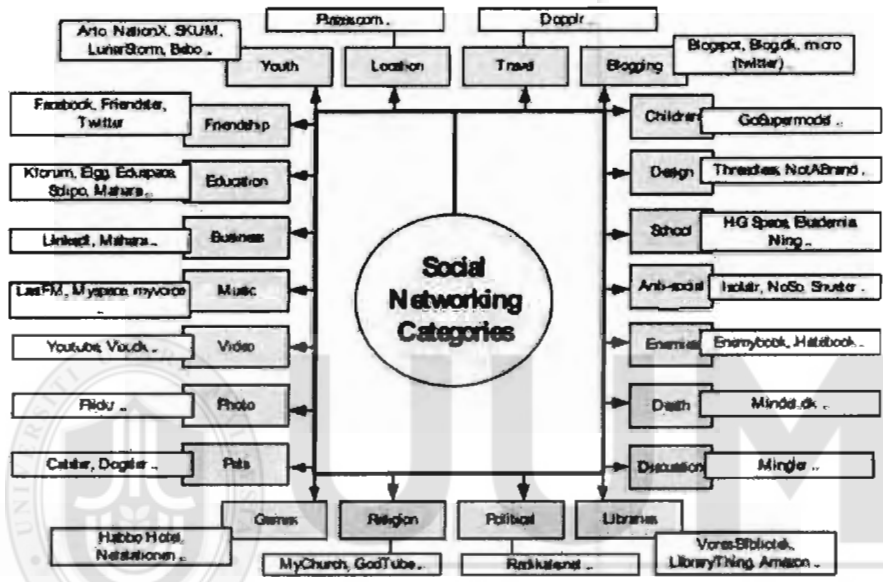

Figure 2.1
The SNSs Categories
Source: Adapted from Othman, Suhaimi, Yusuf and Mohamad (2012)

Despite the popularity and rapid growth of Facebook's users nowadays, previously this site was limited only for the Harvard students. The students who had the Harvard University's email (harvard.edu) address could participated in Facebook (Pay, Hosseini, & Shakouri, 2013). During that time, this site was created to socialize, communicate, keep in touch, discuss and share information among Harvard University's community (Roblyer et al., 2010). In the September of 2005, everything totally changed when this site could be accessed by people outside the Harvard University's academic community (Boyd & Ellison, 2008). Facebook became one of

among the most popular SNSs in the world after this site opened its door to other people in 2006 (Figure 2.2) (Lampe, Ellison and Steinfield, 2006).

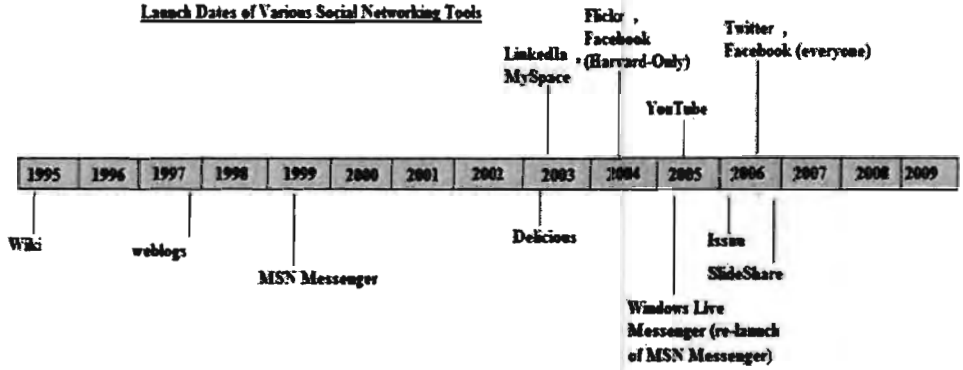

Figure 2.2
Launch Dates of Various SNSs.
Source: Chu and Du (2012)

Although Facebook can be accessed relatively late in the timeline (Boyd and Ellison, 2008) but reality nowadays, the population of Facebook users has drastically increased every year. In recent decades, it started with over 12 million members (2006), 50 million members (2007), 100 million members (2008), 350 million members (2009), 500 million members (2010), 800 million members (2011), 900 million members (2012) and 1.23 billion members in 2013 (Chauhan, Buckley, & Harvey, 2013). Presently, Facebook.com (2015) reported that *"864 million daily active users on average for September 2014 and 703 million mobile daily active users on average for September 2014. 1.35 billion Monthly active users as of September 30, 2014. 1.12 billion Mobile monthly active users as of September 30, 2014. Approximately 82.2% of our daily active users are outside the US and Canada."*

Nowadays, the Facebook Company Headquarters operates in California as Mark Zuckerberg becomes a CEO; meanwhile 30 branch offices have been opened

worldwide. This company has 8,348 employees as reported until September 30, 2014 and its stock is listed in Nashaq (Facebook.com, 2015). Each year Facebook always improves their site by adding new features or upgrade the interface. Similar to other SNSs, this site has given authority to the users to make their self-descriptive profiles (e.g. name, address, gender, email address, mobile phone number, relationship 'status, education and etc.) either visible or not visible to be seen by people (Traud, Mucha, & Porter, 2012). An interactive features can be seen in Facebook include the timeline, friends list, group, page, events, messages, pokes, photos, videos, status, like button, chat, find friends and etc. (Nadkarni & Hofmann, 2012). Although the features in mobile apps are restricted and not completed as through a web browser (Allen, 2012), the flexibility in surfing this site any time and everywhere is one of the factors that influence the increasing of Facebook's users from year to year. Figure 2.3 indicates the Facebook's interface website and logo.

Figure 2.3
Facebook Interface Website and Logo
Source: Facebook.com

Fundamentally, in the education world, Facebook is a SNS as the main purpose of this site is to socialize. The advantages of using Facebook in the general purpose by the users such as a medium to maintain the relationship with the family, peers besides find new friends that sharing the same interest, disseminate the news and information, do business online and so on (Dogruer, Menevis, & Eyyam, 2011). On

the other hand, the drawbacks of using Facebook which related to the privacy issues, sexual harassment and abuse, cyberbullying and others (Bugeja, 2006). In academic world, the education community see an immensely potential in Facebook as e-Learning tool as it has the attributes that not only naturally foster social interaction, building friendship but also learning environment (Othman, Suhaimi, et al., 2012; Pempek, Yermolayeva, & Calvert, 2009). Based on the Figure 2.4, Facebook attributes are suitable for learning as well as building relationship with the friends. Facebook is suggested as the technology alternative to support e-Learning (Grosseck, Bran, & Tiru, 2011).

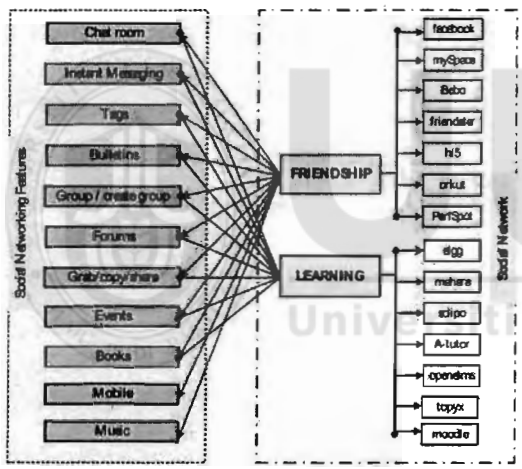

Figure 2.4
The Relationship between SNSs Attributes for Learning and Friendship
Sources: Othman et al. (2012)

2.4 The Formation of Social-Academic Communities via Facebook

The popularity of Facebook cannot be denied and Facebook is already become the phenomena in the virtual world. Based on the review of many past studies (Refer section 2.2), the output revealed that Facebook was the most preference SNS as e-Learning tool. Facebook dominates the population of Malaysian's users in the virtual world (Alexa, 2015). It is reported that majority of Malaysian's Facebook users are the young people (18-34 years). It clearly shows that this age group includes the

students in secondary school and universities. The students already utilize Facebook during their secondary school and continuing use this site until they enter the university even in the long future as the worker. The frequent of using Facebook making the students are competent to utilize Facebook. As the undergraduate students, the daily uses of Facebook naturally making them utilize this site as e-Learning tool.

Starting as the new students register to the universities, Facebook also play a vital medium for social transition among them. An output of past study (Madge, Meek, Wellens & Hooley, 2009) revealed that Facebook was a part of the *'social glue'* that helped the new students adopted the environment of universities. For example, the university official Facebook pages enable the students to find out the latest update information regarding the university's activities and events. They can directly ask the admin and quickly get the feedbacks either from the admin or community. In addition, the new students get closure and know each other by adding their new friends and in the long period of time, the relationship is transferring to be a kind of social capital relationship. The social capital referred either benefits or disadvantages were received from social relationship, but generally, the social relationship was built gave the benefits impacts (e.g. advices, information and support, news) towards an individual and the community (Ellison, Steinfield & Lampe, 2007).

Social capital can be categorized into two types which are bridging social capital and bonding social capital (Putnam, 2000). Bridging social capital is defined as the weaker relationship between the students that had little acquaintance, which may develop because of academic affairs and share useful information (formal situation) but not emotional support. Meanwhile, bonding social capital refers to close

relationships that the individual always get emotional, social and physical support from her/his close friend (Granovetter, 1983). The findings of many past studies revealed that the active online communication leads to increase bridging social capital and bonding capital (Weiqin, Campbell, Kimpton, Wozencroft & Orel, 2016). Facebook seem to be most valuable the undergraduate students with the lower self-esteem, weaker social capabilities and lower satisfaction on their university life (Ellison, Steinfield & Lampe, 2007; Steinfield, Ellison & Lampe, 2008).

The transformation of social transition to social capital naturally forms the social-academic communities among the students. The benefits of developing social capital among the students are not just limited inside the academic environment. Once the students enter into the work environment, the social capital that was built during the universities times somehow will give the benefits to them. For example, the students still can promote and sell the products, discuss the work matters or perhaps asking for the job vacancy to their academic peers.

2.5 Modular Object-Oriented Dynamic Learning Environment (Moodle)

Moodle is identified as the most utilized platform in higher education, most popular and easier to utilized (Cavus, 2015; Costa, Alvelos & Teixeira, 2012). As shown in Figure 2.5, Moodle is still widely utilized in education sector and it is reported has the most users (73.8 million) in the LMS market, followed by Edmodo and Blackboard (20 million) (Pappas, 2015). 9 out of 20 universities in Malaysia utilized this site as their LMS (Embi, 2010). Cavus and Zabadi (2014) claimed that there were many methods implied to determine the best LMS by the researchers and the output showed that Moodle was the best LMS.

Figure 2.5
The Top Six Most Popular LMS Software in 2015
Source: Valova (2015)

As shown in Table 2.1, Moodle has very interactive features. Besides this platform can be obtained free, the varieties of Moodle features attracted the HEI to utilize this platform. Approximately 75% of the LMS have more than 50% of Web 2.0 tools features (Soumplis, Koulocheri, Kostaras, Karousos & Xenos, 2011).

Table 2.1
Activities and Features of the Moodle platform

Activity	Features	Description
Creation	Database	1. allows to build, display and search a bank of record entries about any topic 2. allows to share a collection of data
Organization	Lessons	represent a set of ordered topics summarizing the instructional materials and allow the access to them through the respective link;
Delivery	Assignments	1. allow teachers to collect work from students 2. allow teachers to evaluate the student's work and provide feedback including grades, in a private mode 3. allow students to upload assignment files
	Workshops	1. represent a peer assessment activity with many options 2. allow students to submit their work via an online text tool and attachments
Communication	Chats	allow synchronous conversation
	Forums	represent a communication tool where students and teachers can exchange ideas by posting comments

Table 2.1 (Continue)

	News	1. represent a special forum for general announcements 2. allow teachers to add posts and to send emails
Collaboration	Glossary	1. allows creating and maintaining a list of definitions 2. represents a mechanism for collaborative activities that can be restricted to entries made by the teacher
	Wikis	1. allow users to edit collaborative Web pages 2. provide space for collaborative work
Assessment	Choice	1. allows teachers to ask questions and specify multiple choice answers 2.represents a useful mechanism to stimulate thinking about a topic
	Quiz	allows teachers to design and build quizzes with a variety of questions, with different types of answers, such as multiple choice, true/false, short answer
	Survey	allows teachers to gather feedback from students using prepackaged questionnaires
	Feedback	allows teachers to create surveys to collect feedback
Reusability	SCORM	1. represent specifications that enable interoperability, accessibility and reusability of the learning content 2. represent tools that enable SCORM packages to be included in the course
	External tools	1. Enable interaction with compliant learning resources (e.g. Learning Tools Interoperability) and activities on other Web sites provide access to new activities' types or materials

Source: Adapted from Costa, Alvelos and Teixeira (2012).

2.6 Facebook versus Moodle as an e-Learning Tool

In the broadest sense, in the education world, Facebook and others web 2.0 tools are utilized as the technology alternative to support and encourage the students to share, engage and communicate each other's either with their peers or lecturers. Otherwise, nowadays, the past studies approved that the advancement of web 2.0 tools especially SNSs decreased the use of LMS as the main e-Learning tool (Alhazmi & AbdulRahman, 2012b). Although Moodle is the best LMS, the findings of many previous studies show that Moodle is still under-utilized and facing the problem of low student engagement (Gulieva, 2014). In regard with the issue, the section discusses about the nature possible reasons inhibit the academic community from using Moodle compare to Facebook as e-Learning tool.

2.6.1 Informal Learning versus Formal Learning Environment

As an e-Learning tool, the nature of Facebook environment provides opportunities not only for formal learning but also informal learning. Thus, one of many reasons Facebook's successes as e-Learning tool is because of its informal learning environment (Cain & Policastri, 2011). On the other hand, the conventional LMS environment offers limited opportunities for the students to interact each other. The interaction activities among the students are limited to closed classroom in one whole semester. The resources on LMS cannot be accessed by the students after their graduation (Wang, Woo, Quek, Yang & Liu, 2012).

Besides, the utilization of Facebook as e-Learning tool creates the community learning and the students are not obtaining knowledge regarding their subjects but also others beneficial knowledge that shared by the Facebook's users. In addition, the openness element on Facebook environment creates the tendency of students' willingness to share and discuss without feeling limitation. Also, Facebook creates the openness informal learning environment offers the students to share, discuss, acting globally and mingling and socializing and it naturally enable the users to exchange knowledge freely besides encourage mutual cooperative (Kim, Altmann & Hwang, 2010). Table 2.2 indicates the differentiation between the environment of LMS and community learning. Besides, the formal learning stimulates the formality feeling among the students and also their instructor. Hence, the students spend more time to think the proper language to write their messages and they also feel they are being monitored and forced to perform which prevent them to participate (Gulieva, 2014).

Table 2.2

The Comparison of LMS Leaning and Community Learning

LMS Learning	Community Learning
Sell and certify content mastery	Share and evolve content
Teaching is structured, formal, managed	Learning is social, informal, facilitated
Finite/temporal learning-get the degree	Infinite/ lifelong learning
Institutional community	Community of practice
Access to information	Access to like-minded others
Predominantly utilitarian motivations	Hedonic and utilitarian motivations
Institution delivers teaching	Institution/ community nurture learning
Centralized, restricted hierarchical	De-centralized, open, communal
Pedagogy	
Managed learning about	Nurtured learning to be
Instructor assesses students	Community rewards member content
Registered students must participate	Anyone may contribute
Knowledge-push on what to think	Knowledge-pull on how to think
Access for registered students, that term	Open to anyone, anywhere, anytime
Technology	
Overarching LMS	Free tools such as Blogger, Facebook and YouTube
Standardize processes	Quest for best practices
Desktop and proprietary computing	Cloud and open computing

Source: Adapted from Murphy (2012)

2.6.2 Facebook and Moodle Features as e-Learning Tool

Due to the high usage rate of using web 2.0 tools, the developers imitated some features on Web 2.0 tools interactive functionality to the LMS (Danyaro, Jaafar, Lara & Downe, 2010). Yet, although the LMS had interactive features, many studies showed that the participation of the students and lecturers are still quite low (Pilli, 2014). Besides, the students and lecturers utilized LMS just for basic usage such as uploading notes and changing knowledge among them (Alhazmi & Abdul-Rahman, 2012a). Amongst the open source LMS, Moodle rated the highest based on adaptability features and it has the best communication tools with user friendly interface (Cavus, 2015; Cavus & Zabadi, 2014). Yet, the previous studies revealed that the lecturers and students utilized Facebook more than Moodle as e-Learning tool (Petrovic, Jeremic, Cirovic, Radojicic & Milenkovic, 2014). Besides, the finding of this study showed that the students agreed that Facebook was easier to be utilized compare Moodle and they admitted that Facebook had a good graphical user interface compare Moodle. Thus, it is very imperative to compare the Moodle and

Facebook features in order to find out the features of Facebook that attract the students to utilize Facebook more than Moodle as e-Learning tool.

2.6.2.1 The Similarity of Facebook and Moodle Features

The similarity of Facebook and Moodle features are analyzed based on five main features (i.e. Whiteboard/ Video Services, Discussion Forum, File exchange/Internal Mail, Online Journal Mail, Real Time Chat) by adapting the past study review (Cavus & Zabadi, 2014).

i. Whiteboard/ Video Services

Moodle: Amongst the LMS, Moodle is identified has the best whiteboard feature. This feature is added with the Skype whiteboard and interactive whiteboard that available for the learners and instructors (Cavus & Zabadi, 2014).

Facebook: The Facebook's inbox feature supports different kinds of chats. In term of Facebook as e-Learning tool, the lecturers and students utilize this feature to send text, URL link, audio, videos, files and pictures. Calling and video calling also available in this feature and he conversation can be held between only two persons or group.

ii. Discussion Forum

Moodle: The students and lecturers exchange information, knowledge and ideas among them through posting the comments and arranging the workshop (Cavus & Zabadi, 2014).

Facebook: The functionality of Discussion Forum is same as Facebook's Group. The interaction between the students and lecturers are possible through the comments on a Group's Wall. All interactions and group changes are automatically set to users news feed and notifications. The Facebook's group can be set up either as private just

for member or open for public. In addition, the group members write the post, comments, add photos/videos, create the poll, sharing the link from external resources, upload and download the files. Inside the group feature, the group's members can create the events if they want to organize the workshop.

iii. File Exchange/ Internal Mail

Moodle: The students download the notes from the lecturers via Moodle. The arrangements of notes are more organized compare sending the files/ notes via email.

Facebook: Differently from Moodle, both side either the students or lecturers can upload/ download the files. The students can send the assignment to their lecturers through the Inbox feature. Also, the students exchange the files privately between them.

iv. Online Journal Mail

Moodle: This feature provides a text area where the students can type their ideas, knowledge and information (Cavus & Zabadi, 2014). This feature is just like their personal blog that can be edited, revisited and updated.

Facebook: The notes on Facebook can substitute the role of online journal mail. However, the weaknesses of Facebook's notes are available and only can be read by the student's friends.

v. Real Time Chat

Moodle: Through this real time chat feature, the students and lecturers have a real time synchronous interaction and discussion regarding that particular course (Cavus & Zabadi, 2014).

Facebook: The inbox feature on Facebook is very interactive. The flexibility of using Facebook's inbox feature is not just for having a real time synchronous interaction

and discussion but also available for calling and video calling. Besides, the interactive session can be held between two persons or group in the real time.

2.6.2.2 The Differentiation of Facebook and Moodle Features

Based on the analysis between Facebook and Moodle features above, each site has their own strengths and weaknesses as e-Learning tool.

i. Graphical User Interface

It cannot be denied that Facebook has a good graphical user interface compare Moodle. The students accessed and read all entire information by looking only at Facebook's Group wall. Otherwise, the students and lecturers manage to open link by link before to get into the Moodle's discussion feature. Meanwhile, a study of Gomes, Guerra, Mendes and Rego (2015) revealed that the students were not really like too much email originated by the Moodle notifications. Based on the data and views expressed by the students in Chen (2014), the students discovered that Facebook's interface was clear meanwhile Moodle was dull and serious. A distinct result (Gary, Annabell & Kennedy, 2010) showed that the students expressed that Facebook layout and functionality actually distract their educational activities. All these past studies clearly confirm that the graphical, interface and layout also play an important aspect that attract the students to choose and utilize Facebook as e-Learning tool. Yet, the distraction of Facebook cannot be fully blamed since the main role of this site is to socialize and not for learning. By just login into Facebook, the users can get all information in just looking one wall. Fewer clicks on Facebook and all information can be looked only one wall. It is totally different on Moodle's interface; the users need to click from one link to others link to see each feature.

ii. Alert Functionality

Facebook's notification Facebook gives an alert to the students about any changing of Facebook's Group wall. Meanwhile, Facebook's news feed is the feed based on them and their friends with other users (Rozac, Pogacnik, Kos, Buendia & Ballester, 2012). Dissimilar with Moodle, these two functions are naturally attracting the students to read the comments as they realize the changing from Facebook's Group. All of these changing on Facebook's group can be reviewed by the students in just one interface. Also, a previous study (Chen, 2014) revealed that the students preferred to use Facebook because this site was convenient compared Moodle.

iii. Interactive feature

The functionality of Facebook's group wall is similar with Moodle's discussion forum. In Facebook's group, the students start their discussion with the instructors and peers by commenting on the wall. Attachment function on Facebook's group that available for attach the files, pictures, video and link from other websites easier the students' process to learn, share and exchange knowledge. The students were satisfied with the way of using Facebook's group as the LMS (Wang, Woo, Quek, Yang & Liu, 2012). However, the weakness of Facebook's group was the untreated discussion that made the students difficult to follow and understand the whole discussion because the posts in chronological order (Chen, 2014; DeSchryyer, Mishra, Koehleer & Francis, 2009; Meishar-Tal, Kurtz & Pieterse, 2012; Wang, Woo, Quek, Yang & Liu, 2012). Meanwhile, Moodle's discussion forum is more organize and thread, such the feedback is right under the post for which the response is intended (DeSchryver, Mishra, Koehleer & Francis, 2009). Moodle's discussion feature is more organize and thread and it is easier for the students and lecturers to read the comments among them.

Meanwhile, Facebook's inbox is more flexible compare Moodle's chat. The multi-functionality of Facebook's inbox is not only for chatting but also to send the files, pictures, videos, sharing links, calling and making video call. In addition, the conversation can be held more than two persons. Moodle's chat feature is similar with Facebook's inbox feature when utilizing it during the asynchronous learning and synchronous learning. However, in the setting of asynchronous learning, the students and lecturers get a lot of benefits from using Facebook's inbox feature. The attachment function on Facebook's inbox feature makes the students is much easier to utilize Facebook as e-Learning tool. While the discussion among the group's member ongoing, they can attach their notes, assignments, pictures, videos and etc. On the other hand, it is uneasy to utilize Moodle's chat since the group members cannot share directly the files, videos, assignments, notes, videos, pictures and etc. during the asynchronous learning.

iv. Authority and Privacy Setting

The nature role of Facebook as the SNS gives more authority to the students for utilizing Facebook as e-Learning tool. Otherwise, the authority for controlling Moodle among the students is less and in fact, the lecturers and organizations manage the content management. The capability of controlling their own accounts stimulates the students' behaviour to feel freer to participate, share their knowledge and exchange information among them. The students have an authority to create their own groups to learn, discuss and exchange knowledge. On the other hands, the students cannot access certain features on Moodle such as creating the groups as this feature was usually available for the lecturers and administrators only. However, the full authority on Facebook exposed the users towards the privacy and internet security issues (Houghton & Joinson, 2010). The tendency for them to expose too

much of their personal information to public people are higher (Qi & Edgar-Nevill, 2011). It is because a sense of less privacy will be generated among the users if the medium is perceived more public (Tu, 2002). Young people especially the students face the major privacy challenge by posting their information they post about themselves, allow people to post and share about them (Zorica, Biskupic, Ivanjko & Spirance, 2011).

2.6.2.3 The Important Conclusion from the Comparison of Facebook and Moodle Features

Based on the analysis towards Facebook and Moodle features, each site have its own advantages and disadvantages.

i. In term of interactive feature, Facebook is much better than Moodle. Interactive features are the most important elements that will attract the students to choose e-Learning tool. According to Alenezi and Shahi (2015), *"most powerful feature of E-Learning is that it remains an extremely interactive experience"* (p.891). Facebook's Inbox/ Chat feature is more flexible compare Moodle's chat feature. The students can attach the files while chatting with their peers. Hence, Facebook's interactive feature attracts the students to utilize this site to discuss with their peers.

ii. The full authority to manage their Facebook account makes the students have ability to create group/pages compare Moodle. The multifunctional and flexibility of Facebook's Group feature cannot be compared with the limitation functionality of Moodle's Discussion/Forum feature. Facebook's Group features easier the students to discuss and attach their task materials. However the weakness of Facebook's Group was the untreated discussion.

On the other hand, Moodle's discussion forum is more organize and thread, such the feedback is right under the post for which the response is intended. The students cannot create their own groups/pages on Moodle. Only instructors and admins have authority to create the group.

iii. Past studies revealed that the students admitted that the Facebook's graphical user interface was very attractive compare Moodle is very dull. Thus, the designers need to emphasize the interface of LMS.

iv. In term of utilizing Facebook as e-Learning tool, the academic communities especially the instructors always concerned about the privacy issues.

v. Only one feature on Moodle (i.e. Online Journal Mail) that Facebook feature (i.e. Notes) is still limited to replace it usefulness as the personal blog for the students write and share their ideas with their instructors and peers.

vi. Moodle has many features that suitable for e-learning process. Meanwhile, Facebook can be used as technology alternative to support Moodle. Many features in Facebook can be utilized for e-Learning process. In term of interactive feature, the main reason of students utilize Facebook's interactive features because of it multi functionality. Therefore, although the LMS had interactive features, many studies showed that the participation of the students and lecturers are still quite low (Pilli, 2014). The multi functionality of Facebook's features is the reason why the students prefer to utilize Facebook compare Moodle.

2.6.3 The Nature Characteristics of Millennials

The behaviour of the students nowadays changes from being the participants to the contributors inside the virtual world. The emergence wave of Web 2.0 tools especially SNSs naturally created the coming-of-age of the digital generation that majority of them like to contribute, share and discuss the information and knowledge (Brown, 2012). The undergraduate students nowadays can be categorized as the generation Z and some of them are Generation Y. An output from past study (Jones, Ramanau, Cross & Healing, 2010) showed that "*the conditions in terms of the availability and use of technologies required for a Net generation and the development of Digital Natives exists within the population entering university* (p.730)." Generation Y and Z (also known as the Millennials) are considered the leaders in the usage of the technology and they always use Internet to complete their work and study (e.g. sending assignment and task by using emails) or virtually socializing with the community (e.g. Facebook) (Issa & Isaias, 2016). The SNSs are already become the part of their life and they utilize this medium in order to complete their daily task as the students. Majority of students already utilize Facebook since they study at their high school. Facebook was a dominant player in the students' everyday lives as it naturally effect in their academic domain too (Poonudurai & Jacob, 2013) .Therefore, it is not surprising that the output from many previous studies indicates the motivations for using Facebook such as the familiarity with these tools are relatively common since the students nowadays are *"digital natives"* (Manca & Ranieri, 2016). Table 2.3 indicates the comparison between generation X, Y and Z. Considering the students nowadays live inside the social networking world, it can be predicted that the turnover of using LMS to SNS is also because of the nature characteristics of generation Y and Z.

Table 2.3
The Comparison between Generation X, Y and Z

Gen	Born	Technological Environment	Historical Environment
X	From the early 1960s to 1974	Seeing the inception of the home computer, the rise of videogames and the Internet as a tool for social and commercial purposes	Formed by political experiences and cultural perspective of the fall of Berlin Wall, collapse of USSR, Yugoslavia
Y	1975-1994	Technology communicators	Seen as the ultimate rejecters of the counterculture which began in the 1960s
Z	From the mid-1990s to the late 2000s	Fully technology communicators	Social networking-world perceived without time and space limits

Source: Levickaite (2010)

2.7 Review of Previous Studies about the Integration of Acceptance and Satisfaction Theories

Reality, the literature regarding the integration of acceptance and satisfaction model for understanding the success of IS implementation is still limited. A few studies were identified (Wixom & Todd, 2005; Lai & Pires, 2010) integrated Theory Acceptance Model (TAM) (Davis, 1989), IS success model (DeLone & McLean, 1992) and EUCS (Doll & Torkzadeh, 1988). A study conducted by Roca, Chiu and Martinez (2006) consolidated TAM, Expectancy Disconfirmation theory (EDT) (Oliver, 1980) and IS success model. Next, the integration of five models in the study of Ceccucci, Peslak and Sendall (2010) which were TRA (Fishbein and Ajzen, 1975), TAM, Theory of Planned Behaviour (TPB) (Ajzen, 1991), EUCS and Diffusion of Innovation (DOI) (Moore & Benbasat, 1991). Meanwhile, Ling and Islam (2015) amalgamated the UTAUT and EUCS in their study.

Wixom and Todd (2005) integrated three models, namely, TAM, IS Success Model and EUCS in order to evaluate the user's BI of using data warehousing predefined reporting software. This study involved a sample of 465 users of data warehousing predefined software from seven different organizations. The value of R^2 for intention

increased from 0.59 (TAM) to 0.60 (plus quality and satisfaction to intention) to 0.62 (plus system characteristics to intention) to 0.63 (all factors to intention). Meanwhile, information and system quality were more distal predictors compared the satisfaction as the mediator variable in this study. Without the existence of satisfaction, the path coefficients between Information Quality (IQ) and usefulness decrease from 0.64 to 0.45 meanwhile systems quality and ease of use also decrease from 0.81 to 0.66. In addition, the value of R^2 for ease of use and usefulness factors decreased from 0.65 to 0.43 and from 0.67 to 0.55 respectively.

Miyamoto, Kudo and Lizuka (2012) integrated two models which were TAM and IS success model as the aim to evaluate the success of Enterprise Planning Resource (EPR) among 266 users in Japan. There were three exogenous variables (perceived ease of use, perceived usefulness and BI) and one endogenous variable (user satisfaction) were tested on this study. '*Perceived usefulness'* and *'Ease of Use'* gave the impacts towards the user's intention of using EPR, thus leads to the respondents' satisfaction. Meanwhile, the first order construct for perceived usefulness (function, standard), perceived ease of use (compatibility and support), BI (upgrading version and EPR implementation) and user satisfaction (operation efficiency, enhancement of management control and improve efficiency of development and operating services) were also tested. The results of this study were largely parallel with the model hypotheses except for *'upgrading version'* was not related to users' BI of using EPR at all. The structural model and modified structural model were fit significantly since the value of NFI, CFI, IFI and RMSEA met the requirement.

Lai and Pires (2010) tested a model to evaluate the user's intention of using e-Government Portal by integrating TAM, IS success model and EUCS. A sample of

464 online users of Macao's e-Government portal took part in this study. There were four independent variables, namely, IQ, system quality (SQ), perceived effectiveness and SI. The mediator variable in this study was satisfaction (SAT) and intention to use (IU) became the dependent variable. A result showed that all independent variable except PE affected the user's intention of using the Macao's e-Government portal. Only the relationship between PE and IU was not mediated by SAT. IQ ($b= 0.28$, $p<0.01$) was the most crucial factor affect SAT and there was a significant relationship between SAT and IU ($b=0.14$, $p<0.05$). Roca, Chiu and Martinez (2006) conducted a study by integrating three theories, namely, TAM, EDT and IS Success Model. Theoretically, EDT was used as the background and itself integrated into TAM. Meanwhile IQ, service quality (ServQual) and SQ became direct antecedents of confirmation and satisfaction. In this study, 172 students take e-learning course involve as a sample. A result shows that the students' satisfaction ($b=0.51$, $p<0.01$) positively and significantly affect the e-learning continuance intention which in turn is jointly determined by perceived quality (IQ, ServQual and SQ), confirmation, subjective norm (interpersonal influence and external influence) and perceived usability (perceived usefulness, cognitive absorption and perceived ease of use, computer self-efficacy and internet self-efficacy). Ceccucci, Peslak and Sendall (2010) investigated the students' BI in using text messaging by amalgamating five well known theories which are TRA, TAM, TPB, DOI and EUCS. A result from multiple regression analysis by involving 153 students showed that only five (attitude, compatibility, ease of use, satisfaction and visibility) out of fifteen predictors have a significant influence on the students' BI in using text messaging.

Wei-Tsong and Chun-Chieh (2009) integrated TAM and IS success Model as the aim to evaluate the instructor's adoption of using web-based learning systems. This study

involved 268 instructors from Taiwan's university. By implementing SEM, the results revealed that there was positive and significant relationship between SQ, ServQual and self-efficacy on perceived ease of use. Meanwhile, perceived usefulness is positively and significantly affected by perceived usefulness. Next, Subjective norm and perceived usefulness are positively and significantly affect intention to use web-based learning system. Lastly, there was a positive and significant relationship between user's intention and system use. This study proved that the integration of exogenous variables from satisfaction and acceptance model increased a significant amount of the variance of actual system use (R^2= 0.562). Meanwhile, a current study was conducted by Ling and Islam (2015) amalgamated the UTAUT and IS success model. The aim of this study was to evaluate the Malaysian users' satisfaction in using online banking. Only 125 users took part as the respondents in this study. The endogenous variable was the users' satisfaction meanwhile the exogenous variables are self-efficiency (SE), PE, EE, SI, ServQual and IQ. A result shows that the PE, SI and ServQual have a positive significant effect on the users' satisfaction.

2.8 Underpinning Theories

This subtopic discusses about the theory and instrument that will be used in this study, namely, Unified Theory of Acceptance and Use of Technology (UTAUT) and End User Computing Satisfaction (EUCS).

2.8.1 UTAUT

Venkatesh, Morris, Davis & Davis (2003) developed UTAUT by analyzing and reviewing eight theories which are the TRA, TAM, Motivational Model (MM), TPB, the model combining the technology acceptance model and the theory of planned

behaviour (C-TAM-TPB), the model of PC utilization (MPCU), Innovation Diffusion Theory (IDT) and last but not least the social cognitive theory (SCT). UTAUT was formed to evaluate the BI and the actual use of IS among the end users.

The Figure 2.4 shows the modeling of UTAUT. This model contains four independent variables in order to access the acceptance of information technology, namely, Performance Expectancy (PE), Effort Expectancy (EE), Social Influences (SI) and Facilitating Conditions (FC). Meanwhile, four moderator variables in this research, i.e. gender, age, experience and voluntariness changes the strength of relationship between independent variables and BI and actual use of information technology. Gender moderates the relationship between independent variables (i.e. PE, EE and SI) and BI and actual use of using IS. Next, age moderates the relationship between all independent variables and dependent variables. Experience becomes a moderator variable towards the relationship between EE, SI, FC and BI/ actual use of information technology. Meanwhile, only voluntary in using IS becomes a moderator variable towards the relationship between SI towards BI and actual use of using IS. These moderator variables increased the predictive validity of the eight theories except SCT and MM in order to develop the UTAUT (Venkatesh et al., 2003).

If comparing the UTAUT with other theories, the improvement of the UTAUT based on analyzing previous theories made this theory explained 70% users' behaviour compared 40% users' behaviour towards the acceptance of using IS (Venkatesh *et al.,* 2003). In term of validity, the study was conducted by Oshlyansky, Cairns and Thimbleby (2007) in the 12 countries (Malaysia was one of twelve countries) clearly revealed that this model can be used cross-culturally and beyond it country and

language of origin. As concluded by Anderson, Schwager and Kems (2006) in their study, the UTAUT model is good to be used to predict the acceptance of technology among the users and suggest that this model should be tested in various scopes in order to validate the relationship between variables. Table 2.4 indicates the development of UTAUT model main constructs.

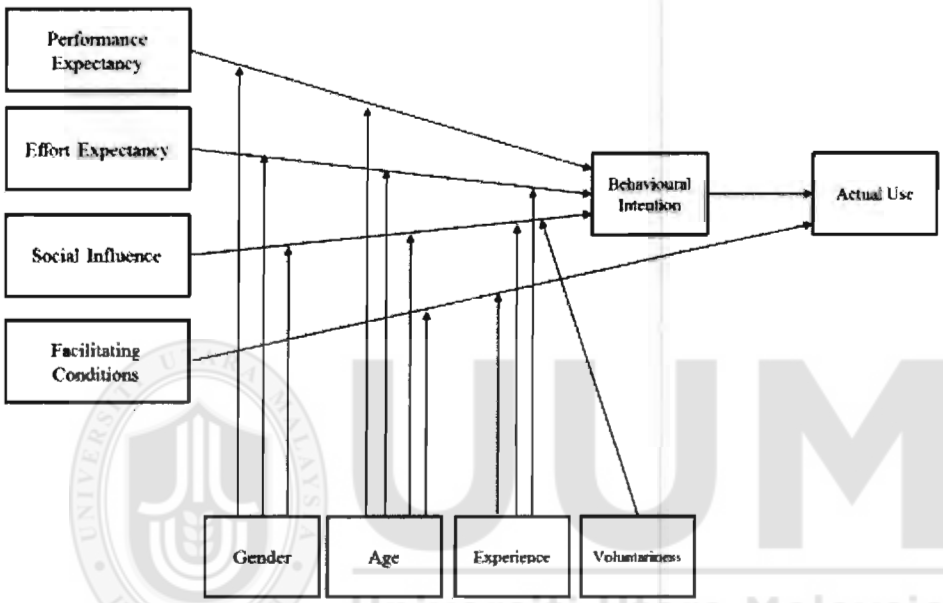

Figure 2.6
The UTAUT Model
Source: Venkatesh et al (2003)

Table 2.4
The Development of UTAUT Model Main Constructs

The Main Constructs	Collaboration and Adjustment of Variables	
	Model/ Theory	**Independent Variables**
Performance Expectancy	TAM	Perceived Usefulness
	TAM 2	
	C-TAM-TPB	
	MM	Extrinsic Motivation
	MPCU	Job Fit
	IDT	Relative Advantages
	SCT	Outcome Expectations
Effort Expectancy	TAM	Perceived Ease of Use
	TAM2	
	MPCU	Complexity
	IDT	Ease of Use
Social Influence	TRA	Subjective Norm
	TAM 2	
	TPB	
	DTPB	
	C-TAM-TPB	
	MPCU	Social Factors
	IDT	Image
Facilitating Condition	TPB	Perceived Behavioural Control
	DTPB	
	C-TAM-TPB	
	MPCU	Facilitating Condition
	IDT	Compatibility

Source: Venkatesh et al (2003)

2.8.2 EUCS

The benchmark of IS effectiveness was based on the user satisfaction of using that particular IS (Bailey & Pearson, 1983; Wang, Tang & Tang, 2001). Doll and Torkzadeh (1988, p.261) described EUCS as *"the affective attitude towards a specific computer application by someone who interacts with the application directly."* The main aim of their study was not for improving satisfaction (downstream) but to extent of end-user satisfaction (upstream) (Doll & Torkzadeh, 1991). According to Cheng and Lee (2005), EUCS was one of the best user satisfaction instruments and widely cited in many literature. This instrument contains twelve items and five dimensions, namely, content, accuracy, format, ease of use and timeliness to evaluate the users' satisfaction towards specific application. EUCS has

been pervasively used and cross-validated in many studies (Aggelidis & Chatzoglou, 2012). Table 2.5 posits the dimension and items of each dimension of EUCS.

The EUCS model had been approved can be applied as a tool to measure the user's satisfaction in using a system traverse across the cultures. This statement is proven from the result of the study is undertaken by Deng et al., (2008). This study uses a sample of western countries (USA and Europe) and non-western countries (Saudi Arabia, Taiwan and India). The result shows that only the ease of use factor indicates the different significant relationship. Figure 2.7 shows a model for measuring EUCS.

Table 2.5
The Dimension and Items of EUCS

Dimensions	Brief description of dimensions and items
Content	'The relevance and completeness of website content.' (p.213) 1. Does the system provide the precise information you need? 2. Does the information content meet your needs? 3. Does the system provide reports that seem to be just about exactly what you need?
Accuracy	'The reliability of website content.' (p.213) 1. Is the system accurate? 2. Are you satisfied with the accuracy of the system?
Format	'The way the information is presented on the website.' 1. Do you think the output is presented in a useful format? 2. Is the information clear?
Ease of use	'The extent to which the website is easy to use and helps consumers accomplish their tasks.' (p.213) 1. Is the system user friendly? 2. Is the system easy to use?
Timeliness	'Whether the information provided on the website is up-to-dated.' (p.213) 1. Do you get the information you need in time? 2. Does the system provide up-to-date information?

Source: Deng, Doll, Al-Gahtani, Larsen, Pearson, & Raghunathan (2008).

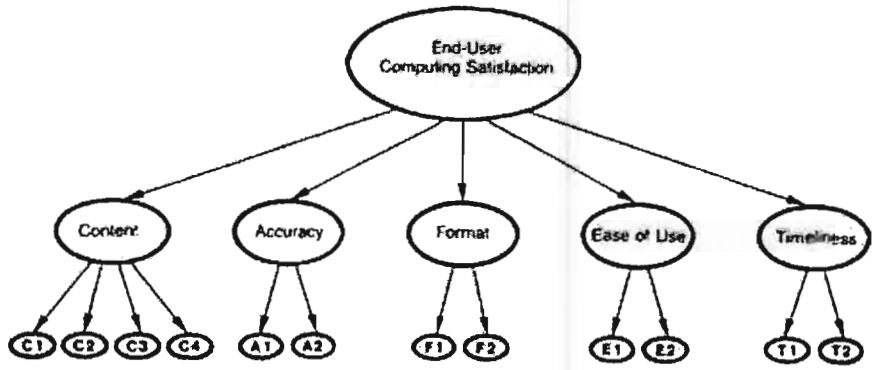

Figure 2.7
The EUCS Model
Source: Doll and Torkzadeh (1988)

As a matter, up to now there are many researchers utilized EUCS model in order to evaluate the satisfaction of using IS among the users. Ilias, Abd-Razak, Abdul-Rahman and Yasoa' (2009) studied the level of satisfaction among 90 users in using Computerized Accounting System (CAS). The EUCS model was modified by adding two dimensions (the speed and reliability system). The result of this study indicated that only the perceived ease to use, content and accuracy factors influence the users' satisfaction in using CAS. Overall, majority of users relatively satisfied with the CAS usage. Marakarkandy and Yajnik (2013) investigated the validity of EUCS model in the scope of online banking. In addition, this study undertaken to determine the most influential dimension that have an effect on the level of satisfaction in using online banking services online.

Sample in this study involved 387 respondents. Study confirmed 12 items in this instrument can be used to measure the users' satisfaction in using online banking services within the scope of non-western countries. The result shows that between the five dimensions, format is the highest loading meanwhile content is the lowest loading in influencing the user to use the online banking services. Meanwhile, the lowest mean value is the content showed that the user extremely dissatisfied with the

system while the highest mean value was the accuracy indicated that the user of this system was extremely satisfied with the system. Meanwhile, a research was conducted by Doll et al. (2004) test the validity of the EUCS as the sample of this study included about 1,166 users in using 200 different types of systems. The result of this study indicates that the system accuracy is less important for the professional and managerial workers compare to the workers in the operational sector. Mohamed, Hussin and Hussein (2009) conduct a study to evaluate the level of satisfaction among the Malaysian civil servants in using e-Government system by implementing the EUCS. Data is analyzed by using (SEM). The results show that there was a significant association between all dimensions in EUCS with the level of Malaysian civil servant's satisfaction of using e-Government. However, the most three factors that affect the level of satisfaction in using e-Government are timeliness, content and accuracy.

2.9 Behavioural Intention

According to Ajzen (1991), BI was a criterion factor that explains the users' willingness to carry out the particular behaviour. BI in the IS scope was defined as the users' intention to make use of IS (Amako-Gyampah & Salam, 2004). On the other meaning, BI was described as the tendency of an individual's intention to perform a particular behaviour by using IS (Masrom & Hussein, 2008). Meanwhile, Warshaw and Davis (1985, p. 214) gave the meaning of BI as "*the degree to which a person has formulated conscious plans to perform or not perform some specified future behavior.*" In the scope of the SNSs, BI was described as the degree to which an individual would like to surf again the SNSs (Lin and Lu, 2000). Since this study conducted in the education environment, BI is posited as criterion variable as the aim

to evaluate the students' intention of using Facebook as e-Learning tool. As a matter of fact, it was not really easy to obtain the data on the actual use of technology in education scope due to the data sensitively and this would discourage the education communities to participate (Teo, 2011). In regard of this issue, BI can be the good indicator to represent actual use to evaluate the acceptance of IS if the data about actual use was not easy to be collected (Tan, Chong & Lin, 2013). The actual usage can be predicted by the BI and its strong linkage to actual usage of using IS (Kiraz & Ozdemir, 2006; Taylor & Todd, 1995; Venkatesh et al., 2003). Figure 2.8 shows the basic concept underlying user acceptance models.

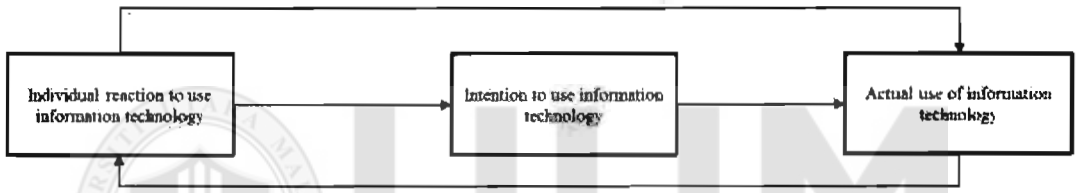

Figure 2.8
Basic Concept Underlying User Acceptance Models

2.10 Relationship of Four Factors of UTAUT and Behavioural Intention

This section discusses about the relationship between four core UTAUT factors towards BI. Each subsection explains the relationship between every construct i.e. PE, EE, SI and FC towards BI. The findings of the previous studies either from same contexts and respondents or otherwise are reviewed in order to support all these links relationship.

2.10.1 Performance Expectancy and Behavioural Intention

Venkatesh et al. (2003, p. 447) gave the meaning of PE as "*the degree to which an individual believes that using the system will help him or her to attain gains in job performance.*" Lee, Cho, Gay, Davidson and Ingraffea (2003) conducted a study to evaluate the acceptance of SNSs in the scope of distance learning concluded that the

users who got useful benefits from using technology had a positive perception towards it performance. Venkatesh et al. (2003) found that this variable in their study as the strongest predictor in UTAUT (R^2: 0.46-0.59, $p<0.001$). People used the SNSs to obtain information, solve problems and search for the right people and information that can help in their work (Kaba & Toure, 2014). Everson, Gundlach and Miller (2013) conducted a study revealed that Facebook was used by the students to discuss with their peers to ask about the task and they quickly got feedback from their peers. There was a paucity of substantial empirical studies that examined the direct relationship between PE and BI in many contexts and different types of respondents. Many outputs from previous studies showed that PE was found significantly and positively related to BI. As stated by Venkatesh et al. (2003), the strongest predictor of users' BI was the PE and there was a positive significant relationship between these two variables either in volitional behaviour or non-volitional behaviour context.

Many previous studies proved that there was a positive and significant relationship between PE and BI. Also, PE was a part of PU and there were many previous studies revealed that there was a positive and significant relationship between Perceived Usefulness (PU) and BI of using Facebook for learning purpose among the college students (Sharma, Joshi & Sharma, 2015). But, some studies indicated otherwise finding (Harsono & Suryana, 2014; Marchewka et al., 2007; Raman et al., 2014; Wu et al., 2012) as there was insignificant and either positive or negative relationship between PE and BI. Borrero, Yousafzai, Javed and Page (2014) examined the acceptance of using SNS among 214 students in Spain. The finding revealed that PE had a direct positive and significant on BI in using SNS. Dhaha and Ali (2014a) studied the adoption and satisfaction of using 3G Mobile Phone among 395 Somalia's Private University students. The SEM method was applied to test all

hypotheses in this study. This finding confirmed that the user's BI was positively and significantly influenced by PE (β=0.11, $p<0.05$). Dhaha and Ali (2014b) used multiple step-wise regressions to evaluate the same data study. The result (β=0.358, $p<0.01$) also indicated that PE significantly and positively influenced the students' BI to use 3G Mobile Phone. Next, Escobar-Rodriguez and Carvajal-Trujillo (2014) conducted the study to evaluate the acceptance of purchasing online tickets among 1,096 Spanish Consumers revealed that there was a positive and significant relationship between PE and BI (β=0.099, $p<0.01$).

Chu (2013) conducted a study to examine the effect of the factors on BI and actual use of using Internet innovation intermediaries. The finding from a study involved 735 respondents indicated that there was a positive and significant relationship between PE and BI (β= 0.236, $p<0.001$). This study finding seem to echo with the finding of Khechine, Lakhal, Pascot and Bytha (2014) in that they, too, found a positive and significant relationship between PE and BI (β=0.445, $p<0.001$). The aim of this study was to evaluate the acceptance of using Webinars among the 114 students as a sample. Kaba and Toure (2014) conducted the study regarding the acceptance of SNSs among 1,030 students. The finding found a positive and significant relationship between PE and BI (β= 0.26, $p<0.05$). Echeng, Usoro and Majewski (2013) examined the acceptance of using web 2.0 tools among 317 students and the result showed that the correlation between PE and BI was positive and significant (β=0.520, $p<0.01$). Next, Thomas, Singh and Gaffar (2013) examined the acceptance of mobile learning among 322 students and it was found that there was a positive and significant relationship between PE and BI (β=0.353, $P<0.01$). Next, Tan (2013) conducted the study regarding the adoption of using English e-

Learning website among 176 students. Research finding (β=0.346, $p<0.001$) seem also to indicate that BI was significantly and positively influenced by PE.

Lallmahomed, Ab.Rahim, Ibrahim and Abdul-Rahman (2013) examined the relationship between independent variables of use and different theoretical of system use in the willingness setting of using Facebook among 449 Malaysian students. The test results showed that there was a significant and positive relationship between PE and BI (β=0.12, $p<0.05$). Meanwhile, Pardamean and Susanto utilized UTAUT in order to evaluate the effects of acceptance factors towards the use of Blog as e-Learning tool among 49 university students. Research finding seem also to indicate that the path from PE to BI was positive and significant (β= 0.346, $p<0.05$). In a survey of 534 postgraduate students, the output indicated that there was significant and positive relationship between PE and BI in using Digital Library IS (β= 0.365, $p<0.01$) (Abdul-Rahman, Jamaludin & Mahmud, 2011). Jong and Wang (2009), found that PE had a significant effect on BI for better understanding the acceptance of web-based learning system among 606 students (β=0.150, $p<0.001$).

As mentioned earlier, while the finding in majority of studies revealed that the relationship between PE and BI would be positive and significant, otherwise, there are some studies indicate that the relationship between PE and BI was insignificant and negative. Raman, Mohd-Sani and Kaur (2014) evaluated the acceptance of Facebook as a communication and collaborative educational tool among 150 high school students. The finding of study showed that PE did not have a significant positive impact on BI. Marchewka and Kostiwa (2007) found that there was a positive and insignificant relationship between PE and BI on measuring Blackboard intention among 132 students (β=0.87, $p<0.005$). Wu, Yu and Weng (2012) found

that there was negative and insignificant relationship between PE and BI on evaluating I-Pass intention among 201 users of Taiwan's MRT. Table 2.6 indicates the relationship between PE and BI.

Table 2.6
The Relationship between PE and BI

No.	Authors	Year	Respondents/Scope/ Method	Finding	Direction
1.	Raman, Mohd-Sani, Kaur	2014	150 secondary school students Facebook Malaysia PLS SEM	$\beta = 0.36$ $p > 0.01$	Insignificant (Positive)
2.	Borrero, Yousafzai, Javed, Page	2014	214 students SNS Spain SEM Analysis	$\beta = 0.37$ $p<0.001$	Sig (Positive)
3.	Dhaha & Ali	2014a	395 students in the Somalia's private universities. 3G Mobile Phone Used AMOS SEM.	$\beta=0.11$ $p<0.05$	Sig (Positive)
4.	Dhaha & Ali	2014b	395 students 3G Mobile Phone Used Multiple Step-Wise Regression	$\beta=0.358$ $p=0.005$ $p<0.01$	Sig (Positive)
5.	Escobar-Rodriguez, Carvajal-Trujillo	2014	1096 Spanish Consumers Online tickets purchasing PLS	$\beta=0.099$ $p=0.001$ $p<0.01$	Sig (Positive)
6.	Khechine, Lakhal, Pascot, Bytha	2014	114 students Webinars Regression Analysis	$\beta=0.445$ $p=0.000$ $p<0.001$	Sig (Positive)
7.	Kaba, Toure	2014	1030 students (27 high schools and 4 universities) SNS	$\beta= 0.26$ $p<0.05$	Sig (Positive)
8.	Harsono, Suryana	2014	419 students Social Media (LINE) Path Analysis	$\beta= -0.291$ $p<0.05$ $p=0.000$	Sig (Negative)
9.	Echeng, Usoro, Majewski	2013	317 students from 5 Universities in Nigeria Web 2.0 Correlation Analysis	$\beta=0.520$ $p<0.01$	Sig (Positive)
10.	Thomas, Singh, Gaffar	2013	322 students Mobile learning SEM Analysis	$\beta=0.353$ $p<0.01$	Sig (Positive)
11.	Tan	2013	176 students English e-Learning website Regression Analysis	$\beta=0.346$ $p<0.001$	Sig (Positive)

Table 2.6 (Continue)

12.	Lallmahomed, Ab. Rahim, Ibrahim, Abdul-Rahman	2013	449 students Facebook Malaysia PLS Analysis	β=0.12 p<0.05	Sig (Positive)
13.	Chu	2013	735 respondents from Taiwan and China Internet innovation intermediary Regression Analysis	β= 0.236 p<0.001 p=0.000	Sig (Positive)
14.	Pardamean, Susanto	2012	49 students Blog Indonesia Regression Analysis	β= 0.346 p<0.05 p=0.009	Sig (Positive)
15.	Wu, Yu, Weng	2012	201 user of Taiwan's MRT I Pass Taiwan SEM Analysis	β= -0.15 p>0.001	Insignificant (Negative)
16.	Abdul-Rahman, Jamaludin, Mahmud	2011	534 postgraduate students Malaysia Digital Library Multiple Regression	β= 0.365 p<0.01 p=0.00	Sig (Positive)
17.	Hanson, West, Neiger, Thackeray, Barnes	2011	503 health educators Social Media Regression Analyses	β= 0.584 p<0.001	Sig (Positive)
18.	Holtz, Krein	2011	113 nurses Electronic Medical Record System	β= 0.584 p<0.10 p=0.05	Sig (Positive)
19.	Kijasanayotin, Pannarunothai, Speedic	2009	1607 respondents in community health centres Thailand Information Technology PLS modelling	β= 0.43 p<0.001	Sig (Positive)
20.	Jong, Wang	2009	606 students Web-based Learning system Taiwan Regression Analysis	β= 0.150 p<0.001	Sig (Positive)
21.	Marchewka, Liu, Kostiwa	2007	132 students Blackboard Spearman Correlations	β=0.87 p=0.322 p<0.005	Insignificant (Positive)

2.10.2 Effort Expectancy and Behavioural Intention

According to Venkatesh et al. (2003, p.450), EE was defined as *"the degree of ease associated with the use of the system."* A part of TAM, this independent variable was the same as Perceived Ease of Use (PEU) in TAM. Harthsorne and Ajjan (2008) evaluated the acceptance of Web 2.0 tools among the students defined PEU as the extent to which they believed that using Web 2.0 tools required minimum efforts. Hoe (2012) and Roblyer et al. (2010) found that the factor students remain with Facebook because it was very easy and convenient to be used. Meanwhile, based on their study's findings, Schroeder and Greenbowe (2009) concluded that the students more frequently used Facebook because this site already became a part of their routine life as every day they visited it and easily for them to know about the group updated. Manca and Ranierit (2013) reviewed 23 past studies regarding Facebook issues in Education and 16 out of 23 journals revealed that the students liked to use Facebook because they were familiar with the use of Facebook besides its features were very easy to be utilized.

Many previous studies revealed there was a significant and positive relationship between EE and BI such as Dhaha and Ali (2014a), Dhaha and Ali (2014b), Escobar-Rodriguez and Carvajal-Trujillo (2014), Harsono and Suryana (2014), Chu (2013), Tan (2013), Salim (2012), Wu et al., (2012), Abdul-Rahman et al., (2011) and lastly Kijasanayotin et al., (2009). Meanwhile, the distinct finding of study of Raman et al., (2014) indicated that there was an insignificant and positive relationship between EE and BI. On the other hand, Hanson et al., (2011) examined the acceptance of social media among 503 health educators and the outputs showed that EE had insignificant and negative relationship with BI. Table 2.7 indicates the relationship between EE and BI among the different types of users in variety types of IS.

Table 2.7
The Relationship between EE and BI

No.	Authors	Year	Respondents/ Scope/ Method	Finding	Direction
1.	Raman, Mohd-Sani, Kaur	2014	150 secondary school students Facebook Malaysia PLS SEM	β = 0107 p > 0.01	Insignificant (Positive)
2.	Berrero, Yousafzai, Javed, Page	2014	214 students SNS Spain SEM Analysis	Not Stated	Insignificant (Positive)
3.	Dhaha & Ali	2014a	395 students in the Somalia's private universities. Used SEM.	β=0.16 p<0.05	Sig (Positive)
4.	Dhaha & Ali	2014b	395 students 3G Mobile Phone Used Multiple Step-Wise Regression	β= 0.106 p=0.037 p<0.05	Sig (Positive)
5.	Escobar-Rodriguez, Carvajal-Trujillo	2014	1096 Spanish Consumers Online tickets purchasing PLS	β=0.085 p=0.001 p<0.01	Sig (Positive)
6.	Harsono, Suryana	2014	419 students Social Media (LINE) Path Analysis	β= 0.475 p<0.05 p=0.000	Sig (Positive)
7.	Chu	2013	735 respondents from Taiwan and China Internet innovation intermediary Regression Analysis	β= 0.427 p<0.001 p=0.000	Sig (Positive)
8.	Tan	2013	176 students English e-Learning website Regression Analysis	β=0.154 p<0.05	Sig (Positive)
9.	Salim	2012	37 Facebook's users Social Media Egypt Spearman's correlations	β= 0.280 p<0.01	Sig (Positive)
10.	Wu, Yu, Weng	2012	201 user of Taiwan's MRT I Pass Taiwan SEM Analysis	β= 0.86 p<0.001	Sig (Positive)
11.	Abdul-Rahman, Jamaludin, Mahmud	2011	534 postgraduate students Malaysia Digital Library Multiple Regression	β= 0.202 p<0.01 p=0.00	Sig (Positive)
12.	Hanson, West, Neiger, Thackeray, Barnes	2011	503 health educators Social Media Regression Analyses	β=-0.146 p=0.014	Insignificant (Negative)

Table 2.7 (Continue)

13.	Kijasanayotin, Pannarunothai, Speedic	2009	1607 respondents in community health centres Thailand Information Technology PLS modelling	β= 0.20 p<0.001	Sig (Positive)

2.10.3 Social Influence and Behavioural Intention

According to Venkatesh et al. (2003), SI was described as "*the degree to which an individual perceives that important others believe he or she should use the new system*" (p.451). As quoted by Hoe (2012), SI was also the crucial factor trigger an individual to use the SNSs (Brandtzaeg and Heim, 2009). SI was used by several researchers as the vital predictor to investigate the students' BI in using e-Learning system (Park, 2009). An original study was conducted by Venkatesh et al. (2003) showed that the casual-effect relationship between SI and BI became significant when moderating by age, voluntary use and experience. Meanwhile, Schepers and Wetzels (2007) conducted a meta-analysis study revealed that there was a positive significant relationship between SI and BI from 19 out of 22 studies. Mazer, Murphy and Simonds (2007) stated that the students realized that the use of Facebook among their instructors as an effort to promote positive relationships among them and which possibility gave positive impacts toward their performance learning. As the result, the students were also influenced to use this site as technology alternative to support their e-Learning. Based on the study finding, Hsu and Yang (2011) concluded that the SI factor stimulated Facebook became the most popular SNS besides this site was very easy to be used for people to interact with each other. The previous studies are conducted by the researchers to examine the direct relationship between SI and BI is summarized at Table 2.8:

Table 2.8
The Relationship between SI and BI

No.	Authors	Year	Respondents/ Scope/ Method	Finding	Direction
1.	Raman, Mohd-Sani, Kaur	2014	150 secondary school students Facebook Malaysia PLS SEM	β = 0.291 p < 0.01	Sig (Positive)
2.	Dhaha & Ali	2014a	395 students in the Somalia's private universities. Used SEM.	β=0.37 p<0.05	Sig (Positive)
3.	Dhaha & Ali	2014b	395 students 3G Mobile Phone Used Multiple Step-Wise Regression	β= 0.358 p=0.000 p<0.001	Sig (Positive)
4.	Borrero, Yousafzai, Javed, Page	2014	214 students SNS Spain SEM Analysis	β= 0.53 p<0.001	Sig (Positive)
5.	Khechine, Lakhal, Pascot, Bytha	2014	114 students Webinars Regression Analysis	β=0.237 p=0.005 p<0.01	Sig (Positive)
6.	Escobar-Rodriguez, Carvajal-Trujillo	2014	1096 Spanish Consumers Online tickets purchasing PLS	β=0.043 p=0.044 p<0.05	Sig (Positive)
7.	Harsono, Suryana	2014	419 students Social Media (LINE) Regression Analysis	β=0.251 p=0.000 p<0.05	Sig (Positive)
8.	Raman, Mohd-Sani, Kaur	2014	150 secondary school students Facebook PLS analysis	β=0.291 p<0.01	Sig (Positive)
9.	Echeng, Usoro, Majewski	2013	317 students from 5 Universities in Nigeria Web 2.0 Correlation Analysis	β=0.520 p<0.01	Sig (Positive)
10.	Chu	2013	735 respondents from Taiwan and China Internet innovation intermediary Regression Analysis	β= 0.489 p<0.001 p=0.000	Sig (Positive)
11.	Tan	2013	176 students English e-Learning website Regression Analysis	β=0.282 p<0.001	Sig (Positive)
12.	Thomas, Singh, Gaffar	2013	322 students Mobile learning SEM Analysis	β=0.146 p<0.05	Sig (Positive)
13.	Lallmahomed, Ab. Rahim, Ibrahim, Abdul-Rahman	2013	449 students Facebook Malaysia PLS Analysis	β=0.18 p<0.001	Sig (Positive)

Table 2.8 (Continue)

14.	Salim	2012	37 Facebook's users Social Media Egypt Spearman's correlations	β= -0.250 p<0.05	Sig (Negative)
15.	Pardamean, Susanto	2012	49 students Blog Indonesia Regression Analysis	β= 0.644 p<0.05 p=0.001	Sig (Positive)
16.	Wu, Yu, Weng	2012	201 users of Taiwan's MRT I Pass Taiwan SEM Analysis	β= 0.23 p<0.01	Sig (Positive)
17.	Hanson, West, Neiger, Thackeray, Barnes	2011	503 health educators Social Media	β= 0.325 p<0.001	Sig (Positive)
18.	Holtz, Krein	2011	113 nurses Electronic Medical Record System	β= 0.32 p<0.05 p=0.01	Sig (Positive)
19.	Sumak, Polancic, Hericko	2010	235 undergraduate students Moodle SEM approach	β= 0.246 p<0.05	Sig (Positive)
20.	Kijasanayotin, Pannarunothai, Speedic	2009	1607 respondents in community health centres Thailand Information Technology PLS modelling	β= 0.17 p<0.001	Sig (Positive)
21.	Jong, Wang	2009	606 students Web-based Learning system Taiwan Regression Analysis	β= 0.163 p<0.001	Sig (Positive)

2.10.4 Facilitating Condition and Behavioural Intention

Venkatesh et al. (2003, p.453) described FC as *"the degree to which an individual believes that an organizational and technical infrastructure exits to support use of the system."* FC had a direct relationship with actual use in an original study. But, FC had also been found to have a direct influence on BI (Taylor and Todd, 1995). The previous studies were conducted by the researchers to examine the relationship between FC and BI in different content, type of respondents and IS were summarized at Table 2.9:

Table 2.9

The Relationship between FCs and BI

No.	Authors	Year	Respondents/ Scope/ Method	Finding	Direction
1.	Raman, Mohd-Sani, Kaur	2014	150 secondary school students Facebook Malaysia PLS SEM	β = 0.253 p < 0.01	Sig (Positive)
2.	Khechine, Lakhal, Pascot, Bytha	2014	114 students Webinars Regression Analysis	β=0.159 p=0.029 p<0.05	Sig (Positive)
3.	Escobar-Rodriguez, Carvajal-Trujillo	2014	1096 Spanish Consumers Online tickets purchasing PLS	β=0.146 p<0.001	Sig (Positive)
4.	Harsono, Suryana	2014	419 students Social Media (LINE) Path Analysis	β= 0.015 p<0.05 p=0.032	Sig (Positive)
5.	Echeng, Usoro, Majewski	2013	317 students from 5 universities in Nigeria Web 2.0 Correlation Analysis	β=0.115 p<0.05	Sig (Positive)
6.	Thomas, Singh, Gaffar	2013	322 students Mobile learning SEM Analysis	β=0.395 p<0.01	Sig (Positive)
7.	Salim	2012	37 Facebook's users Social Media Egypt Spearman's correlations	β= 0.250 p<0.05	Sig (Negative)
8.	Teo	2011	592 teachers from schools Singapore The use of technology SEM Analysis	β =0.130 p<0.001	Sig (Positive)
9.	Jong, Wang	2009	606 students Web-based Learning system Taiwan Regression Analysis	β= 0.134 p<0.001	Sig (Positive)
10.	Wu, Tao & Yang	2007	394 users 3G Mobile Communication Used SEM	β=0.228 p<0.001	Sig (Positive)

2.11 The Direct Relationship between Four Factors of UTAUT and EUCS

The relationship between four core UTAUT factors on EUCS in the research world is still limited. In addition, the past studies (Dhaha & Ali, 2014a; Chan et al., 2010; Maillet et al., 2015; Napitupulu & Patria, 2013; Ling et al., 2015) only measure satisfaction in term of the level of their satisfaction towards the use of IS and not deeply focusing on the satisfaction towards the design and characteristics of that particular IS. By making this assumption as the basic and fundamental, this study predict that there is a relationship between PE, EE, SI and FC towards EUCS among the students in using Facebook as e-Learning tool. Maillet, Mathieu and Sicotte (2015) evaluated the acceptance and satisfaction of EPR among 616 nurses revealed that there were the significant relationships between PE, EE and FC to BI but not for SI. Meanwhile, Ling and Islam (2015) conducted the study involved 215 users in using online banking showed that the PE, SI and FC was positively associated with satisfaction. A study undertaken by Napitupulu and Patria (2013) revealed that PE, EE and FC were positively related with the satisfaction of using Electronic Medical Recorder (EMR) among 188 users. Chan, Thong, Venkatesh, Brown, Hu and Tan (2010) examined the satisfaction of using card e-Government in the mandatory situation among the 1, 179 respondents. The result showed that there were positive significant relationships between PE, EE, and FC with satisfaction. However, there was an insignificant relationship between SI and satisfaction. Based on the current study, it can be concluded that PE, EE and FC are the important factors that influence the users' satisfaction in using the information system. According to Chan et al (2010), many studies reveal that the PE and EE are the two factors that positively stimulate both the users' acceptance and satisfaction in using technology. Table

indicates the relationship between PE, EE, SI and FC with satisfaction. The summary of past studies is at Table 2.10 underneath.

Table 2.10
The Relationship between Independent Variables and EUCS

The Relationship between Independent Variables and EUCS					
Performance Expectancy					
No.	**Authors**	**Year**	**Respondents/ Scope/ Method**	**Finding**	**Direction**
1.	Maillet, Mathieu, Sicotte	2015	616 nurses EPR (Electronic Patient Record) Canada SEM	β=0.272 p<0.05	Sig (Positive)
2.	Ling, Islam	2015	125 users Online Banking Malaysia	β=0.417 p=0.000 p<0.001	Sig (Positive)
3.	Napitupulu, Patria	2013	188 users E-electronic Medical Recorder SEM	β=0.37 p<0.01	Sig (Positive)
4.	Chan, Thong, Venkatesh, Brown, Hu, Tam	2010	1,179 respondents Hong Kong smart card e-Government PLS	β= 0.26 p<0.001	Sig (Positive)
Effort Expectancy					
No.	**Authors**	**Year**	**Respondents/ Scope/ Method**	**Finding**	**Direction**
1.	Maillet, Mathieu, Sicotte	2015	616 nurses EPR (Electronic Patient Record) Canada SEM	β=0.160 p<0.01	Sig (Positive)
2.	Ling, Islam	2015	125 users Online Banking Malaysia	β=-0.007 p=0.937	Insignificant
3.	Napitupulu, Patria	2013	188 users Electronic Medical Recorder SEM	β=0.46 p<0.05	Sig (Positive)
4.	Chan, Thong, Venkatesh, Brown, Hu, Tam	2010	1,179 respondents Hong Kong smart card e-Government PLS	β= 0.13 p<0.01	Sig (Positive)
Social Influence					
No.	**Authors**	**Year**	**Respondents/ Scope/ Method**	**Finding**	**Direction**
1.	Maillet, Mathieu, Sicotte	2015	616 nurses EPR (Electronic Patient Record) Canada SEM	Not stated	Insignificant
2.	Ling, Islam	2015	125 users Online Banking Malaysia	β=0.113 p=0 .045	Sig (Positive)

Table 2.10 (Continue)

3.	Dhaha, Ali	2014	395 students in the Somalia's private universities. Used SEM. 3G Mobile Phones.	β=0.462 p=0 .00	Sig (Positive)
4.	Chan, Thong, Venkatesh, Brown, Hu, Tam	2010	1,179 respondents Hong Kong smart card e-Government PLS	Not Stated	Insignificant

Facilitating Conditions

No.	Authors	Year	Respondents/ Scope/ Method	Finding	Direction
1.	Maillet, Mathieu, Sicotte	2015	616 nurses EPR (Electronic Patient Record) Canada SEM	β=0.272 p<0.05	Sig (Positive)
2.	Ling, Islam	2015	125 users Online Banking Malaysia	β=0.417 p=0.000 p<0.001	Sig (Positive)
3.	Napitupulu, Patria	2013	188 users E-electronic Medical Recorder SEM	β=0.37 p<0.01	Sig (Positive)
4.	Chan, Thong, Venkatesh, Brown, Hu, Tam	2010	1,179 respondents Hong Kong smart card e-Government PLS	β= 0.26 p<0.001	Sig (Positive)

2.12 The Direct Relationship between EUCS and BI and EUCS as Potential Mediator Variable

This section discussed the direct relationship between user satisfaction and BI. The past studies (Belanche, Casalo & Guinaliu, 2012; Chen, Yen & Hwang, 2012; Fong & Ho, 2014; Roca, Chiu & Martinez, 2006; Chiu, Chiu & Chang, 2007; Shi, Lee, Cheung & Chen, 2010; Lai & Pires, 2010) revealed that the satisfaction was positively associated with the BI. Next, the function of EUCS as the potential mediator variable in mediating the relationship between the PE, EE, SI and FC with BI is then discussed. Besides, this section also reviewed the past studies (Chen, Yen & Hwang, 2012; Lai & Pires, 2010) that indicated the user satisfaction as the mediator variable in different model.

Fong and Ho (2014) examined the satisfaction of 634 workers in using Accounting Information System (AIS). This study integrated two well-known theories which are the EUCS and the ECT. The result indicated that the EUCS was positively related with the user's usage continuance intention. Belanche, Casalo and Guinaliu (2012) evaluated the customer's BI to use website for purchasing e-ticket. The result indicated that the customer's satisfaction was positively affected with the customer's BI to use online e-ticket purchasing website. Satisfaction mediated the relationship between perceived usability and the customer's BI to use online e-ticket purchasing website. Roca, Chiu and Martinez conducted the study regarding the students' continuance intention in using e-Learning. The result indicated that the satisfaction was positively influenced (β=0.51, p<0.010) with the student's continuance intention to use e-Learning. A same result as the study was conducted by Shi, Lee, Cheung and Chen (2010) showed that the satisfaction of Facebook's users was positively significantly associated with the users' intention to continue use Facebook.

Meanwhile, Chen, Yen and Hwang (2012) investigated the impacts of SI factor towards user's satisfaction which in turn directly affect the user's continuance intention in using Web 2.0 applications. The result showed that the satisfaction was positively influenced the user's continuance intention (β=0.16, p<0.05) Meanwhile, the satisfaction, itself mediated the relationship between subjective norm and e-Word of Mouth, the relationship between image and e-Word of Mouth and lastly the relationship between critical mass and e-Word Mouth. The study undertaken by Lai and Pires (2010) deployed the satisfaction as the mediator variable. The result showed that the satisfaction was found significantly and positively related to 464 users' intention in using Macao's e-Government portal. The relationship between IQ, SI and SQ were mediated by satisfaction.

As discussed earlier, the past studies reveal that the satisfaction and acceptance model can be integrated in order to get better understanding towards the factors that influenced the intention of using IS. The variables either from satisfaction or acceptance model have a potential perhaps to become independent, mediator, moderator and dependent variable as these two model integrate. All of the relationship between variables are based on the objective, issue and problem of the study and also supported by past studies. Hence, the first prediction of EUCS can be mediator variable in the study is based on the issue, raised problem of study, reviews of past studies, analysis and assumption towards the satisfaction and acceptance model. Secondly, based on previous study, it is hypothesized in this study that there is a positive and significant relationship between user satisfaction and BI. This study predicts that the nature of influence between all four UTAUT constructs and BI in using Facebook is mediated by EUCS. The prediction is done based on the direct relationship of four UTAUT constructs on satisfaction and satisfaction, itself on BI. Besides, the prediction regarding the satisfaction as the potential mediator in this study can be strongly expected as there are past studies indicate that the user satisfaction become a mediator variable in different theories. The summary of past studies is at Table 2.11:

Table 2.11
The Relationship between Satisfaction and BI and Satisfaction as the Potential Mediator Variable

No.	Authors	Year	Description of Methodology	Finding	Direction
1.	Fong, Ho	2014	Satisfaction (EUCS) → Usage Continuance Intention EUCS+The Expectation Confirmation Theory 634 workers of Hong Kong public housing organization. Hong Kong Accounting Information Systems PLS	β=0.465 p<0.10	Sig (Positive)

Table 2.11 (Continue)

2.	Chen, Yen, Hwang	2012	Satisfaction → Continuance Intention 409 graduate students Taiwan Web 2.0 SEM (AMOS) and SPPS	β=0.16 p<0.05	Sig (Positive)
			Mediation effect Analysis Satisfaction as the mediator variable	Sobel Test	
			Subjective Norm→Satisfaction→e-Word Of Mouth	2.70 p<0.01	Sig (Positive)
			Image → Satisfaction→ e-Word Of Mouth	3.62 p<0.005	Sig (Positive)
			Critical Mass → Satisfaction→ e-Word Of Mouth	2.90 p<0.005	Sig (Positive)
3.	Belanche, Casalo, Guinaliu	2012	Direct relationship: Customer Satisfaction → Intention to use Satisfaction as mediator variable: Perceived usability→ Satisfaction→Intention to use 214 Spanish users Website for purchasing ticket Satisfaction mediates the relationship between perceive usability and intention to use e-ticket website. SEM analysis	β= 0.558 p<0.05	Sig (Positive)
4.	Roca, Chiu, Martinez	2006	Satisfaction → E-Learning Continuance Intention 172 students Theory Planned Behaviour (TPB), Theory Acceptance Model(TAM), Expectancy disconfirmation theory (EDT) E-learning	β=0.51 p<0.01	Sig (Positive)
5.	Shi, Lee, Cheung, Chen	2010	User Satisfaction → Continuance Intention 125 respondents Facebook PLS analysis The expectation disconfirmation theory (EDT), Motivation, Satisfaction, Continuance Intention		Sig (Positive)
6.	Lai, Pires	2010	Satisfaction → Intention to Use 464 online users of Macao's e-government portal. Satisfaction mediates the relationship between Information Quality, Social Influence, and System Quality on Intention to Use.	β=0.13 p<0.01	Sig (Positive)

2.13 Theoretical Framework

As mentioned earlier, this research model adapts and amalgamates two well-known and established models, namely, UTAUT and EUCS. This research framework consists of four different types of variables which are independent variables, mediating variable, dependent variable and control variable. All core factors in UTAUT, namely, PE, EE, SI and FC are retained as independent variables. Meanwhile, only gender was included in this research as a control variable and EUCS (Content, Accuracy, Format and Timeliness) is posited as the mediator variable. One of dimension in EUCS i.e. ease of use is dismissed as it is same as one of the factor core of UTAUT i.e. EE. Lastly, the dependent variable in this research is BI. Table 2.9 summarizes all the variables are used in this study. Based the above literature review, a theoretical framework were constituted in this study as shown in Figure 2.8. Table 2.12 indicates the lists of variables are involved in this study.

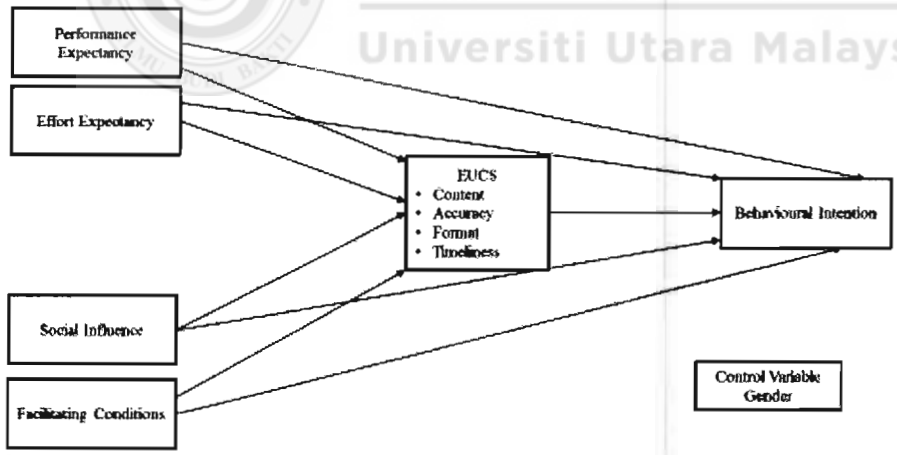

Figure 2.8
Theoretical Framework

Table 2.12
List of Variables are Involved in This Study

Variables	Name of Variables
Independent Variables	Performance Expectancy (PE) Effort Expectancy (EE) Social Influence (SI) Facilitating Conditions (FC)
Mediator Variable	Satisfaction (Overall EUCS) Content Accuracy Format Timeliness
Dependent Variable	Behavioural Intention (BI)

2.14 Justifications of Adopting UTAUT and Eliminating Some of UTAUT's Variables

There are many reasons for adopting the UTAUT as the back bone of this study's conceptual framework. Firstly, as mentioned in literature review, this model was reviewed by eight established model although it was developed just one decade. Secondly, the UTAUT also considered established as this theory success in predicting nearly 70% of the acceptance of IS on the other hand others theory only can predict 40% of the acceptance of IS (Schaper & Pervan, 2007). Next, based on a researcher review, UTAUT was the most appropriate to be utilized in the large organization such as the HEIs in order to evaluate the acceptance of IS among the users. This was because in the original study (Venkatesh et al., 2003), the workers in the company were used as the sample. In addition, this theory was the only theory that focused on the acceptance of information technology from general perspective besides considering two aspects either the organization and individual factors (Venkatesh, Sykes & Xiaojun, 2011).

Moreover, despite of TAM was widely used by many researchers to evaluate the acceptance of IS, but the UTAUT can be considered acceptable because TAM was a

part of UTAUT (Bankole et al, 2011; Ceccucci, Peslak & Sendall, 2010). Furthermore, the TAM did not fit with the complexity and particularly related affect to the educational institution (Straub, 2009). TAM cannot predict the relationship between educators and students due to the effect of technology transformation despite the fact that there are some homogenous characteristics between a business environment and educational environment (Wolski & Jackson, 1999). Although TAM was famously adapted in business and education sector as a theory to measure acceptance of new innovations among the user, but the nature of educational intuitions which are more dynamic and complex compared to business organizational structure caused many studies are conducted within the scope of business compared to the realm of education sector (Aypay, Celik, Aypay & Sewer, 2012). Many previous studies used UTAUT to measure the acceptance of social media among the public, organization and students (Gruzd, Staves & Milk, 2012).

And yet, the two independent variables i.e. PE and EE in UTAUT were constructed by taking these two prominent beliefs (i.e. Usefulness and Ease of Use) in TAM (Alharbi & Drew, 2014). As mentioned previously, this theory was an extension of the TAM (Saba, 2012). In fact, the acceptance of using technology was not totally just depending on these two prominent beliefs (usefulness and ease of use) and attitude to the users' BI (Straub, 2009). This theory was very useful to predict user acceptance behaviour and suggested to retest in different scope for further validating the proposed relationship (Anderson, Schwager & Kerns, 2006). UTAUT was also apt to be used in examining the SNS among the students. In addition, the variety factors of UTAUT were really suitable to measure the acceptance of web 2.0 tools and it was suggested to carry out the further studies within the scope of the use of web 2.0 as a medium of teaching and learning (Usluel and Mazman, 2009).

Considering all argument and evident above, it can be concluded that TAM was not suitable to be used as the spine theory to evaluate Facebook as e-learning tools among students. Through a review of literature on the UTAUT in previous section, there are four independent variables that influenced the dependent variables i.e. BI and actual use of using IS among the users. But this study only focuses on the relationship between the independent variables towards BI as the dependent variable. As discussed earlier, the output of past studies revealed that all independent variables, i.e. PE, EE, SI and FC in UTAUT influenced the users' BI to use IS.

All moderators in UTAUT plays an important role in adopting IS (Sharma, Ganpati & Kumar, 2013). However, although the moderating variable plays a vital role in increasing the predictive validity of many modification models surpasses the original model (Sun & Zhang, 2006), none moderator variables are retained in this study. Only gender is posited as the control variable. These moderator variables are not really important in this study as the students are homogenous population and their experience, voluntary and age was approximately equal (Sedana & Wijaya, 2010). There are several meticulous reasons this present study does not retain any moderator variables and the gender is implemented as the control variable. In this study, the gender is used as the control variable in order to evade the effect on the relationship between independent variables, mediating variable and dependent variable. According to Leong, Ooi, Chong and Lin (2013), the control variables did not drive the grounded theory although it had the potential to interrupt the influence of determinants on a technology acceptance. But reconsider there are some previous studies revealed that there were imbalances acceptances of IS between genders, the gender is used as the control variable in the present study.

Previous studies (Barret & Larry, 1999; Bernand, Mills & Friend, 2000; Colley & Comber, 2005; Hakkarainen & Palonen, 2003; Li, 2002) indicated that there were imbalances acceptance of IS between genders. A study regarding the use of Facebook among students was conducted by Muhametjanova, Cagiltay, Kara and Akimaliev (2011) approved that the female students were more likely to use Facebook compared the male students. With the contradicting result, a study was carried out by Akyildiz and Argan (2011) found that female students were much less likely to visit Facebook compared than male students. As the same result of studying by Baker (2009), the male students showed more interest and likely in using Facebook as the social and learning medium compare to the female students. According to Heemskerk et al. (2005), although a few studies revealed that the female students more preferred to communicate by using IS, but the male students still dominate in using of information technology. Sibona and Choi (2012) examined either the factors (perceived ease of use and perceived usefulness) have an effect on satisfaction in using Facebook among 1,552 respondents. The control variables in this study was age, gender, nationality (US or non US), number of interactions, number of friends and years of using SNS. The result indicates that the male users perceive that the use of Facebook is less useful compare than the female users (t-value: 2.91, $p<0.01$). Nevertheless, the gender did not affect neither towards the perceived ease of use nor satisfaction.

Voluntary of using the Facebook as a moderator variable is not retained in this study. Reality, Facebook is the phenomena and the majority of the students access the Facebook daily. Nowadays, the students are known as generation Y or digital natives born into this digital world (Cabral, 2011). They use information technology daily and it has given the direct impact on the way their study, live and work (Wesner &

Miller, 2008). According to Aksoy *et al* (2013), the students nowadays are very active in contributing, sharing, searching and using the content of social networking as the medium to socialize, work and study. Because of that, it can be predicted that all the students have the willingness to use Facebook as e-learning tools. Up to a point, the voluntary of using the Facebook as the moderator variable is not considered important in this study.

Next, age is not included as a moderating variable in this research because of many undergraduate students are in the same range of age, which in between 19 until 26 years old, although maybe they are few of them are more than this range of age. Meanwhile, the experience of using Facebook is not very vital in this research since the majority of Facebook users are in the range age of 18 until 24 years old which include the students in the HEIs (Socialbakers.com). Besides, there are a lot of studies revealed that the range of users' age between 20 until 40 years old are more likely to use new technologies compared to elderly (Morris & Venkatesh, 2000; Morris, Venkatesh & Ackerman, 2005).

2.15 Justification of Adopting the EUCS and Eliminating One of EUCS's Dimension

There are many well-known user satisfaction models that developed and subsequently extended by many researchers such as Bailey and Pearson (1983), Baroudi and Orlikowski (1987) Doll and Torkzadeh (1988). All these models are widely adopted by the researchers in order to evaluate the extent of satisfaction among the user in using IS. According to Gelderman (1998), EUCS developed by Doll and Torkzadeh (1988) was good predictor to representative the success of IS. In this study, EUCS developed by Doll and Torkzadeh (1988) was choose compare

others well-known users satisfaction theory. In this study, one of dimension i.e. '*eases of use*' was not included in the conceptual framework since this variable is the same predictor variable as EE on UTAUT. There are several justifications of adapting the EUCS that is developed by Doll and Torkzadeh (1988) in this study.

Firstly, this instrument was developed in order to overcome the weaknesses of user satisfaction instrument that was developed by Ives et al. (1983). Doll and Torkzadeh (1988) claimed that user satisfaction instrument (Ives et al., 1983) is suitable to be used for measuring the satisfaction of general user compared the satisfaction of specific applications. Next, this instrument does not included one vital factor i.e. ease of use. In addition, two items i.e. Electronic Data Processing (EDP) staffs and service items and user involvement/knowledge items) were not really fit for EUC environments. The coherent justification of weakness of Ives et al. (1983) user satisfaction instruments are strong enough to support the reason this research implemented EUCS instrument that was developed by Doll and Torkzadeh (1988).

Secondly, there is no modification in term of adding more dimensions on the EUCS in the model of this study as this study just followed the original model. In term of validation and reliability of the model, the study was conducted by Deng et al. (2008) revealed that the 12 items-factor loadings of EUCS pointed to be equivalent across the cultures examined (Taiwan, India, Saudi Arabia, United States and Western Europe). In addition, in this study, EUCS is pointed as second order construct with the first-order factor (i.e. Content, Format, Accuracy, Timeliness and Ease of Use).

Next, according to the research by Mat-Yamin (2011), the instruments are developed by Chin and Lee (2000), Doll and Torkzadeh (1988), Doll, Xia and Torkzadeh (1994) and McHaney et al. (2002) are the apt instruments to evaluate the IT

applications. Based on Table 2.13, Facebook is categorized as IT System. Also, clearly that satisfaction of using Facebook cannot be measured by using web customer satisfaction model. But it is still argument towards this categorization since nowadays Facebook can be accessed by the students via website and also mobile application (Facebook Mobile Apps). The flexibility and mobility of Facebook increase the Facebook usage among the users. Besides, Abdinnour-Helm, Chaparro and Farmer (2005) contributed one important discovery that EUCS that was developed by Doll and Torkzadeh (1988) can be applied to evaluate user satisfaction in the "*situation related context for four different computing environments (Web site, General application software, software for mobile devices, and game software)*". (p. 358). In addition, the respondents in this study were the students. Again, since the Facebook can be accessed via website and mobile application, it is also the good significant explanation to use EUCS as the instrument to evaluate the students' satisfaction in using Facebook as e-Learning tool and the predictor to the students' BI to use Facebook.

Table 2.13
The appropriate instrument for measuring IT Satisfaction based on the type of IT

Model	Type of Information Technology	Researchers
User information satisfaction (UIS)	IT System	Bailey and Person, (1983); Ives et al., (1983); McHaney & Cronan (1998)
End User Computing Satisfaction (EUCS)	IT Application	Chin and Lee (2000); Doll & Torkzadeh (1988); Doll, Xia & Torkzadeh (1994); McHaney et al., (2002)
Web Customer Satisfaction	Web based Information Technology System	McKinney, Yoon & Zahedi, (2002); Muylee et al., (2004); Ho & Wu (1999); Cho & Park (2001); Huang Jin & Chiu (2004);Wang, Tang & Tang (2003)

Source: Adaption from Mat-Yamin (2011)

In addition, EUCS model also can be applied to evaluate user's satisfaction on Facebook. Recently, Rauniar, Rawski, Johnson and Yang (2013) developed a theoretical model for measuring user satisfaction among 389 full time students in the context of social media (Facebook). As stated by the researchers, no previous researches were conducted to empirically measure user's satisfaction of using social media specifically, Facebook. In this study, Rauniar, Rawski, Johnson and Yang (2013) defined *"social media user satisfaction (SMUS) as the overall affective evaluation that an active end-user of social media has."* (p.197). EUCS model is modified by adding several exogenous constructs which were value (utilitarian and hedonic), critical mass, privacy, and capability of social media. The measurement model fit indicated adequate (AMOS). Meanwhile, all hypotheses were supported since there were significant and positive relationships between all exogenous variables and endogenous variable. Based on this study, EUCS instrument indicate adequate validity and reliability throughout the various sample of Facebook users. Hence, since the utilization of EUCS instrument is still limited in evaluating the users' satisfaction of using social media (Rauniar, Rawski, Johnson and Yang (2013), this study also will contribute towards development of knowledge of evaluating satisfaction of using social media.

Lastly, the consideration towards the students' experience of using Facebook as e-Learning tool also the reason of choosing EUCS instrument to predict the students' satisfaction. Reviewing and understanding back the definition of EUCS by Doll and Torkzadeh (1991), it was defined as *"the overall evaluation of the users of information systems based on their experience in using the system"* (p.2). Based on this definition, it is relevant to utilized EUCS model as the mediator in this study.

2.16 The Essential of Integrating Acceptance and Satisfaction Theory

The next paragraphs explain the essential to integrate the acceptance and satisfaction theories in order to evaluate the students' BI of using Facebook as e-Learning tool. In depth and better understanding on the user's BI and actual use of using IS, many studies exposed that the integration of theories was very useful (Lee, Kozar & Larsen, 2003). The technology acceptance was a strong predictor of behaviours and ability to link attitude and beliefs to behaviour meanwhile the strength of user satisfaction was in its ability to link information design attributes (Au, Ngai & Cheng, 2002; Lai & Pires, 2010; Miyamoto, Kudo & Iizuka, 2012, Wixom & Todd, 2005). As mentioned earlier, a dramatically shift of using Web 2.0 applications as e-Learning tools were not just because of its' interactive applications and features but also another possible factors. This statement was supported by Masrom and Hussien (2008) state that there were many factors stimulate the users' decision to adapt social software package. It was suggested by Usluel and Mazman (2009) to consolidate different theories and models beside consider the features of innovations that will pave the way to further understand towards the acceptance of web 2.0 applications among the students based on the problem. The integration of these two approaches i.e. technology acceptance and user satisfaction for better understanding the factors influenced the user's BI and actual use of IS (Seddon, 1997). The technology was the minor contribution compared to the human factor in prompting the adaption of technology in the scope of education environment (Renes & Strange, 2011). Therefore, the right decision to utilize UTAUT as the back bone of the conceptual framework since the factors core of UTAUT is more towards the human factor (PE, EE, SI and FC). Meanwhile, EUCS is more focusing on the characteristic and design of the IS (Technology Factor) (Au, Ngai & Cheng, 2002). As quoted by Pikkarainen

et al. (2006), EUCS was in the field of Management Information Systems (MIS) and dissimilar from social and cognitive psychology area (TRA) (Doll & Torkzadeh, 1991). Wixom and Todd (2005) stated that user satisfaction instruments evaluate object-based beliefs (e.g. information quality, system quality) and object-based attitudes (e.g. information satisfaction, system satisfaction) meanwhile the TRA, TAM and UTAUT were used for measuring the users' behavioural beliefs (e.g. usefulness and ease of use in TAM, PE and EE in UTAUT).

Past studies evaluated the user's BI and actual use of many types of IS by implementing the acceptance model. For instance, the ERP (Keong, Ramayah, Kurnia & Chiun, 2012), Web 2.0 tools (Tulaboev, 2013; Yoo & Huang, 2011), Facebook (Lallmahomed et al., 2013), social media (Gruzd et al., 2012; Mandal & Mcqueen, 2012; Salim, 2012), LMS (Fidani & Idrizi, 2012), SNS (Ismail, 2010), blog (Pardamean & Susanto, 2012) and etc. Similarity to the EUCS has also been widely adapted to evaluate the users' satisfaction towards many types of specific software and information system applications, including web-based information systems (Rauniar, Rawski, Crumbly & Simms, 2009). For example, internet marketing website (Cheung & Lee, 2005; Wang, Tang & Tang, 2001), Hospital Information System (HIS) (Aggelidis & Chatzoglou, 2012), Accounting Information System (AIS) (Fong & Ho, 2014; Ilias & Razak, 2011; Ilias, Razak, Rahman & Yasoa, 2009; Ismail, Mohd-Saleh & Kundari, 2012), internet banking (Pikkarainen, Pikkarainen, Karjaluoto & Pahnila, 2006; Marakarkandy & Yajnik, 2013), business intelligence systems (Hou, 2012), social media (Rauniar, Rawski, Johson & Yang, 2013) and etc. Meanwhile, as discussed previously, several previous studies are identified integrate technology acceptance and satisfaction theories such as TAM, the variables from IS Success Model i.e. IQ and SQ (Wixom & Todd, 2005; Lai & Pires,

2010), TAM, EDT and IS success model (Roca, Chiu & Martinez, 2006), ECT and EUCS (Fong & Ho, 2014), TRA, TAM, TPB, EUCS, and DOI (Ceccucci, Peslak & Sendall, 2010) and UTAUT and IS success model (Ling & Islam, 2015).

2.17 Research Hypotheses

The study hypotheses are derived in accordance with the theoretical framework in Figure 2.9

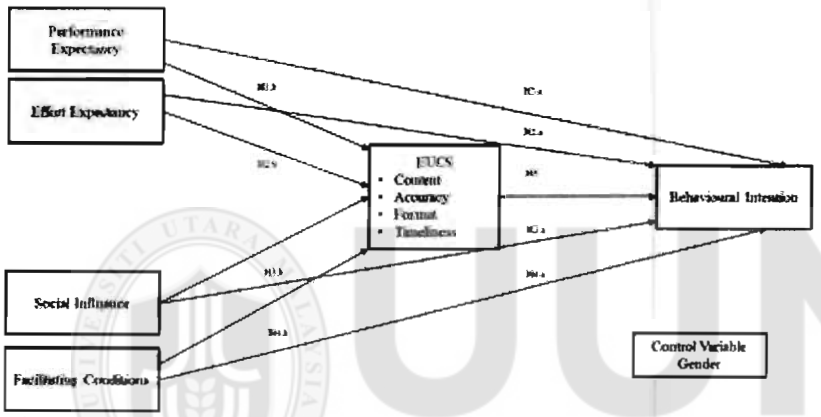

Figure 2.9
Research Hypotheses

i. Performance Expectancy

H1.a: There is a positive significant relationship between PE and the student's BI to use Facebook as e-learning tool.

H1.b: There is a positive significant relationship between PE and EUCS to use Facebook as e-learning tool.

H1.c: EUCS mediates the relationship between PE and the student's BI to use Facebook as e-learning tool.

ii. Effort Expectancy

H2.a: There is a positive significant relationship between EE and the student's BI to use Facebook as e-learning tool.

H2.b: There is a positive significant relationship between EE and EUCS to use Facebook as e-learning tool.

H2.c: EUCS mediates the relationship between EE and the student's BI to use Facebook as e-learning tool.

iii. Social Influence

H3.a: There is a positive significant relationship between SI and the student's BI to use Facebook as e-learning tool.

H3.b: There is a positive significant relationship between SI and EUCS to use Facebook as e-learning tool.

H3.c: EUCS mediates the relationship between SI and BI to use Facebook as e-learning tool.

iv. Facilitating Conditions

H4.a: There is a positive significant relationship between FC and the student's BI to use Facebook as e-learning tool.

H4.b: There is a positive significant relationship between FC and the EUCS to use Facebook as e-learning tool.

H4.c: EUCS mediates the relationship between FC and the student's BI to use Facebook as e-learning tool.

v. End User Computing Satisfaction

H5: There is a positive significant relationship between the EUCS and the student's BI to use Facebook as e-learning tool.

2.18 Research Objectives, Research Questions and Research Hypotheses

For better understanding, Table 2.14 summarizes the relationship between research hypotheses, research questions and research objectives in this study. Table indicates the relationship between research objectives, research questions and research hypotheses in this present study.

Table 2.14
The Relationship between Research Hypotheses, Research Questions and Research Objectives

No	Research Objectives	Research Questions	Research Hyphotheses
1.	To investigate the effect of PE on the student's BI to use Facebook as e-Learning tool.	Does PE have an effect on the student's BI to use Facebook as e-Learning tool?	There is a positive significant relationship between PE and the student's BI to use Facebook as e-Learning tool.
2.	To investigate the impact of PE towards the EUCS to use Facebook as e-Learning tool.	Does PE have an effect on EUCS to use Facebook as e-Learning tool?	There is a positive significant relationship between PE and EUCS.
3.	To analyze the mediating effect of the EUCS in the relationship between PE and the student's BI on to use Facebook as e-Learning tool.	Does the EUCS mediates the relationship between PE and the student's BI to use Facecook as e-Learning tool?	EUCS mediates the relationship between PE and the student's BI to use Facebook as e-Learning tool.
4.	To investigate the effect of EE on the student's BI to use Facebook as e-Learning tool.	Does EE have an effect on the student's BI to use Facebook as e-Learning tool?	There is a positive significant relationship between EE and the student's BI to use Facebook as e-Learning tool.
5.	To evaluate the impact of EE towards the EUCS to use Facebook as e-Learning tool.	Does EE influence the EUCS to use Facebook as e-Learning tool?	There is a positive significant relationship between EE and EUCS.
6.	To analyze the mediating effect of the EUCS in the relationship between EE and the student's BI to use Facebook as e-Learning tool.	Does EUCS mediates the relationship between EE and the student's BI to use Facebook as e-Learning tool?	EUCS mediates the relationship between EE and the student's BI to use Facebook as e-Learning tool.

Table 2.14 (Continue)

7.	To investigate the effect of SI on the student's BI to use Facebook as e-Learning tool.	Does SI affect the student's BI to use Facebook as e-Learning tool?	There is a positive significant relationship between SI and the student's BI to use Facebook as e-Learning tool.
8.	To measure the effect of SI towards EUCS to use Facebook as e-Learning tool.	Does SI affect EUCS to use Facebook as e-Learning tool?	There is a positive significant relationship between SI and EUCS to use Facebook as e-Learning tool.
9.	Does EUCS mediate the relationship between SI and the student's BI to use Facebook as e-Learning tool.	Does EUCS mediates the relationship between SI and the student's BI to use Facebook as e-Learning tool?	EUCS mediates the relationship between SI and the student's BI to use Facebook as e-Learning tool.
10.	To investigate the effect of FC on the student's BI to use Facebook as e-Learning tool.	Do FC affect the student's BI to use Facebook as e-Learning tool?	There is a positive significant relationship between FC and the student's BI to use Facebook as e-Learning tool.
11.	To measure the effect of FC towards the EUCS to use Facebook.	Do FC have an effect on the EUCS to use Facebook as e-Learning tool?	There is a positive significant relationship between FC and the EUCS to use Facebook as e-Learning tool.
12.	To measure the mediating effect of the EUCS in the relationship between FC and the student's BI to use Facebook.	Does the EUCS mediates the relationship between FC and the student's BI to use Facebook as e-Learning tool?	EUCS mediates the relationship between FC and the student's BI to use Facebook as e-Learning tool.
13.	To measure EUCS of using Facebook that affect the students' BI to use Facebook.	Does the EUCS influence the student's BI to use Facebook as e-Learning tool?	There is a positive significant relationship between EUCS and the student's BI to use Facebook as e-Learning tool.
Total Amount			13

2.19 Summary

The chapter two in this study is divided into two main parts. The first part starts with the review of student's perception in using SNSs as e-Learning tool. Next, the review of Facebook begins with the previous studies have been investigated by the researchers worldwide indicated that majority of academic community like to use Facebook compares others SNSs. Then, the brief history about Facebook retells intentionally for exposing the fact of Facebook's launch dates, types of Facebook in SNSs family and the main purpose of Facebook.

The second part reviews the previous studies about the integration of acceptance and satisfaction theories which are used to evaluate the use of IS in the variety scope of study. Next, the explanation of underpinning theories which are used as the backbone in this study namely UTAUT and EUCS. Furthermore, this section also includes the justification of adopting UTAUT model and dismissing some of UTAUT's variables, the justification of adopting the EUCS and eliminating one of EUCS dimension (i.e. ease of use) then followed by the explanation of reasons the present study integrates the UTAUT and EUCS. Lastly, the research hypotheses to be tested are presented and the relationship between research hypotheses, research questions and research objectives are listed in one table for better understanding. Next chapter is all about research methodology.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Chapter Overview

Generally, the methodology is a very crucial aspect as every researcher emphasizes it. An appropriate method should be properly think by every researcher as it just like a gold key that can open the door with full of results for answering the questions raised. Equally important, the sampling technique as well as analysing data method used in the study should be emphasized in order to accordance with the research objectives that are highlighted. On the corollary of using erroneous research methodologies, this study gets inexact result. This chapter discusses the research approach to gather and analyse the data to resolve the research questions and reach the study objectives. This chapter also covers aspect of research design, operational definitions, questionnaire design, face validity test, pilot test and lastly data analysis technique.

3.1 Research Design

According to Cooper and Schindler (2009), the research design was just like the master plan for gathering research information. The quantitative approach was utilized in this study as tool to get data in order to explain and statistically measured the relationship between independent variables, mediator variable and dependent variable. Two reasons for selecting the quantitative compared qualitative research design because of first, the sample size in this study was big. As mentioned earlier in chapter one and two, this research related with the students' behaviour issues. The research design of quantitative method was very suitable for collecting the primary

data in large population and the advantages of using this method was that the researcher can obtained the real opinion from the respondents about the problem issues were raised besides getting the particular view towards individual behaviour (Keeter, 2005; Laskshman, Sinha & Biswas, 2000). The unit of analysis in this research was a student and the research population was the individual students in the Malaysian public universities.

Because of the hurdle in term of time and money, this research practiced cross-sectional research design compared longitudinal research design. It was a method of collecting the data only one time for the entire study. By implementing the cross-sectional research design, a researcher made the conclusion towards the population of the study at a certain time after statistically analyzing, scrutinizing and then elucidating the research data (Saunders, Lewis & Thornhill, 2009; Zikmund, Babin, Carr & Griffin, 2009). This research also adopted the PLS approach to SEM (or PLS path modelling) in order to analyse the primary data obtained. According to Hair, Black, Babin, Anderson and Tatham (2006), SEM was the most appropriate approach to analyse the primary data for field study.

3.2 Data Collection Method

Irrespective of the data collection method employed, this research utilized the personally administered questionnaire to collect the data. The reasons of utilizing these tools were as follows: (1) A survey questionnaire method was the most appropriate approach to obtain data regarding the pattern of behavioural, perception, belief and opinion from a large population (Ary, Jacobs, Razayieh & Sorenson, 2009). (2) A questionnaire was a suitable tool to be utilized in order to collect data when a researcher absolutely knew the purpose of study and the approach to evaluate the behaviour (Sekaran, 2003).

The personal administered questionnaire was chosen because of the rate of participating was higher rather than others types of data collection method. As suggested by Russell, Moralejo and Burges (2000), the researchers need to spend a time and also effort in order to increase the participation among the respondents. Before starting distributed the questionnaire, the researcher asked the students either they used Facebook as a part of their technology alternative for e-Learning tool or not. The questionnaire only distributed for those whom use Facebook as technology alternative for e-Learning tool.

3.3 Population

Sekaran and Bougie (2009, p. 262) gave the meaning of population as "*the entire groups of people, events or things of interest that researchers wish to investigate.*" (p. 262). Meanwhile, the population of this study was described as the students who were studying in the Malaysian Public Universities. A main reason of selecting the first degree students as the population was because this group was the majority community in Malaysian Public University. According to statistic report released by the Ministry of Higher Education (2013), 331, 410 out of 560, 359 (59%) students were enrolling in 2013 as the first degree students. As reported by Socialbakers (2014), the majority of Facebook users in Malaysia in the ranges of age from 18 to 24 years old. Meanwhile, the ages range of the undergraduate students generally from 19 to 26 years old. It clearly proved that this ages range were also included the undergraduate students. As quoted by Bosch (2009), the heaviest users of Facebook were among the undergraduate students (Stutzman, 2008). As a fact, Malaysian University was divided by two categories i.e. Public University and Private University. Because the total number of first degree students in Malaysian Public University (331,410) was more than in Malaysian Private University (198,653), this

study only concentrated to the population in Malaysian Public University. Then, this study narrowly focused on Malaysian Public University in northern region (Kedah, Perlis and Pulau Pinang) due to the limitation of money and time. The total students on Malaysian Public University in Northern Region are 52,563 students. Table 3.1 shows the total number of first degree students' enrolment in Malaysian Public Universities.

Table 3.1
The Total Number of First Degree Students' Enrolment in Malaysian Public Universities

Region	List of Universities	Abbreviation	Total Students
Middle (Kuala Lumpur, Selangor, Middle and Southern Perak)	Universiti Malaya	UM	13,333
	Universiti Kebangsaan Malaysia	UKM	16,035
	Universiti Putera Malaysia	UPM	17,617
	Universiti Islam Antarabangsa	UIAM	18,155
	Universiti Pertahanan Malaysia	UPNM	2,103
	Universiti Pendidikan Sultan Idris	UPSI	20,678
Southern (Johor, Melaka, Negeri Sembilan)	Universiti Teknologi Malaysia	UTM	19,838
	Universiti Sains Islam Malaysia	USIM	10,348
	Universiti Teknikal Malaysia	UTM	10,180
	Universiti Tun Hussein Onn	UTHM	11,423
Northern (Kedah, Perlis, Pulau Pinang, Northern Perak)	Universiti Sains Malaysia	USM	20,103
	Universiti Utara Malaysia	UUM	24,120
	Universiti Malaysia Perlis	UniMAP	8,340
Eastern (Pahang,Terengganu, Kelantan)	Universiti Malaysia Pahang	UMP	7,005
	Universiti Malaysia Terengganu	UMT	7,715
	Universiti Sultan Zainal Abidin	UniSZA	4,731
	Universiti Malaysia Kelantan	UMK	5,985
Sabah and Sarawak	Universiti Malaysia Sabah	UMS	21,712
	Universiti Malaysia Sarawak	UniMAS	14,044
All states	Universiti Teknologi Mara	UiTM	77,945
	Total		331,410

Source: National Education Statistic (Malaysia Higher Education Sector)(2013)

Meanwhile, only Malaysian Public Universities in the Northern Region of Malaysia utilized open source LMS system (Moodle) is selected. A matter of fact, LMS was divided into two types which are proprietary (e.g. Blackboard) and open source (e.g. Moodle). Moodle was an example of an open source LMS system which was famous, open source, and widely used (Hamat, Embi & Sulaiman, 2011). Besides Moodle can be obtained free and open source, this site was reported in many survey

and investigation as the most efficient LMS that was used in education sector (Cavus, 2015). The output of many past studies showed that Moodle is the best LMS (Cavus & Zabadi, 2014). In the Northern region of Malaysia, Universiti Utara Malaysia (UUM), Universiti Sains Malaysia (USM) and Universiti Malaysia Perlis (UniMAP) utilized Open Source LMS system (Moodle) (Hamat, Embi & Sulaiman, 2011). Meanwhile, all UiTM branches on Malaysia Northern Area utilized LMS that purchased from local vendor. In regard with this study issue, it is vital to select the same type of LMS because the similar features of LMS will generalize the answers of the students. The features of LMS provided by UiTM is totally different compares LMS from UUM, UniMAP and USM. Hence, only three universities (UUM, UniMAP and USM) that utilized open source LMS are selected in this study.

3.4 Sample Size and Power Analysis

Although determining the sample size was the complicated stage, this stage was very crucial in planning statistical research (Lenth, 2001). Because of the population of this study covered about 52,463 students, the power analysis test was conducted. The power analysis test was statistical method to determine felicitous sample size of the study (Bruin, 2006). Therefore, a *priori* power analysis was conducted by using G*Power 3.1.7 software in order to evaluate the minimum sample size that can be appropriately used before the study was not carried out yet (Faul, Erdfelder, Lang & Buchner, 2007; Faul, Erdfelder, Buchner & Lang, 2009; Mayr, Erdfelder, Buchner & Faul, 2007). Figure 3.1 indicates the output shows that 138 respondents as the minimum sample size are needed for this study in order to analysis the multiple regressions based models. Before the result was obtained, input parameters must be filled as followed: Effect size f^2=0.15, α err prob= 0.05, Power (1-β err prob) = 0.95,

Number of tested predictors=5(PE, EE, SI, FC and EUCS). Total number of predictors=5 (Cohen, 1992; Faul, Erdfelder, Buchner & Lang, 2009).

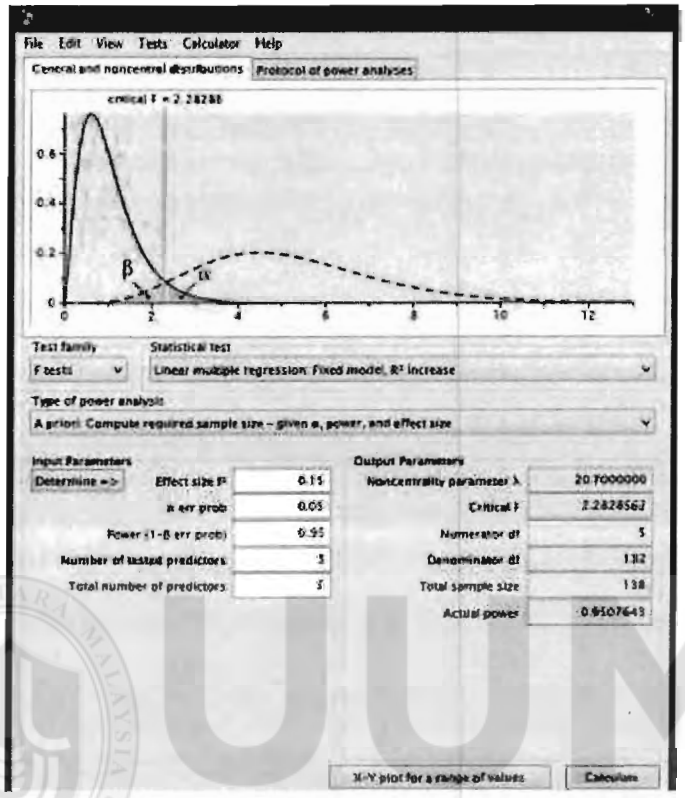

Figure 3.1
The Result of Minimum Sample Size for the Present Study

Due to the probability to give the feedback among the students are lower, the researcher decides to distribute the 382 questionnaires rather than the 138 questionnaire. The decision to distribute about 382 questionnaires (N=75000, S=382) among the students is based on Krejcie and Morgan's (1970) table (Refer Table 3.2). The Krejcie and Morgan (1970) table was chosen because the calculation for determining the sample size included with the level of confidence and precision, assure minimum error in the sample. Table 3.2 shows the table for determining the sample size from a given population.

Table 3.2
Evaluating Sample Size from a Particular Population

N	S
10000	370
15000	375
20000	377
30000	379
40000	380
50000	381
75000	382
1000000	384

Note: N is population size; S is sample size
Source: Krejcie and Morgan (1970)

3.5 Sampling Technique

This study implemented the quota sampling technique to make sure an unbiased distribution of students who are studying in the four universities located in northern region of Malaysia. The reasons for selecting a quota sampling technique in this study as follows: (1) The quota sampling technique is chosen due to limitation of moneys and time (Hair, Money, Samouel, & Page, 2007). The quota sampling technique is very cheap (Moser, 1952). (2) The quota sampling method considered the homogeneity (the students in Malaysian Public Universities in northern region) and heterogeneity groups (age, distinct universities, faculties, schools, variety courses and classes rank) (Cooper & Schindler, 2009). (3) The quota sampling technique makes sure the minimum error in the sample (Wilson, 2010). Since the population of this study is large (52,463 students), it is a good decision to implement this sampling technique.

Several steps involved in order to determine the total number of subjects in each university. Firstly, the total number of subjects in sample was divided by the total number of elements in Stratum. The answer was 0.0073. Then, the total number of each element for each stratum was multiplied by 0.0073. For instance, the total number of students studied in USM was 20, 103 and this amount was divided by 52,

463 and then multiplying by 0.0073. The answer was 146. This research implemented disproportionate quota random sampling in order to make sure an equal dissemination of the students to represent each university. Table 3.3 indicates the total number of subjects in each university.

Table 3.3
The Total Number of Participants in Each University

No.	Name of Universities	Number of Elements in Stratum	Number of Participants in Sample
1	USM	20,103	146
2	UUM	24120-100*=24,020	175
3	UniMAP	8,340	61
	Total	52,463	382

*=Sample Size for Pilot Test

3.6 Operational Definitions

Operational definitions exactly describe the meaning of every variable specifically in the scope of study. The variables are used in this study and the definitions are shown at Table 3.4.

Table 3.4
Operational Definitions of Variable and Dimension

	Variables/Dimensions	Definitions	Source
IV	Performance Expectancy	The degree to which the students' believe that using Facebook as e-Learning tool will help him or her to attain gains in their academic performance.	Venkatesh et al (2003)
	Effort Expectancy	The extent to which the students are feeling very easy to use the Facebook as e-Learning tool.	Venkatesh et al (2003)
	Social Influence	The tendency of the students' perceives that their peers and lecturers' believe are very crucial for them to use the Facebook as e-Learning tool.	Venkatesh et al (2003)
	Facilitating Condition	The extent to which the students' perception of the resources and support available to use Facebook as e-Learning tool.	Borrero, Yousafzai, Javed and Page (2014)
DV	Behavioural Intention	The extent to which the students' intention to continue use Facebook as the e-Learning tool for learning purpose in the future.	Lin and Lu (2000)
MV	EUCS	The affective attitude towards Facebook by the student who interacts with this site directly.	Aggelidis and Chatzoglou (2012)
	Content	The relevance and completeness of information on Facebook.	Deng et al (2008)
	Accuracy	The reliability of Facebook content	Deng et al (2008)
	Format	The way the information is presented on the Facebook.	Deng et al (2008).
	Timeliness	Timeliness of the Facebook indicates the capability of the site to facilitate real-time interactivity and instantaneous information exchange among the users.	Rauniar, Rawski, Johnson & Yang (2013)

3.7 Questionnaire Design

In order to evaluate the relationship between exogenous, mediating and endogenous variables that were suggested in prior section, the researcher meticulously structured the questionnaire (Refer to Appendix A). This study questionnaire instruments were adapted from prior researches which are pertinent to the study objectives. Comply with credentials and legitimacy standard, the first page of questionnaire is initiated with the introduction paragraph briefly described about the researcher as the student from Universiti Utara Malaysia, study objective, the expected time will spend by the students to answer the questionnaire and a formal promise to use the information that is gathered only for the present study. Table 3.5 shows the description of the questionnaire in each part.

Table 3.5
Description of Questionnaire for Each Part

Parts	No. of Questions	Description
One	11	Demographic Variable
Two	14	The Features on Facebook
	7	Performance Expectancy
	6	Effort Expectancy
Three	5	Social Influence
	6	Facilitating Condition
	5	Behavioural Intention
Four	17	EUCS Satisfaction

3.8 Questionnaire Language

The questionnaire in this research was available only one language which was English language as it available to be understood by the native and international undergraduate students.

3.9 Questionnaire Scale

Three types of scales used in this study i.e. dichotomous scale, nominal scale and Likert scale (five-point). The implementation of dichotomous scale and nominal

scale towards demographic variables question (section one). The information gathered from using dichotomous and nominal scale was used to calculate the percentage (frequency) of demographic variables in the study's sample (Sekaran & Bougie, 2009). Also, the dichotomous scale was used to get the data for control variable (gender).

Meanwhile, five-point Likert scale (Likert, 1932) was implemented for all questions from part one (k) (The reasons of using Facebook), part two (The application on Facebook), part three (All four core factors of UTAUT and BI) and part four (The four dimensions on EUCS). All questions from part 1(k) until part four implemented the 5-point Likert scale in category of level of agreement. This type of Likert-scale was the rating scale and specifically used to measure the how strongly respondents disagree and agree towards independent variables, mediator variable and dependent variable. According to Rovai (2002), Likert scale was suggested as the method to evaluate attitudes among the education communities in using new technology. A parallel argument by DeVellis (2012), Likert-scale was generally used for evaluating opinions, beliefs and attitudes among the respondents.

In regard with question part 1(k), this question was adapted from Saw, Abbott and Donaghey (2012) and it contains nine questions regarding the reason of using Facebook among the students. The original question didn't implement Likert Scale to measure the tendency of disagree or agree. Meanwhile, the Likert Scale was employed towards this question in order to have a clearer picture the extent to which the students disagree or agree regarding the reasons of using Facebook among the students.

All questions in part two were constructed as the aim to explore the students' perception towards the applications on Facebook that attracts the students to use Facebook besides the opinion either these Facebook's applications should have on LMS or not. Because of that, it was very vital to implement the Likert scale to measure the extent to which the students disagree or agree towards the application on Facebook and also opinion either these Facebook's applications should have on LMS or not.

In the context of the acceptance of using Facebook questions, some previous studies used the five-point Likert scales in order to measure the relationship among variables of UTAUT such as Al-Gahtani et al., (2007), Curtis and et al., (2010); Baltaci-Goktalay and Ozdilek (2010); Hanson, West, Neiger, Thackeray, Barnes and McIntyre (2011); Hubona and Wang (2007); Tulaboev, (2013); Laire, Casteleyn and Mottart, (2012).

On the contrary, an original study (Venkatesh et al., 2003) and some previous studies in evaluating the relationship among variables of UTAUT used the seven-point Likert scales such as Borrero, Yousafzai, Javed and Page (2014); Escobar-Rodriguez, Carvajal-Trujillo and Monge-Lozano (2014); Im, Hong and Kang (2011); Khechine, Lakhal, Pascot and Bytha, (2014); Salim, (2012); Sumak, Polancic and Hericko, (2010); Maillet, Mathieu and Sicotte (2014); Marchewka, Liu and Kostiwa (2007); Usoro, Echeng and Majewski (2013).

In despite of an original study and many previous studies used seven-point Likert scales, this study still practices five-point Likert scales for gathering the data regarding the UTAUT variables. The main reason for using only five-point Likert scales because the sample in this study was the students. A small number of scale

points are enough for respondents of ordinary people (Malhotra, 2008). Besides, seven-point Likert scales in the questionnaire maybe will make the respondents feel a little bit irritate because the respondents have to spend more time to think and put more effort for answering the questionnaire (Frary, 1996).

Lastly, five-point Likert scales were also used to evaluate dimensions of EUCS. An original study by Doll and Torkzadeh (1988) and some previous study used the 5-likert point to measure EUCS dimensions are Abdinnour-Helm, Chaparro and Farmer (2005); Aggelidis and Chatzoglou (2012); Doll, Xia and Torkzadeh (1994); Rauniar, Rawski, Johson and Yang (2013); Ilias, Abd-Razak, Abdul-Rahman and Yasoa' (2009). Table 3.6 indicates five-point Likert Scale in category of level of agreement (Vagias, 2006).

Table 3.6
Five-point Likert Scales for the question in Part 1(k) until Part 8

Strongly Disagree	Disagree	Neither disagree or Agree	Disagree	Strongly Agree
1	2	3	4	5

3.10 Questionnaire Measure Items

According to Tuckman (1985), the questionnaire was an effective method to gather information from the respondents. Besides, it was the method to observe the respondents' behaviour. The main reason of choosing the questionnaire in this research it is because of suitability for gathering data from sizeable samples of the population (Glasow, 2005). Specifically, the appropriate scale in the questionnaire was very vital.

3.11 Demographic Variable

i. **Gender.** The students were asked to justify their gender: (1) male and (2) female.

ii. **Age.** The students were asked to confirm their age: (1)18-21 (2)22-25 (3)26-29 (4)30 and above

iii. **Year of Study.** The students need to confirm their current year of study: (1) First Year (2) Second Year (3) Third Year (4) Final Year

iv. **Nationality.** The students were asked to confirm their nationality: (1) Malaysian (2) International. Justify

v. **Ethnicity.** The students were asked about their ethnicity: (1) Malay (2) Chinese (3) Indian (4) others. Justify

vi. **Field.** The students were asked to confirm their field: (1)Applied Sciences (2) Applied Arts (3) Pure Arts (4) Pure Sciences (5)Engineering

vii. **The account of Web 2.0 tools that are owned by the students besides Facebook.** The students need to justify if they had other types of web 2.0 tools account besides Facebook. 12 types of web 2.0 tools were listed i.e. Twitter, Instagram, Blog, and Google Plus+, LinkedIn, Tumblr, Pinterest, Weibo, MySpace, Friendster, Youtube, Tagged and others.

viii. **Daily Facebook use in hours** was adopted from Ainin, Naqsbandi, Moghavvemi and Jaafar (2015). The aim of the question was to determine how many hours the students spend per day to surf Facebook: (1) 0-3 hours (2) 4-6 hours (3) 7-10 hours (4) More than 10 hours

ix. **Time period using Facebook** was adopted from Ainin, Naqsbandi, Moghavvemi and Jaafar (2015). The students need to state their time period

of using Facebook (1) Less than 1 year (2) 1-2 years (3) 3-4 years (4) 5-6 years (5) More than 6 years

x. **Numbers of Facebook friends** was adopted from Ainin, Naqsbandi, Moghavvemi and Jaafar (2015). The students need to state number of their Facebook friends: (1) Less than 100 (2) 101-200 3) 201-300 4) 301-400 5) 401-500 6) More than 500.

xi. **Reason for using Facebook.** This question was adapted from Saw, Abbott and Donaghey (2012). The students were asked to give the reason for using Facebook. The questions contain 9 reasons which are chatting with friends, meeting new people, keeping up with the friends' activities, staying in touch with family, sharing information, finding out information, entertainment, posting photos/ videos, job hunting, communicate with community (family, peers and instructors), education purpose and others.

3.12 The Features on Facebook

Second part of this questionnaire was about to explore the students' perception towards the features on Facebook that attracts the students to use Facebook. All of 15 features on Facebook (Table 3.7) were identified and predicted attract the attention of students to use Facebook as e-Learning tool. Besides, this question also wanted to find out the perception of students towards the features that they felt it supposed to be applied on LMS. Table 3.7 indicates the question regarding the features of Facebook.

Table 3.7
Questionnaire Items Related to Features on Facebook

Features	Item Code	Questions
News Feed	1NF01	I like Facebook News Feed
	1NF02	I like if Facebook News Feed has in LMS
Status Update	1SU01	I like Facebook Status Update
	1SU02	I like if Facebook Status Update has in LMS
Comment	1CM01	I like Facebook Comment
	1CM02	I like if Facebook Comment has in LMS
Wall	1WL01	I like Facebook Wall
	1WL02	I like if Facebook Wall has in LMS
Notification	1NN01	I like Facebook Notification
	1NN02	I like if Facebook Notification has in LMS
Page	1PG01	I like Facebook Page
	1PG02	I like if Facebook Page has in LMS
Chat/Instant Message	1CIM01	I like Facebook Chat/Message
	1CIM02	I like if Facebook Chat/Message has in LMS
Friend List	1FL01	I like Facebook Friend List
	1FL02	I like if Facebook Friend List has in LMS
Events	1ET01	I like Facebook events
	1ET02	I like if Facebook events has in LMS
Attach Files	1AF01	I like Facebook Attach Files
	1AF02	I like if Facebook Attach Files has in LMS
Group	1GP01	I like Facebook Group
	1GP02	I like if Facebook group has in LMS
User Profile/ Personal Timeline application	1UP01	I like Facebook User Profile/ Personal Timeline
	1UP02	I like if Facebook User Profile/Personal Timeline has in LMS
Photos and Video Uploads/ Sharing	1PV01	I like Facebook Photos and Video Uploads/ Sharing
	1PV02	I like if Facebook Photos and Video Uploads/ Sharing has in LMS

3.13 Instrument Variables

This study selected all instruments from previous studies (Table 3.17) that have high Cronbach Alpha. Meanwhile, each survey item was modified compatible with the scope of the study. The range value of Cronbach Alpha or Composite Factor Reliability used in this study was 0.77 until 0.95 indicated the high level of internal consistency reliability.

3.13.1 Performance Expectancy

In regard with the PE factor, the students are asked to determine the degree to which the students' believe that using Facebook as e-Learning tool will help him or her to attain gains in their academic performance. All seven indicators are adapted from Borrero, Yousafzai, Javed and Page (2014) and Marchewka, Liu and Kostiwa (2007). Particularly, four indicators (IPE01, IPE04, IPE05, 1PE07) are adapted from Marchewka, Liu and Kostiwa (2007) and others (IPE02, IPE03, IPE06) are adapted from Borrero, Yousafzai, Javed and Page (2014).

Marchewka, Liu and Kostiwa (2007) conducted the study regarding the students' perception in using Blackboard among 132 students. Because of that, the items are modified compatible with the scope of the study. For example, the question IPE01 *'I find Blackboard useful in my study'* is adapted and changed as *'I find Facebook useful in my virtual learning process.'* The Cronbach's Alpha value for PE in this study is 0. 836. Meanwhile, Borrero, Yousafzai, Javed and Page (2014) examined the use of SNS for expressive participation in Internet Social Movements (ISMs) among the students. In this study, the value of Cronbach's alpha for PE is 0.92. Only items related with the study are adapted and the questions are changed in order to fix with the scope of study. The indicators of these two studies are selected because of although the scope of study is different, the respondents are the students as same as this study. Besides, the sentences and words used in these studies are simple and easy to understand. Table 3.8 shows the questionnaire items related to PE.

Table 3.8
Questionnaire Items Related to PE

Variable	Item Code	Survey Items
PE	IPE01	I find Facebook useful in my virtual learning process.
	IPE02	Facebook as e-Learning tool increase the discussion about my study among me and my peers/ lecturers.
	IPE03	Using Facebook as e-Learning tool increase my knowledge and information sharing among my peers and lecturers.
	IPE04	The use of Facebook as e-Learning tool enables me to accomplish my tasks more quickly (e.g. send messages and assignments to my friends/lecturers via Facebook).
	IPE05	Using Facebook as e-Learning tool increases my academic performance.
	IPE06	The use of Facebook as e-Learning tool quickened acquisition of knowledge and information.
	IPE07	Using Facebook as e-learning tool increase my productivity as the students.

3.13.2 Effort Expectancy

EE is determined as the extent to which the students feel very easy to use the Facebook as e-Learning tool. Six questions are asked to the students regarding EE. Specifically, three items (IEE01, IEE02, IEE03) are adapted from Borrero, Yousafzai, Javed and Page (2014) and three items (IEE04, IEE05, IEE06) from Marchewka, Liu and Kostiwa (2007). Only three of five questions are selected from the study of Borrero, Yousafzai, Javed and Page (2014) with Cronbach's Alpha is α=0.82. Meanwhile, two questions from the study of Borrero, Yousafzai, Javed and Page (2014) are dropped out because it's are same as the questions from the study from Marchewka, Liu and Kostiwa (2007). Meanwhile, only four out of five questions regarding EE in the study of Marchewka, Liu and Kostiwa (2007) with the value of Cronbach's Alpha is 0.892. But one question is dropped as the researcher feel it is not very important to ask the question i.e. '*Learning to operate Blackboard is easy for me.*' In the scope of using Facebook, all the students are assumed not in the stage of learning to operate Facebook. All questions are modified compatible with the scope of the study. Table 3.9 shows questionnaire items related to EE.

Table 3.9
Questionnaire Items Related to EE

Variable	Item Code	Survey Items
EE	IEE01	In the scope of Facebook as e-learning tool, my interaction with this site is clear and understandable
	IEE02	It is simple for me to navigate Facebook as e-Learning tool
	IEE03	The features on Facebook (e.g. groups, pages, events, messages) are very easy to be used as e-Learning tool.
	IEE04	It would easy for me to become skilful at using Facebook.
	IEE05	I find it easy to get Facebook to do what I want it to do.
	IEE06	The use of Facebook as e-Learning tool does not require a lot of mental effort.

3.13.3 Social Influence

In the scope of this study, SI is defined as the tendency of the students' perceives that their peers and lecturers' believe are very crucial for them to use the Facebook as e-Learning tool. All five questions are adopted from Marchewka, Liu and Kostiwa (2007). The modification is done as same as PE and EE in order to fix with the context of study. The value of Cronbach's Alpha for these questions is 0.77. Table 3.10 indicates questionnaire items related to SI.

Table 3.10
Questionnaire Items Related to SI

Variable	Item Code	Survey Items
SI	ISI01	My peers/ lecturers who are important to me think that I should use Facebook as e-Learning tool.
	ISI02	My peers/ lecturers who are important to me think that using Facebook as e-Learning tool is a good idea.
	ISI03	My peers/ lecturers who are important to me think that I should try out Facebook as e-Learning tool.
	ISI04	My peers/ lecturers who influence my decisions think that I should use Facebook as e-Learning tool.
	ISI05	My lecturers/ peers have been supportive in the use of Facebook as e-Learning tool

3.13.4 Facilitating Conditions

To evaluate FC, the students are asked to determine the extent to which the students' perception of the resources and support available to use Facebook as e-Learning tool. There are six questions as five questions (IFC01, IFC02, IFC03, IFC05 and IFC06) are adapted from Borrero, Yousafzai, Javed and Page (2014) meanwhile only one

question (IFC04) is adapted from Marchewka, Liu and Kostiwa (2007). Actually five questions are same from both studies and only one question *'My peers/lecturers are available for assistance with Facebook difficulties'* is available in study by Marchewka, Liu and Kostiwa (2007). The value of Cronbach's Alpha of FC in the study conducted by Borrero, Yousafzai, Javed and Page (2014) (α=0.86) is greater than Marchewka, Liu and Kostiwa (2007) (α=0.452). Table 3.11 shows questionnaire items related to FC.

Table 3.11
Questionnaire Items Related to FCs

Variable	Item Code	Survey Items
FCs	IFC01	I have the resources necessary to use Facebook as e-Learning tool.
	IFC02	I have the necessary knowledge required to make use of Facebook as e-Learning tool.
	IFC03	Specialized instruction on how to use Facebook is available to me.
	IFC04	My peers/lecturers are available for assistance with Facebook difficulties.
	IFC05	In the scope of using Facebook as e-learning tool, this site would be entirely within my control.
	IFC06	I have the required ability to make use of Facebook as e-Learning tool.

3.13.5 Behavioural Intention

The students are asked to determine the extent to which the students' intention to continue use Facebook as the e-Learning tool for learning purpose in the future. All questions are adapted also in the study conducted by Borrero, Yousafzai, Javed and Page (2014). The Cronbach Alpha's value is 0.89. Table 3.12 indicates the questionnaire items related to BI.

Table 3.12
Questionnaire Items Related to BI

Variable	Item Code	Survey Items
BI	IBI01	I intend to use Facebook as e-Learning tool for next semester.
	IBI02	I plan to continue using Facebook as e-Learning tool.
	IBI03	I will tell others about the positive aspects of using Facebook as e-Learning tool.
	IBI04	I will prefer to use Facebook compared others SNS as e-Learning tool.
	IBI05	I have the intention to use Facebook for virtual learning as much as possible.

3.13.6 Four Dimensions of EUCS

To evaluate satisfaction towards the design characteristics of Facebook, the students are asked to determine the content, accuracy, format and timeliness of Facebook. All questions regarding content, format and timeliness of Facebook are adapted from the study conducted by Rauniar, Rawski, Johson and Jie Yang (2013). Only accuracy indicators are adapted from the study conducted by Mohamed, Husnayati and Hussien (2009). Rauniar et al., (2013) examine the satisfaction of using social media among 389 users. Because of that, all questions are modified to fix with the context of this study. The value of composite factor reliability (CFR) for content, format and timeliness are 0.88, 0.93 and 0.88 respectively. Meanwhile, Mohamed, Husnayati and Hussien (2009) measure the satisfaction of using e-Government among the 130 users. The value of Cronbach Alpha is 0.88. Also, the question regarding accuracy is modified to fix with this content of study. Actually, all these questions are not really different with the original questions by Doll and Torkzadeh (1988). But the researcher considers using the current studies in order to measure the satisfaction of using Facebook as e-Learning tool. Table 3.13 until 3.16 indicate the questions items related to Content, Accuracy, Format and Timeliness. Meanwhile Table 3.17 shows the instrumentation's Cronbach Alpha and Composite Factor Reliability.

Table 3.13

Questionnaire Items Related to Content

Variable	Item Code	Survey Items
Content	ICT01	Facebook information (text, image, and video) content fits my virtual learning needs.
	ICT02	I can easily understand the learning information posted by my peers and lecturers in Facebook.
	ICT03	The Facebook information content meets my needs.
	ICT04	Facebook provides sufficient information.

Table 3.14

Questionnaire Items Related to Accuracy

Variable	Item Code	Survey Items
Accuracy	IAY01	Facebook website is free from error
	IAY02	I am satisfied with the accuracy of Facebook website.
	IAY03	Facebook is reliable
	IAY04	I do not obtain any errors in the information when using Facebook as e-Learning tool

Table 3.15

Questionnaire Items Related to Format

Variable	Item Code	Survey Items
Format	IFT01	Facebook is well organized.
	IFT02	Facebook format is easy to read.
	IFT03	The organization of Facebook information is very clear.
	IFT04	The information on the Facebook is presented in useful format
	IFT05	The sequence of Facebook screen is very clear

Table 3.16

Questionnaire Items Related to Timeliness

Variable	Item Code	Survey Items
Timeliness	ITS01	Facebook homepage loads quickly
	ITS02	Postings and other information on Facebook refresh quickly
	ITS03	The search engine of Facebook website generates result quickly
	ITS04	Facebook provides up-to-date information of my friends' and lecturers' postings.

Table 3.17

Instrumentation's Cronbach Alpha and Composite Factor Reliability

Variable	Variable Measured	Dimensions	Item	Cronbach Alpha	Source
IV1	PE		7	α=0.92	Borrero, Yousafzai, Javed and Page (2014)
				α=0.836	Marchewka, Liu and Kostiwa (2007)
IV2	EE		6	α=0.82	Borrero, Yousafzai, Javed and Page (2014)
				α=0.892	Marchewka, Liu and Kostiwa (2007)
IV3	SI		5	α=0.77	Marchewka, Liu and Kostiwa (2007)
IV4	FCs		6	α=0.86	Borrero, Yousafzai, Javed and Page (2014)
				α=0.452	Marchewka, Liu and Kostiwa (2007)
MV	EUCS				
		Content	4	CFR=0.88	Rauniar, Rawski, Johson & Jie Yang (2013)
		Accuracy	4	α= 0.89	Mohamed, Husnayati & Hussien (2009)
		Format	5	CFR=0.93	Rauniar, Rawski, Johson & Jie Yang (2013)
		Timeliness	4	CFR=0.88	Rauniar, Rawski, Johson & Jie Yang (2013)
DV	BI		5	α=0.89	Borrero, Yousafzai, Javed and Page (2014)

*IV: Independent Variables, MV: Mediator Variable, DV: Dependent Variable, CFR: Composite Factor Reliability, α= Cronbach Alpha

3.14 Data Editing and Coding

According to Zikmund (2003), coding is necessary to be done after getting the data in order to keep the data methodically. The data were edited and coded by putting alphabet and numerical symbols on it before filling it into SPPS software version 19.0. For example, there were six questionnaire items related to PE. . Each item in the question was coded as 1PE01, 1PE02, 1PE03, 1PE04, 1PE05 and 1PE06.

3.15 Content Validity and Face Validity

The content validity in this study was conducted with the involvement of two academic experts from School of Computing, College of Arts of Sciences (CAS), UUM. According to Sekaran (2003), the assessment of content validity is done in order to ask for the experts' suggestion and opinions about the measures' appropriateness and representativeness. It was recommended to involve two to three people for pretesting process (Gay & Diehl, 1996). They were selected based on their expertise and experience of teaching in the IS field. The discussion with first academic expert was held on 18th of March 2015 within around two hours twenty minutes. Next day, the researcher discussed with the second academic expert and it took around less than two hours. The researcher had jot down all the suggestions and comments during the discussion. Only few words were suggested to be change for increasing the level of understandable towards the questionnaire among the students. Overall, they satisfied with the questions and the establishment of instruments are relevance, clarity, simplicity and ambiguity.

Meanwhile, three respondents were selected for assessing the questionnaire's face validity. This assessment was conducted as the aim to make sure the face of instrument was intended to evaluate what it was supposed to evaluate (Sekaran,

2003). They were asked to give their opinion regarding their ability to understand each of item statements and instructions, any difficulty to answer as the Likert scale do not contain labelling on each question, the suitableness of item statements and wordings and general formatting.

3.16 Pilot Test

After correcting the questionnaire sentences, the words and rearrange the items of instrument variables, the next step was conducting the pilot test. The pilot test was a last step before disseminating the final questionnaires to actual respondents. The main purpose of the pilot test was to measure the reliability and validity of the research instrument besides to assure the correctness and consistency of the answers collected through the research's questionnaire (Flynn, Sakakibara, Schroeder, Bates & Flynn, 1990; Hair, Black, Babin, Anderson & Tatham, 2006). As stated by Zikmund (2003), the definition of reliability was the level of measurements release from error. When analyse the data, if the result showed lower value in reliability, it means that the measurements are higher error variance (Sekaran, 2003).

It was necessary to conduct the pilot test in this study since all the original scales were adapted from United States (Borrero, Yousafzai, Javed & Page 2014; Doll & Torkzadeh, 1988; Rauniar, Rawski, Johson & Jie Yang, 2013; Venkatesh et al., 2003). According to Sekaran (2000), the reliability value more than 0.8 was consider good, 0.7 to 0.79 acceptable meanwhile less than 0.6 was considered to be poor. Based on table 3.18, it can be proved that the internal consistency reliability of measures used in this study was good because the Cronbach's Alpha value for the variables and dimensions in this study ranged from 0.722 to 0.911.

Table 3.18
Reliability Coefficient of Multiple Items in the Pilot Test

Variables /Dimensions	Number of Items	Cronbach's Alpha (α) (n=100)
PE	7	0.802
EE	6	0.838
SI	5	0.754
FCs	6	0.778
BI	5	0.748
Satisfaction	17	0.911
Content	4	0.768
Accuracy	4	0.741
Format	5	0.766
Timeliness	4	0.722

3.16.1 Sampling

The pilot test was done by distributing the questionnaire to the UUM's students as the sample. The reason for selecting the UUM's students as the sample was because of it was easy to access them and collecting back the questionnaire as the researcher was also the UUM's student.

3.16.2 Sample Size

The range of sample size for pilot test starting from five until one hundred respondents as depending on the research methodology will be used by the researchers (Blumberg, Cooper and Schindler (2005). Hence, one hundred UUM's students were selected as the sample. All one hundred questionnaire booklets were randomly given to the respondents. These respondents were not included in the actual sample.

3.17 Data Collection Procedures

The data collection process took two months started from the end of May until the end of June. It began after one week of proposal defense through personal-administrated. As general credentials and legitimacy standard, the researcher applied an official letter from Othman Yeop Abdullah Graduate School of Business

(OYAGSB) before starting collecting the data as the purpose to prove that the researcher was an officially a Master Student from UUM and to explain a little bit about the purpose of the this study. Besides, it enabled the researcher to get the support and trust from the Department of Academic Affairs in all universities to distribute the questionnaire to the students.

As a pace to increase and motive the participation among the students, the researcher gave a pen with the UUM logo as a gift. The cover of questionnaire clearly described the background and purpose of the study, the total number of questions in the questionnaire besides the guidance on how to answer the questionnaire, time to be spent to answer the questionnaire and lastly about an intimation that their personal information was confidentiality (see Appendix A). Table 3.19 indicates the plan of collecting the data in all universities.

Table 3.19
The Plan of Collecting the Data in All Universities

The Phase of Data Collection	Universities	Number of Students	State	Date
Phase 1 (Pre-Test)	UUM	100	Kedah	April 2015
Phase 2	UUM	175	Kedah	May 2015
	UniMAP	61	Perlis	May 2015
	USM	146	Penang	May 2015
Total		482		

3.18 Data Analysis Strategy

In this study, the analysis of data was conducted in three stages starting with the basic analysis, preliminary analyses, Exploratory Factor Analysis (EFA) and Structural Equation Modelling (SEM). SPSS 19 was used to determine the basic analysis, five assumptions of multivariate analysis and EFA. Meanwhile, Smart PLS 2.0 (Beta) software was employed to analysis the assessment model, structural model and testing for hypotheses.

3.18.1 Basic Analysis

The meaning of basic analysis was the analysis that always was done by the researcher before conducting the main analysis including descriptive analysis, reliability test, missing data analysis and test of data outliers.

i. Descriptive Analysis

Firstly, the descriptive analysis was conducted to determine the demographic profile of the respondents, descriptive statistics of Facebook usage among the respondents and lastly descriptive statistics for each measurement of this study. According to Agresti and Finlay (2009), the descriptive analysis summarized the data frequency regarding demography, profiling and etc. by presenting different kinds of tabular presentations.

ii. Reliability Test

The aim of testing for reliability test was to evaluate internal consistency across items by referring at the value of Cronbach's Alpha. According to Sekaran (2000), the reliability value more than 0.8 was consider good, the range from 0.7 to 0.79 acceptable meanwhile less than 0.6 was considered to be poor. The reliability test on the data was employed twice in this study wherein during the pilot test and after conducting EFA.

iii. Missing Data

It was nature situation when collecting the data, some respondents missed and did not complete their answer on that particular topics or questions. Thus, it was very important to identify the missing data especially for the variables questions. Because of that, the treatment on missing data was made based on the percentage of missing data on the data (Tabachnick & Fidell, 2007).

iv. Outliers

According to Hair et al., (2010), the data outliers were defined as the observation of cases that obviously different compared others cases observations. Naturally, all studies that were conducted by the researchers can't escape from dealing with the data outliers but they can minimise the presence of outliers in the data. The researchers need to have proper plan before, during and after collecting the data. In order to make sure there were no outliers on data, the researchers need to examine the univariate and multivariate outliers' analysis. To examine the univariate outliers, the z-scores need to be obtained for each case. The data outliers were detected when the cases with the standard scores of ±2.5 or greater for small samples (80 or less cases) and up to ±4.0 for larger sample sizes (Hair et al., 2010). Meanwhile, Mahalanobis distance (D^2) test was implemented to detect the data with multivariate outlier as recommended by Tabachnick and Fidell (2007). Mahalanobis values that exceeded this threshold were deleted.

3.18.2 Four Assumptions of Multivariate Analysis and Factor Analysis

i. Normality Assessment

There were many methods to test the data normality. This study implemented two methods to test the data normality. The first method was determined by evaluating the skewness and kurtosis value (Tabachnick & Fidell, 2007). Hair, Hult, Ringle and Sarstedt (2014) also recommend to evaluate the data normality by using the Skewness and Kurtosis test for further PLS-SEM analysis compared the Kolmogorov-Smirnov test and Shapiro-Wilks test. The normality assessment was very important due to the reason of the data that obtaining the high value of Skewness and Kurtosis can increase the tendency of the bootstrapped standard error estimates (Chernick, 2008) and directly affected and underestimated the statistical

significance of the path coefficients (Dijkstra, 1983). The skewness value of the data indicates the symmetry of the data distribution while the kurtosis value gives information regarding to the data distribution *'peakedness'* or flatness and the data distribution can be said absolutely normal when the skewness and kurtosis value was zero (Hair et al., 2010). The suggestion value of skewness was ± 1.0 (Hair et al., 2010) as well as the value of Kurtosis in the cohort of ± 1.0 (Hair et al., 2010) or ± 2.0 (Coakes & Steed, 2003).

Secondly, the normality assessment was done by looking the shape of the data distribution graphically. According to Field (2009), it was more imperative to evaluate the normality of the data by looking at the shape of data distribution graphically if the sample size was about 200 above compared than evaluating the skewness and kurtosis value. In addition, the large sample size increased the skewness and kurtosis value due to the impact of the declination of the value of standard errors in large sample size (Field, 2009). In spite of this argument, this study still implemented two methods to test the data normality by examining it statically and graphically.

ii. Test of Linearity

Linearity test was conducted to make sure there was a linear relationship between of variables. In this study, the linearity was determined by assessing the residuals through Normal Probability Plot (P-P plot) as it can be obtained after running a simple regression analysis (Hair et al., 2010).

iii. Test of Homoscedasticity

The aim of Homoscedasticity test was done in order to make sure that endogenous construct variables exhibit equal levels of variance across the range of exogenous variables (Hair et al., 2006). Otherwise, it was called as heteroscedasticity if this assumption was not met. This test was related with the normality assumptions. The relationships between endogenous variable and exogenous variables were free from heteroscedasticity issue when the assumption of multivariate normality was met (Tabachnick & Fidell, 2007).

iv. Test of Multicollinearity

The aim for multicollinearity test was to determine the extent to which the effect of a predictor variable can be predicted by the other predictor variable. There were two approaches to determine the multicollinearity. Firstly, it can be detected by looking at the correlation matrix for independent variable. The data can be assumed free from the presence of multicollinearity problem when the obtained value of correlation test was less than ≤ 0.9 (Malhotra, 2008). Secondly, the presence of multicollinearity can be determined by evaluating the value of the variance inflating factor (VIF) and tolerance. The multicollinearity problem exits when the value of VIF indicates more than 10 meanwhile the value of tolerance was less than 0.1 (Belsley et al, 1980; Menard, 1995; Myers, 1990).

3.18.3 Exploratory Factor Analysis (EFA)

According to Conway and Huffcutt (2003), there were twelve reasons for the researchers took a decision to run EFA before conducting further analysis. One reason of conducting EFA was to explain the interrelationship among the variables (Hatcher, 1994; Pallant, 2007). But, most of them run EFA in order to decrease the large number of indicators into a smaller factors numbers besides for developing new

scale. The factor extraction approaches in factor analysis that always be used by the researchers are Principal Components Analysis (PCA), Principal Axis Factoring (PAF), Maximum Likelihood (ML), Generalized Least Squares (GLS) and Item-Total Correlations (Tabachnick & Fidell, 2007). Hence, this study adopted PCA as a way to reduce the large number of indicators into a smaller factors number and only related item with strong factor loading in exactly specific factors will be retained (Tabachnick & Fidell, 2007).

Besides, it was must be noted that the test of unidimensionality can't be determined in PLS (Gerbing & Anderson, 1988). Although there was an argument that the instrument should be evaluated more holistically (MacCallum & Austin, 2000; Straub, Boudreau, & Gefen, 2004), the unidimensionality was still important because of this study integrate two model. Concerning with this issue and besides of this study integrate two model, it was very vital to employ EFA in order to examine the unidimensionality of the instrument. The unidimensionality indicated that the affiliated relationship of each of their construct indicators and explain and it was the best method to compare them individually and respectively (Hair et al., 2010). Before analyzing the data for factor analysis, several important presumptions should be met as shown in Table 3.20.

Table 3.20
Assumptions before Conducting EFA

Conditions	Requirements	References
Outliers	No outliers	Hair et al. (2010)
Normality	± 1.0 for skewness & kurtosis	Hair et al. (2010)
Linearity	The data is free from non-linear data pattern	Pallant (2007)
Multicollinearity	No multicollinearity; VIF<10	Hair et.al (2010)
Sample Size	Minimum 5 cases for each item	Tabachnick & Fidell (2007)

After running the EFA, the data need to meet several criteria as shown in Table 3.22. Firstly, Bartlett's test of sphericity was done to evaluate the overall of correlation matrix significance. The Bartlett's test of sphericity should be significant ($p<.05$)

indicates that the data are good to factor (Tabachnick & Fidell, 2007). Secondly, the Kaiser-Myer-Olkin (KMO) evaluated the sufficiency of sample (Black & Porter, 1996; Hair et. al., 2010). Besides, this assessment was done in order to determine the correlations of independent construct measures scales (Flynn et al., 1994) and this test indicated either the particular data were factor well or otherwise. The obtained value of KMO started from zero to one which near to one indicated the adequacy of sample for factor analysis. According to Tabachnick and Fidell (2007), the KMO value should be obtained at least 0.60 and more. Thirdly, the Eigenvalue value should be obtained one or greater than one (Hair et al., 2010). The Eigenvalue value becomes an indicator for the researchers to decide how many factors should be retained in the study (Ford et al., 1986; Hair et al., 2010). In addition, the scree plots also be used in some studies in order to see the number of factors should be retained (Cattell, 1966; Ford et al., 1986). Fourthly, the total variance must be explained at least 60% based on Hair et al. (2010). The total variance indicated a good factor solution. Next, in term of factor loading value of item, it value was based on the sample size. Because of this study sample size is 411; the value of factor loading must be ≥ 0.30 and above at 0.05 significant level (Hair et al., 2010). Lastly, in term of measure of sampling adequacy (MSA), the value of MSA for individual items should be above 0.50. Table 3.21 shows the requirement that need to be fulfilled after conducting EFA.

Table 3.21
Assumptions after conducting EFA

Criteria	Requirements	References
Bartlett's Test of Sphericity	Be Significant ($p<0.05$)	Tabachnick & Fidell (2007)
Kaiser-Mayer-Olkin (KMO) Index	≥ 0.6	Tabachnick & Fidell (2007)
Factor loading	If 350 sample size the value of factor loading must be ≥ 0.30 for significance	Hair et al. (2010)
Total variance	At least 60% of total variance	Hair et al. (2010)
Eigenvalue	Eigenvalue value shall be greater than one	Ford et al. (1986); Hair et al. (2010)
Measure of Sampling Adequacy (MSA)	The value of MSA for individual items should be above 0.50	Hair et al. (2010)

3.18.4 Structural Equation Modeling (SEM)

This study employed SEM for testing all hypotheses of theoretical framework. There were several reasons for employing SEM in this study. Basically, SEM explains the interrelationship between the latent variables as each of these latent variables were measured by their own measured variables (Hair et al., 2010; Schumacker & Lomax, 2010). Opposite the nature of old multivariate approaches, SEM had ability to estimate indirect relations, integrate the observed and latent variables together and evaluate error variance parameters of each observed and unobserved variable. Besides, there were many types of SEM analysis for determining the relationships among the measured variables that can be used to test all hypotheses of the study (Schumacker & Lomax, 2010). In addition, since there was a mediator variable in this study, it was more preferable to employ SEM. The affordances and flexibility of SEM programs in model specification and the options of estimation was suitable to be used if involving the mediation model (Preacher & Hayes, 2008). Naturally, SEM was divided by two types which are covariance based (AMOS) and variance based (Partial Least Squares).

The decisions to use either CBSEM or PLS-VBSEM were based on the objectives, the total number of sample size and normality issues. The study is suitable to employ CBSEM if the researchers want to confirm the theory that already strong and well-developed meanwhile PLS-VBSEM is used for predicating/developing the theory. In this study, the researcher utilizes PLS-VBSEM method and the justifications of using this method will be discussed in the next subsection.

3.18.5 Justification of Using Partial Least Squares (PLS)

There are few reasons to utilize PLS-VBSEM compare CBSEM in order to analysis the data. Firstly, in regard with distributional data issue, the researcher considers applying PLS-VBSEM to analysis the data study. It is must be noted that in the real research world, it is often difficult to find a data set that meets the requirement of multivariate normality distribution (Bhattacherjee & Sanford, 2006; Kwong-Kay, 2013; Rain et al., 2006). PLS provides a powerful method for assessing a structural model and measurement model because of the minimal demands on sample size, residual distributions and measurement scales (Goodhue, Lewis, Thompson, 2006).

Secondly, although the theory of UTAUT and EUCS are well-establishment theory, the past studies regarding the integration of EUCS and UTAUT are still limited. Many past studies evaluate the level of satisfaction in term of the respondent's feeling towards the use of system and not the satisfaction of system's design and characteristics. Hence, it is suitable to employ PLS-VBSEM which little prior knowledge about the relationship that exist among the variables (Hair et al., 2014; Kwong-Kay, 2013) especially the mediating effect of satisfaction between all independent variables with BI. PLS is not just can be used to ensure the theory but

also it can suggests the possible relationship either exist or not besides the suggestion for the next testing (Kim, Ferrin & Rao, 2008).

Thirdly, PLS analysis can help to achieve this study objective as it can be used to test highly complex model. The model of this study is highly complex model as there are several independent variables, mediator variable and dependent variable and one control variable (gender). In addition, EUCS as second order factor construct (satisfactions) and accuracy, content, format while timeliness become first order factor structure. In this kind of situation, it is suggested to use PLS because it support for testing first order model (Basselier & Benbasat, 2004; Burton-Jones & Straub, 2006). Besides, according to Chin, Marcolin and Newsted (2003), highly complex models with several construct and indicators variables can be evaluated by using PLS besides it also has an ability and easily of evaluating hierarchical models, mediating or moderating effects.

Fourthly, it is noted that PLS is very flexible and can measure either reflective or formative indicators and can estimate the structural and measurement model simultaneously different with the conventional regression (Hair, Ringle & Sarstedt, 2011). Although this statement is not strong enough to support the reason of using PLS because this study do not have formative indicators, it is proved that the PLS is more flexible compare AMOS.

There are a few procedures that must be followed in PLS SEM analysis (Henseler et al, 2009). Firstly, the assessments of the present study's reflective measurement model particularly to evaluate composite reliability, indicator reliability, AVE, Fornell Larcker criterion and cross-loadings. Secondly, the assessments of structural model in terms of evaluating R^2 of endogenous latent variables, estimate for path

coefficients, effect size f^2 and prediction relevance (Q^2 and q^2). A standard bootstrap approach is implemented to evaluate the structural model and lastly the supplementary PLS-SEM analysis (mediator analysis) was conducted and testing of control variable.

3.19 Summary

Chapter three has described the methodology covering the research design, data collection approach, the determination of population and sample size, sampling method, operational definitions, the questionnaire aspects (design, language, translation, and scale), data editing and coding, face validity test , pilot test and lastly data analysis approach.

CHAPTER FOUR

DATA ANALYSIS AND HYPOTHESES TESTING

4.0 Chapter Overview

This chapter starts by reporting the respondent rate. Next, the pre-analysis i.e. the data screening, preliminary analysis, non-response bias assessment and Common Method Variance (CMV) test are reported. The Exploratory Factor Analysis (EFA) and the reliability test after factor analysis are then discussed. The results of user's descriptive statistics and descriptive statistics for each variable and dimension are presented next. The section is continued by presenting the main results are presented in four sections. In the first section, the assessment of measurement model is discussed the second-order construct establishment is presented in the second section and next, assessment of the structural model is presented in the third section. Lastly, the result of hypotheses testing is discussed before presenting the chapter summary.

4.1 Response Rate

Each selected Public University in Malaysia's northern area was added extra 30 respondents as the researcher apprehensive towards the usable questionnaires. Because of that, the totals of 472 questionnaires were distributed among the Public Universities' students in the Malaysia's northern area. In the effort to get high responses rates, the researcher personally distributed the questionnaires to the respondents. Due to this action, only 462 questionnaires were returned which represents the response rate of 97.88% as illustrated on Table 4.1. Of these 462 questionnaires, 5 questionnaires were identified unusable as many important

questions were not answered by the students. Hence, only 457 questionnaires (96.82%) were used for further analysis.

Table 4.1
Response Rate of the Questionnaires

Response	Rate
No. of distributed questionnaires	472
Returned questionnaires	462
Returned and unusable questionnaires	5
Returned and usable questionnaires	457

4.2 Data Screening, Initial Data Examination and Data Preparation

First of all, the data screening was done towards 457 returned and usable questionnaires. Next, the researcher conducted the preliminary analysis and lastly the further multivariate analysis was done. It was an essential step to conduct the preliminary analysis techniques before conducting the further multivariate analysis to make sure the data underlying assumptions related to the application of multivariate techniques (Hair et al., 2007). There were five preliminary analyses that must be done before conducting the further multivariate analysis (Tabachnick and Fidell, 2007). This preliminary analysis began with the analysis of missing values, analysis of outliers, normality test, linearity and homoscedasticity test and multicollinearity test (Tabachnick & Fidell, 2007). The data screening and preliminary analysis were conducted by using the IBM SPSS Statistics 19 software package.

4.2.1 Missing Data

It was a common situation in any research was undertaken to get missing data in the questionnaires. According to Hair et al. (2010), the researcher needs to take an important consideration of the missing data before conducting further analysis. This situation was nature and happened when the respondents did not or failed to answer

some questions in the questionnaire (Sekaran & Bougie, 2010). As prevention to minimize the missing data in the questionnaire, the researcher checked every question after the respondents completed the questionnaire. As the result, only six missing value in the 457 set of questionnaire were detected in this study (Table 4.2). There were 21,022 data points in the SPSS dataset and ten data points missed. Based on Table 4.2, PE, EE, Accuracy and Format obtained two missing value. Meanwhile, one missing value was detected on SI and Timeliness. Otherwise, no missing value was tracked on FC, BI and Content. According Tabachnick and Fidell (2007), the data that had missing rate of less than five percent was non-significant and it was suggested the easy method to replace the missing value was by substituting the mean.

Table 4.2
Total and Percentage of Missing Value

Latent Variable/Dimension	Missing Value Count
PE	2
EE	2
SI	1
FCs	0
BI	0
Content	0
Accuracy	2
Format	2
Timeliness	1
Total	10 out of 21022
Percentage	0.047%

4.2.2 Analysis of Outliers

After cleaning and screening the data, the next step was detecting outlier. This step was very crucial as the presence of outliers in the data set can seriously impact the estimates of regression coefficients and lead to unreliable results (Verardi & Croux, 2008). According to Barnett and Lewis (1994, p.7), the meaning of outliers was an *"observations or subsets of observations which appear to be inconsistent with the*

reminder of the data." The two methods were conducted to detect the data outliers which were univariate and multivariate methods. The univariate outlier's analysis was conducted as suggested by Hair et.al (2010). According to Hair et al. (2010), the data outliers were detected when the cases with the standard scores of ±2.5 or greater for small samples (80 or less cases) and up to ±4.0 for larger sample sizes. Following Hair et al. (2010) rules for detecting the data outliers by looking the standardized values, there none of the cases were identified as the potential univariate outliers.

Secondly, Mahalanobis distance (D^2) test was implemented to detect the data with multivariate outlier as recommended by Tabachnick and Fidell (2007). Based on 46 items in this study, the recommended threshold of chi-square was 81.40 (p=0.001). Tabachnick and Fidell (2007, p.74) defined Mahalanobis distance (D^2) as "*the distance of a case from the centroid of the remaining cases where the centroid is the point created at the intersection of the means of all the variables."* Mahalanobis values that exceeded this threshold were deleted. In this study, there were 46 cases (i.e. 8, 11, 13, 35, 36, 37, 48, 63, 64, 85, 89, 107, 128, 135, 158, 164, 176, 180, 185, 232, 243, 256, 259, 268, 277, 281, 286, 305, 309, 314, 320, 326, 342, 356, 367, 376, 377, 384, 394, 404, 409, 422, 425, 426, 442, 443) with range of 161.72613-81.65626 were identified as the multivariate outliers since the Mahalanobis distance value more than critical value (46 items, p=0.001, c.v.=81.40). Thus, the total of 411 usable questionnaires was used for further analysis. The result of Mahalanobis was attached in Appendix D.

4.2.3 Normality Assessment

As discussed earlier, this study implemented two methods to test the data normality. The first method was examined by evaluating the Skewness and Kurtosis value and secondly, it was determined by looking at the shape of data distribution graphically. In this study, the Skewness and Kurtosis value obtained was not greater than ±1 respectively. This output proved that the normality assumptions in this study were not violated (Hair et al., 2010). The Skewness and Kurtosis value (Normality outputs) analysis are given in Appendix E. Meanwhile, the statement of normality assumptions in this study was not violated also can be proven by looking at the shape of data distribution graphically. All the bars on the histogram were almost the same to the normal pattern (Appendix E).

4.2.4 Test of Linearity and Homoscedasticity

The linearity test was done to ensure the data free from non-linear data pattern. The linearity can be identified by looking at the scatterplots of the variable. Practically, after running simple regression, the residual through the Normal Probability Plot was assessed (P-P plots) (Hair et al., 2010). It can be considered that the assumption of linearity in this study was met since the plotted points approximately close to the linear line (Pallant, 2002) (Refer Appendix F). In regard with the homoscedasticity test, Pallant (2002) stated that the homoscedasticity as *"the variance of the residuals about predicted DV scores should be the same for all predicted scores* (p.151)". According to Hair et al (2007), the homoscedasticity can be determined if the null plot indicated that the residuals dispersion randomly with fairly distributed about zero and no strong inclination to be more or less than zero. The overall shape of the scatterplots (Refer Appendix F) in this study indicates that the residuals scattered

randomly with the approximately same pattern below and above y-axis (i.e. 0 point), which proved that the absence of homoscedasticity. But, some of the scatterplots showed the pattern of residuals was a diamond-shaped pattern with indicate the presence of heteroscedasticity.

According to Hair et.al (2007), *"a diamond-shaped pattern can be expected in the case of percentages where more variation is expected in the midrange than at the tails* (p.207)*."* With regard to the homoscedastic issue, this was one of many reasons the researcher preferred to utilize the PLS-VBSEM analyses. Hair et al. (2011) stated that the result of CB-SEM was not highly inaccurate instead of the PLS-VBSEM result often provided more approximate value of the structural model when the assumptions of multivariate analysis were violated. Hence the assumptions of multivariate analysis was not really vital issue for the PLS-SEM analysis, none of the transformation technique was applied on the data of this study.

4.2.5 Test of Multicollinearity

The presence of multicollinearity can be detected when the correlation between exogenous latent constructs were more than 0.90. The test of multicollinearity was very imperative since it can underestimate the coefficients of regression and the test of statistical significance (Hair, Black, Babin, Anderson & Tatham, 2006). According to Tabachnick and Fidell (2007), the presence of multicollinearity will increase the coefficients' standard errors value and as the result cause the coefficients become non-significant. Concerning to the presence of multicollinearity in this study, two techniques were implemented. Firstly, the examination on the correlation matrix and secondly, determining the Variance Inflated Factor (VIF),

tolerance value and condition index among of all exogenous latent constructs (Peng & Lai, 2012). Based on Table 4.3, it can be seen that the data was free from the presence of multicollinearity since the value of correlation coefficient between exogenous latent constructs were less than 0.90 (Hair et al., 2010).

Table 4.3
Correlation Matrix of the Exogenous Latent Constructs

No	Latent Construct	PE	EE	SI	FC
1	PE	1			
2	EE	.737**	1		
3	SI	.575**	.654**	1	
4	FCs	.608**	.681**	.701**	1

Note **Correlation is significant at the 0.01 level (1 tailed)

Next, according to Hair, Ringle and Sarstedt (2011), the presence of multicollinearity also can be detected if tolerance value was less than 0.20; the value of VIF was more than five and the value of condition index was more than 30. As shown in Table 4.4, all the exogenous latent constructs obtained tolerance value more than 0.20, the VIF value less than five and the value of condition index was less than 30 which mean the absence of multicollinearity among the exogenous variables.

Table 4.4
Tolerance and Variance Inflation Factors (VIF)

Latent Constructs	Collinearity Statistics		Condition Index
	Tolerance	VIF	1.000
PE	0.432	2.317	14.744
EE	0.349	2.863	19.166
SI	0.447	2.237	23.284
FCs	0.413	2.423	27.461

4.3 Non-Response Bias Assessment

According to Lambert and Harrington (1990, p.5), non-response bias was defined as *"the differences in the answers between non-respondents and respondents."* The non-respondents shared the same characteristics with late respondents (Armstrong &

Overton, 1977). In regard with the possibility of bias including non-response bias issue, this study adopted a time-trend extrapolation method (Philippens, Loosveldt, Stoop & Billiet, 2004) by dividing two groups i.e. the early and late respondents. As mentioned earlier, the data was collected directly from the students by the researcher. The data was divided into two groups as the first group consisted of 276 students during first duration of time (10 a.m. to 12 p.m.) and second duration of time (12 p.m. and above). Table 4.5 indicates the tentative time of collecting data. In order to detect any kind of non-response bias, this study implemented independent sample t-test on this study variables and dimensions by comparing the means of the two groups.

Table 4.5
The Tentative Time of Collecting Data

Universities	**Time**	
	Early Respondents (10 a.m. to 12 p.m.)	**Late Respondents (12 p.m. above)**
UUM	144	46
UniMAP	20	36
USM	112	53
Total	276	135

Meanwhile, as presented in Table 4.6, it can be concluded that non-response bias was not a major concern in this study since the results of independent-samples t-test showed that the significance value of ten variables were greater than the 0.05 significance level. As suggested by Pallant (2009), it can be considered the achievement of equality of variances if the variable significance value of Levene's Test is greater than 0.05. In addition, this study obtained more than 50% response rate (97.88%) and this can be considered that the non-response bias as the minor concern (Linder & Wingenbach, 2002).

Table 4.6
Results of Independent Samples T-test for Non-Response Bias

Construct		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	df	Sig.
PE	Early	.668	.414	-1.332	409	.184
	Late			-1.353	353.151	.177
EE	Early	.050	.824	-1.727	409	.085
	Late			-1.741	344.741	.083
SI	Early	.364	.547	-2.024	409	.044
	Late			-2.042	345.639	.042
FCs	Early	.000	.987	-1.217	409	.224
	Late			-1.223	341.137	.222
Content	Early	.421	.517	-1.120	409	.263
	Late			-1.129	344.308	.260
Accuracy	Early	2.403	.122	-3.387	409	.001
	Late			-3.437	352.003	.001
Format	Early	.429	.513	-3.867	409	.000
	Late			-3.933	354.535	.000
Timeliness	Early	.008	.928	-3.069	409	.002
	Late			-3.108	349.797	.002
BI	Early	.167	.683	-1.987	409	.048
	Late			-2.031	359.781	.043

4.4 Test of Common Method Variance (CMV)

The CMV was seen as a major concern by many researchers especially for the researchers that employing questionnaire as the method to collect the data (Spector, 2006). According to Podsakoff, MacKenzie, Lee and Podsakoff (2003, p. 879), this test is defined as *"variance that is attributable to the measurement method rather than to the construct of interest."* Informed by these, this study employed several methods to make sure the minimum effects of CMV test (MacKenzie & Podsakoff, 2012; Viswanathan & Kayande, 2012). As a first step, the respondents were reminded by the researcher that the questionnaire did not had neither right nor answer questions. Besides, the respondents were informed that all their answers were

private and confidential and it can only be used for this research study. Secondly, the improvement towards the scale items of questionnaire was done as a step to minimize method biases in this study. It was done by writing the entire question in the questionnaire in a precise, simple and easy to understanding language. As such of the methods above, this study also employed Harman's single factor test (Podsakoff & Organ, 1986) to evaluate common method variance. Practically, this test was conducted by employing factor analysis as all items are included to a principal components factor analysis (Podsakoff & Organ, 1986). The results indicated that this analysis extracted nine factors and showed a cumulative of 68.146% of the variance with the first factor was less than 50% i.e. 40.360% (Kumar, 2012; Podsakoff, MacKenzie, & Podsakoff, 2012). Thus, it can be concluded that the common method bias is not a major concern in this study.

4.5 Construct Validity

Validity was described as *"the extent to which a test measures what we actually wish to measure"* (Cooper & Schindler, 2008, p. 289). Pallant (2007) stated that the validity of content as the adequate measure had been sampled to present the particular universe. The content of the individual constructs on this study can be said valid since all indicators were selected based on previous substantial empirical studies. Besides, after constructing the instrument, the researcher discussed with several academicians to make sure that all indicators in the instruments were related from their point of view during conducting pilot test. Meanwhile, this study was conducted in the environment context of Malaysian Education, which of course is totally different from the Western contexts. Besides, in previous study, the instrument was used in different scope, respondents and type of information system.

In order to verify each indicator's loading, exploratory factor analysis was conducted on all measurement items as Varimax rotation was selected as the solution meanwhile the extraction approach was principle components.

4.6 Exploratory Factor Analysis (EFA)

The data in this study fulfil all the require assumptions for further EFA as proven in previous section. Meanwhile, the requirement of sample size for conducting exploratory factor analysis in this study also met since this study sample size is 411. The PCA factor extraction approach with varimax rotation in EFA was performed on all variables in this study which are PE, EE, SI, FC, EUCS and BI.

4.6.1 Factor Analysis for Performance Expectancy

In order to check the validity of PE, a Principle Component Analysis (PCA) with varimax rotation was conducted on all seven items. As shown in Table 4.7, the KMO was more than 0.50 (0.89), test of Bartlett sphericity showed that there was a significant (p=0.000) and the existence of one factors with Eigenvalue greater than 1 explained by 60.09% of the variance in the data. Furthermore, none of indicators were deleted since all of them indicated high communalities value and factor loadings (Refer to Appendix G). In term of the Measurement of Sampling Adequacy (MSA), all indicators in the cohort of acceptable value (0.859-0.929) (Refer to Appendix G).

Table 4.7
Factor Analysis for PE

No	Items	Factor Loading
IPE01	I find Facebook useful in my virtual learning process.	.769
IPE02	Facebook as e-Learning tool increase the discussion about my study among me and my peers/ lecturers.	.796
IPE03	Using Facebook as e-Learning tool increase my knowledge and information sharing among my peers and lecturers.	.790
IPE04	The use of Facebook as e-Learning tool enables me to accomplish my tasks more quickly (e.g. send messages and assignments to my friends/lecturers via Facebook).	.765
IPE05	Using Facebook as e-Learning tool increases my academic performance.	.782
IPE06	The use of Facebook as e-Learning tool quickened acquisition of knowledge and information.	.792
IPE07	Using Facebook as e-learning tool increase my productivity as the students.	.730
% of variance		60.09
Kaiser-Meyer-Olkin (KMO)		0.89
Bartlett's Test of Sphericity		1384.82
df		21
Sig		.000

4.6.2 Factor Analysis for Effort Expectancy

Based on Table 4.8, the KMO value showed 0.870. Meanwhile, the value of MSA for all six items ranged from 0.845 until 0.893 (Refer to Appendix G). The test of Bartlett sphericity was also indicated to be significant (p=0.000). None of items were deleted since none of them obtained low value of communalities and factor loadings. Furthermore, the total variance explained by the factors was 60.98% with extracted factors' eigenvalue of greater than one.

Table 4.8
Factor Analysis for EE

No	Items	Factor Loading
IEE01	In the scope of Facebook as e-learning tool, my interaction with this site is clear and understandable	.741
IEE02	It is simple for me to navigate Facebook as e-Learning tool	.821
IEE03	The features on Facebook (e.g. groups, pages, events, messages) are very easy to be used as e-Learning tool.	.794
IEE04	It would easy for me to become skillful at using Facebook.	.804
IEE05	I find it easy to get Facebook to do what I want it to do.	.820
IEE06	The use of Facebook as e-Learning tool does not require a lot of mental effort.	.698
% of variance		60.98
Kaiser-Meyer-Olkin (KMO)		.870
Bartlett's Test of Sphericity		1108.62
		0
df		15
Sig		.000

4.6.3 Factor Analysis for Social Influence

As exhibited in Table 4.9, the KMO value was 0.887 and the Bartlett sphericity test was also significant ($p<0.005$). Meanwhile, all five items in this factors obtained high communalities value ranging from 0.704 to 0.808. Moreover, the MSA showed that all items were loaded from 0.836 to 0.880 (Refer to Appendix G). Lastly, the value of factor loading for each item was more than 0.30 ranging from 0.860 to 0.899.

Table 4.9
Factor Analysis for SI

No	Items	Factor Loading
ISI01	My peers/ lecturers who are important to me think that I should use Facebook as e-Learning tool.	.860
ISI02	My peers/ lecturers who are important to me think that using Facebook as e-Learning tool is a good idea.	.897
ISI03	My peers/ lecturers who are important to me think that I should try out Facebook as e-Learning tool.	.896
ISI04	My peers/ lecturers who influence my decisions think that I should use Facebook as e-Learning tool.	.899
ISI05	My lecturers/ peers have been supportive in the use of Facebook as e-Learning tool	.875
% of variance		78.42
Kaiser-Meyer-Olkin (KMO)		.887
Bartlett's Test of Sphericity		1642.07
df		10
Sig		.000

4.6.4 Factor Analysis for Facilitating Conditions

As presented in Table 4.10, the value of KMO was more than 0.60 and the Bartlett's Test of Sphericity was significant (p=0.00). The value of factor loading for each item was more than 0.30 ranging from 0.552 until 0.619. Besides, the total variance explained by the factors was 60.798% with extracted factors' eigenvalue of greater than one. The value of MSA for individual items was in the range of 0.836 until 0.880 which above the required value of 0.60 (Refer to Appendix G).

Table 4.10
Factor Analysis for FC

No	Items	Factor Loading
IFC01	I have the resources necessary to use Facebook as e-Learning tool.	.561
IFC02	I have the necessary knowledge required to make use of Facebook as e-Learning tool.	.619
IFC03	Specialized instruction on how to use Facebook is available to me.	.597
IFC04	My peers/lecturers are available for assistance with Facebook difficulties.	.596
IFC05	In the scope of using Facebook as e-learning tool, this site would be entirely within my control.	.602
IFC06	I have the required ability to make use of Facebook as e-Learning tool.	.552
% of Total Variance		60.798
Kaiser-Meyer-Olkin (KMO)		.865
Bartlett's Test of Sphericity		976.790
df		15
Sig		.000

4.6.5 Factor Analysis for End User Computing Satisfaction

Factor analysis was conducted on EUCS in order to evaluate the interrelationships of related items and how these items can be explained under four dimensions i.e. content, timeliness, accuracy and format. Based on table 4.11, the result of factor analysis for EUCS proved that the data can be used for factor analysis since the value of KMO was 0.93 and all items' MSA ranging from 0.903 to 0.949. In addition, Bartlett's Test of Sphericity was significant (p=0.00). Meanwhile, the communalities of all ranging from 0.501 to 0.741 proved that they correlated with their relevant factors. Moreover, the output from Component Matrix table shows that all indicators had loading value above 0.3. The total variance explained by the factors was 68.955% with 4 extracted factors' eigenvalue of greater than one (Appendix G).

Table 4.11
Factor Analysis for EUCS

KMO and Bartlett's Test		
Bartlett's Test of Sphericity	Kaiser-Meyer-Olkin (KMO)	.931
	Approx. Chi-Square	3970.555
	df	136
	Sig.	.000

Items	Anti-image Correlations	Communalities	Component Matrix				Rotated Component Matrix			
			1	2	3	4	1	2	3	4
ICT01	.903	.668	.617	.515					**.773**	
ICT02	.886	.731	.647	.553				.303	**.786**	
ICT03	.921	.701	.722	.393					**.733**	
ICT04	.932	.613	.682				.354		**.705**	
IAY01	.931	.738	.670		.458		**.797**			
IAY02	.945	.741	.718	-.316	.354		**.772**			
IAY03	.948	.652	.712		.314		**.691**	.349		
IAY04	.928	.701	.695	-.330	.329		**.749**			
IFT01	.937	.580	.753			-.335	.342	**.687**		
IFT02	.946	.533	.685			-.406		**.765**		
IFT03	.933	.525	.708			-.416		**.750**		
IFT04	.939	.566	.745					**.602**	.311	
IFT05	.947	.590	.727					**.524**		.462
ITS01	.914	.628	.654	-.327	-.304	.328				**.787**
ITS02	.922	.643	.704		-.313	.325				**.781**
ITS03	.943	.636	.725			.308				**.748**
ITS04	.949	.501	.614		-.337			.381	.318	**.513**

4.7.6 Factor Analysis for Behavioural Intention

From the Table 4.12, a result of factor analysis for BI indicated that the value of KMO was 0.51 and the individual items' MSA ranging from 0824 to0.884. The factor loading for each item was in the range from 0.813 until 0.867 (Refer to Appendix G). In addition, the Bartlett's Test of Sphericity was significant (p=0.00). None of items were deleted since none of them obtained low value of communalities.

Table 4.12
Factor Analysis for BI

No	Items	Factor Loading
IBI01	I intend to use Facebook as e-Learning tool for next semester.	.841
IBI02	I plan to continue using Facebook as e-Learning tool.	.867
IBI03	I will tell others about the positive aspects of using Facebook as e-Learning tool.	.858
IBI04	I will prefer to use Facebook compared others SNS as e-Learning tool.	.813
IBI05	I have the intention to use Facebook for virtual learning as much as possible.	.829
% of variance		70.853
Kaiser-Meyer-Olkin (KMO)		.851
Bartlett's Test of Sphericity		1224.86
		7
df		10
Sig		.000

4.7 Reliability Test after Conducting EFA

A reliability test was conducted after conducting EFA as the aim to evaluate internal consistency across items by referring at the value of Cronbach's Alpha. Based on Hair et al., (2010), the value of reliability over 0.80 was considered good meanwhile in cohort range of 0.50 until 0.60 was considered sufficient and acceptable. As shown on Table 4.13, the value of Cronbach's Alpha for each variable and dimension was more than 0.80. The output details of SPSS can be seen in Appendix H. Overall, the test of reliability was conducted for each variable and dimension proved that all measurements in this study were reliable and internally consistent.

Table 4.13
Reliability Test after Conducting Factor Analysis

Variables and Dimension	No. of Items	Cronbach's Alpha
PE	7	0.889
EE	6	0.870
SI	5	0.931
FCs	6	0.859
BI	5	0.898
Satisfaction	17	0.931
Content	4	0.849
Accuracy	4	0.863
Format	5	0.864
Timeliness	4	0.828

4.8 Demographic Profile of the Respondents

All the demographic data of the students were analysed by using descriptive technique. The results indicated that out of 411 respondents, majority respondents were female (62.3%) and the remaining 37.71% were male. Concerning age, the majority of students were aged from 22 to 25 years old (264 students), 126 students were aged from 18 to 21 years old, 3.9% were aged from 26 to 29 years old consisting 16 students, four students were aged between 30 to 33 years old and lastly only one student was aged between 34 to 37 years old. Meanwhile, as for year of study, majority of the students (29.9%) were third year students, followed by 113 (27.5%) students were first year students, 100 students (24.3%) were second year students, 12 students (2.9%) were fourth year students and 63 students were final year students. None of respondents were fifth year students.

With regard to the nationality categories, the results clearly show that majority of the respondents were local students (94.2%), six students were China citizen, three students were Indonesia citizen and one student from Korea, Libya, Nigeria, Philippines, Sudan, United Kingdom, Uzbekistan and Yemen respectively. In term of ethnicity, slightly less than three-fourths (61.8%) were Malay students, followed by 21.7% were Chinese, 8.8% were Indian, 2.2% students were Siamese, 1.0% students

were Somalia and 0.7% were Africa, Bajau and Indonesia respectively. Only 0.2% students were Arab, Bidayuh, Kadazan, Korean, Melanau, Uzbekistan and Yemeni respectively.

With respect to the type of fields were taken by the students, slightly less than two-fourth (38.2%) majored in applied arts, followed by 111 students majored in engineering, 44 students majored in pure arts and 33 students majored in pure sciences.

Lastly, in term of web 2.0 tools that were owned by the students besides Facebook, majority of the students owned Pinterest (92%), Instagram (73.5%) and Youtube (63.3%). On the other hand, the students less owned Twitter (47.4%), MySpace (28%), Google Plus + (26.5%), Blog (23.6%), Weibo (23%), others (15.5%), Tumblr (7.8%), Friendster (7.1%), LinkedIn (6.8%) and Tagged (6.3%). The summary for the demographic profile of the respondents is shown in Table 4.14.

Table 4.14
Demographic Profile of the Respondents

		Frequency	Percentage
Gender	Male	155	37.7
	Female	256	62.3
	Total	411	100.0
Age	17 above	0	0
	18-21	126	30.7
	22-25	264	64.2
	26-29	16	3.9
	30-33	4	1.0
	34-37	1	0.2
	38-41	0	0
	42 above	0	0
	Total	411	100.0

Table 4.14 (Continue)

Year of Study	First Year	113	27.5
	Second Year	100	24.3
	Third Year	123	29.9
	Fourth Year	12	2.9
	Fifth Year	0	0
	Final Year	63	15.3
	Total	411	100
Nationality	Malaysian	6	1.5
	China	3	0.7
	Indonesia	1	0.2
	Korea	1	0.2
	Libya	1	0.2
	Nigeria	1	1.0
	Philippines	4	0.2
	Somalia	1	0.7
	Sudan	3	0.2
	Thailand	1	0.2
	United Kingdom	1	0.2
	Uzbekistan	1	0.2
	Yemen	411	100.0
Ethnicity	Total	254	61.8
	Malay	89	21.7
	Chinese	36	8.8
	Indian	3	0.7
	Africa	1	0.2
	Arab	3	0.7
	Bajau	1	0.2
	Bidayuh	2	0.5
	Dusun	3	0.7
	Indonesia	1	0.2
	Kadazan	1	0.2
	Korean	1	0.2
	Melanau	1	0.2
	Philippines	9	2.2
	Siamese	4	1.0
	Somalia	1	0.2
	Uzbekistan	1	0.2
	Yemeni	411	100
Field	Total	111	27.0
	Applied Sciences	157	38.2
	Applied Arts	44	10.7
	Pure Arts	33	8.0
	Pure Sciences	66	16.1
	Engineering	411	100

Table 4.14 (Continue)

The account of Web 2.0 tools that are owned by the students besides Facebook	Total Total	% Yes	Total No	% No
Twitter	Yes	47.4	216	52.6
Instagram	195	73.5	109	26.5
Blog	302	23.6	314	76.4
Google Plus+	97	26.5	302	73.5
LinkedIn	109	6.8	383	93.2
Tumblr	28	7.8	379	92.2
Pinterest	32	92.0	378	92.0
Weibo	378	5.6	388	94.4
MySpace	23	6.8	383	93.2
Friendster	28	7.1	382	92.9
Youtube	29	63.3	151	36.7
Tagged	260	6.3	385	93.7
Others	26	15.5	347	84.4

4.9 Descriptive Statistics of Facebook Usage among the Respondents

Table 4.15 indicates the descriptive statistics of hours spending on Facebook, experience of using Facebook and numbers of Facebook's friends among the respondents. In term of hours spent on surfing Facebook per day, the bulk of the respondents (42.1%) had been spending on surfing Facebook for at least four to six hours per day, followed by one to three hours (26.5%) per day, less than one hour per day (21.9%) and seven to nine hours per day (5.8%) and lastly, 15 students (3.6%) spent on surfing Facebook in cohort of ten hours and above.

Respondents' Facebook usage experiences were indicated as follows: less than one year (2.4%), one to two years (4.6%), three to four years (25.5%), five to six years (44.0%), seven to eight years (19.0%) and nine to ten years (4.4%). Meanwhile, the students that have the number of friends on their Facebook account in the designated range were shown as follows: 1001-1400 friends (24.1%), 1000 friends (23.1%), 1401-1800 friends (11.7%), 201-600 friends (9.2%), 1801-2200 friends (8.3%), 2201-2600 friends (6.8%), less than 200 friends (4.4%), 3001-3300 friends (2.2%),

3301-3400 friends (1.9%), 4601-5000 friends (1.7%), 4201-4600 friends (1.2%), 3801- 4200 friends (1.0%) and 3401-3800 friends (0.5%).

Table 4.15
Descriptive Statistics of Hours spending on Facebook per day, experience of using Facebook and numbers of Facebook's friends.

Descriptive		Frequency	Percentage
Hours Spend on Facebook per day			
	Less than 1 hour	90	21.9
	1-3 hours	109	42.1
	4-6 hours	173	26.5
	7-9 hours	24	5.8
	10 hours and above	15	3.6
	Total	411	100
Experience of Using Facebook			
	Less than 1 year	10	2.4
	1-2 years	9	4.6
	3-4 years	105	25.5
	5-6 years	181	44.0
	7-8 years	78	19.0
	9-10 years	18	4.4
	Total	411	100.0
Numbers of Facebook's Friends			
	Less than 200	18	4.4
	201-600	38	9.2
	601-1000	95	23.1
	1001-1400	99	24.1
	1401-1800	48	11.7
	1801-2200	34	8.3
	2201-2600	28	6.8
	2601-3000	16	3.9
	3001-3300	9	2.2
	3301-3400	8	1.9
	3401-3800	2	0.5
	3801-4200	4	1.0
	4201-4600	5	1.2
	4601-5000	7	1.7
	Total	411	100

Statistical analysis table (Table 4.16) is constructed in order to give a full explanation of reason for using Facebook among the students. With the reason of using

Facebook because want to chat with the communities, 39.66% students agreed that the reason they used Facebook was for chatting with the communities, followed by 25.06% students neither agreed nor disagreed, 20.68% students strongly agreed, 10.46% students disagreed and 4.14% strongly disagreed.

As for second reason of using Facebook that was met new people, slightly less than half students agreed (189 students/ 45.99% students) agreed with this statement, followed by 25.06% students neither agreed nor disagreed, 18 % students consisting 24 students strongly agreed, 7.79% (32) students disagreed and only 3.16% students strongly disagreed.

The next reason for using Facebook was about keeping up with the friends' activities. The result indicated that almost half students (54.99%) agreed this statement, followed by 30.17% students strongly agreed, 11.19% students were in neutrally stage, 2. 92% students disagreed and 0.73% students strongly disagreed.

When asked about the reasons for using Facebook were staying in touch with the family, one-third respondents (33.33%) agreed, followed by 28.17% students neither agreed nor disagreed, 17.27% strongly agreed, 14.11% disagreed and only 6.57% strongly disagreed.

In term of sharing information with the communities was one of the reasons for using Facebook, the data obtained indicates the results as follows: Slightly less than one-half students (49.88%) agreed, followed by 26.88% strongly agreed, 16.06% neither agreed nor disagreed, 6.33% disagreed and 1.46% strongly disagreed. Next reason of using Facebook was for finding out information. The result showed that 37.47% students agreed, 27.25% students strongly agreed, 26.04% students neither agreed

nor disagreed, 7.79% students disagreed and 1.46% students strongly disagreed with this statement.

Next, the students were asked the reason for using Facebook were because of entertainment and the result indicated as follows: Slightly less than one-half students (49.88%) agreed, followed by 22.38% students neither agreed nor disagreed, 21.41% students strongly agreed, 5.84% students disagreed and only 0.48% strongly disagreed with this statement.

Regarding the next reason of using Facebook which was 'post the photos/video', the result showed that slightly one-third students consisting 156 or 37.96% students agreed, 27.98% students neither agreed nor disagreed, 18.00% students strongly agreed, 11.92% disagreed and lastly 4.14% strongly disagreed.

In term of reason of using Facebook for education purpose, the result showed that nearly half students (42.82%) agreed that they always used Facebook for education purpose, followed by 24.82% students neither agreed nor agreed, 20.68% students strongly agreed, 9% students disagreed and 2.68% students strongly disagreed. When asked the students regarding the use of Facebook to search for the job, the result showed as follows: 36.25% students agreed, 32.36% students neither agreed nor disagreed, 13.34% students disagreed, 11.68% students strongly agreed and 6.57% students strongly disagreed.

The mean of each question regarding the reason for using Facebook were shown as follows: *'Chat with the communities'* (mean=3.62), *'Meet new people'* (mean=3.68), *'Keep up with the friends activities'* (mean=4.11), *'Stay in touch with the family'* (mean=3.41), '*Share information with the communities'* (mean=3.93), '*Find out information'* (mean=3.81), *'Entertainment'* (mean=3.86), '*Post the photos/ video'*

mean=3.54), '*I always use Facebook for education purpose'* (mean=3.70) and last question was '*Search for the job on Facebook'* (mean=3.33).

Table 4.16
Reasons for using Facebook

Reasons for using Facebook	Frequency					Mean
	1 SD	2 D	3 N	4 A	5 SA	
Chat with the communities	17 (4.14%)	43 (10.46%)	103 (25.06%)	163 (39.66%)	85 (20.68%)	3.62
Meet new people	13 (3.16%)	32 (7.79%)	103 (25.06%)	189 (45.99%)	74 (18.00%)	3.68
Keep up with the friends' activities	3 (0.73%)	12 (2.92%)	46 (11.19%)	226 (54.99%)	124 (30.17%)	4.11
Stay in touch with the family	27 (6.57%)	58 (14.11%)	118 (28.71%)	137 (33.33%)	71 (17.27%)	3.41
Share information with the communities	6 (1.46%)	26 (6.33%)	66 (16.06%)	205 (49.88%)	108 (26.88%)	3.93
Find out information	6 (1.46%)	32 (7.79%)	107 (26.04%)	154 (37.47%)	112 (27.25%)	3.81
Entertainment	2 (0.48%)	24 (5.84%)	92 (22.38%)	205 (49.88%)	88 (21.41%)	3.86
Post the photos/ videos	17 (4.14%)	49 (11.92%)	115 (27.98%)	156 (37.96%)	74 (18.00%)	3.54
I always use Facebook for education purpose	11 (2.68%)	37 (9%)	102 (24.82%)	176 (42.82%)	85 (20.68%)	3.70
Search for the job on Facebook	27 (6.57%)	54 (13.34%)	133 (32.36%)	149 (36.25%)	48 (11.68%)	3.33

Table 4.17 indicates the degree of fondness on Facebook's features and the opinion of these Facebook's features should have been imitating and implementing on LMS. The explanation of this question focused only on the percentage of students strongly, disagree, natural, agreed and strongly agreed towards Facebook's features and these listed Facebook's features should or not imitated and implemented in LMS.

In term of Facebook's news feed features, 53.28% students agreed and 16.06% strongly agreed that they liked this feature. Meanwhile, 39.66% students agreed and 18.73% strongly agreed that they liked if this feature had in LMS. Second feature was status update. 53.53% students agreed and 13.63% strongly agreed liked

Facebook's status update feature. 38.93% students agreed and 14.84% strongly agreed that Facebook's status update feature should have in LMS.

Thirdly, the students were asked about Facebook's comment feature. The total of 285 students agreed and strongly agreed that they liked Facebook's comment feature. On the other hand, the total of 235 students agreed and strongly agreed that they thought that this application should have in LMS. In term of Facebook's wall feature, 52.55% students agreed consisting 216 students and only 16.06% students strongly agreed consisting 66 students that they liked this feature.

The next question regarding this feature indicated that the total 210 students agreed and strongly agreed this feature should have in LMS. As for Facebook's notification feature, more than half students (69.82%) admitted that they liked this feature. In the meantime, the total of 255 students thought that this feature should implement in LMS. Regarding Facebook's page feature, 63.75% students totally agreed and strongly agreed that they liked this feature while about 51.82% students agreed and strongly agreed this feature should have in LMS.

With regard to Facebook's chat/message feature, 39.66% students agreed and 20.92% students strongly agreed that they liked Facebook's chat/message feature. The total of 54.74% students agreed and 22.38% students strongly agreed that this feature should have in LMS. The next question was about Facebook's friend list feature. The result indicated that 52.07% students agreed and 16.55% students strongly agreed they liked Facebook's friend list feature.

Other question regarding this feature, 159 students (38.69%) agreed and 60 students (14.60%) strongly agreed that this application should have in LMS. Regarding Facebook's events feature question, 200 (48.66%) students agreed and 84 (20.44%)

students strongly agreed that they liked this application. Second question regarding this feature revealed that the total of 242 students agreed and strongly agreed that this feature should be imitated on LMS.

In term of Facebook's attach files feature, 80.29% students consisting 330 students referred to the total of students agreed and strongly agreed that they liked this application. Meanwhile, 75.48% students (the total of students agreed and strongly agreed) thought this feature should implement in LMS. Regarding the Facebook's group, 210 (51.09%) students agreed and 104 students (25.30%) strongly agreed that they liked this feature. The next question also regarding Facebook's group revealed that 41.61% agreed and 25.79% strongly agreed that this feature should be implemented on LMS.

In term of Facebook's user profile/ personal timeline, 49.39% and 18.98% students agreed and strongly agreed respectively that they liked Facebook's user profile/personal timeline. Meanwhile, 156 students (37.96%) agreed and 76 students (18.49%) strongly agreed that this feature should have in LMS. Lastly, with the regard of Facebook's photos and video uploads/sharing, the data obtained revealed that 203 (49.39%) students agreed and 77 students (18.73%) strongly agreed that they liked this feature. Second question also regarding this feature revealed that 161 students (39.17%) agreed and 78 students (18.98%) strongly agreed that this feature should be implemented in LMS.

Overall, the result of data analysed indicated three important outcomes in this research. Firstly, only minority students strongly disagreed and disagreed in each question regarding Facebook's features. Secondly, it can be concluded that majority students liked all of these features since the total amount of students agreed and

strongly agreed were more than 50% students for each application respectively. This statement became more strengthened by referring the question regarding the degree of fondness on Facebook's features indicated that the minimum value of mean was 3.64 meanwhile the maximum value of mean was 4.08. Thirdly, it can be concluded that majority students thought that these listed Facebook's features should have in LMS since the total percentage of students agreed and strongly agreed were more than 50% students for each feature respectively.

Table 4.17
The degree of fondness on Facebook's features and the opinion of these Facebook's features should have in LMS.

Applications	**Questions**					
News Feed	I like Facebook News Feed					
	SD	D	N	A	SA	Mean
	5	27	94	219	66	3.76
	1.22%	6.57%	22.87%	53.28%	16.06%	
	Facebook News Feed should be implemented on LMS					
	SD	D	N	A	SA	Mean
	21	38	112	163	77	3.58
	5.11%	9.25%	27.25%	39.66%	18.73%	
Status Update	I like Facebook Status Update					
	SD	D	N	A	SA	Mean
	8	27	100	220	56	3.72
	1.95%	6.57%	24.33%	53.53%	13.63%	
	Facebook Status Update should be implemented on LMS					
	SD	D	N	A	SA	Mean
	24	46	120	160	61	3.46
	5.84%	11.19%	29.20%	38.93%	14.84%	
	I like Facebook Comment					
	SD	D	N	A	SA	Mean
	3	26	97	218	67	3.78
	0.73%	6.33%	23.60%	53.04%	16.30%	
	Facebook Comment should be implemented on LMS					
	SD	D	N	A	SA	Mean
	18	34	124	172	63	3.55
	4.38%	8.27%	30.17%	41.85%	15.33%	

Table 4.17(Continue)

Wall	I like Facebook Wall					
	SD	D	N	A	SA	Mean
	11	20	98	216	66	3.74
	2.68%	4.87%	23.84%	52.55%	16.06%	
	Facebook's Wall should be implemented on LMS					
	SD	D	N	A	SA	Mean
	25	40	136	150	60	3.44
	6.08%	9.37%	33.09%	36.50%	14.60%	
Notification	I like Facebook Notification					
	SD	D	N	A	SA	Mean
	9	22	93	207	80	3.83
	2.19%	5.35%	22.63%	50.36%	19.46%	
	Facebook Notification should be implemented on LMS					
	SD	D	N	A	SA	Mean
	22	32	102	164	91	3.66
	5.35%	7.79%	24.82%	39.90%	22.14%	
Page	I like Facebook Page					
	SD	D	N	A	SA	Mean
	7	27	115	198	64	3.69
	1.70%	6.57%	27.98%	48.18%	15.57%	
	Facebook's Page should be implemented on LMS					
	SD	D	N	A	SA	Mean
	22	48	128	152	61	3.44
	5.35%	11.68%	31.14%	36.98%	14.84%	
Chat/Instant Message	I like Facebook Chat/Message					
	SD	D	N	A	SA	Mean
	20	32	110	163	86	3.64
	4.87%	7.79%	26.76%	39.66%	20.92%	
	Facebook's Chat/Message should be implemented on LMS					
	SD	D	N	A	SA	Mean
	3	15	76	225	92	3.94
	0.73%	3.65%	18.49%	54.74%	22.38%	
Friend List	I like Facebook's Friend List					
	SD	D	N	A	SA	Mean
	5	22	102	214	68	3.77
	1.22%	5.35%	24.82%	52.07%	16.55%	
	Facebook's Friend List should be implemented on LMS					
	SD	D	N	A	SA	Mean
	26	48	118	159	60	3.44
	6.33%	11.68%	28.71%	38.69%	14.60%	

Table 4.17 (Continue)

Events	I like Facebook's events					
	SD	D	N	A	SA	Mean
	5	26	96	200	84	3.81
	1.22%	6.33%	23.36%	48.66%	20.44%	
	Facebook's events should be implemented on LMS					
	SD	D	N	A	SA	Mean
	15	43	111	155	87	3.62
	3.65%	10.46%	27.01%	37.71%	21.17%	
Attach Files	I like Facebook Attach Files					
	SD	D	N	A	SA	Mean
	3	13	65	196	134	4.08
	0.73%	3.16%	15.82%	47.69%	32.60%	
	Facebook's Attach Files should be implemented on LMS					
	SD	D	N	A	SA	Mean
	11	25	73	164	138	3.96
	2.68%	6.08%	17.76%	39.90%	35.58%	
Group	I like Facebook Group					
	SD	D	N	A	SA	Mean
	6	8	83	210	104	3.97
	1.46%	1.95%	20.19%	51.09%	25.30%	
	Facebook's group should be implemented on LMS					
	SD	D	N	A	SA	Mean
	12	33	89	171	106	3.79
	2.92%	8.03%	21.65%	41.61%	25.79%	
User Profile/ Personal Timeline application	I like Facebook's User Profile/ Personal Timeline					
	SD	D	N	A	SA	Mean
	9	17	104	203	78	3.79
	2.19%	4.14%	25.30%	49.39%	18.98%	
	Facebook's User Profile/Personal Timeline should be implemented on LMS					
	SD	D	N	A	SA	Mean
	25	50	104	156	76	3.51
	6.08%	12.17%	25.30%	37.96%	18.49%	
Photos and Video Uploads/ Sharing	I like Facebook Photos and Video Uploads/ Sharing					
	SD	D	N	A	SA	Mean
	10	16	105	203	77	3.78
	2.43%	3.89%	25.55%	49.39%	18.73%	
	Facebook's Photos and Video Uploads/ Sharing should be implemented on LMS					
	SD	D	N	A	SA	Mean
	24	41	107	161	78	3.55
	5.84%	9.98%	26.03%	39.17%	18.98%	

4.10 Descriptive Statistics for Each Variable and Dimension

The descriptive statistics for each variable and dimension was very important since it can give the researcher a detailed form of idea on how the respondents in particular sample answered to the set of questionnaire with the regard to the study (Sekaran & Bougie, 2010). As for this study, a descriptive analysis was conducted in order to find out the descriptive statistics for each variable (PE, EE, SI, FC and BI), dimensions (content, accuracy, format and timeliness) and overall dimension of EUCS. Based on table 4.18, it can be concluded that all variables and dimensions had the mean in the range of 3.63 until 3.76. Meanwhile, all variables and dimensions had the standard deviation in the range of 0.61 until 0.80.

Table 4.18
Descriptive Statistics for Each Variable and Dimension

Variables	Number of Items	Mean	Standard Deviation
Independent Variables			
Performance Expectancy	7	3.66	0.62
Effort Expectancy	6	3.76	0.61
Social Influence	5	3.64	0.78
Facilitating Condition	6	3.63	0.61
Overall dimension			
Satisfaction	17	3.66	0.69
Each Dimension in Mediator Variable			
Content	4	3.69	0.65
Accuracy	4	3.30	0.80
Format	5	3.76	0.63
Timeliness	4	3.66	0.69
Dependent Variable			
Behavioural Intention	5	3.66	0.74

4.11 Assessment of PLS-SEM Path Model Results

Comparing with the CB-SEM, the PLS-SEM does not consider the condition of global goodness-of-fit (GoF) index. Practically, a latest study conducted by Henseler and Sarstedt (2013) recommend that the goodness-of-fit (GoF) index was not appropriate for model validation-ergo, this study does not evaluate the value of global goodness-of-fit (GoF). According to Hair, Ringle and Sarstedt (2013), the

model validation based on the goodness-of-fit index (GoF) was not suitable since it cannot differentiate the valid and invalid models. In the recent research world, numerous papers regarding on how to report the CBSEM analyses compared not so much for PLS-SEM analyses (Chin, 2010). Despite of lacking of papers regarding the method to report the PLS-SEM analyses, this study employed two-step assessment that was suggested by Henseler, Ringle and Sinkovics (2009) i.e. the measurement model assessment and the structural model assessment.

4.12 Assessment of Measurement Model

Based on Hair et al. (2014) and Henseler et al. (2009), five assessment included in the measurement model assessment i.e. individual item reliability, internal consistency reliability, content validity, convergent validity and discriminant validity.

4.12.1 Individual Item Reliability

Individual item reliability was determined by evaluating the outer loadings of each item in latent variable (Hair et al., 2014). According to Vinzi, Trinchera and Silvano (2010), the rule of thumb for retaining items with outer loadings should be 0.50 and above. In this study, all 46 items were retained since they had outer loadings more than 0.50 in the cohort of 0.703 until 0.900. The table 4.19 that follows displays the result of outer loading in each item of latent variable. Meanwhile, Figure 4.3 shows the measurement model with the items' loading value of each latent variable.

Table 4.19

The Result of Each Item's Outer Loading of Latent Variable.

Variable/Dimension	Items	Outer Loadings
Accuracy-Satisfaction	IAY01	0.835
	IAY02	0.865
	IAY03	0.834
	IAY04	0.842
BI	IBI01	0.842
	IBI02	0.868
	IBI03	0.859
	IBI04	0.810
	IBI05	0.828
Content-Satisfaction	ICT01	0.801
	ICT02	0.837
	ICT03	0.862
	ICT04	0.820
EE	IEE01	0.748
	IEE02	0.820
	IEE03	0.779
	IEE04	0.797
	IEE05	0.822
	IEE06	0.711
FCs	IFC01	0.751
	IFC02	0.787
	IFC03	0.761
	IFC04	0.765
	IFC05	0.778
	IFC06	0.756
Format-Satisfaction	IFT01	0.810
	IFT02	0.793
	IFT03	0.828
	IFT04	0.811
	IFT05	0.786
PE	IPE01	0.777
	IPE02	0.790
	IPE03	0.782
	IPE04	0.754
	IPE05	0.797
	IPE06	0.799
	IPE07	0.722
SI	ISI01	0.861
	ISI02	0.896
	ISI03	0.893
	ISI04	0.900
	ISI05	0.877
Timeliness-Satisfaction	ITS01	0.813
	ITS02	0.862
	ITS03	0.865
	ITS04	0.703

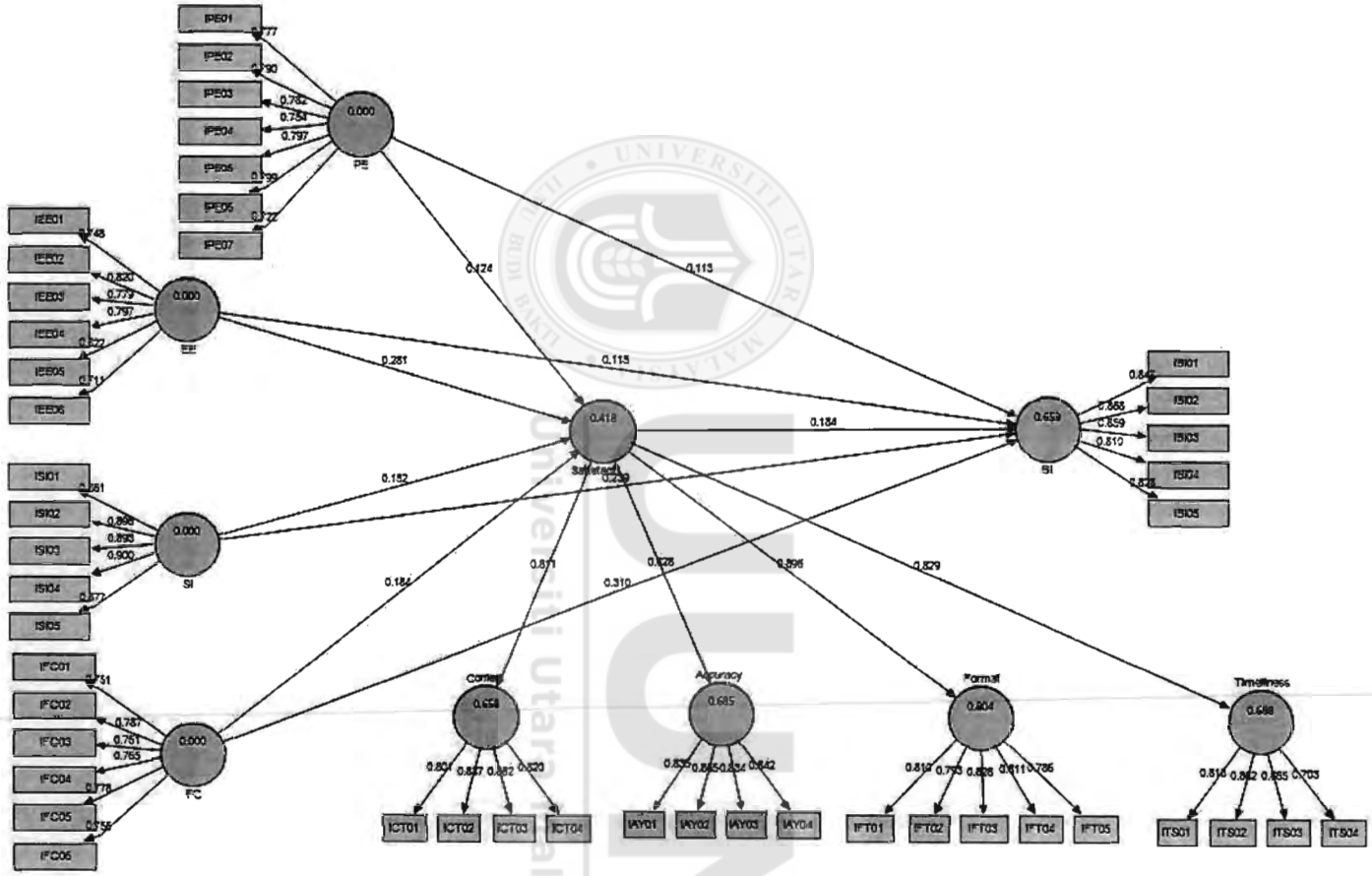

Figure 4.1
Measurement Model

4.12.2 Internal Consistency Reliability

Based on Sun, Chou, Stay, Unger and Gallaher (2007), Internal Consistency Reliability was defined as the degree to which all items were appropriate can be used to evaluate the same construct. The Internal Consistency Reliability was assessed by looking either at Cronbach's Alpha coefficient or Composite Reliability coefficient. But this study looked at the value of composite reliability coefficient in order to assess the Internal Consistency Reliability because of two reasons. The Cronbach's Alpha value can be interpreted in the same way as the Composite Reliability value.

Firstly, according to Gotz, Liehr-Gobbers and Krafft (2010), there was more biased estimate on Cronbach's Alpha coefficient compares Composite Reliability coefficient since Cronbach's Alpha coefficient predicts the contribution between all items towards its construct was equal regardless of the actual contribution of individual loadings. Secondly, the over and under estimation of scale reliability may not occur if using the Composite Reliability because the each item had different loadings. Based on the rule of thumb by Hair et al. (2011) regarding on how to interpret of ICR by using composite reliability coefficient, the value of Composite Reliability should be 0.70 and more. As far this study was concerned, the coefficient value of composite reliability for each latent constructs in the cohort of 0.886 until 0.948 as shown on Table 4.20 (Bagozzi & Yi, 1988 Fornell & Larcker, 1981; Hair et al., 2011).

Table 4.20
The Value of Composite Reliability for Each Latent Construct

Dimension/Variable	Items	Composite Reliability
Accuracy-Satisfaction	IAY01	0.908
	IAY02	
	IAY03	
	IAY04	

Table 4.20 (Continue)

BI	IBI01	0.924
	IBI02	
	IBI03	
	IBI04	
	IBI05	
Content-Satisfaction	ICT01	0.899
	ICT02	
	ICT03	
	ICT04	
EE	IEE01	0.903
	IEE02	
	IEE03	
	IEE04	
	IEE05	
	IEE06	
FCs	IFC01	0.895
	IFC02	
	IFC03	
	IFC04	
	IFC05	
	IFC06	
Format-Satisfaction	IFT01	0.902
	IFT02	
	IFT03	
	IFT04	
	IFT05	
PE	IPE01	0.913
	IPE02	
	IPE03	
	IPE04	
	IPE05	
	IPE06	
	IPE07	
SI	ISI01	0.948
	ISI02	
	ISI03	
	ISI04	
	ISI05	
Timeliness-Satisfaction	ITS01	0.886
	ITS02	
	ITS03	
	ITS04	

4.12.3 Convergent Validity

According to Fornell and Larcker (1981), in order to test the establishment of convergent validity of the research, the researchers need to evaluate the value of Average Variance Extracted (AVE) for every latent construct. Average Variance Extracted (AVE) was defined as the extent to which the variance among the particular latent construct items (Hair, Anderson, Tatham, & Black, 1998). The AVE value of each latent construct should be 0.50 and more (Chin, 1998). As could be seen in Table 4.20, each latent construct in this research obtain more than 0.50 in the range of 0.588 until 0.784 proofing adequate convergent validity.

Table 4.21
The Value of AVE for Every Latent Construct

Dimension/Variable	AVE
Accuracy-Satisfaction	0.712
BI	0.709
Content-Satisfaction	0.690
EE	0.609
FCs	0.588
Format-Satisfaction	0.649
PE	0.600
SI	0.784
Timeliness-Satisfaction	0.662

4.12.4 Discriminant Validity

The discriminant validity test was very apt as this test is done in order to know the degree to which the measurement items do not correlate and should be dissimilar with other variable (Duarte & Raposo, 2010). As suggested by Gefen and Straub (2005), the discriminant validity property was tested by implementing two different methods. First method to test the discriminant validity is by looking at the loadings on that latent construct and cross loading of indicators on variable as the loading should 0.10 and more on that latent construct while for cross loadings, all items value

on that particular variable should be more than all items of other variables. In this study, it can be seen in Table 4.22 that all items on its intended latent construct obtain loadings more than 0.10 and all indicators value on that particular variable more than all items of other variables.

Table 4.22
Cross Loadings of the Items

Item	AY	BI	CT	EE	FC	FT	PE	SI	TS
IAY01	**0.835**	0.365	0.485	0.301	0.332	0.480	0.262	0.382	0.473
IAY02	**0.865**	0.428	0.469	0.345	0.344	0.578	0.312	0.353	0.507
IAY03	**0.834**	0.500	0.486	0.420	0.393	0.585	0.370	0.412	0.491
IAY04	**0.842**	0.483	0.446	0.370	0.436	0.548	0.364	0.422	0.511
IBI01	0.468	**0.842**	0.465	0.572	0.628	0.412	0.505	0.572	0.421
IBI02	0.470	**0.868**	0.459	0.572	0.634	0.417	0.538	0.634	0.391
IBI03	0.444	**0.859**	0.524	0.570	0.637	0.440	0.535	0.607	0.422
IBI04	0.366	**0.810**	0.425	0.548	0.573	0.427	0.487	0.557	0.367
IBI05	0.465	**0.828**	0.490	0.584	0.586	0.461	0.556	0.553	0.365
ICT01	0.416	0.517	**0.801**	0.532	0.507	0.484	0.516	0.429	0.401
ICT02	0.395	0.465	**0.837**	0.542	0.455	0.536	0.485	0.404	0.433
ICT03	0.511	0.454	**0.862**	0.495	0.501	0.581	0.465	0.421	0.502
ICT04	0.525	0.438	**0.820**	0.432	0.419	0.500	0.434	0.384	0.486
IEE01	0.366	0.532	0.466	**0.748**	0.542	0.431	0.649	0.511	0.399
IEE02	0.298	0.560	0.492	**0.820**	0.551	0.413	0.611	0.535	0.390
IEE03	0.252	0.458	0.421	**0.779**	0.480	0.398	0.521	0.452	0.300
IEE04	0.332	0.531	0.420	**0.797**	0.551	0.333	0.576	0.525	0.384
IEE05	0.355	0.556	0.523	**0.822**	0.553	0.427	0.610	0.542	0.420
IEE06	0.381	0.517	0.475	**0.711**	0.510	0.377	0.487	0.488	0.329
IFC01	0.312	0.561	0.439	0.549	**0.751**	0.346	0.521	0.582	0.312
IFC02	0.348	0.574	0.448	0.550	**0.787**	0.338	0.481	0.570	0.297
IFC03	0.310	0.496	0.421	0.491	**0.761**	0.306	0.479	0.484	0.343
IFC04	0.392	0.503	0.414	0.470	**0.765**	0.350	0.403	0.565	0.369
IFC05	0.334	0.578	0.437	0.525	**0.778**	0.338	0.486	0.526	0.324
IFC06	0.356	0.618	0.440	0.547	**0.756**	0.356	0.439	0.493	0.334
IFT01	0.596	0.450	0.512	0.422	0.390	**0.810**	0.340	0.392	0.575
IFT02	0.459	0.389	0.486	0.381	0.321	**0.793**	0.355	0.291	0.518
IFT03	0.502	0.378	0.491	0.392	0.332	**0.828**	0.336	0.319	0.504
IFT04	0.552	0.422	0.553	0.414	0.370	**0.811**	0.361	0.375	0.548
IFT05	0.502	0.420	0.508	0.440	0.368	**0.786**	0.382	0.329	0.614
IPE01	0.332	0.511	0.490	0.575	0.529	0.408	**0.777**	0.462	0.329
IPE02	0.278	0.439	0.481	0.552	0.436	0.335	**0.790**	0.397	0.284
IPE03	0.287	0.450	0.436	0.535	0.432	0.325	**0.782**	0.437	0.292

Table 4.22 (Continue)

IPE04	0.209	0.420	0.369	0.558	0.447	0.312	**0.754**	0.418	0.276
IPE05	0.401	0.593	0.443	0.616	0.535	0.335	**0.797**	0.565	0.347
IPE06	0.335	0.512	0.458	0.597	0.485	0.366	**0.799**	0.435	0.350
IPE07	0.220	0.417	0.402	0.581	0.422	0.294	**0.722**	0.395	0.246
ISI01	0.413	0.615	0.449	0.595	0.607	0.354	0.548	**0.861**	0.347
ISI02	0.419	0.618	0.421	0.581	0.591	0.375	0.489	**0.896**	0.372
ISI03	0.405	0.599	0.419	0.563	0.620	0.352	0.500	**0.893**	0.364
ISI04	0.425	0.629	0.449	0.572	0.641	0.396	0.494	**0.900**	0.416
ISI05	0.394	0.616	0.442	0.586	0.640	0.403	0.531	**0.877**	0.408
ITS01	0.498	0.387	0.377	0.345	0.335	0.535	0.296	0.341	**0.813**
ITS02	0.504	0.388	0.459	0.380	0.372	0.570	0.326	0.374	**0.862**
ITS03	0.522	0.375	0.492	0.408	0.362	0.586	0.337	0.349	**0.865**
ITS04	0.376	0.373	0.461	0.424	0.327	0.539	0.329	0.338	**0.703**

PE	Performance Expectancy	AY	Accuracy
EE	Effort Expectancy	FT	Format
SI	Social Influence	TS	Timeliness
FC	Facilitating Conditions	CT	Content

Secondly, the discriminant validity can be tested by squaring roof of AVE for it intended latent construct and comparing this AVE value with the correlations between latent constructs. In attempt to ratify the discriminant validity, this AVE value must be greater than others correlation of latent constructs value in the same row and columns (Fornell & Larcker, 1981; Gefen & Straub, 2005). Based on table 4.23, the findings point to the fact that the discriminant validity is supported since the value of square root of AVE was greater than the latent construct correlations value in the same row and columns.

Table 4.23
Latent Variable Correlations and Square Roots of AVE

	Variable/Dimension	1	2	3	4	5	6	7	8	9
1	AY	**0.844**								
2	BI	0.527	**0.842**							
3	CT	0.559	0.562	**0.830**						
4	EE	0.426	0.676	0.600	**0.781**					
5	FC	0.447	0.727	0.566	0.682	**0.767**				
6	FT	0.650	0.512	0.634	0.509	0.443	**0.806**			
7	PE	0.388	0.623	0.570	0.741	0.611	0.440	**0.775**		
8	SI	0.464	0.695	0.493	0.654	0.700	0.425	0.579	**0.886**	
9	TS	0.587	0.467	0.551	0.478	0.430	0.686	0.396	0.431	**0.813**

AY: Accuracy BI: Behavioural Intention
PE: Performance Expectancy CT: Content
SI: Social Influence EE: Effort Expectancy
TS: Timeliness FC: Facilitating Condition

4.13 Second Order Construct Establishment

One of the latent constructs i.e. EUCS on this theoretical model was the high-order model. Informed by these, the test for second order construct which contains two layers of latent constructs should be done if the latent construct was higher-order models (Hair, Hult, Ringle & Sarstedt, 2013). In this study, EUCS model represented as mediator variable. The review towards the related past studies and on existing theoretical basic, it was showed that EUCS model was high order construct as this model consisted two layers of latent constructs. In attempt to test this model as mediator variable, it was very imperative to consider and test it as a second order measurement model which containing five dimensions as first order measurement model i.e. Content, Accuracy, Timeliness, Format and Ease of Use. As mentioned earlier, only *'Ease of Use'* is dismissed from this model because this dimension was similar characteristic with *'Effort Expectancy'* variable. In term of calculation aspect, in this study, the evaluation of satisfaction was done by calculating each loading of first order constructs as its indicators which was content, accuracy, timeliness and format. Meanwhile, according to Byrne (2010), it was vital to deeply explain

regarding the hypothesis of second order construct and it was expected the relationship between the dimensions are different as the path way to consider first order constructs and then theoretically explained by the second order construct. On the other hand, before evaluating the model, it was vital to confirm the qualification of first order constructs were fulfilled and then can be explained in terms of a concept by second order construct. Informed by these, Table 4.24 displays the result relating to development of satisfaction as the second order construct in this study. The result showed that the value of R^2 for four first-orders constructs i.e. Content, Accuracy, Format and Timeliness in the cohort of 65.8% until 80.4%. As explained in previous part, it can be proved that the establishment of first order constructs was qualified enough under designated consideration. In addition, the distinct nature of relationship between these dimensions strengthens the statement that the second order construct in this study was established well. It can be clearly seen that the relationship between the dimensions were definitely different as EUCS as a second order construct was developed and explained well by four first-order constructs. As such, the establishment of second order constructs also was qualified enough under designated consideration (AVE $\geq$ 0.50; CR $\geq$ 0.70) and the value of R^2 was 0.418.

Table 4.24
The Development of Second Order Construct

Second Order Construct	First Order Construct	Loading	Std. Error	T Value	P Value	R Square	Second Order Construct		
Satisfaction	Content	0.811	0.021	40.361	0.00	0.658	AVE	CR	R^2
	Accuracy	0.828	0.019	47.319	0.00	0.685	0.708	0.907	0.418
	Format	0.896	0.010	87.469	0.00	0.804			
	Timeliness	0.829	0.019	45.068	0.00	0.688			

4.14 Assessment of Significance of the Structural Model

After determining the measurement model, next analyses were to evaluate the structural model. In order to assess the structural model of this study, the standard bootstrapping procedure was applied with a total number of 1000 bootstrap samples meanwhile 411 cases to determine the significance of path coefficients (Hair et al., 2014). In view of that, Figure 4.4 presents the estimates for full structural model, which includes mediator variable (i.e. EUCS).

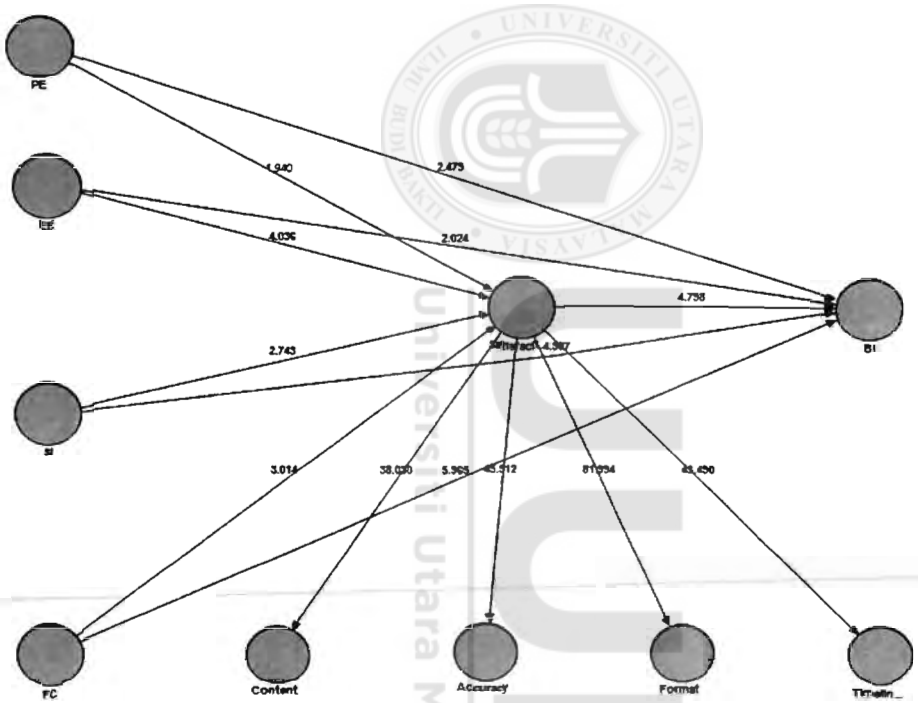

Figure 4.4
Structural Model with Mediator (Full Model)

4.14.1 Assessment of Variance Explained in the Endogenous Latent Variables

One of the crucial criterions for evaluating the structural model in PLS-SEM was the value of R^2 and it was also recognized as the assessment of the coefficient (Henseler et al., 2009). According to Elliott and Woodward (2007) and Hair et al. (2010), the value of R^2 indicated the proportion of variation in the endogenous variable (s) that can be explained by more than one exogenous variable. In despite of the value of R^2 rely on the context of study, Falk and Miller (1992) state that the value of R^2 (0.10) still can be acceptance as a minimum acceptable level. On the other hand, Chin (1998) proposed that the R^2 value of 0.67, 0.33 and 0.19 in PLS-SEM can be regarded as substantial, moderate and weak respectively. Table 4.25 indicates that the R^2 value of endogenous latent variables i.e. EUCS and BI. The R^2 value for all four independent variables i.e. PE, EE, SI and FC collectively was able to influence 41.8% of the changes in the EUCS and then all exogenous variable put together explain 65.3% of the variance of the BI.

Table 4.25
Variance Explained in the Endogenous Latent Variables

Endogenous Latent Variable	Variance Explained (R^2)
Satisfaction	0.418
BI	0.6530

4.14.2 Assessment of Effect Size (f^2)

According to Chin (1998), effect size refers to the relative effect of a particular latent variable on endogenous latent variable by referring towards the change in the R-squared. For better understanding, based on this research, the effect size of PE can be calculated by determining the R-squared value of BI with the absence and presence of PE. Hence, the effect size can be calculated by following this formula (Selya, Rose, Dierker, Hedeker & Mermelstein, 2012):

$$f^2 = \frac{R^2_{included} - R^2_{excluded}}{1 - R^2_{included}}$$

After calculating by using the above formula, Table 4.25 that follows displays the result of the effect size f^2 of the nine hypotheses. According to Cohen (1988), the obtained value of 0.02 was considered as weak meanwhile 0.15 and 0.35 had moderate and strong effects respectively. As shown in table 4.26, eight out of nine posit a small strength of f^2 while there is no effect on one of the relationships. Although, majority of hypotheses obtained just a small strength of f^2, this small strength of relationship is still important. As stated by Chin et al. (2003), even though the small strength of effect size should be taken into consideration since these independent variables still have an effect on the dependent variable.

Table 4.26
Relationship Effect Size and Rating

Predictors	R-Squared	Included	Excluded	f-squared	Effect Size
PE	BI	0.653	0.647	0.02	Small
EE		0.653	0.648	0.01	None
SI		0.653	0.628	0.07	Small
FCs		0.653	0.614	0.11	Small
EUCS		0.653	0.633	0.06	Small
PE	EUCS	0.418	0.411	0.01	Small
EE		0.418	0.391	0.05	Small
SI		0.418	0.408	0.02	Small
FCs		0.418	0.404	0.02	Small

4.14.3 Predictive Relevance of the Model

The predictive relevance of the model was done in order to determine the ability of the model to predict the endogenous variables besides the quality of model as buttressed by Hair et al. (2010). In order to test the predictive relevance of the model in using PLS-SEM 2, the blindfolding procedure must be done by implementing the Stone-Geisser test (Geisser, 1974; Stone, 1974). Since the endogenous latent variable in this model was a reflective measurement model, the blindfolding procedure can be applied to test the predictive relevance of the model (Sattler, Völckner, Riediger &

Ringle, 2010) (p.320). Specifically, a value of cross-validated redundancy (Q^2) obtained after running blindfolding was used to assess the predictive relevance of the research model (Chin, 2010; Geisser, 1974; Hair et al., 2013; Ringle, Sarstedt, & Straub, 2012; Stone, 1974). As seen in column four (Table 4.27), the predictive relevance of EUCS and BI were 0.199 and 0.460 respectively. The value of Q^2 was more than zero proved that this research model had predictive relevance (Henseler et al. 2009).

Table 4.27
Cross-Validated Redundancy

Construct	R^2	SSO	SSE	1-SSE/SSO (Q^2)
Satisfaction	0.418	6987	5594.982	0.199
Behavioural Intention	0.6530	2055	1109.654	0.460

4.14.4 Alternative Models

This subsection discusses the vital ramifications of the integration of acceptance and satisfaction model. As quoted by Wixom and Todd (2005), it was claimed that the behavioural belief was strong predictor compare to the satisfaction towards system characteristics on the behaviour of interest (Fishbein & Ajzen, 1975). In addition, the integration between acceptance and satisfaction increase the value of variance in the endogenous variable. Thus, in order to prove the aptness of proposed research model, the alternative models were evaluated as the aim to examine the degree of each predictor and explain the impact of using intention and satisfaction as an endogenous variable towards all four cores UTAUT factors separately.

Firstly, the model was examined separately on the direct determinants relationship between all four cores UTAUT factors towards BI and next EUCS as an endogenous variable. The output showed that the value of R^2 when setting the BI as an endogenous variable was 0.634. Meanwhile, the value of R^2 was lower when

replacing EUCS (0.418) as an endogenous variable. The path coefficients were significantly higher for using the BI as an endogenous variable except for EE. The result indicated there were positive and significant relationship between PE (0.136), EE (0.164), SI (0.266) and FC (0.347) towards the students' BI in using Facebook as e-Learning tool. Meanwhile, the EUCS was positively and significantly influenced by PE (0.124), EE (0.282), SI (0.151) and FC (0.184).

Secondly, the direct relationship between satisfaction and intention was tested without the presence of all four cores UTAUT factors. The explanatory power for intention was 0.376 and the path coefficient was generally big (0.614). Next, the model was tested in term of direct relationship between all four cores UTAUT factors to EUCS and BI. The output showed that the value of R^2 increased from 0.634 to 0.653. However, the value of path coefficients generally decreases as shown in table 4.28.

Based on the result, it can be concluded the integration of satisfaction and acceptance model increased the exploratory power on the behaviour of interest and in parallel with the study was conducted by Wixom and Todd (2005). But, the value of path coefficients between the variables generally decreased. Again, it also proved that the behavioural belief was strong predictors compared the satisfaction towards system characteristics (object-based belief) on the behaviour of interest. Also, this result supported the statement by Wixom and Todd (2005) that technology acceptance to usage was evidenced by many studies to be a stronger predictor of system usage compared user satisfaction to usage.

Table 4.28
The Result of Alternative Models

	UTAUT	Satisfaction	All Factors
Intention R^2	0.634	0.376	0.653
Satisfaction R^2	0.418		
	UTAUT→Intention (Only)		
Performance Expectancy	0.136*		0.113
Effort Expectancy	0.164*		0.115
Social Influence	0.266*		0.239
Facilitating Conditions	0.347*		0.310
	UTAUT→Satisfaction (Only)		
Performance Expectancy	0.124*		0.124
Effort Expectancy	0.282*		0.281
Social Influence	0.151*		0.152
Facilitating Conditions	0.184*		0.184
Overall Satisfaction		0.614	0.184

4.15 Hypothesis Testing

Towards the aim to determine all hypotheses in this study, the model must be assessed in two criteria with are the value of path coefficients and path significant. The value of path coefficients (β) and path significant (p-value) can be obtained by running PLS algorithm and bootstrapping using PLS SEM 2.0 respectively. The bootstrapping was run by inserting 1000 bootstrap samples which were bigger than the actual sample size of this study as suggested by Hair et al. (2013) to get t-value.

4.15.1 Testing for Direct Hypotheses

As exhibited in Table 4.29, interestingly, the test results showed that all hypotheses in this study were found to be accepted and positive significant relationship. The result of H1.a proves that there was a significant positive relationship between PE and BI at 0.01 level of significance (β=0.113, t=2.479, p<0.01). Second, H2.a indicated that there was a significant positive relationship between EE and BI at 0.05 level of significance (β=0.115, t=2.024, p<0.05). The H3.a and H4.a were found to be supported wherein SI (β=0.239, t=4.907) and FC (β=0.310, t=5.965) respectively indicated a significant positive relationship with BI at 0.01 level of significance.

Thereafter, H1.b was found to be accepted since there was a significant positive relationship between PE and EUCS (β=0.124, t=1.940) at 0.05 level of significance. At 0.01 level of significance, the hypotheses H2.b, H3.b H4.b were found to be supported since the EUCS was seen to be positively influenced by EE (β=0.281, t=4.036, p<0.01), SI (β=0.152, t=2.743) and FC (β=0.184, t=3.014). Last but not least, H5 was supported possessing that BI was positively impacted by EUCS (β=0.184, t=4.798, p<0.01) at 0.01 level of significance.

Table 4.29
The Test Result of Direct Hypotheses

Hypo.	Relationship	Path Coefficient	Standard Error	T Value	p-value	Decision
H1.a	PE -> BI	0.113	0.046	2.479	0.01	Supported
H2.a	EE -> BI	0.115	0.057	2.024	0.02	Supported
H3.a	SI -> BI	0.239	0.049	4.907	0.00	Supported
H4.a	FC -> BI	0.310	0.052	5.965	0.00	Supported
H1.b	PE -> Satisfaction	0.124	0.064	1.940	0.03	Supported
H2.b	EE -> Satisfaction	0.281	0.070	4.036	0.00	Supported
H3.b	SI -> Satisfaction	0.152	0.055	2.743	0.00	Supported
H4.b	FC -> Satisfaction	0.184	0.061	3.014	0.00	Supported
H5	Satisfaction -> BI	0.184	0.038	4.798	0.00	Supported

p<0.01** and p<0.05*

4.15.2 Testing for Mediating Effects

According to Ramayah et al. (2004), the mediation assessment was done in order to evaluate either the mediator variable extends the effects of the predictor variable towards the endogenous variable. Meanwhile, Hair et al. (2013) stated the mediating effect was the situation when the relationship between two latent constructs were interrupted by a third latent construct (mediator variable). As the fact, there were many methods to test mediation that always be used by the researchers such as Sobel (1982) developed Sobel test and Baron and Kenny (1986) that came out with an idea of three conditions to evaluate the existence of mediation. Then, MacKinnon, Lockwood and Williams (2004) developed product distribution method and latest the

bootstrapping method (Hayes, 2009; Preacher & Hayes, 2004). This study employed re sampling mediation technique which is the bootstrapping method (Hayes, 2009). According to Hair et al. (2004), the bootstrapping method (Preachers & Hayes, 2004; 2008) is a powerful tool for mediation analysis. Besides, this method is also rigor (Hayes, 2009; Shoroud & Bolger, 2002). The advantage of bootstrapping method was this method involved the use of standard errors meanwhile otherwise for the Baron and Kenny (1986) technique is not included the standard error or the size of the indirect effect of the independent on the dependent variables (Hayes & Preacher, 2010; (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002). The bootstrap method affords greater statistical power meanwhile Sobel Test is low statistical power because of the product of indirect effect is not normally distributed (MacKinnon et al., 2002).

In order to assess the mediating effect by referring Hayes and Preacher (2009) approach, the search for path coefficients and bootstrapping that used standard errors must be determined. There were three links that must be determined which were ***a*** representing the path effect of independent variable to the mediator variable relationship (X-M), ***b*** representing the path effect of mediator variable to the dependent variable (M-Y). Lastly, the assessment of indirect effect ***a*b*** was evaluated. The calculation (Appendix I) was done to determine the bootstrap result of the indirect effect ***(a*b).*** According to Table 4.30, it can be seen that all the hypotheses from H1.c until H4.c are supported as having mediating effect in this study since all the product ***a*b*** are significant at 5%.

Table 4.30

Result of Mediating Hypotheses using Bootstrapping Method

Hypo.	Relationship	a			b			a*b				Decision
		Path Coefficient	t-value	p-value	Path Coefficient	t-value	p-value	Path Coefficient	t-value	p-value	Std.Error	Mediation
H1.c	PE→Satisfaction→BI	0.124	1.940	0.03	0.184	4.798	0.00	0.023	1.860	0.03*	0.012	Mediation
H2.c	EE→Satisfaction→BI	0.281	4.036	0.00	0.184	4.798	0.00	0.052	2.955	0.00**	0.018	Mediation
H3.c	SI→Satisfaction→BI	0.152	2.743	0.00	0.184	4.798	0.00	0.028	2.411	0.01**	0.012	Mediation
H4.c	FC→Satisfaction→BI	0.184	3.014	0.00	0.184	4.798	0.00	0.034	2.444	0.01**	0.014	Mediation

*$p<0.01$** $p<0.05$**

4.15.3 Testing for Control Variable Effect

Besides the test of the proposed relationship between the predictor variables and criterion variable, this study also examined the significant effect of control variable (i.e. gender) on the research model. As emphasized by Klarner, Sarstedt, Hoeck and Ringle (2013), the control variable was not really important on the research but it was treated as same as exogenous variable. Before running the data on Smart PLS SEM, the control variable need to be changed to dummy variable by coding 0 for male and 1 for female. Based on Table 4.31, the result indicates that the path from the control variable i.e. gender to the endogenous variable (BI) was not significant ($p>0.05$). Meanwhile, the value of R^2 was not significantly different.

Table 4.31
Testing for Control Variable

Path	Path Coefficient	Std. Error	t-value	p-value	R^2
Gender→Behavioural Intention	0.026	0.028	0.857	0.20	0.653

4.16 Summary of Findings

A summary of the findings results of the hypotheses test are indicated including main and mediating effects in Table 4.32.

Table 4.32
Summary of Hypotheses Testing

Hyp.	Hypothesized Path	Decision
H1.a	There is a positive significant relationship between PE and the student's BI use Facebook as e-learning tool	Supported
H1b	There is a positive significant relationship between PE and EUCS to use Facebook as e-learning tool	Supported
H1.c	EUCS mediates the relationship between PE and the student's BI to use Facebook as e-learning tool	Mediation
H2.a	There is a positive significant relationship between EE and the student's BI to use Facebook as e-learning tool	Supported
H2.b	There is a positive significant relationship between EE and EUCS to use Facebook as e-learning tool	Supported
H2.c	EUCS mediates the relationship between EE and the student's BI to use Facebook as e-learning tool	Supported
H3.a	There is a positive significant relationship between SI and the student's BI to use Facebook	Supported
H3.b	There is a positive significant relationship between SI and EUCS as e-learning tool	Supported
H3.c	EUCS mediates the relationship between SI and BI to use Facebook as e-learning tool	Mediation
H4.a	There is a positive significant relationship between FC and the student's BI to use Facebook as e-learning tool	Supported
H4.b	There is a positive significant relationship between FC and EUCS to use Facebook as e-learning tool	Supported
H4.c	EUCS mediates the relationship between FC and the student's BI to use Facebook as e-learning tool	Mediation
H5	There is a positive significant relationship between EUCS and the student's BI to use Facebook as e-learning tool	Supported

4.17 Summary

This chapter was the most crucial among all chapters. It was because this chapter presented the results of data analysis. The chapter began with the presentation of the results of data screening, initial data examination and data preparation. Next, the result of non-response bias assessment, CMV test and goodness of measurement were reported. Detailed demographic profile of the respondents, descriptive statistics of Facebook usage among the respondents and descriptive statistics for each variable and dimension were duly presented. All of these analyses are conducted by using SPSS 19.0. Lastly, PLS SEM analysis was employed in order to assess the measurement and structural model besides testing for direct hypotheses, mediating effects and control variable effect. The direct causal relationships showed that PE, EE, SI and FC were significant positive of satisfaction as well as BI in using Facebook as hypothesized. The satisfaction also had significant and positive impacts on BI. In regard with the testing for mediating effect, all hypotheses were supported. On the other hand, the result indicated that the path from the control variable i.e. gender to the endogenous variable (BI) was not significant ($p>0.05$). In addition, the value of R^2 was not significantly different.

CHAPTER FIVE

DISCUSSION AND CONCLUSION

5.0 Chapter Overview

The last chapter begins with the discussion regarding the analytical results that was gathered in previous chapter. In light of the above, the discussion was summarized into conclusions. Then, the theoretical and practical contribution of the study was highlighted. Next, limitations of the study are presented. Based on these study's limitations, the suggestions were presented for further studies. This chapter was ended by the conclusion of the study.

5.1 Recapitulation of the study

The main purpose of this study is to determine the mediating effect of user satisfaction on the relationship between PE, EE, SI, FC on EUCS and BI in using Facebook as technology alternative for e-Learning tool. In the line with the findings, this study has succeeded to determine and understanding the key determinants of BI in using Facebook among the students as e-Learning tool. Besides Furthermore, it also emerged out that this study achieved to answers the following research questions: (1) Do four factors of UTAUT have an effect on the students' BI to use Facebook as e-Learning tool? (2) Do the four factors of UTAUT have an effect on the EUCS to use Facebook? (3) Does the EUCS have an effect on the students' BI to use Facebook as e-Learning tool? (4) Does the mediate the relationship between four factors of UTAUT and the students' BI to use Facebook as e-Learning tool?

With respect to the direct relationship between independent variable and dependent variable, the findings of this study revealed that all five hypotheses were supported.

The results of PLS path model indicated there is a significant positive relationship between PE on satisfaction and also BI. Besides, the result proved that EEwas significantly and positively related to satisfaction and also BI. SI was found to be significantly and positively related satisfaction as well as BI. Lastly, FC was also found to be significantly and positively related to EUCS as well as BI.

Regarding to EUCS as the mediator on the relationship between independent variables and dependent variable, the obtained results revealed that all four hypotheses were partial supported. Firstly, user satisfaction was found to mediate the relationship between PE and BI. Secondly, it was also found that the EUCS mediates the relationship between EE and BI. Next, the result also proved that the relationship between SI and BI was mediated by user satisfaction. Lastly, EUCS was also found to mediate the relationship between FC and BI.

5.2 Discussion of Findings

In order to have a clearer picture, this section explains the findings of the study. In line with these findings, all related and relevant theories and previous research findings were discussed in order to support all hypotheses. Meanwhile, each subheading is constructed based on the research questions.

5.2.1 Direct Effects of Independent Variables on Dependent Variable

As mentioned earlier in chapter one, the first objective of this study is to evaluate the effect of four factors of the UTAUT (i.e. PE, EE, SI and FC) on the student's BI to use Facebook. The output of this study reveals that the PE, EE, SI, FC are the robust predictors of the undergraduate students' BI to use Facebook as e-Learning tool. In this study, FCs proved to exert the strongest influence ($\beta = 0.310$, $p < 0.001$),

followed by SI (β=0.238, p<0.01), EE (β=0.115, p<0.01) and lastly PE (β=0.113, p<0.01).

5.2.1.1 Performance Expectancy and Behavioural Intention

In this scope of study, PE is defined as the extent to which the students' BI to continue use Facebook as the e-Learning tool for learning purpose in the future. With regards to the Malaysian students' PE of using Facebook as e-Learning tool, it has positive influence towards BI (β = 0.113, p < 0.01, Mean=3.66). This finding is in line with previous studies that there was a positive and significant relationship between PE and BI (Abdul-Rahman & Jamaludin Mahmud, 2011; Borrero et al., 2014; Chu, 2013; Dhaha & Alia, 2014a; Escobar-Rodriguez & Carvajal-Trujillo, 2014; Echeng, Usoro & Majewski, 2013; Jong and Wang, 2009; Hanson et al., 2011; Harsono & Suryana, 2014; Holtz & Krein, 2011; Kijasanayotin et al., 2009; Khechine et al., 2014; Kaba & Toure, 2014; Lallmahomed et al., 2013; Pardamean & Susanto, 2013; Tan, 2013; Thomas, Singh & Gaffar, 2013). In other words, the usefulness of features Facebook influences the students' intention of using Facebook as e-Learning tool. For example, the flexibility of chat message features on Facebook can be used not only for communicating each other's but also it can be utilized for sending pictures and documents. Besides, the mobility of Facebook that can be assessed by mobile phone everywhere influences the Malaysian's student to use Facebook as e-Learning tool. The group features on Facebook make the students easily to create their own study group discussion. Besides, the files can be attached and privately seen among the group members. Matter of fact, the use of Facebook as e-Learning tool enables the students to accomplish my tasks more quickly. The usefulness of Facebook as e-Learning among the Malaysian students is diversified. Facebook is not just a tool for the students and academic to communicate, but this

site also can be utilized as a tool to share files, documents and etc. They share the links, upload videos, documents and files among their peers and lecturers. Besides, they ask and discuss with the lecturers and expert from others universities or in a field they are interested in (Pilli, 2014). In the other words, Facebook as e-Learning tool increase their productivity as the students.

However, in this study, PE is the weakest predictor of students' BI in using Facebook as e-Learning tool. This output contradicts the statement of Venkatesh et al. (2003) that the strongest predictor of users' BI was the PE and either in volitional behaviour or non-volitional behaviour context. This is because the nature habit of the undergraduate students in daily using Facebook make they feel that the usefulness of Facebook is not really important that attract them to use of Facebook as e-Learning tool. They don't realize that Facebook have helped their daily task as the students. Besides, as Facebook are accessed daily by the Malaysian students, they also use others Web 2.0 tools to communicate and sharing knowledge. For example, the students communicate and send their files towards e-mail and WhatsApp respectively. Hence, there are other Web 2.0 tools that utilized among the Malaysian students' as e-Learning tool to increase and sharing their information among their peers and lecturers. Besides, the main function of Facebook is more as a tool for socializing and not for e-Learning tool. Thus, this relevant reason is the evident of PE is the weakest predictor of students' BI in using Facebook as e-Learning tool.

5.2.1.2 Effort Expectancy and Behavioural Intention

EE is described as the extent to which the students are feeling very easy to conduct and use Facebook as e-Learning tool. In a second revealing finding coming from this study, H2.a indicates that there is a significant positive relationship between EE and BI at 0.05 level of significance (β=0.115, $p<0.05$, Mean=3.76). Similar findings

echoed in the previous study that there was a positive and significant relationship between EE and BI (Abdul-Rahman et al., 2011; Chu, 2013; Dhaha & Alia, 2014a; Dhaha & Alia, 2014b; Escobar-Rodriguez & Carvajal-Trujillo, 2014; Harsono & Suryana, 2014; Salim, 2012; Kijasanayotin et al., 2009; Tan, 2013; Wu et al., 2012). The Malaysian students utilize Facebook as e-Learning tool because of the features on Facebook (e.g. groups, pages, events and messages) are very easy to be used as e-Learning tool. Consequently, EE play an important role of influencing the Malaysian students' BI to use Facebook as e-Learning tool. Their interaction with this site was clear and understandable (Hoe, 2012; Roblyer, 2010). An output from the past study (Petrovic, Jeremic, Cirovic, Radojicic and Milenkovic, 2014) showed that the students agreed that Facebook was easier to be used compare Moodle.

Meanwhile, the EE is not really important as the predictor in this scope of this study since the value of beta coefficient obtained is second lowest among others four factors of UTAUT. The reason is the students in this study accessed Facebook daily and naturally they will expert on using Facebook. Based on the survey in this study, majority of undergraduate students (181) have an experience of using this site and it naturally make them become skilful in operating Facebook as e-Learning tool. This statement was supported by Hanson et al. (2011) that the fact that EE was not really important to influence the users of the age ranges of 18 to 29 years old due to the advanced technological skills of this age group. The cohorts' age of undergraduate students especially from 18 to 24 years old was more trained in using SNS, more socially interested and active (Berrero et al., 2014). Hence, the EE factor was not strong predictor of the students' BI in using SNS. Contrary to Raman, Mohd-Sani and Kaur (2014) study, the lack of experience of using Facebook among the secondary students indicated the positive and insignificant relationship between EE

and BI. Meanwhile, the past studies revealed that there was a positive and significant relationship between EE and BI of using SNS when the sample of study was among the higher education students (Abdul-Rahman, Jamaludin & Mahmud, 2011; Harsono & Suryana, 2014).

5.2.1.3 Social Influence and Behavioural Intention

This study gives the term of SI as the tendency of the students' perceives that their peers and lecturers' believe are very crucial for them to use the Facebook as e-Learning tool. The finding confirms that there is a positive significant relationship between SI and BI in using Facebook as e-Learning tool among the students (β=0.239, t=4.907, $p<0.05$). It is confirmed that a student who felt more pressure from people surrounding to use Facebook as e-Learning tool are more likely to use this site. This study finding in the line with previous finding studies that were conducted by the researchers explained in section 2.10 (Borrero et al. 2014; Chu, 2013; Dhaha and Ali, 2014a; Echeng et al., 2013; Escobar-Rodriguez and Carvajal-Trujillo, 2014; Jong and Wang, 2009; Kijasanayotin et al., 2009; Khechine et al., 2014; Lallmahomed et al., 2013; Raman et al. 2014; Pardamean and Susanto, 2012; Salim, 2012; Sumak et al., 2010; Tan, 2013; Thomas et al., 2013). This study result supported the statement by Park (2009) that SI is a vital predictor to examine the student's BI in using e-Learning system. Previous study (i.e. a study is conducted by Hsu and Yang, 2011) revealed that Facebook had become the most popular SNS was because of the SI.

As explained earlier, Facebook is phenomena in SNS world and the previous empirical study revealed that majority Facebook's users in Malaysia is young people which of course include the students. Besides this site is used as communication tool

of their daily life, ergo, it also naturally becomes their e-Learning tool. In this education community, the students especially generation Y and Z nowadays are easily following the trend and easily get influence with their lecturers and peers. As majority Malaysia undergraduate students in the community have Facebook account and this site already become a part of their communication tools, it is naturally happened without the students realized that this site also become the e-Learning tool. Thus, it can be proved that the education community also play an important role in influencing the intention of using Facebook as e-Learning tool among the students. Their peers or the lecturers who are important to a student think that he/she should use Facebook as e-learning tool.

5.2.1.4 Facilitating Conditions and Behavioural Intention

The result of this study also shows that FC have significant impact on BI in using Facebook as e-Learning tool among the students (β=0.310, t=5.965, $p<0.05$). The positive and significant impact of FC is consistent with the current past studies findings (Escobar-Rodriguez et al., 2014; Echeng et al., 2013; Jong and Wang, 2009; Harsono and Suryana, 2014; Khechine et al., 2014; Raman et al., 2014; Salim, 2012; Thomas et al., 2013; Teo, 2011; Wu et al., 2007). It is proved that the internet facilities provided on UniMAP, UUM and USM are very good. Internet can be accessed around the universities' area by the students. Besides, the availability of good internet signals can be regarded as FC for the use of Facebook as e-Learning tool among the Malaysian undergraduate students' universities. The improvement of high-speed internet access and also the emergence of Web 2.0 applications created a new world of collaboration, sharing knowledge and interactive (Cheung & Lee, 2010). Besides, nowadays, the interaction via Facebook is on the rise with readily

available Internet connectivity and the growth in mobile technology and applications (Margo, Sharp, Ryan & Ryan, 2013).

In addition, the output shows that Malaysian undergraduate students' have necessary resources such as knowledge and money to make use Facebook as e-Learning tool. Facebook is not only can be accessed from the website but also mobile phone. The mobility of Facebook makes the Malaysian undergraduate students access Facebook in anytime and everywhere. Besides, nowadays, majority of Malaysia undergraduate students can be categorized as the generation Y and Z that spend their entire lives in the digital environment have enough necessary knowledge to make use Facebook as e-Learning tool. In addition, their peers or lecturers are available for assistance with Facebook difficulties.

In this study, FC is the strongest predictor among other predictors that influence the students' BI of using Facebook as e-Learning tool. In parallel with the study of Choudrie, Pheeraphuttharangkoon, Zamani and Giaglis (2014) revealed that FC is very vital for younger population. Experience of using Facebook as e-Learning tool increase the knowledge of Malaysia undergraduate students have enough knowledge to utilize Facebook as e-Learning tool. Compare to LMS, the Malaysia undergraduate students still lack of knowledge to utilize all features of LMS as e-Learning tool.

5.2.2 Direct Effects of Independent Variables on Mediator Variable

As discussed earlier, the relationship between four factors of UTAUT on EUCS in the research world is still limited. In addition, the past studies (Chan et al., 2010; Maillet et.al, 2015; Napitupulu & Patria, 2013; Ling et al., 2015) only measure satisfaction in term of the level of their satisfaction towards the use of IS and not

deeply focusing on the satisfaction towards the design and characteristics of that particular information system. By making this as a basic and fundamental, this study predict that there is a relationship between PE, EE, SI, FC towards the students' BI in using Facebook as e-Learning tool. Based on the result, EUCS of using Facebook as e-Learning tool is the most significant influenced by EE (β=0.281) and followed by FC (β=0.184), SI (β=0.152) and PE (β=0.124).

5.2.2.1 Performance Expectancy and End User Computing Satisfaction

In regard with the relationship between PE and EUCS, the finding point to the fact the EUCS was seen to be positively influenced by PE (β=0.124, t=1.940) at 0.05 level of significance. The output of this study is consistent with the previous studies findings (Chan et al., 2010; Ling & Islam, 2015; Maillet et al., 2015; Napitupulu & Patria, 2013) which revealed that PE has a positive significant influence on satisfaction. The Malaysian undergraduate students involved in this study tend to use Facebook because of this site is usefulness and productive tool. The usefulness of this site leads to positive impact on the students' satisfaction on Facebook's features; specifically in the aspect of content, accuracy, timeliness and format in using Facebook as e-Learning tool. As discussed previously, PE is the weakest predictor towards students' BI as well as EUCS in using Facebook. On the other words, the usefulness of using Facebook as e-Learning tool is not the most important factor that influences the Malaysian undergraduate students of using Facebook. It can be concluded that the Malaysian undergraduate students don't really admit that Facebook is usefulness in their virtual learning process. Thus, Facebook is not very useful as e-Learning tool. They utilized this site more for as the communication and socializing tool compares as the e-Learning tool. This distinct output with the study of Maillet, Mathieu and Sicotte (2015) showed that PE was the strongest predictor

towards the nurse's satisfaction of using an EPR (Electronic Patient Record). In the scope of their study, the nurse utilized ERP as they need to record of each patient condition, thus influenced the nurses' satisfaction of using this system. The EPR is really useful compares the traditional method of writing on the patient's conditions in the papers. Meanwhile, in the scope of this study, the undergraduate students still enable to accomplish their task (e.g. send messages and assignments to their friends/lecturers) without using Facebook. Other Web 2.0 tools can be utilized in order to communicate each other's and accomplish their task. Thus, the output of study shows that PE can be strongest predictor of the user's satisfaction of using IS when that particular IS is really need to be used in order to accomplish their daily task/works.

5.2.2.2 Effort Expectancy and End User Computing Satisfaction

Research findings seem also to indicate that EUCS was positively and significantly impacted by EE (β=0.281, t=4.036, $p<0.01$) in line with the findings of the past studies (Chan et al., 2010; Maillet et al., 2015; Napitupulu and Patria, 2013). The output shows in the scope of Facebook as e-Learning tool, the interaction of Malaysia undergraduate students with this site is clear and understandable. Besides, they find it easy to get Facebook to do what they want it to do, thus, influence the satisfaction of students in using Facebook as e-Learning tool. In this study, EE is the strongest predictor towards the students' satisfaction of using Facebook. It revealed that the content, format, accuracy and timeliness of Facebook are easy to be understood and utilized by the Malaysia undergraduate students as e-Learning tool.

Besides, this study also proved that the positive and significant between EE and satisfaction of using IS based on the level of using that particular IS daily. In the

study of Chan, Thong, Venkatesh, Brown, Hu and Tam (2010), the nurses as the respondents need to use EPR daily to record the patients. The nurses utilized EMR every day to easier their work (Napitupulu & Patria, 2013). Meanwhile, the Hong Kong citizens used their smart card e-Government for personal identification and access to public services (Chan, Thong, Venkatesh, Brown, Hu & Tam, 2010). Besides, the output of past studies (Chan, Thong, Venkatesh, Brown, Hu & Tam, 2010; Maillet, Mathieu & Sicotte, 2015; Ling & Islam, 2015) showed that the use of IS that really made their task became easy and they need to use IS to complete the task daily. Hence, EE is positive and significant on satisfaction of using IS in their scope of studies. Otherwise, the result of study of Ling and Islam (2015) showed the insignificant relationship between EE and satisfaction of using online banking. The users can use other alternatives method to accomplish their dealings with the banks.

In this scope of study, they use Facebook daily and the students send their assignment, discuss and communicate with their peers and lecturers. On the other words, Facebook somewhat really help their life as the students. Hence, the output of this study shows that there is a positive and significant relationship between EE and EUCS of using Facebook as e-Learning tool among the Malaysian Undergraduate Students.

5.2.2.3 Social Influence and End User Computing Satisfaction

The result indicated that SI significantly and positively influences the students' satisfaction specifications on Facebook's content, accuracy, format and timeliness (β=0.152, $p<0.01$). The finding of study is parallel with the study that is conducted by Dhaha and Ali (2014a). Otherwise, the result was not consistent with the finding of current previous studies (Maillet et al., 2015; Ling & Islam, 2015) which revealed that SI does not have a positive significant impact towards user satisfaction. In this

new era, SI is one of important factor that influence users' satisfaction in using Facebook, especially the students. This study revealed that the Malaysian students' easily get influence with their peers to use Facebook and which in turn increase to the EUCS of using this site as e-Learning tool.

Also, the output proves that the relationship between EE and satisfaction of using IS depends on the situations. The past studies (Chan, Thong, Venkatesh, Brown, Hu & Tam, 2010; Maillet, Mathieu & Sicotte, 2015) showed that in the mandatory and non-volitional situations, the relationship between EE and satisfaction was insignificant. Otherwise, the output of past studies in the setting of volitional situation (Dhaha & Ali, 2014a; Maillet, Mathieu & Sicotte, 2015) showed EE is positive and significant towards satisfaction of using IS. In the scope of this study, the utilization of Facebook depends on their willingness to use Facebook as e-Learning tool. In the volitional situation, their peers and lecturers play an important role to influence them to use Facebook as e-Learning tool.

5.2.2.4 Facilitating Conditions and End User Computing Satisfaction

The satisfaction was significantly and positively influenced by FC (β=0.184, $p<0.01$). Consistently with the findings in the studies that have been obtained previously i.e. Chan et al. (2010), Ling and Islam (2015), Maillet et al. (2015) and Napitupulu and Patria (2013). As mentioned earlier, FC is the strongest predictor on BI of using Facebook. Meanwhile, FC becomes the second vital predictor for satisfaction of using Facebook. In this study, it is proved that the public universities provide the good facilities to the students to utilized Facebook as e-Learning tool. Besides, they have necessary knowledge to make use Facebook as e-Learning tool. As a conclusion, FC is confirmed as an important to predict satisfaction of using IS either in volitional or non-volitional situations.

5.2.3 End User Computing Satisfaction and Behavioural Intention

The third objective of this study is to examine the impact of EUCS on BI in using Facebook as e-Learning tool among the students. The H5 was also supported, proving that the students' satisfaction towards the features of Facebook increased their intention to use Facebook as e-Learning tool. The BI is significantly and positively influenced by satisfaction (β=0.184, t=4.798, p<0.01). It clearly revealed that there is a direct positive effect satisfaction in term of the design and characteristics (i.e. Accuracy, Timeliness, Format and Content) on BI in using Facebook as e-Learning tool. This result is consistent with a study of Fong and Ho (2014). Fong and Ho (2014) theorized a model of AIS continuance in the context of Hong Kong Housing Authority, and satisfaction was also found to be a determinant continuance intention of IS. The satisfaction of students in term of content, format, accuracy and timeliness of Facebook influence the students' BI of using Facebook as e-learning tool. The output confirms that the user satisfaction is the primary motivation to continue use to the IS (Churchill, Gilbert & Suprenant, 1982). Meanwhile, many studies (Chen, Yen & Hwang, 2012; Belanche, Casalo & Guinaliu, 2012; Roca, Chiu & Martinez, 2006; Shi, Lee, Cheung & Chen, 2010; Lai & Pires, 2010) identified the user satisfaction effect the continuance intention of using IS. In the context of Facebook as e-Learning tool, the output confirmed that EUCS is an important predictor that affecting continuous intention of using Facebook among the Malaysia undergraduate students.

5.2.4 The Mediating Effect of End User Computing Satisfaction

The last objective of this study is to evaluate the mediating effect of EUCS on the relationship between four factors of UTAUT and BI. As discussed earlier, past studies reveal that the satisfaction and acceptance model can be integrated in order to

get better understanding towards the use of IS. Numerous past studies revealed there is a positive significant relationship between four factors of UTAUT towards EUCS. Meanwhile, many past studies also indicate that BI is positively and significantly influenced by satisfaction. Besides, there are past studies (Chen, Yen & Hwang, 2012; Belanche, Casalo & Guinaliu, 2012) show that the user satisfaction become a mediator variable in different models. Informed by these, it is predicted that EUCS mediates the relationship between four UTAUT constructs on BI of using Facebook as e-Learning tool. The result of the test of mediation for EUCS has shown empirically that all hypotheses of indirect effect (i.e.PE, EE, SI and FC) of satisfaction indicate significant. Based on Barron and Kenny rules (1986), it revealed that EUCS partially mediates the relationship between PE, EE towards BI. Meanwhile, based on bootstrapping method (Preacher & Hayes, 2004) revealed that EUCS also mediates the relationship between all factors of UTAUT towards BI. Based on the path coefficient's value of product ab, the output of this study shows that EUCS has a strongest mediating effect on the relationship of EE and BI (p=0.052), followed by FC and BI (p=0.034), SI and BI (p=0.028) and lastly PE and BI (p=0.023). In order words, EUCS is a mechanism that transfers the effect of PE, EE, SI and FC on the undergraduate students of using Facebook as e-Learning tool. Hence, the prediction of EUCS mediates the relationship between PE, EE, SI, FC towards BI in this study is totally proved.

5.3 Contributions of the Study

This study has several valuable contributions as discussed below:

5.3.1 Theoretical Contributions

In research world of management IS, the integration of satisfaction and acceptance theories is still limited. It is suggested to integrate these two scopes for better

understanding of IS (Ong, Day & Hsu, 2009). Meanwhile, only several studies are identified focus on the acceptance of web 2.0 as the e-Learning tools for learning and teaching purpose (Cheung & Vogel, 2013). There were many past studies revealed Facebook as the most popular SNS that is used as e-Learning tool compare others SNS. In scope of Malaysian education, the studies regarding the acceptance and satisfaction of using Facebook as e-Learning tool are still limited, otherwise, many studies are identified focus on others topics (Ayu & Abrizah, 2011; Balakrishnan & Shamim, 2013; Jumaat & Tasir, 2013; Kabilan, Ahmad, Jafre, & Abidin, 2010; Lallmahomed, Zairah, Rahim, Ibrahim, & Rahman, 2013; Lubis et al., 2012; Noh, Hajar, Razak, Alias, & Siraj, 2013; Omar, Embi, & Yunus, 2012).

Based on above, in term of theoretical, this study has contributed towards the body of knowledge in understanding the intention of using IS particularly SNS by integrating the acceptance and satisfaction models. This study integrates the UTAUT and EUCS in the general context of the technology alternative for e-Learning tool and particularly in the scope of SNS as e-Learning tool in the education world. Besides, this study overcomes the weakness of UTAUT that not fully emphasized the system design attributes as the EUCS. As mentioned earlier, the previous studies about the acceptance and satisfaction of IS are still limited.

Centered on the research outcomes, it is confirmed that Malaysian students' BI is significantly influenced by PE, EE, SI, FC and EUCS in using Facebook as e-Learning tool. Based on this, it can be said that this study validates the claims of Wixom and Todd study (2005) which revealed that the integration of satisfaction towards system's characteristics (object-based belief) and also behavioural belief increase the R^2 towards the intention of using IS and that these should be

incorporated into the model. Also, the result proves that the behavioural belief is the strong predictor compares the assessment towards specific system factors to the behaviour of interest (Fishbein & Ajzen, 1975; Wixom & Todd, 2005).

Furthermore, as mentioned earlier, numerous studies focused on the level of satisfaction by measuring the user's feeling and not the satisfaction towards the characteristics of system. Based on this study, it revealed the significant of measuring not only behavioural belief but also the design and characteristics of system for understanding the intention of using SNSs. Thus, this study strengthens the fundamental of integrating the acceptance and satisfaction framework that are studied in previous studies.

Moreover, the satisfaction on the system's design and characteristics are discovered in this study partially mediate the relationship between PE, EE, SI and FC with the students' BI in using Facebook as e-Learning tool. Hence, this study gives the specific and comprehensive guidelines to the researchers towards the implementation of EUCS either as the independent variable, dependent variable or mediator variable in developing the theoretical framework based on the type of IS.

5.3.2 Methodological Contributions

There are two methodological contributions in this study and it can be used as the guidelines for further research including (i) Design of questionnaire and (ii) the use of EFA to determine the unidimensionality and SEM analysis with PLS to examine the psychometric properties of each latent variable.

In term of design of questionnaire, it is recommended to use 5-point Likert scales if the sample is the students. According to Malhotra (2008), a small number of scale

points are enough for the respondents who are just an ordinary people. Besides, 7-point Likert scales in the questionnaire maybe will make the respondents feel a little bit irritate because the respondents have to spend more time to think and put more effort for answering the questionnaire (Frary, 1996). Besides, the questions in this study are written in a precise, simple and easy to understanding language. Also, as the result, the issue of CMV bias become minor issue in this study.

Concerning with this issue and besides of this study integrate two model, it is very important to employ EFA in order to examine the unidimensionality of the instrument. The unidimensionality indicates that the affiliated relationship of each of their construct indicators and explain and it is a best method to compare them individually and respectively (Hair et al., 2010). Another methodological contribution of this study is related to employing PLS SEM. It is strongly suggested to utilize PLS in order to evaluate the psychometric properties for all latent variables. The utilization of PLS SEM has succeeded in evaluating the measurement and structural model besides answering all hypotheses that are tested in this study.

5.3.3 Practical Contributions

Based on this empirical study, it will therefore give several benefits practical contributions to the instructors, academicians, designers as well as the management of universities in Malaysian Public Universities. The perception of instructors, academicians and administrators will be enhanced in understanding the significant factors that influenced the satisfaction and directly the intention of the students to use Facebook as e-Learning tool compare LMS.

The result shows that the most significant factors that influence the students' intention to use Facebook as e-Learning tool is FC (β=0.310), it indicates that the

students have an intention to use Facebook because they have necessary knowledge required to make use of Facebook as e-Learning tool. SI is a second important factor (β=0.238) that effect the intention of the students to use Facebook. Hence, it is revealed that their peers and lecturers play an important role to influence them to use Facebook. Result shows that EE (β=0.115) and followed by PE (β=0.113) are not really important as the factors that influenced the students' intention of using Facebook. Referring to the most factors that influence the intention of using Facebook, the instructors can emphasize that factor when implementing the LMS in order to increase the level of the students' engagement in using LMS. It is suggested to conduct the training course to the new students as the aim to gain their ability to make use of LMS and thus influence their intention to use LMS as the main e-Learning. In term of SI, the instructors need to influence the students to maximally use LMS as a main e-Learning. Besides, it is suggested to the management of universities to launch the campaign regarding the way to utilize their LMS effectively among the students and the lecturers.

As discussed earlier, EUCS of using Facebook as e-Learning tool is the most influenced by EE(β=0.281) and followed by FCs(β=0.184), SI (β=0.152) and PE (β=0.124). Because of that, in order to attract the students to use LMS, either the instructors or the management of universities need to focus towards the most influenced factor towards satisfaction of using Facebook as e-Learning tool. It is suggested to the management of universities to conduct the survey among the students in order to make sure the LMS is very easy to be used and they have required ability to make use of this site as e-Learning tool. Thus, these factors will influence the students' satisfaction in using this system as e-Learning tool. It can be concluded that by looking at the most factor that influence the acceptance and

satisfaction of Facebook, the instructors and the administrators can emphasize that factor when implementing the LMS in order to increase the level of the students' engagement in using LMS.

Furthermore, this study also gives the beneficial guidelines for the LMS designers such guideline includes the most preferable attributes of Facebook that can be included in the design of LMS. Also, these guidelines can be referred by the designers that have intention to develop the SNS on the types of education (e.g. Mahara, Elgg, Eduspace and etc.). They can consider imitating or developing the same preferable applications of Facebook among the Malaysian students on their new developed social site. All these guidelines can be obtained by referring the result from question 1(k). According to first question of question 1(k), majority of students admit they like attach files on Facebook (Mean=4.08), group application (Mean=3.97), notification a (Mean=3.83), personal timeliness (Mean=3.79), photo/videos uploads sharing (Mean=3.78), events application (Mean=3.81), friend list application (Mean=3.77), comment (Mean=3.78), news feed (Mean=3.76), wall (Mean=3.74), status update (Mean=3.72), page (Mean=3.69) and chat/instant message (Mean=3.64). Meanwhile, based on the second question of question 1(k), majority of students like attach file should have in LMS (Mean=3.96) followed by chat instant message (Mean=3.94), group (Mean=3.79), notification (Mean=3.66), events (Mean=3.62), news feed (Mean=3.58), comment (Mean=3.55), photo (Mean=3.55), personal timeliness (Mean=3.51), status update (Mean=3.44), page (Mean=3.44), wall (Mean=3.44) and friend list (Mean=3.44). It is suggested to the designers and universities' administers of LMS to focus on the most preferable features on Facebook that Malaysian students thought should be applied on LMS. Hence, it is imperative matter for the designers to emphasize the graphical, layout

and interface of Facebook in order to attract the students to utilize Moodle as the main e-Learning tool.

5.4 Limitation of Study

Several major limitations were identified in this study. As mentioned earlier, firstly, this study only focused on the main campus universities of the north region in Malaysia and among the undergraduate students. Besides, the population did not consider on other institutions like the private universities, polytechnics, private colleges and community colleges that are also a part of HEI's in Malaysia. Informed by these, this limitation may hinder the generalization of research results to other institutions and postgraduate students. This study does not claim that the findings are generalizable to a wider population of Internet users.

Secondly, the test of the casual direction in the observed relationship is restricted by the cross-sectional nature of this study. Based on Sekaran (2003), the weakness of implementing cross-sectional study is the limitation to prove the causal impact among the variables compares longitudinal study. Besides, due to the cross-sectional nature of this study, it is important to be reminded that the alternative model also cannot be claimed to demonstrate as the casual relationships.

Thirdly, the common-method variance naturally will influence the result as the data is collected by self-report measures. This study only can minimize the common-method bias by implementing many approaches as discussed previously besides measuring the common method bias in order to prove that this problem is not a major concern in this study. According to Podsakoff, MacKenzie, Lee and Podsakoff (2003), the mix method of collecting the data are suggested to avoid the impact of common-method bias.

Fourthly, this study just evaluates the students' intention of using Facebook as e-learning tool which is the most popular SNSs among the Malaysian user. It is because each site has different design and characteristics. Because of that, this study cannot represent others SNSs as e-Learning tool.

Next, the variables evaluated in this study are limited to four UTAUT constructs and the dimension of EUCS. Hence, it is possible to cover all factors that influence the BI of using Facebook as e-Learning tool among the students. Other factors are really beyond the scope of this study which affects DV in using Facebook as e-Learning tool that should be given considerable attention.

Finally, the last limitation is regarding the supporting literatures for this research. The studies about the integration of acceptance and satisfaction models as the aim to evaluate the students' BI to use SNS besides the end user satisfaction as mediator variable are still limited and hence, the past studies cannot support this study very well.

5.5 Suggestion for Future Studies

Due to the limitations of this study, a few recommendations to future studies have been suggested according to the results and discussion of this study. Firstly, the sample size could be extended in order to provide more strong confirmation of generalizability. In the future, it is suggested to involve the students from other region and type of HEI's in Malaysia. It is also recommended to adapt this model in order to evaluate the students' BI in different type of SNSs as e-Learning tool among the students.

Secondly, in regard with the limitation of cross-sectional study, it is suggested to conduct the longitudinal studies test causality of all related variables in this study over different time periods as the aim to provide a better understanding of these issues. Besides, the longitudinal studies also can be used to explain the causality and interrelationships between predictor variables of the alternative model.

Thirdly, it is also recommended to use qualitative technique to understand and uncover more information about the students' BI of using Facebook as e-Learning tool. The qualitative method is used in order to explore perhaps new factors that influence the students' BI of using Facebook as e-learning tool.

Next, it is suggested to focus on others behavioural belief factors and object-based belief that suitable to be tested in this study context. As quoted by Wixom and Todd (2005, p. 90), "*attitudes and behavioural belief that most closely correspond to the behaviour of interest should be the most important proximal predictors of those behaviours.*" (Fishbein & Ajzen, 1975). These variables maybe could be great value in explaining predictors of BI in using Facebook as e-Learning tool among the students. It is suggested to extent UTAUT model by adding other factors are really beyond the scope of this study which affects the students' BI and actual use of using Facebook as e-Learning tool that should be given considerable attention such as collaboration and resource sharing (Sharma & Joshi, 2015), habit (Escobar-Rodriguez, Carvajal-Trujillo & Monge-Lozano, 2014), hedonic motivation (Escobar-Rodriguez, Carvajal-Trujillo & Monge-Lozano, 2014), perceived advantages of Facebook as e-Learning tool (Escobar-Rodriguez, Carvajal-Trujillo & Monge-Lozano, 2014) and perceived relevance of Facebook as e-Learning tool (Escobar-Rodriguez, Carvajal-Trujillo & Monge-Lozano, 2014). These factors might also be

great value in explaining predictors of BI in using Facebook as e-Learning tool among the students. Haque, Sarwar and Ahmad (2015) suggested overlooking into others contextual variables in order to evaluate the acceptance of Facebook as an alternative learning tool among the students.

Finally, due to limitation of literature review, the results of this study need to be confirmed by other studies by focusing on the factors that influence students' BI in using Facebook as e-Learning tool in others setting. In this respect, any integration of acceptance and satisfaction models needs to be formulated and all relationships between variable should be strongly supported by the past studies. Because of that, it is suggested to conduct other studies by adapting and testing this model in others type of SNS, respondents (postgraduate students, polytechnics students, secondary students and etc.) and setting.

5.6 Conclusion

This study reveals the significant impact of integrating the satisfaction and acceptance model in order to find out the vital factors that influenced the students to use Facebook as e-learning tool compare LMS. While there have been many past studies evaluating the user's satisfaction and acceptance of using SNS separately, on the other hand, this study addressed the theoretical gap by incorporating end-user satisfaction as a significant mediating variable. Taken together, this study has provided additional evidence to the growing body of knowledge concerning the integration of acceptance and satisfaction model. In addition, this study also contributes towards the mediating role of EUCS on the relationship between PE, EE, SI and FCs and BI to use SNS.

The result form data analysis proves to support the key theoretical propositions and that all questions in this study are successfully answered. All four UTAUT factors i.e. PE, EE, SI and FC do help explain BI of Facebook among the students. Similar result also proves that the satisfaction in term of Facebook's content, format, accuracy and timeliness has positive and significant influence on BI to use Facebook as e-Learning tool. The results of study not only provide theoretical and methodological contributions to the researchers but also vital practical implications to the instructors and the management of universities. However, it is nature for each study to have some of its limitations and hence, several future research directions are suggested. In the nutshell, this study has added valuable and important theoretical, practical and methodological contributions to the development of knowledge of integration between satisfaction and acceptance model in the field of management of information system, particularly SNSs.

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Appendix A

Dear Respondent,

This questionnaire is designed to evaluate behavioural intention to use Facebook e-Learning tool among the Malaysian Public Universities' students. The information provided will help the researcher to better understand the determinants of factors that influence the students' behaviour intention towards the use of Facebook as e-Learning tool. Because you are the one who can give me the correct picture of how you experience the use of Facebook as e-Learning tool, I importune you to give honest and frank answer. 10 to 15 minutes are expected to be necessary to complete all questions.

Your response will be kept strictly confidential. Only people concerned at the Universiti Utara Malaysia will have access to the information you give.

Thank you very much for your spending time and kind cooperation.

Sincerely,

NUR FATHIAH BINTI MOHD BASHRI
Master Student (814178)
School of Technology Management and Logistics
Othman Yeop Abdullah Graduate School of Business

PART ONE: DEMOGRAPHIC INFO

Please kindly write or mark your responses (✓) on questions that are relevant to you. Further instructions will be given to you at all relevant sections. There will be no RIGHT or WRONG answers.

A. GENDER

Male ☐ Female ☐

B. AGE

17 below ☐
18-21 ☐
22-25 ☐
26-29 ☐
30-33 ☐
34-37 ☐
38-41 ☐
42 above ☐

C. YEAR OF STUDY

First Year ☐
Second Year ☐
Third Year ☐
Fourth Year ☐
Final Year ☐

D. NATIONALITY

Malaysian ☐
International. Please Specify:_____ ☐

E. ETHNICITY

Malay ☐
Chinese ☐
Indian ☐
Others. Please Specify:_____ ☐

F. FIELD

Applied Sciences ☐
Applied Arts ☐
Pure Arts ☐
Pure Sciences ☐
Engineering ☐

G. Which of the following Social Networking Sites that you own besides Facebook? You may mark your responses (✓) more than one option.

Twitter		Weibo	
Instagram		MySpace	
Blog		Friendster	
Google Plus+		Youtube	
LinkedIn		Tagged	
Tumblr		Others	
Pinterest			

H. How many hours you spend on Facebook a day?

< 1 hour /day		7-9 hours/day	
1-3 hours/day		10 hours & above	
4-6 hours/day			

I. Experience of using Facebook in years

Less than 1 year		5-6 years	
1-2 years		7-8 years	
3-4 years		9-10 years	

J. No of Facebook friends

Less than 200		2601-3000	
201-600		2901-3300	
601-1000		3001-3400	
1001-1400		3401-3800	
1401-1800		3801-4200	
1801-2200		4201-4600	
2201-2600		4601-5000	

K. The following question is about the reason of using Facebook. Please circle the appropriate number which indicates extent to which you disagree or agree with the following statement.

Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
1	2	3	4	5

1.	I like to chat with the communities (Family, peers and instructors) by using Facebook.	1	2	3	4	5
2.	Facebook is a good Social Networking Site to meet new people.	1	2	3	4	5
3.	Facebook helps me to keep up with the friends' activities	1	2	3	4	5
4.	I use Facebook as the medium to stay in touch with the family.	1	2	3	4	5
5.	I use Facebook to share information with the communities.	1	2	3	4	5
6.	I use Facebook to find out information	1	2	3	4	5
7.	Facebook is a good Social Networking Site for entertainment.	1	2	3	4	5
8.	I use Facebook to post the photos/ videos	1	2	3	4	5
9.	I always use Facebook for education purpose	1	2	3	4	5
10.	I can search for the job on Facebook	1	2	3	4	5

PART TWO:

Second part of this questionnaire is about to evaluate the students' perception towards the features on Facebook that attracts the students to use Facebook besides the opinion either Learning Management System should have this features or not. Please circle the appropriate number which indicates the extent to which you disagree or agree with the applications on Facebook as e-Learning using the following scale.

Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
1	2	3	4	5

News Feed						
1.	I like Facebook News Feed	1	2	3	4	5
2.	I like if Facebook News Feed has in Learning Zone	1	2	3	4	5
Status Update						
3.	I like Facebook Status Update	1	2	3	4	5
4.	I like if Facebook Status Update has in Learning Zone	1	2	3	4	5
Comment						
5.	I like Facebook Comment	1	2	3	4	5
6.	I like if Facebook Comment has in Learning Zone	1	2	3	4	5
Wall						
7.	I like Facebook Wall	1	2	3	4	5
8.	I like if Facebook Wall has in Learning Zone	1	2	3	4	5

Notification						
9.	I like Facebook Notification	**1**	**2**	**3**	**4**	**5**
10.	I like if Facebook Notification has in Learning Zone	**1**	**2**	**3**	**4**	**5**
Page						
11.	I like Facebook Page	**1**	**2**	**3**	**4**	**5**
12.	I like if Facebook Page has in Learning Zone	**1**	**2**	**3**	**4**	**5**
Chat/Instant Message						
13.	I like Facebook Chat/Message	**1**	**2**	**3**	**4**	**5**
14.	I like if Facebook Chat/Message has in Learning Zone	**1**	**2**	**3**	**4**	**5**
Friend List						
15.	I like Facebook Friend List	**1**	**2**	**3**	**4**	**5**
16.	I like if Facebook Friend List has in Learning Zone	**1**	**2**	**3**	**4**	**5**
Events						
17.	I like Facebook events	**1**	**2**	**3**	**4**	**5**
18.	I like if Facebook events has in Learning Zone	**1**	**2**	**3**	**4**	**5**
Attach Files						
19.	I like Facebook Attach Files	**1**	**2**	**3**	**4**	**5**
20.	I like if Facebook Attach Files has in Learning Zone	**1**	**2**	**3**	**4**	**5**
Group						
21.	I like Facebook Group	**1**	**2**	**3**	**4**	**5**
22.	I like if Facebook group has in Learning Zone	**1**	**2**	**3**	**4**	**5**
User Profile/ Personal Timeline application						
23.	I like Facebook User Profile/ Personal Timeline	**1**	**2**	**3**	**4**	**5**
24.	I like if Facebook User Profile/Personal Timeline has in Learning Zone	**1**	**2**	**3**	**4**	**5**
Photos and Video Uploads/ Sharing						
25.	I like Facebook Photos and Video Uploads/ Sharing	**1**	**2**	**3**	**4**	**5**
26.	I like if Facebook Photos and Video Uploads/ Sharing has in Learning Zone	**1**	**2**	**3**	**4**	**5**

PART THREE:

The following statements refer to **Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Condition** and **Behavioural Intention** in using Facebook as e-Learning tool. Please follow the numbers which denote the following answers to circle one answer for each question.

Strongly Disagree	**Disagree**	**Neither Agree or Disagree**	**Agree**	**Strongly Agree**
1	**2**	**3**	**4**	**5**

1.	I find Facebook useful in my virtual learning process.	**1**	**2**	**3**	**4**	**5**
2.	Facebook as e-Learning tool increase the discussion about my study among me and my peers/ lecturers.	**1**	**2**	**3**	**4**	**5**
3.	Using Facebook as e-Learning tool increase my knowledge and information sharing among my peers and lecturers.	**1**	**2**	**3**	**4**	**5**
4.	The use of Facebook as e-Learning tool enables me to accomplish my tasks more quickly (e.g. send messages and assignments to my friends/lecturers via Facebook).	**1**	**2**	**3**	**4**	**5**

5.	Using Facebook as e-Learning tool increases my academic performance.	**1**	**2**	**3**	**4**	**5**
6.	The use of Facebook as e-Learning tool quickened acquisition of knowledge and information.	**1**	**2**	**3**	**4**	**5**
7.	Using Facebook as e-learning tool increase my productivity as the students.	**1**	**2**	**3**	**4**	**5**
8.	In the scope of Facebook as e-learning tool, my interaction with this site is clear and understandable	**1**	**2**	**3**	**4**	**5**
9.	It is simple for me to navigate Facebook as e-Learning tool	**1**	**2**	**3**	**4**	**5**
10.	The features on Facebook (e.g. groups, pages, events, messages) are very easy to be used as e-Learning tool.	**1**	**2**	**3**	**4**	**5**
11.	It would easy for me to become skilful at using Facebook.	**1**	**2**	**3**	**4**	**5**
12.	I find it easy to get Facebook to do what I want it to do.	**1**	**2**	**3**	**4**	**5**
13.	The use of Facebook as e-Learning tool does not require a lot of mental effort.	**1**	**2**	**3**	**4**	**5**
14.	My peers/ lecturers who are important to me think that I should use Facebook as e-Learning tool.	**1**	**2**	**3**	**4**	**5**
15.	My peers/ lecturers who are important to me think that using Facebook as e-Learning tool is a good idea.	**1**	**2**	**3**	**4**	**5**
16.	My peers/ lecturers who are important to me think that I should try out Facebook as e-Learning tool.	**1**	**2**	**3**	**4**	**5**
17.	My peers/ lecturers who influence my decisions think that I should use Facebook as e-Learning tool.	**1**	**2**	**3**	**4**	**5**
18.	My lecturers/ peers have been supportive in the use of Facebook as e-Learning tool	**1**	**2**	**3**	**4**	**5**
19.	I have the resources necessary to use Facebook as e-Learning tool.	**1**	**2**	**3**	**4**	**5**
20.	I have the necessary knowledge required to make use of Facebook as e-Learning tool.	**1**	**2**	**3**	**4**	**5**
21.	Specialized instruction on how to use Facebook is available to me.	**1**	**2**	**3**	**4**	**5**
22.	My peers/lecturers are available for assistance with Facebook difficulties.	**1**	**2**	**3**	**4**	**5**
23.	In the scope of using Facebook as e-learning tool, this site would be entirely within my control.	**1**	**2**	**3**	**4**	**5**
24.	I have the required ability to make use of Facebook as e-Learning tool.	**1**	**2**	**3**	**4**	**5**
25.	I intend to use Facebook as e-Learning tool for next semester.	**1**	**2**	**3**	**4**	**5**
26.	I plan to continue using Facebook as e-Learning tool.	**1**	**2**	**3**	**4**	**5**
27.	I will tell others about the positive aspects of using Facebook as e-Learning tool.	**1**	**2**	**3**	**4**	**5**
28.	I will prefer to use Facebook compared others SNS as e-Learning tool.	**1**	**2**	**3**	**4**	**5**
29.	I have the intention to use Facebook for virtual learning as much as possible.	**1**	**2**	**3**	**4**	**5**

PART FOUR:

The following statements refer to End User Computing Satisfaction of using Facebook **Content, Accuracy, Format** and **Timeliness** as e-Learning tool. Please follow the numbers which denote the following answers to circle one answer for each question.

Strongly Disagree	**Disagree**	**Neither Agree or Disagree**	**Agree**	**Strongly Agree**
1	**2**	**3**	**4**	**5**

1.	Facebook information (text, image, video)content fits my virtual learning needs	**1**	**2**	**3**	**4**	**5**
2.	I can easily understand the learning information posted by my peers and lecturers in Facebook.	**1**	**2**	**3**	**4**	**5**
3.	Facebook information content meets my needs.	**1**	**2**	**3**	**4**	**5**
4.	Facebook provides sufficient information.	**1**	**2**	**3**	**4**	**5**
5.	Facebook is free from error	**1**	**2**	**3**	**4**	**5**
6.	I am satisfied with the accuracy of Facebook.	**1**	**2**	**3**	**4**	**5**
7.	Facebook is reliable	**1**	**2**	**3**	**4**	**5**
8.	I do not obtain any errors in the information when using Facebook as e-Learning tool	**1**	**2**	**3**	**4**	**5**
9.	Facebook is well organized	**1**	**2**	**3**	**4**	**5**
10.	Facebook format is easy to read	**1**	**2**	**3**	**4**	**5**
11.	The organization of Facebook information is very clear	**1**	**2**	**3**	**4**	**5**
12.	The information on the Facebook is presented in useful format	**1**	**2**	**3**	**4**	**5**
13.	The sequence of Facebook e screen is very clear	**1**	**2**	**3**	**4**	**5**
14.	Facebook website homepage loads quickly	**1**	**2**	**3**	**4**	**5**
15.	Postings and other information on Facebook refresh quickly	**1**	**2**	**3**	**4**	**5**
16.	The search engine of Facebook website generates result quickly	**1**	**2**	**3**	**4**	**5**
17.	Facebook provides up-to-date information of my friends' and lecturers' postings.	**1**	**2**	**3**	**4**	**5**
18.	Facebook is user friendly.	**1**	**2**	**3**	**4**	**5**

I sincerely appreciate your time and cooperation. Please check and make sure that you have not skipped any questions purposely. Thank you!

Appendix B

Reliability Test before Conducting EFA

Performance Expectancy

Reliability Statistics

Cronbach's Alpha	N of Items
.802	7

Effort Expectancy

Reliability Statistics

Cronbach's Alpha	N of Items
.838	6

Social Influence

Reliability Statistics

Cronbach's Alpha	N of Items
.754	5

Facilitating Condition

Reliability Statistics

Cronbach's Alpha	N of Items
.778	6

Behavioural Intention

Reliability Statistics

Cronbach's Alpha	N of Items
.748	5

All Satisfaction

Reliability Statistics

Cronbach's Alpha	N of Items
.911	17

Content

Reliability Statistics

Cronbach's Alpha	N of Items
.768	4

Accuracy

Reliability Statistics

Cronbach's Alpha	N of Items
.741	4

Format

Reliability Statistics

Cronbach's Alpha	N of Items
.766	5

Timeliness

Reliability Statistics

Cronbach's Alpha	N of Items
.722	4

Appendix C
Missing Value Output

Result Variables

	Result Variable	N of Replaced Missing Values	Case Number of Non-Missing Values		N of Valid Cases	Creating Function
			First	Last		
1	IPE01_1	1	1	457	457	SMEAN(IPE01)
2	IPE07_1	1	1	457	457	SMEAN(IPE07)
3	IEE01_1	1	1	457	457	SMEAN(IEE01)
4	IEE05_1	1	1	457	457	SMEAN(IEE05)
5	ISI03_1	1	1	457	457	SMEAN(ISI03)
6	IAY02_1	1	1	457	457	SMEAN(IAY02)
7	IAY04_1	1	1	457	457	SMEAN(IAY04)
8	IFT02_1	1	1	457	457	SMEAN(IFT02)
9	IFT03_1	1	1	457	457	SMEAN(IFT03)
10	ITS03_1	1	1	457	457	SMEAN(ITS03)

Appendix D

Mahalanobis Distance

Cases	Mahal.Distance
1	26.95512
2	8.54406
3	33.30811
4	27.9017
5	29.70204
6	72.46385
7	35.02601
9	38.55873
10	76.73522
12	70.22857
14	26.15476
15	75.63104
16	56.30299
17	47.8406
18	30.85617
19	25.09543
20	31.19989
21	38.23376
22	55.16444
23	28.01938
24	16.80153
25	54.58106

26	33.09905
27	46.85165
28	56.46689
29	54.523
30	57.8346
31	79.97387
32	41.71257
33	24.59123
34	41.62152
38	29.74376
39	30.55208
40	34.52075
41	40.78881
42	26.09566
43	51.77016
44	45.35453
45	36.89733
46	32.79003
47	40.36887
49	34.17794
50	32.23482
51	16.36616
52	54.53009
53	48.47058
54	54.5107
55	53.89696
56	28.4012
57	77.34091
58	45.7963
59	54.82442
60	68.86691
61	44.80696
62	53.0026
65	19.3378
66	6.18131
67	10.51151
68	64.35235
69	47.3266
70	77.2923
71	24.8755
72	39.96835
73	25.72068
74	65.19234
75	35.80659
76	34.51323

77	39.91811
78	67.28501
79	32.3551
80	24.41253
81	29.31227
82	27.07688
83	60.18279
84	63.11338
86	76.95243
87	42.05428
88	32.04299
90	56.39596
91	73.92002
92	38.45126
93	79.72881
94	31.87287
95	29.36659
96	61.85744
97	38.13526
98	33.27968
99	22.70202
100	29.11134
101	29.82199
102	37.61361
103	15.648
104	28.01556
105	60.27882
106	59.92114
108	28.47034
109	48.36501
110	40.29727
111	48.17199
112	34.22823
113	34.171
114	36.92403
115	50.63865
116	34.65564
117	37.62726
118	25.11779
119	46.93975
120	33.79284
121	33.20928
122	21.36941
123	18.18469
124	37.22087

125	45.12343
126	36.59015
127	51.69669
129	28.40333
130	30.02876
131	31.09973
132	36.17844
133	61.00564
134	76.11336
136	28.82313
137	58.08964
138	21.19889
139	39.92551
140	41.69703
141	70.79403
142	34.85527
143	39.74044
144	56.3535
145	51.4384
146	62.4915
147	29.68086
148	64.22018
149	28.17078
150	35.68349
151	44.35122
152	34.32979
153	28.49779
154	32.68673
155	36.56727
156	39.01122
157	33.78551
159	43.00673
160	47.35328
161	72.90539
162	30.29409
163	41.85958
165	51.58576
166	41.10466
167	25.90502
168	43.59435
169	49.01854
170	28.51732
171	29.30167
172	33.15453
173	34.8223

174	25.7235
175	56.16419
177	30.80552
178	32.42318
179	31.70329
181	20.00818
182	45.80035
183	13.08885
184	22.9846
186	37.55048
187	63.09282
188	31.51275
189	32.9825
190	36.15743
191	29.88377
192	48.87149
193	52.73457
194	26.84964
195	13.19179
196	35.88598
197	54.37149
198	46.13841
199	8.92146
200	35.02165
201	53.24381
202	39.81589
203	40.86262
204	65.53007
205	46.70173
206	50.91758
207	14.67345
208	39.30064
209	18.62104
210	64.20344
211	12.38529
212	24.39846
213	17.37825
214	62.59135
215	11.44586
216	55.03833
217	73.91136
218	53.3471
219	36.11689
220	30.08321
221	72.33437

222	29.61488
223	19.39122
224	30.95674
225	18.98408
226	57.41081
227	54.34716
228	79.30433
229	62.78368
230	25.43019
231	53.46974
233	31.007
234	17.67087
235	47.70616
236	21.80708
237	57.78528
238	17.95
239	23.44332
240	41.64933
241	50.22556
242	16.23514
244	28.15307
245	79.10626
246	61.30215
247	42.07674
248	26.95512
249	70.30365
250	56.10105
251	24.55816
252	30.54915
253	13.70605
254	20.78162
255	32.56504
257	24.76245
258	37.17887
260	20.20714
261	21.83239
262	47.51981
263	35.11225
264	74.50294
265	39.79053
266	40.54632
267	52.7746
269	41.22295
270	27.84786
271	30.18278

272	23.15931
273	78.48847
274	66.97853
275	47.3429
276	22.39585
278	27.02784
279	64.04363
280	42.36436
282	37.73384
283	45.67318
284	37.46741
285	28.04728
287	74.08514
288	33.83572
289	20.12473
290	45.17683
291	17.37515
292	42.00623
293	17.4472
294	39.427
295	61.55417
296	25.76729
297	19.65646
298	54.03983
299	34.5588
300	27.60695
301	56.67987
302	49.99866
303	39.59975
304	20.53524
306	70.15759
307	35.56377
308	35.26074
310	38.61381
311	24.80087
312	38.35303
313	41.03743
315	34.40965
316	60.1552
317	24.05141
318	32.74171
319	35.06676
321	34.76774
322	28.53984
323	29.0169

324	33.94977
325	55.90035
327	46.05977
328	21.26219
329	29.57446
330	23.00972
331	65.35334
332	20.88906
333	53.03199
334	17.05375
335	36.37223
336	35.48333
337	65.57102
338	56.81717
339	1.32637
340	38.70223
341	29.22917
343	46.36312
344	39.96288
345	59.4213
346	20.07669
347	26.31875
348	42.7135
349	24.7703
350	39.50419
351	58.82751
352	22.01004
353	23.94839
354	28.78025
355	19.34789
357	28.80125
358	28.51812
359	62.44122
360	43.48948
361	30.41102
362	33.08133
363	26.75786
364	38.88028
365	22.5397
366	35.95701
368	31.33213
369	43.96175
370	39.04883
371	48.16753
372	38.34194

373	31.53104
374	31.55653
375	23.83914
378	79.35434
379	23.01701
380	59.3425
381	28.60055
382	25.69987
383	28.17378
385	46.69348
386	65.00113
387	19.97154
388	41.61954
389	25.56147
390	32.42255
391	58.94228
392	56.01897
393	36.32577
395	50.84992
396	72.0696
397	44.47643
398	25.4211
399	52.55419
400	19.7227
401	56.91757
402	48.31833
403	42.48945
405	39.18807
406	34.46696
407	44.87818
408	42.88253
410	23.70854
411	32.35902
412	25.31753
413	40.583
414	66.18276
415	48.48106
416	11.66688
417	48.48463
418	19.79204
419	23.59165
420	9.46263
421	52.14872
423	24.52037
424	63.3336

427	32.81955
428	60.44296
429	42.8297
430	43.08914
431	56.08653
432	23.0516
433	68.69504
434	36.65011
435	35.54128
436	33.3209
437	16.2198
438	16.50534
439	50.40091
440	65.81868
441	22.79853
444	32.88356
445	48.80789
446	22.52323
447	46.16293
448	18.19251
449	34.24124
450	46.96069
451	44.83392
452	33.44946
453	40.32622
454	32.90778
455	44.85142
456	43.45158
457	45.9182

Appendix E

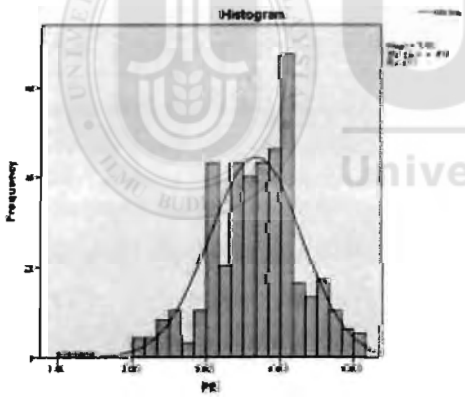
Normality (Skewness and Kurtosis)

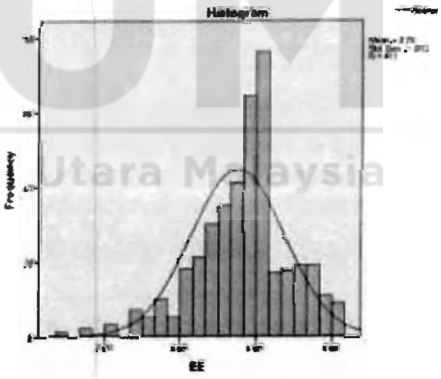
Descriptive Statistics

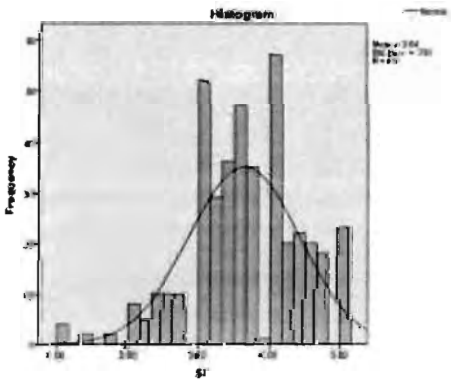
	N	Skewness		Kurtosis	
	Statistic	Statistic	Std. Error	Statistic	Std. Error
IPE01	411	-.478	.120	.329	.240
IPE02	411	-.495	.120	.236	.240
IPE03	411	-.608	.120	.783	.240
IPE04	411	-.503	.120	.459	.240
IPE05	411	-.176	.120	.012	.240
IPE06	411	-.441	.120	.439	.240
IPE07	411	-.534	.120	.785	.240
IEE01	411	-.361	.120	.091	.240
IEE02	411	-.684	.120	.922	.240
IEE03	411	-.471	.120	.572	.240
IEE04	411	-.498	.120	.359	.240
IEE05	411	-.567	.120	.444	.240
IEE06	411	-.397	.120	.096	.240
ISI01	411	-.284	.120	-.018	.240
ISI02	411	-.346	.120	.058	.240
ISI03	411	-.379	.120	.214	.240
ISI04	411	-.358	.120	-.019	.240
ISI05	411	-.351	.120	-.058	.240
IFC01	411	-.340	.120	.063	.240
IFC02	411	-.451	.120	.212	.240
IFC03	411	-.410	.120	-.094	.240
IFC04	411	-.254	.120	-.281	.240
IFC05	411	-.333	.120	.062	.240
IFC06	411	-.538	.120	.470	.240
IBI01	411	-.621	.120	.416	.240
IBI02	411	-.536	.120	.290	.240
IBI03	411	-.496	.120	.416	.240
IBI04	411	-.542	.120	.323	.240
IBI05	411	-.431	.120	.059	.240
ICT01	411	-.420	.120	.232	.240
ICT02	411	-.641	.120	.815	.240
ICT03	411	-.405	.120	.270	.240

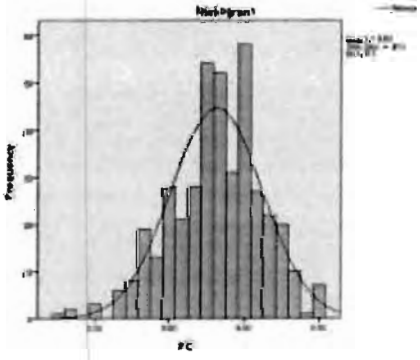
ICT04	411	-.632	.120	.719	.240
IAY01	411	-.275	.120	-.398	.240
IAY02	411	-.280	.120	-.254	.240
IAY03	411	-.586	.120	.242	.240
IAY04	411	-.327	.120	-.228	.240
IFT01	411	-.618	.120	.414	.240
IFT02	411	-.562	.120	.408	.240
IFT03	411	-.382	.120	.216	.240
IFT04	411	-.450	.120	.480	.240
IFT05	411	-.567	.120	.426	.240
ITS01	411	-.420	.120	.038	.240
ITS02	411	-.454	.120	.077	.240
IT03	411	-.622	.120	.658	.240
IT04	411	-.737	.120	.895	.240
Valid N (listwise)	411				

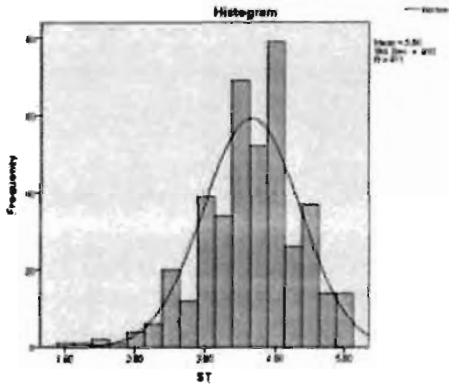
The shape of data distribution

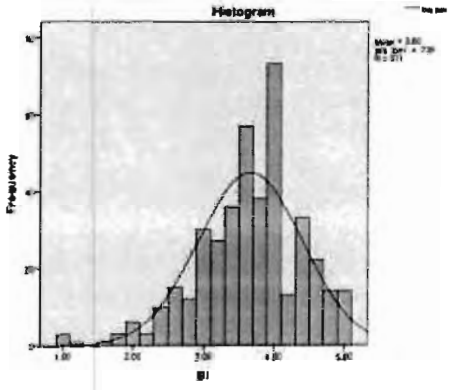






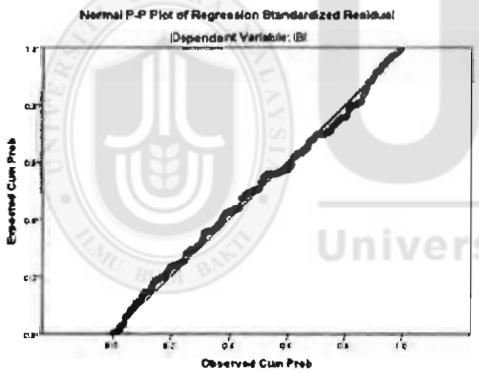


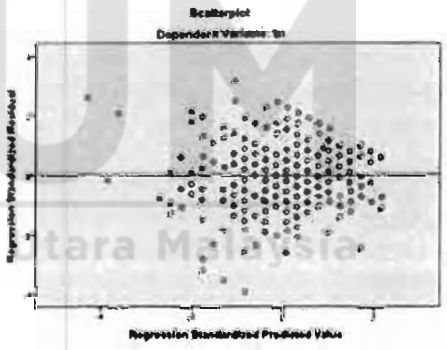




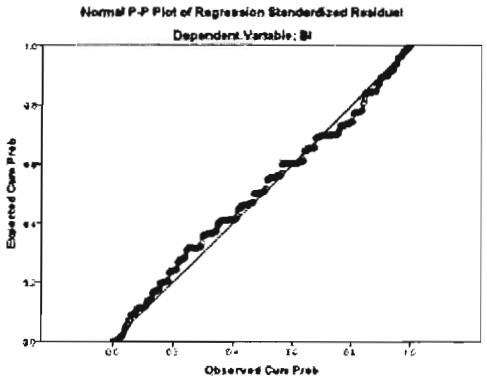
Appendix F
A. Test of Linearity and Homoscedasticity
Dependent Variable: Behavioural Intention

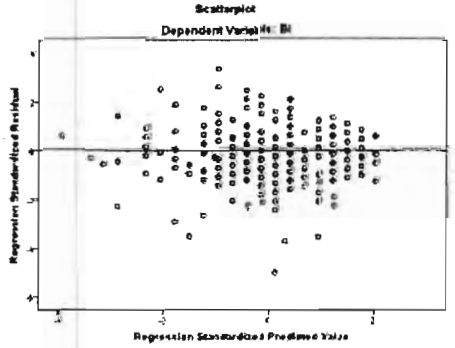
Performance Expectancy



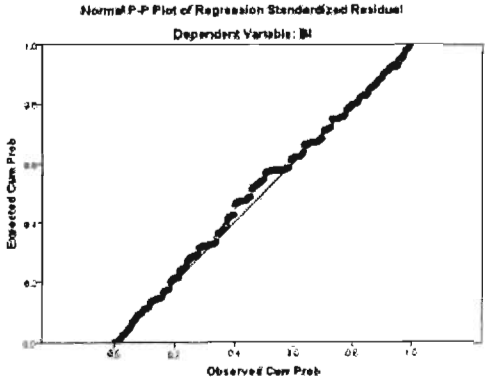


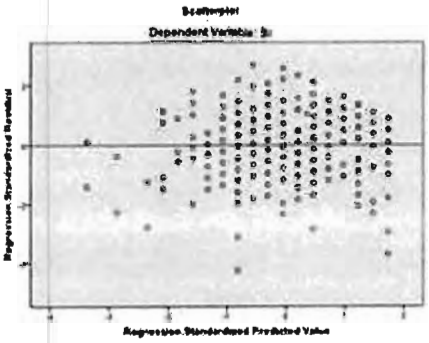
Effort Expectancy



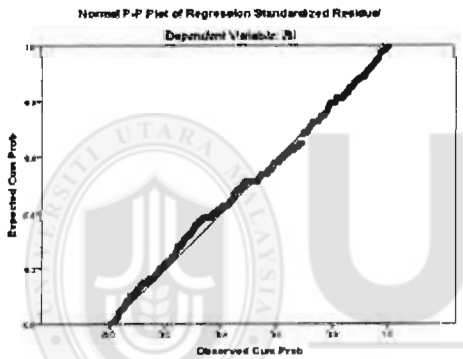


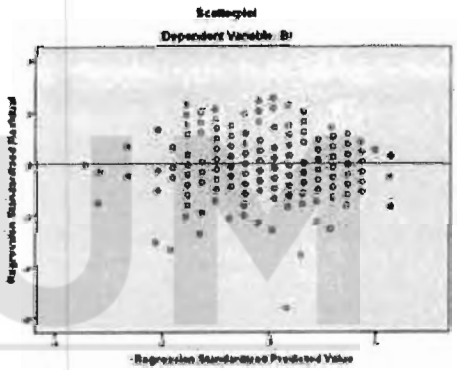
Social Influence



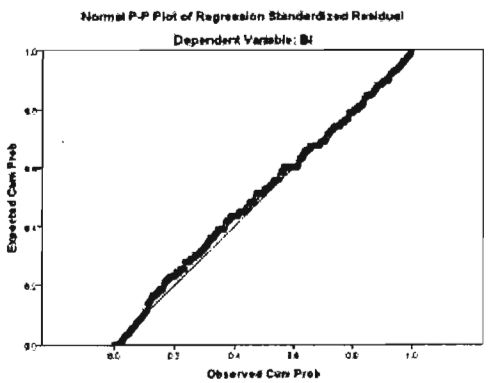


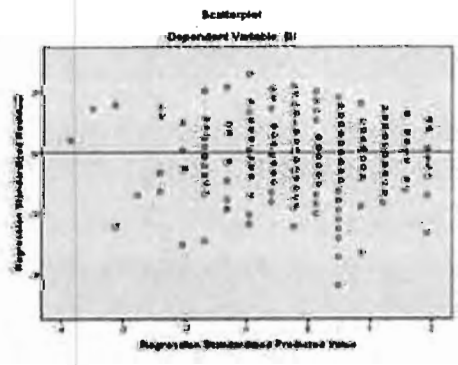
Facilitating Conditions





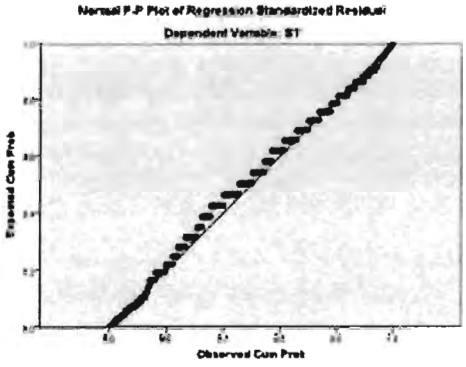
Satisfaction

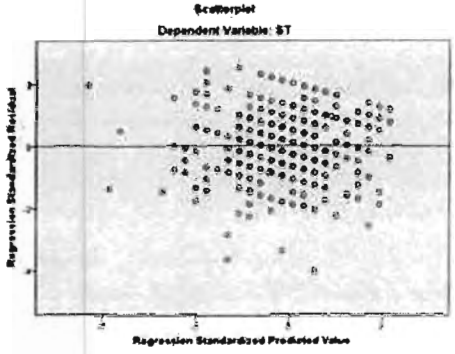




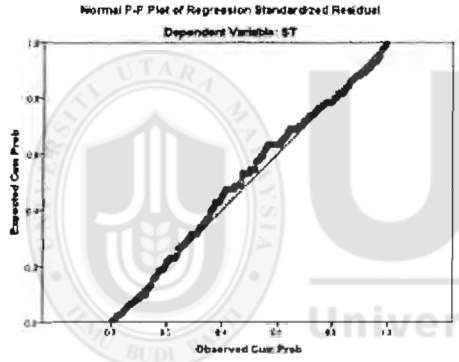
B. Test of Linearity and Homoscedascitiy
Dependent Variable: Satisfaction

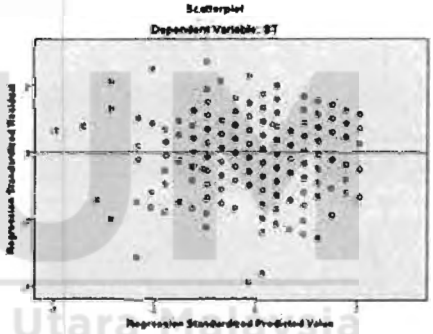
Performance Expectancy



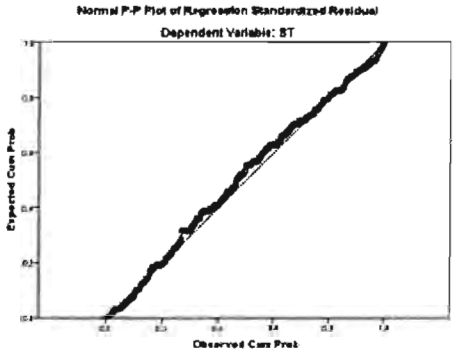


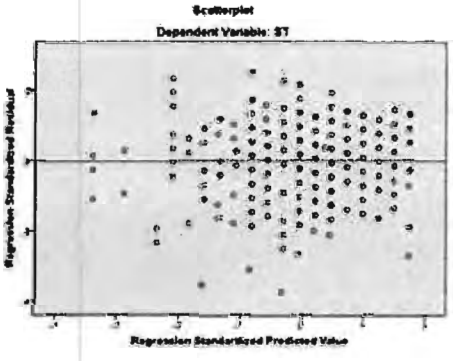
Effort Expectancy



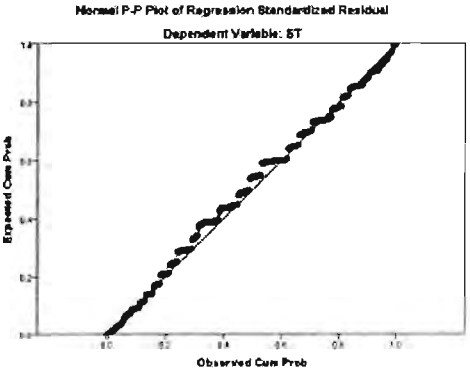


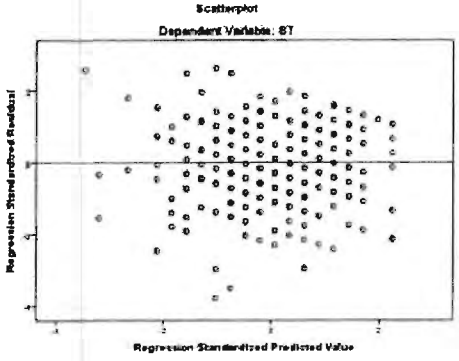
Social Influence





Facilitating Conditions





Appendix G

1. Performance Expectancy

Correlation Matrix[a]

		IPE01	IPE02	IPE03	IPE04	IPE05	IPE06	IPE07
Correlation	IPE01	1.000	.668	.562	.463	.517	.512	.445
	IPE02	.668	1.000	.646	.490	.495	.512	.492
	IPE03	.562	.646	1.000	.558	.509	.530	.467
	IPE04	.463	.490	.558	1.000	.560	.557	.531
	IPE05	.517	.495	.509	.560	1.000	.639	.519
	IPE06	.512	.512	.530	.557	.639	1.000	.538
	IPE07	.445	.492	.467	.531	.519	.538	1.000
Sig. (1-tailed)	IPE01		.000	.000	.000	.000	.000	.000
	IPE02	.000		.000	.000	.000	.000	.000
	IPE03	.000	.000		.000	.000	.000	.000
	IPE04	.000	.000	.000		.000	.000	.000
	IPE05	.000	.000	.000	.000		.000	.000
	IPE06	.000	.000	.000	.000	.000		.000
	IPE07	.000	.000	.000	.000	.000	.000	

a. Determinant = .033

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.897
Bartlett's Test of Sphericity	Approx. Chi-Square	1384.825
	df	21
	Sig.	.000

Anti-image Matrices

		IPE01	IPE02	IPE03	IPE04	IPE05	IPE06	IPE07
Anti-image Covariance	IPE01	.487	-.187	-.060	-.015	-.069	-.047	-.017
	IPE02	-.187	.427	-.152	-.016	-.011	-.025	-.068
	IPE03	-.060	-.152	.477	-.113	-.032	-.051	-.019
	IPE04	-.015	-.016	-.113	.528	-.096	-.078	-.116
	IPE05	-.069	-.011	-.032	-.096	.489	-.166	-.075
	IPE06	-.047	-.025	-.051	-.078	-.166	.478	-.094
	IPE07	-.017	-.068	-.019	-.116	-.075	-.094	.585
Anti-image Correlation	IPE01	.888[a]	-.410	-.124	-.029	-.142	-.098	-.032
	IPE02	-.410	.859[a]	-.337	-.034	-.025	-.056	-.135
	IPE03	-.124	-.337	.902[a]	-.225	-.066	-.106	-.036
	IPE04	-.029	-.034	-.225	.915[a]	-.190	-.156	-.208
	IPE05	-.142	-.025	-.066	-.190	.899[a]	-.343	-.140
	IPE06	-.098	-.056	-.106	-.156	-.343	.902[a]	-.179
	IPE07	-.032	-.135	-.036	-.208	-.140	-.179	.929[a]

a. Measures of Sampling Adequacy(MSA)

Communalities

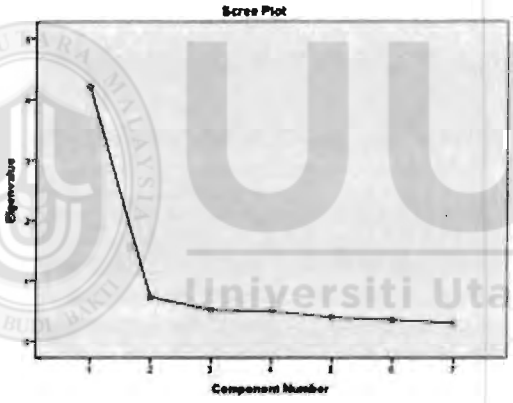
	Initial	Extraction
IPE01	1.000	.591
IPE02	1.000	.633
IPE03	1.000	.624
IPE04	1.000	.586
IPE05	1.000	.612
IPE06	1.000	.627
IPE07	1.000	.534

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.206	60.086	60.086	4.206	60.086	60.086
2	.728	10.397	70.483			
3	.517	7.388	77.871			
4	.498	7.119	84.990			
5	.396	5.658	90.648			
6	.355	5.066	95.714			
7	.300	4.286	100.000			

Extraction Method: Principal Component Analysis.



2. Effort Expectancy

Correlation Matrix[a]

		IEE01	IEE02	IEE03	IEE04	IEE05	IEE06
Correlation	IEE01	1.000	.594	.553	.470	.480	.388
	IEE02	.594	1.000	.617	.545	.567	.501
	IEE03	.553	.617	1.000	.586	.537	.406
	IEE04	.470	.545	.586	1.000	.673	.466
	IEE05	.480	.567	.537	.673	1.000	.560
	IEE06	.388	.501	.406	.466	.560	1.000
Sig. (1-tailed)	IEE01		.000	.000	.000	.000	.000
	IEE02	.000		.000	.000	.000	.000
	IEE03	.000	.000		.000	.000	.000
	IEE04	.000	.000	.000		.000	.000
	IEE05	.000	.000	.000	.000		.000
	IEE06	.000	.000	.000	.000	.000	

a. Determinant = .066

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.870
Bartlett's Test of Sphericity	Approx. Chi-Square	1108.620
	df	15
	Sig.	.000

Anti-image Matrices

		IEE01	IEE02	IEE03	IEE04	IEE05	IEE06
Anti-image Covariance	IEE01	.576	-.156	-.120	-.028	-.042	-.024
	IEE02	-.156	.461	-.137	-.041	-.060	-.105
	IEE03	-.120	-.137	.497	-.123	-.039	-.003
	IEE04	-.028	-.041	-.123	.464	-.190	-.037
	IEE05	-.042	-.060	-.039	-.190	.437	-.155
	IEE06	-.024	-.105	-.003	-.037	-.155	.632
Anti-image Correlation	IEE01	.891[a]	-.302	-.225	-.055	-.084	-.040
	IEE02	-.302	.872[a]	-.285	-.088	-.134	-.195
	IEE03	-.225	-.285	.879[a]	-.256	-.083	-.005
	IEE04	-.055	-.088	-.256	.856[a]	-.421	-.069
	IEE05	-.084	-.134	-.083	-.421	.845[a]	-.294
	IEE06	-.040	-.195	-.005	-.069	-.294	.893[a]

a. Measures of Sampling Adequacy(MSA)

Communalities

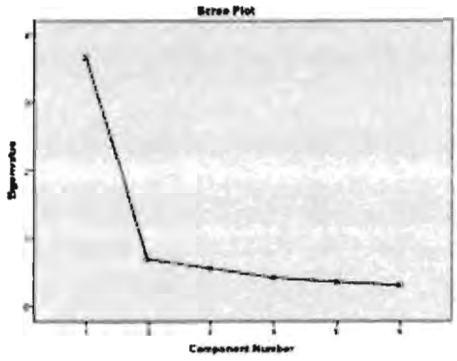
	Initial	Extraction
IEE01	1.000	.549
IEE02	1.000	.674
IEE03	1.000	.631
IEE04	1.000	.647
IEE05	1.000	.672
IEE06	1.000	.487

Extraction Method: Principal Component Analysis.

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.659	60.979	60.979	3.659	60.979	60.979
2	.696	11.603	72.583			
3	.560	9.335	81.918			
4	.423	7.044	88.961			
5	.358	5.965	94.927			
6	.304	5.073	100.000			

Extraction Method: Principal Component Analysis.



Component Matrix[a]

	Component
	1
IEE01	.741
IEE02	.821
IEE03	.794
IEE04	.804
IEE05	.820
IEE06	.698

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

3. Social Influence

Correlation Matrix[a]

		ISI01	ISI02	ISI03	ISI04	ISI05
Correlation	ISI01	1.000	.764	.710	.687	.655
	ISI02	.764	1.000	.767	.728	.712
	ISI03	.710	.767	1.000	.768	.718
	ISI04	.687	.728	.768	1.000	.792
	ISI05	.655	.712	.718	.792	1.000
Sig. (1-tailed)	ISI01		.000	.000	.000	.000
	ISI02	.000		.000	.000	.000
	ISI03	.000	.000		.000	.000
	ISI04	.000	.000	.000		.000
	ISI05	.000	.000	.000	.000	

a. Determinant = .018

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.887
Bartlett's Test of Sphericity	Approx. Chi-Square	1642.071
	df	10
	Sig.	.000

Anti-image Matrices

		ISI01	ISI02	ISI03	ISI04	ISI05
Anti-image Covariance	ISI01	.364	-.131	-.058	-.041	-.025
	ISI02	-.131	.290	-.091	-.032	-.054
	ISI03	-.058	-.091	.301	-.089	-.043
	ISI04	-.041	-.032	-.089	.276	-.138
	ISI05	-.025	-.054	-.043	-.138	.324
Anti-image Correlation	ISI01	.902[a]	-.404	-.176	-.129	-.072
	ISI02	-.404	.880[a]	-.308	-.113	-.176
	ISI03	-.176	-.308	.901[a]	-.310	-.138
	ISI04	-.129	-.113	-.310	.867[a]	-.462
	ISI05	-.072	-.176	-.138	-.462	.886[a]

a. Measures of Sampling Adequacy(MSA)

Communalities

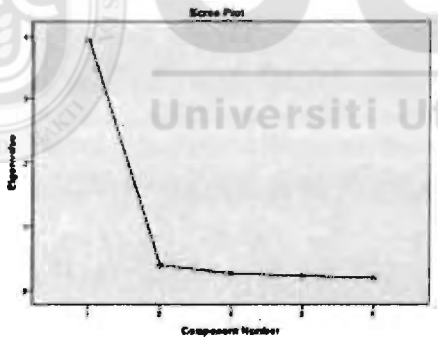
	Initial	Extraction
ISI01	1.000	.740
ISI02	1.000	.805
ISI03	1.000	.803
ISI04	1.000	.808
ISI05	1.000	.766

Extraction Method: Principal Component Analysis.

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.921	78.425	78.425	3.921	78.425	78.425
2	.396	7.926	86.351			
3	.267	5.340	91.691			
4	.225	4.498	96.189			
5	.191	3.811	100.000			

Extraction Method: Principal Component Analysis.



Component Matrix[a]

	Component
	1
ISI01	.860
ISI02	.897
ISI03	.896
ISI04	.899
ISI05	.875

Extraction Method: Principal Component Analysis.

4. Facilitating Conditions

Correlation Matrix[a]

		IFC01	IFC02	IFC03	IFC04	IFC05	IFC06
Correlation	IFC01	1.000	.609	.470	.454	.492	.429
	IFC02	.609	1.000	.523	.474	.471	.534
	IFC03	.470	.523	1.000	.586	.515	.455
	IFC04	.454	.474	.586	1.000	.554	.479
	IFC05	.492	.471	.515	.554	1.000	.534
	IFC06	.429	.534	.455	.479	.534	1.000
Sig. (1-tailed)	IFC01		.000	.000	.000	.000	.000
	IFC02	.000		.000	.000	.000	.000
	IFC03	.000	.000		.000	.000	.000
	IFC04	.000	.000	.000		.000	.000
	IFC05	.000	.000	.000	.000		.000
	IFC06	.000	.000	.000	.000	.000	

a. Determinant = .091

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.865
Bartlett's Test of Sphericity	Approx. Chi-Square	976.790
	df	15
	Sig.	.000

Communalities

	Initial	Extraction
IFC01	1.000	.561
IFC02	1.000	.619
IFC03	1.000	.597
IFC04	1.000	.596
IFC05	1.000	.602
IFC06	1.000	.552

Extraction Method: Principal Component Analysis.

Anti-image Matrices

		IFC01	IFC02	IFC03	IFC04	IFC05	IFC06
Anti-image Covariance	IFC01	.560	-.210	-.052	-.046	-.102	-.013
	IFC02	-.210	.502	-.101	-.035	-.013	-.144
	IFC03	-.052	-.101	.547	-.179	-.086	-.039
	IFC04	-.046	-.035	-.179	.541	-.133	-.075
	IFC05	-.102	-.013	-.086	-.133	.546	-.149
	IFC06	-.013	-.144	-.039	-.075	-.149	.592
Anti-image Correlation	IFC01	.855[a]	-.397	-.094	-.084	-.185	-.022
	IFC02	-.397	.836[a]	-.192	-.068	-.026	-.265
	IFC03	-.094	-.192	.878[a]	-.328	-.157	-.069
	IFC04	-.084	-.068	-.328	.869[a]	-.245	-.133
	IFC05	-.185	-.026	-.157	-.245	.875[a]	-.262
	IFC06	-.022	-.265	-.069	-.133	-.262	.880[a]

a. Measures of Sampling Adequacy(MSA)

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.528	60.798	60.798	3.528	60.798	60.798
2	.660	10.001	70.799			
3	.580	9.659	80.458			
4	.486	7.106	87.564			
5	.402	6.700	94.263			
6	.344	5.737	100.000			

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component
	1
IFC01	.749
IFC02	.787
IFC03	.773
IFC04	.772
IFC05	.776
IFC06	.743

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

5. EUCS

Rotated Component Matrix[a]

	Component			
	1	2	3	4
ICT01			.773	
ICT02		.303	.786	
ICT03			.733	
ICT04	.354		.705	
IAY01	.797			
IAY02	.772			
IAY03	.691	.349		
IAY04	.749			
IFT01	.342	.687		
IFT02		.765		
IFT03		.750		
IFT04		.602	.311	
IFT05		.524		.462
ITS01				.787
ITS02				.781
IT03				.748
IT04		.381	.318	.513

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 6 iterations.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	8.187	48.161	48.161	8.187	48.161	48.161	4.322	25.425	25.425
2	1.353	7.959	56.120	1.353	7.959	56.120	3.214	18.905	44.330
3	1.205	7.087	63.207	1.205	7.087	63.207	3.209	18.877	63.207
4	1.011	5.748	68.955	1.011	5.748	68.955	2.793	16.429	68.955
5	.662	3.891	72.847						
6	.632	3.715	76.561						
7	.600	3.528	80.089						
8	.453	2.667	82.756						
9	.414	2.437	85.193						
10	.389	2.290	87.483						
11	.349	2.055	89.538						
12	.344	2.025	91.563						
13	.336	1.978	93.541						
14	.317	1.866	95.408						
15	.295	1.738	97.145						
16	.251	1.478	98.624						
17	.234	1.376	100.000						

Extraction Method: Principal Component Analysis.

Communalities

	Initial	Extraction
ICT01	1.000	.668
ICT02	1.000	.731
ICT03	1.000	.701
ICT04	1.000	.613
IAY01	1.000	.738
IAY02	1.000	.741
IAY03	1.000	.652
IAY04	1.000	.701
IFT01	1.000	.580
IFT02	1.000	.533
IFT03	1.000	.525
IFT04	1.000	.566
IFT05	1.000	.590
ITS01	1.000	.628
ITS02	1.000	.643
ITS03	1.000	.636
ITS04	1.000	.501

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component			
	1	2	3	4
ICT01	.617	.515		
ICT02	.647	.553		
ICT03	.722	.393		
ICT04	.682			
IAY01	.670		.458	
IAY02	.718	-.316	.354	
IAY03	.712		.314	
IAY04	.695	-.330	.329	
IFT01	.753			-.335
IFT02	.685			-.406
IFT03	.708			-.416
IFT04	.745			
IFT05	.727			
ITS01	.654	-.327	-.304	.328
ITS02	.704		-.313	.325
ITS03	.725			.308
ITS04	.614		-.337	

Extraction Method: Principal Component Analysis.
a. 4 components extracted.

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.931
Bartlett's Test of Sphericity	Approx. Chi-Square	3970.555
	df	136
	Sig.	.000

6. Behavioural Intention

Correlation Matrix[a]

		IBI01	IBI02	IBI03	IBI04	IBI05
Correlation	IBI01	1.000	.751	.651	.567	.564
	IBI02	.751	1.000	.710	.578	.596
	IBI03	.651	.710	1.000	.598	.641
	IBI04	.567	.578	.598	1.000	.697
	IBI05	.564	.596	.641	.697	1.000
Sig. (1-tailed)	IBI01		.000	.000	.000	.000
	IBI02	.000		.000	.000	.000
	IBI03	.000	.000		.000	.000
	IBI04	.000	.000	.000		.000
	IBI05	.000	.000	.000	.000	

a. Determinant = .049

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.851
Bartlett's Test of Sphericity	Approx. Chi-Square	1224.867
	df	10
	Sig.	.000

Anti-image Matrices

		IBI01	IBI02	IBI03	IBI04	IBI05
Anti-image Covariance	IBI01	.393	-.180	-.067	-.055	-.025
	IBI02	-.180	.340	-.126	-.031	-.038
	IBI03	-.067	-.126	.401	-.055	-.102
	IBI04	-.055	-.031	-.055	.455	-.202
	IBI05	-.025	-.038	-.102	-.202	.425
Anti-image Correlation	IBI01	.848[a]	-.492	-.168	-.131	-.060
	IBI02	-.492	.824[a]	-.341	-.079	-.099
	IBI03	-.168	-.341	.884[a]	-.129	-.248
	IBI04	-.131	-.079	-.129	.856[a]	-.459
	IBI05	-.060	-.099	-.248	-.459	.846[a]

a. Measures of Sampling Adequacy(MSA)

Communalities

	Initial	Extraction
IBI01	1.000	.707
IBI02	1.000	.752
IBI03	1.000	.736
IBI04	1.000	.661
IBI05	1.000	.687

Extraction Method: Principal Component Analysis.

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.543	70.853	70.853	3.543	70.853	70.853
2	.579	11.577	82.431			
3	.352	7.039	89.470			
4	.290	5.802	95.272			
5	.236	4.728	100.000			

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component
	1
IBI01	.841
IBI02	.867
IBI03	.858
IBI04	.813
IBI05	.829

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Appendix H
Reliability Test after conducting Factor Analysis

Performance Expectancy

Reliability Statistics

Cronbach's Alpha	N of Items
.889	7

Effort Expectancy

Reliability Statistics

Cronbach's Alpha	N of Items
.870	6

Social Influence

Reliability Statistics

Cronbach's Alpha	N of Items
.931	5

Facilitating Conditions

Reliability Statistics

Cronbach's Alpha	N of Items
.859	6

Behavioural Intention

Reliability Statistics

Cronbach's Alpha	N of Items
.897	5

Content

Reliability Statistics

Cronbach's Alpha	N of Items
.931	17

Accuracy

Reliability Statistics

Cronbach's Alpha	N of Items
.863	4

Format

Reliability Statistics

Cronbach's Alpha	N of Items
.864	5

Timeliness

Reliability Statistics

Cronbach's Alpha	N of Items
.828	4

Satisfaction

Reliability Statistics

Cronbach's Alpha	N of Items
.931	17

Appendix I

ample	a2	a4	a1	a3	b	a1*b	a2*b	a3*b	a4*b
	EE -> ST	FC -> ST	PE -> ST	SI -> ST	ST -> BI				
Sample 0	0.398082	0.249388	0.023507	0.06911	0.147597	0.0034696	0.0587557	0.0102004	0.0368089
Sample 1	0.317706	0.110634	0.11196	0.142846	0.202025	0.0226187	0.0641846	0.0288585	0.0223508
Sample 2	0.226361	0.185192	0.120633	0.208987	0.146682	0.0176947	0.0332031	0.0306546	0.0271643
Sample 3	0.282181	0.15481	0.139806	0.13963	0.143034	0.019997	0.0403615	0.0199718	0.0221431
Sample 4	0.245448	0.256272	0.129451	0.112715	0.21102	0.0273168	0.0517944	0.0237851	0.0540785
Sample 5	0.241758	0.226054	0.099987	0.183093	0.133676	0.0133659	0.0323172	0.0244751	0.030218
Sample 6	0.316397	0.225199	0.119514	0.137756	0.196604	0.0234969	0.0622049	0.0270834	0.044275
Sample 7	0.339916	0.141161	0.079037	0.158747	0.190312	0.0150417	0.0646901	0.0302115	0.0268646
Sample 8	0.375025	0.044315	0.050533	0.212846	0.145929	0.0073742	0.054727	0.0310604	0.0064668
Sample 9	0.359378	0.210242	0.140606	0.036871	0.15495	0.0217869	0.0556856	0.0057132	0.032577
Sample 10	0.306467	0.229097	0.053954	0.181841	0.166668	0.0089924	0.0510782	0.0303071	0.0381831
Sample 11	0.335882	0.157738	0.081188	0.128873	0.194645	0.0158028	0.0653778	0.0250845	0.0307029
Sample 12	0.254904	0.288361	0.108208	0.034409	0.146932	0.0158992	0.0374536	0.0050558	0.0423695
Sample 13	0.238247	0.210878	0.131028	0.172696	0.19539	0.0256016	0.0465511	0.0337431	0.0412035
Sample 14	0.256698	0.257203	0.068321	0.085692	0.194008	0.0132548	0.0498015	0.0166249	0.0498994
Sample 15	0.206102	0.137509	0.178225	0.192253	0.143479	0.0255715	0.0295713	0.0275843	0.0197297
Sample 16	0.241684	0.174544	0.114783	0.174988	0.14605	0.0167641	0.0352979	0.025557	0.0254922
Sample 17	0.261048	0.108016	0.166721	0.214008	0.166687	0.0277902	0.0435133	0.0356724	0.0180049
Sample 18	0.249362	0.249741	0.092811	0.101509	0.164082	0.0152286	0.0409158	0.0166558	0.040978
Sample 19	0.313362	0.176806	0.119337	0.163666	0.177716	0.0212081	0.0556894	0.0290861	0.0314213
Sample 20	0.351963	0.160103	0.112064	0.10579	0.207648	0.0232699	0.0730844	0.0219671	0.0332451
Sample 21	0.175675	0.147202	0.175873	0.251863	0.106815	0.0187859	0.0187647	0.0269027	0.0157234
Sample 22	0.19156	0.243357	0.133997	0.176135	0.154033	0.02064	0.0295066	0.0271306	0.037485
Sample 23	0.354085	0.075341	0.116434	0.256665	0.170564	0.0198594	0.0603942	0.0437778	0.0128505
Sample 24	0.304865	0.215171	0.115679	0.105145	0.17675	0.0204463	0.0538849	0.0185844	0.0380315
Sample 25	0.250252	0.143344	0.145463	0.185224	0.223266	0.0324769	0.0558728	0.0413542	0.0320038
Sample 26	0.172359	0.197305	0.256723	0.08548	0.154701	0.0397153	0.0266641	0.0132238	0.0305233
Sample 27	0.211612	0.225387	0.160678	0.139973	0.195645	0.0314358	0.0414008	0.027385	0.0440958
Sample 28	0.152978	0.270206	0.113618	0.227379	0.180421	0.0204991	0.0276004	0.0410239	0.0487508
Sample 29	0.344717	0.15646	0.134546	0.130999	0.17085	0.0229872	0.0588949	0.0223812	0.0267312
Sample 30	0.328462	0.244977	0.137976	0.038218	0.29184	0.0402669	0.0958584	0.0111535	0.0714941
Sample 31	0.267035	0.283885	0.081469	0.141534	0.144165	0.011745	0.0384971	0.0204042	0.0409263
Sample 32	0.294752	0.124065	0.122118	0.212511	0.211815	0.0258664	0.0624329	0.045013	0.0262788
Sample 33	0.293685	0.057445	0.163829	0.138935	0.203388	0.0333209	0.059732	0.0282577	0.0116836
Sample 34	0.265976	0.207377	0.092617	0.144876	0.186877	0.017308	0.0497048	0.027074	0.038754
Sample 35	0.196042	0.222074	0.076318	0.198323	0.236082	0.0180173	0.046282	0.0468205	0.0524277
Sample 36	0.243732	0.144186	0.197562	0.139998	0.200787	0.0396679	0.0489382	0.0281098	0.0289507
Sample 37	0.244548	0.243572	0.120522	0.13488	0.178046	0.0214585	0.0435408	0.0240148	0.043367
Sample 38	0.396619	0.203428	0.028061	0.147939	0.245991	0.0069028	0.0975647	0.0363917	0.0500415

Sample 39	0.277038	0.184201	0.073166	0.110069	0.157041	0.0114901	0.0435063	0.0172853	0.0289271
Sample 40	0.233261	0.319451	0.132812	0.079722	0.17408	0.0231199	0.0406061	0.013878	0.05561
Sample 41	0.249954	0.139047	0.110122	0.189385	0.161696	0.0178063	0.0404166	0.0306228	0.0224833
Sample 42	0.227266	0.210394	0.146026	0.132045	0.165906	0.0242266	0.0377048	0.0219071	0.0349056
Sample 43	0.296585	0.231583	0.136236	0.093371	0.222481	0.0303099	0.0659845	0.0207733	0.0515228
Sample 44	0.295386	0.155465	0.20708	0.040433	0.173695	0.0359688	0.0513071	0.007023	0.0270035
Sample 45	0.430073	0.070926	0.188269	0.082714	0.194095	0.0365421	0.083475	0.0160544	0.0137664
Sample 46	0.084059	0.202917	0.21061	0.239952	0.164735	0.0346948	0.0138475	0.0395285	0.0334275
Sample 47	0.145505	0.200838	0.06849	0.285558	0.220723	0.0151173	0.0321163	0.0630292	0.0443296
Sample 48	0.224421	0.172032	0.172705	0.095705	0.216959	0.0374699	0.0486902	0.0207641	0.0373239
Sample 49	0.291809	0.171751	0.120261	0.152043	0.187775	0.022582	0.0547944	0.0285499	0.0322505
Sample 50	0.298518	0.155512	0.202649	0.090223	0.12061	0.0244415	0.0360043	0.0108818	0.0187563
Sample 51	0.242948	0.190733	0.195192	0.122332	0.207075	0.0404194	0.0503085	0.0253319	0.039496
Sample 52	0.278443	0.194253	0.098197	0.196843	0.162272	0.0159346	0.0451835	0.0319421	0.0315218
Sample 53	0.27727	0.258923	0.133182	0.127505	0.178604	0.0237868	0.0495215	0.0227729	0.0462447
Sample 54	0.252738	0.142332	0.178905	0.209944	0.23138	0.041395	0.0584785	0.0485768	0.0329328
Sample 55	0.411344	0.206986	0.009769	0.063342	0.202409	0.0019773	0.0832597	0.012821	0.0418958
Sample 56	0.271421	0.2009	0.10435	0.232918	0.274273	0.0286204	0.0744435	0.0638831	0.0551014
Sample 57	0.31779	0.186831	0.094732	0.152125	0.133255	0.0126235	0.0423471	0.0202714	0.0248962
Sample 58	0.2427	0.181094	0.13177	0.172228	0.163158	0.0214993	0.0395984	0.0281004	0.0295469
Sample 59	0.184727	0.189205	0.115253	0.151911	0.074173	0.0085487	0.0137018	0.0112677	0.0140339
Sample 60	0.209781	0.1785	0.151046	0.158788	0.157575	0.0238011	0.0330562	0.025021	0.0281271
Sample 61	0.190585	0.167578	0.111673	0.24726	0.102074	0.0113989	0.0194538	0.0252388	0.0171054
Sample 62	0.209506	0.193859	0.104437	0.177218	0.210406	0.0219742	0.0440813	0.0372877	0.0407891
Sample 63	0.38589	0.117865	0.149779	0.110528	0.175053	0.0262193	0.0675512	0.0193483	0.0206326
Sample 64	0.273708	0.16389	0.2034	0.187196	0.211052	0.042928	0.0577666	0.0395081	0.0345893
Sample 65	0.20349	0.304364	0.051652	0.206468	0.150186	0.0077574	0.0305613	0.0310086	0.0457112
Sample 66	0.175435	0.339659	0.129642	0.132777	0.139219	0.0180486	0.0244239	0.0184851	0.047287
Sample 67	0.405542	0.115554	0.10559	0.153397	0.180051	0.0190116	0.0730182	0.0276193	0.0208056
Sample 68	0.168179	0.199991	0.221963	0.152029	0.222831	0.0494602	0.0374755	0.0338768	0.0445642
Sample 69	0.316053	0.154444	0.116257	0.155116	0.197481	0.0229585	0.0624145	0.0306325	0.0304998
Sample 70	0.328909	0.201093	0.104086	0.070294	0.167087	0.0173914	0.0549564	0.0117452	0.0336
Sample 71	0.235027	0.22848	0.112485	0.192134	0.143048	0.0160908	0.0336201	0.0274844	0.0326836
Sample 72	0.256353	0.176313	0.152892	0.154747	0.236434	0.0361489	0.0606106	0.0365875	0.0416864
Sample 73	0.228262	0.225006	0.126663	0.111537	0.196945	0.0249456	0.0449551	0.0219667	0.0443138
Sample 74	0.411402	0.253477	-0.005414	0.059125	0.2296	-0.001243	0.0944579	0.0135751	0.0581983
Sample 75	0.273859	0.18068	0.08352	0.146499	0.203721	0.0170148	0.0557908	0.0298449	0.0368083
Sample 76	0.242797	0.131933	0.200946	0.129403	0.130151	0.0261533	0.0316003	0.0168419	0.0171712
Sample 77	0.293876	0.131803	0.118725	0.210412	0.2004	0.0237925	0.0588928	0.0421666	0.0264133
Sample 78	0.300234	0.134943	0.223387	0.161605	0.15263	0.0340956	0.0458247	0.0246658	0.0205964
Sample 79	0.227539	0.247028	0.127647	0.181811	0.184903	0.0236023	0.0420726	0.0336174	0.0456762
Sample 80	0.141971	0.220751	0.159344	0.184512	0.162966	0.0259677	0.0231364	0.0300692	0.0359749
Sample 81	0.211743	0.169496	0.127138	0.218259	0.189145	0.0240475	0.0400501	0.0412826	0.0320593
Sample 82	0.355252	0.15022	0.098521	0.096316	0.173384	0.017082	0.061595	0.0166997	0.0260457
Sample 83	0.303243	0.272858	0.09537	0.127164	0.204222	0.0194767	0.0619289	0.0259697	0.0557236

Sample 84	0.174537	0.233384	0.11232	0.192878	0.142742	0.0160328	0.0249138	0.0275318	0.0333137
Sample 85	0.257199	0.277594	0.226518	0.012416	0.170405	0.0385998	0.043828	0.0021157	0.0473034
Sample 86	0.298628	0.235648	0.037044	0.125562	0.195816	0.0072538	0.0584761	0.024587	0.0461436
Sample 87	0.290123	0.226185	0.005418	0.16324	0.200006	0.0010836	0.0580263	0.032649	0.0452384
Sample 88	0.299847	0.088533	0.184504	0.152187	0.133979	0.0247197	0.0401732	0.0203899	0.0118616
Sample 89	0.153749	0.304154	0.028221	0.219178	0.201007	0.0056726	0.0309046	0.0440563	0.0611371
Sample 90	0.285912	0.162371	0.137314	0.166546	0.191628	0.0263132	0.0547887	0.0319149	0.0311148
Sample 91	0.327376	0.122364	0.135879	0.157286	0.178715	0.0242836	0.058507	0.0281094	0.0218683
Sample 92	0.182177	0.276157	0.093499	0.185404	0.253925	0.0237417	0.0462593	0.0470787	0.0701232
Sample 93	0.209913	0.222276	0.142821	0.166125	0.216722	0.0309525	0.0454928	0.0360029	0.0481721
Sample 94	0.311948	0.334581	0.113272	0.067959	0.132127	0.0149663	0.0412168	0.0089792	0.0442072
Sample 95	0.287646	0.210793	0.064636	0.165872	0.207983	0.0134432	0.0598255	0.0344986	0.0438414
Sample 96	0.37733	0.196197	0.026446	0.11154	0.181882	0.0048101	0.0686295	0.0202871	0.0356847
Sample 97	0.311161	0.270008	0.119552	0.103484	0.22039	0.0263481	0.0685768	0.0228068	0.0595071
Sample 98	0.192265	0.228462	0.160171	0.164728	0.210379	0.0336966	0.0404485	0.0346553	0.0480636
Sample 99	0.244023	0.154175	0.118338	0.205704	0.156567	0.0185278	0.0382059	0.0322065	0.0241387
Sample 100	0.225519	0.148454	0.098362	0.222649	0.203669	0.0200333	0.0459312	0.0453467	0.0302355
Sample 101	0.249104	0.21967	0.16736	0.102432	0.190238	0.0318382	0.047389	0.0194865	0.0417896
Sample 102	0.11745	0.359064	0.163702	0.099127	0.19771	0.0323655	0.023221	0.0195984	0.0709905
Sample 103	0.146234	0.192753	0.174784	0.213697	0.177367	0.0310009	0.0259371	0.0379028	0.034188
Sample 104	0.387701	0.152072	0.173228	0.04968	0.237604	0.0411597	0.0921193	0.0118042	0.0361329
Sample 105	0.296848	0.192214	0.133401	0.138922	0.173238	0.0231101	0.0514254	0.0240666	0.0332988
Sample 106	0.303185	0.271256	0.111736	0.070444	0.198743	0.0222067	0.0602559	0.0140003	0.0539102
Sample 107	0.29299	0.197835	0.147011	0.146597	0.155828	0.0229084	0.045656	0.0228439	0.0308282
Sample 108	0.272114	0.222547	0.093768	0.160369	0.148403	0.0139155	0.0403825	0.0237992	0.0330266
Sample 109	0.208298	0.163302	0.112626	0.268997	0.225422	0.0253884	0.046955	0.0606378	0.0368119
Sample 110	0.285669	0.198561	0.155016	0.09551	0.117922	0.0182798	0.0336867	0.0112627	0.0234147
Sample 111	0.363203	0.186758	0.129259	0.070736	0.169662	0.0219303	0.0616217	0.0120012	0.0316857
Sample 112	0.191181	0.246015	0.15404	0.19052	0.132648	0.0204331	0.0253598	0.0252721	0.0326334
Sample 113	0.337059	0.123951	0.164063	0.161956	0.081513	0.0133733	0.0274747	0.0132015	0.0101036
Sample 114	0.23312	0.158582	0.172619	0.202721	0.136558	0.0235725	0.0318344	0.0276832	0.0216556
Sample 115	0.277373	0.091894	0.18736	0.17995	0.137427	0.0257483	0.0381185	0.02473	0.0126287
Sample 116	0.261253	0.195126	0.083251	0.24182	0.100561	0.0083718	0.0262719	0.0243177	0.0196221
Sample 117	0.23873	0.265491	0.150747	0.067699	0.199009	0.03	0.0475094	0.0134727	0.0528351
Sample 118	0.298675	0.260572	0.069737	0.106552	0.186083	0.0129769	0.0555783	0.0198275	0.048488
Sample 119	0.291698	0.225088	0.089747	0.143977	0.137463	0.0123369	0.0400977	0.0197915	0.0309413
Sample 120	0.330801	0.148786	0.112484	0.150551	0.176766	0.0198833	0.0584744	0.0266123	0.0263003
Sample 121	0.405075	0.138259	0.043024	0.116335	0.154437	0.0066445	0.0625586	0.0179664	0.0213523
Sample 122	0.194581	0.179451	0.116564	0.267087	0.128282	0.0149531	0.0249612	0.0342625	0.0230203
Sample 123	0.172307	0.329174	0.146264	0.129963	0.195931	0.0286577	0.0337603	0.0254638	0.0644954
Sample 124	0.187454	0.125514	0.19157	0.251147	0.113447	0.021733	0.0212661	0.0284919	0.0142392
Sample 125	0.303935	0.168765	0.153419	0.138748	0.213406	0.0327405	0.0648616	0.0296097	0.0360155
Sample 126	0.443946	0.103074	0.102759	0.021232	0.19079	0.0196054	0.0847005	0.0040509	0.0196655
Sample 127	0.33474	0.144923	0.142745	0.077239	0.196006	0.0279789	0.065611	0.0151393	0.0284058
Sample 128	0.284181	0.090463	0.161155	0.187115	0.130463	0.0210248	0.0370751	0.0244116	0.0118021

Sample 129	0.354328	0.116033	0.046756	0.247193	0.291639	0.0136359	0.1033359	0.0720911	0.0338397
Sample 130	0.256747	0.179534	0.148756	0.128953	0.135507	0.0201575	0.034791	0.017474	0.0243281
Sample 131	0.388879	0.068618	0.089999	0.14889	0.222295	0.0200063	0.0864459	0.0330975	0.0152534
Sample 132	0.382878	0.057481	0.141189	0.178705	0.165965	0.0234324	0.0635443	0.0296588	0.0095398
Sample 133	0.312731	0.21847	0.146981	0.139394	0.176427	0.0259314	0.0551742	0.0245929	0.038544
Sample 134	0.210011	0.257108	0.0457	0.222455	0.160753	0.0073464	0.0337599	0.0357603	0.0413309
Sample 135	0.338357	0.155661	0.12992	0.150003	0.196946	0.0255872	0.0666381	0.0295425	0.0306568
Sample 136	0.27813	0.338735	0.127629	0.028368	0.167401	0.0213652	0.0465592	0.0047488	0.0567046
Sample 137	0.284102	0.118448	0.22791	0.113827	0.15868	0.0361648	0.0450813	0.0180621	0.0187953
Sample 138	0.277586	0.257404	0.123695	0.08856	0.215521	0.0266589	0.0598256	0.0190865	0.055476
Sample 139	0.313637	0.112712	0.159288	0.154794	0.175204	0.0279079	0.0549505	0.0271205	0.0197476
Sample 140	0.381754	0.147901	0.063885	0.157276	0.217527	0.0138967	0.0830418	0.0342118	0.0321725
Sample 141	0.258661	0.208012	0.175363	0.108778	0.206508	0.0362139	0.0534156	0.0224635	0.0429561
Sample 142	0.258924	0.239942	0.175263	0.090176	0.085098	0.0149145	0.0220339	0.0076738	0.0204186
Sample 143	0.119519	0.221399	0.267157	0.159749	0.099579	0.0266032	0.0119016	0.0159076	0.0220467
Sample 144	0.371037	0.191559	0.087282	0.105281	0.147742	0.0128952	0.0548177	0.0155544	0.0283013
Sample 145	0.222731	0.217683	0.069606	0.244224	0.163419	0.0113749	0.0363985	0.0399108	0.0355735
Sample 146	0.258763	0.207463	0.133395	0.129991	0.220374	0.0293968	0.0570246	0.0286466	0.0457195
Sample 147	0.245122	0.140235	0.236451	0.137878	0.202477	0.0478759	0.0496316	0.0279171	0.0283944
Sample 148	0.244038	0.14735	0.15465	0.183443	0.213954	0.033088	0.0522129	0.0392484	0.0315261
Sample 149	0.290825	0.115588	0.163723	0.154187	0.159877	0.0261755	0.0464962	0.024651	0.0184799
Sample 150	0.234831	0.289507	0.090414	0.103874	0.183615	0.0166014	0.0431185	0.0190728	0.0531578
Sample 151	0.281545	0.225096	0.169858	0.02649	0.201079	0.0341549	0.0566128	0.0053266	0.0452621
Sample 152	0.338028	0.152329	0.139345	0.056728	0.214329	0.0298657	0.0724492	0.0121585	0.0326485
Sample 153	0.37163	0.174656	0.116026	0.088907	0.171088	0.0198507	0.0635814	0.0152109	0.0298815
Sample 154	0.224844	0.178416	0.192213	0.134924	0.159124	0.0305857	0.0357781	0.0214696	0.0283903
Sample 155	0.328647	0.161212	0.117461	0.188637	0.19452	0.0228485	0.0639284	0.0366937	0.031359
Sample 156	0.210117	0.170901	0.189568	0.158295	0.178638	0.033864	0.0375349	0.0282775	0.0305294
Sample 157	0.195703	0.22559	0.201502	0.147457	0.15213	0.0306545	0.0297723	0.0224326	0.034319
Sample 158	0.349454	0.169055	0.147721	0.123345	0.253044	0.0373799	0.0884272	0.0312117	0.0427784
Sample 159	0.263918	0.095362	0.194172	0.143474	0.21492	0.0417314	0.0567213	0.0308354	0.0204952
Sample 160	0.305969	0.092391	0.239666	0.13835	0.151268	0.0362538	0.0462833	0.0209279	0.0139758
Sample 161	0.231415	0.097221	0.145409	0.22357	0.172396	0.0250679	0.039895	0.0385426	0.0167605
Sample 162	0.257898	0.261733	0.147316	0.066866	0.139406	0.0205367	0.0359525	0.0093215	0.0364872
Sample 163	0.218838	0.199963	0.144694	0.186184	0.229294	0.0331775	0.0501782	0.0426909	0.0458503
Sample 164	0.213405	0.186602	0.190788	0.179155	0.134665	0.0256925	0.0287382	0.0241259	0.0251288
Sample 165	0.276487	0.226805	0.037506	0.221745	0.19772	0.0074157	0.054667	0.0438434	0.0448439
Sample 166	0.286161	0.089836	0.208119	0.215591	0.216099	0.0449743	0.0618391	0.046589	0.0194135
Sample 167	0.153345	0.227003	0.258375	0.134176	0.262878	0.0679211	0.040311	0.0352719	0.0596741
Sample 168	0.248817	0.206304	0.119709	0.174606	0.181809	0.0217642	0.0452372	0.0317449	0.0375079
Sample 169	0.349418	0.174301	0.044115	0.178841	0.194357	0.0085741	0.0679118	0.034759	0.0338766
Sample 170	0.233339	0.179177	0.156606	0.197611	0.242071	0.0379098	0.0564846	0.0478359	0.0433736
Sample 171	0.258603	0.216031	0.092643	0.156081	0.273155	0.0253059	0.0706387	0.0426343	0.0590099
Sample 172	0.190886	0.254513	0.161521	0.170831	0.107737	0.0174018	0.0205655	0.0184048	0.0274205
Sample 173	0.351714	0.160461	0.062074	0.10054	0.147222	0.0091387	0.05178	0.0148017	0.0236234

Sample 174	0.207003	0.199891	0.145358	0.189528	0.185979	0.0270335	0.0384982	0.0352482	0.0371755
Sample 175	0.296353	0.221773	0.069763	0.110679	0.213704	0.0149086	0.0633318	0.0236525	0.0473938
Sample 176	0.234371	0.227019	0.085095	0.204821	0.247879	0.0210933	0.0580956	0.0507708	0.0562732
Sample 177	0.232106	0.239348	0.061908	0.201436	0.113759	0.0070426	0.0264041	0.0229152	0.027228
Sample 178	0.299939	0.23695	0.134398	0.078087	0.245742	0.0330272	0.0737076	0.0191893	0.0582286
Sample 179	0.372167	0.115607	0.092833	0.169207	0.216905	0.0201359	0.0807249	0.0367018	0.0250757
Sample 180	0.222509	0.236784	0.074036	0.164328	0.190961	0.014138	0.0424905	0.0313802	0.0452165
Sample 181	0.27934	0.193811	0.154279	0.138326	0.202148	0.0311872	0.056468	0.0279623	0.0391785
Sample 182	0.358903	0.17681	0.02971	0.211378	0.222722	0.0066171	0.0799356	0.0470785	0.0393795
Sample 183	0.321256	0.199801	-0.023579	0.229229	0.134361	-0.003168	0.0431643	0.0307994	0.0268455
Sample 184	0.350916	0.16382	0.068447	0.152849	0.146971	0.0100597	0.0515745	0.0224644	0.0240768
Sample 185	0.436109	0.239741	-0.035349	0.069243	0.285847	-0.010104	0.1246604	0.0197929	0.0685292
Sample 186	0.319669	0.187677	0.12762	0.093964	0.154886	0.0197666	0.0495123	0.0145537	0.0290685
Sample 187	0.258499	0.14626	0.176802	0.12114	0.208178	0.0368063	0.0538138	0.0252187	0.0304481
Sample 188	0.267607	0.190478	0.091444	0.213118	0.187144	0.0171132	0.050081	0.0398838	0.0356468
Sample 189	0.353924	0.156623	0.145694	0.083434	0.153732	0.0223978	0.0544094	0.0128265	0.024078
Sample 190	0.235373	0.204637	0.118736	0.19616	0.222569	0.026427	0.0523867	0.0436591	0.0455459
Sample 191	0.253959	0.233152	0.089781	0.135007	0.247972	0.0222632	0.0629747	0.033478	0.0578152
Sample 192	0.400939	0.242355	-0.085446	0.135878	0.123418	-0.010546	0.0494831	0.0167698	0.029911
Sample 193	0.288582	0.14967	0.15655	0.190383	0.196873	0.0308205	0.056814	0.0374813	0.029466
Sample 194	0.29046	0.186141	0.216199	0.092863	0.217893	0.0471082	0.0632892	0.0202342	0.0405588
Sample 195	0.252132	0.242346	0.110946	0.149869	0.188568	0.0209209	0.047544	0.0282605	0.0456987
Sample 196	0.319612	0.059428	0.143743	0.208771	0.19672	0.0282771	0.0628741	0.0410694	0.0116907
Sample 197	0.280956	0.221884	0.104237	0.115877	0.105832	0.0110316	0.0297341	0.0122635	0.0234824
Sample 198	0.298827	0.231324	0.069121	0.119039	0.178594	0.0123446	0.0533687	0.0212597	0.0413131
Sample 199	0.261186	0.221565	0.119003	0.078612	0.160387	0.0190865	0.0418908	0.0126083	0.0355361
Sample 200	0.193321	0.186991	0.151926	0.218757	0.255795	0.0388619	0.0494505	0.0559569	0.0478314
Sample 201	0.312687	0.159978	0.002645	0.174432	0.183709	0.0004859	0.0574434	0.0320447	0.0293894
Sample 202	0.25526	0.132842	0.18879	0.193708	0.199865	0.0377325	0.0510175	0.0387154	0.0265505
Sample 203	0.32801	0.152073	0.120718	0.135397	0.195727	0.0236278	0.0642004	0.0265008	0.0297648
Sample 204	0.208488	0.103892	0.09731	0.223258	0.253126	0.0246317	0.0527737	0.0565124	0.0262978
Sample 205	0.359235	0.229121	0.034544	0.083242	0.175419	0.0060597	0.0630166	0.0146022	0.0401922
Sample 206	0.357949	0.136054	0.068981	0.197303	0.158414	0.0109276	0.0567041	0.0312556	0.0215529
Sample 207	0.29307	0.260726	0.120348	0.119011	0.247496	0.0297856	0.0725337	0.0294547	0.0645286
Sample 208	0.284823	0.245775	0.103499	0.148021	0.134581	0.013929	0.0383318	0.0199208	0.0330766
Sample 209	0.298624	0.178069	0.066648	0.21579	0.130691	0.0087103	0.0390275	0.0282018	0.023272
Sample 210	0.331873	0.218699	0.005449	0.13291	0.189601	0.0010331	0.0629235	0.0251999	0.0414655
Sample 211	0.207455	0.148988	0.256025	0.150704	0.148056	0.037906	0.030715	0.0223126	0.0220586
Sample 212	0.328898	0.1552	0.145486	0.174285	0.206282	0.0300111	0.0678457	0.0359519	0.032015
Sample 213	0.368651	0.105373	0.07634	0.137822	0.21881	0.016704	0.0806645	0.0301568	0.0230567
Sample 214	0.113154	0.283872	0.233136	0.148653	0.253696	0.0591457	0.0287067	0.0377127	0.0720172
Sample 215	0.399163	0.18491	0.065365	0.046574	0.168542	0.0110167	0.0672757	0.0078497	0.0311651
Sample 216	0.285539	0.21778	0.10623	0.1173	0.221179	0.0234958	0.0631552	0.0259443	0.0481684
Sample 217	0.234732	0.190578	0.14254	0.204002	0.167313	0.0238488	0.0392737	0.0341322	0.0318862
Sample 218	0.217226	0.177052	0.224038	0.126873	0.177068	0.03967	0.0384638	0.0224651	0.0313502

Sample 219	0.369154	0.202601	0.033518	0.154808	0.178858	0.005995	0.0660261	0.0276886	0.0362368
Sample 220	0.332916	0.103693	0.226796	0.117694	0.157205	0.0356535	0.0523361	0.0185021	0.0163011
Sample 221	0.297474	0.176604	0.10151	0.185515	0.174519	0.0177154	0.0519149	0.0323759	0.0308208
Sample 222	0.280467	0.158607	0.142595	0.148937	0.173868	0.0247927	0.0487642	0.0258954	0.0275767
Sample 223	0.379262	0.109762	0.101648	0.09308	0.176669	0.0179581	0.0670038	0.0164444	0.0193915
Sample 224	0.295842	0.093558	0.210013	0.155743	0.209447	0.0439866	0.0619632	0.0326199	0.0195954
Sample 225	0.286519	0.123899	0.198313	0.109169	0.140579	0.0278786	0.0402786	0.0153469	0.0174176
Sample 226	0.288609	0.242933	0.158299	0.031199	0.153646	0.024322	0.0443436	0.0047936	0.0373257
Sample 227	0.249186	0.221091	0.109885	0.182127	0.16343	0.0179585	0.0407245	0.029765	0.0361329
Sample 228	0.224152	0.124105	0.135379	0.236908	0.233091	0.0315556	0.0522478	0.0552211	0.0289278
Sample 229	0.266277	0.235307	0.209244	0.079452	0.154461	0.03232	0.0411294	0.0122722	0.0363458
Sample 230	0.213453	0.261826	0.167994	0.147691	0.235215	0.0395147	0.0502073	0.0347391	0.0615854
Sample 231	0.404645	0.017253	0.149606	0.151074	0.141336	0.0211447	0.0571909	0.0213522	0.0024385
Sample 232	0.207964	0.159797	0.127889	0.192078	0.19505	0.0249447	0.0405634	0.0374648	0.0311684
Sample 233	0.414688	0.264173	0.035221	0.059465	0.220508	0.0077665	0.091442	0.0131125	0.0582523
Sample 234	0.253565	0.096693	0.197815	0.177092	0.235731	0.0466311	0.0597731	0.0417461	0.0227935
Sample 235	0.172815	0.243576	0.196002	0.139574	0.214885	0.0421179	0.0371354	0.0299924	0.0523408
Sample 236	0.295768	0.226293	0.043153	0.180869	0.156635	0.0067593	0.0463276	0.0283304	0.0354454
Sample 237	0.229775	0.203228	0.201636	0.139035	0.163599	0.0329874	0.037591	0.022746	0.0332479
Sample 238	0.338338	0.164557	0.080341	0.193446	0.225581	0.0181234	0.0763226	0.0436377	0.0371209
Sample 239	0.259086	0.255763	0.102863	0.139494	0.112352	0.0115569	0.0291088	0.0156724	0.0287355
Sample 240	0.245735	0.243781	0.268726	0.017648	0.197945	0.053193	0.048642	0.0034933	0.0482552
Sample 241	0.262039	0.259046	0.068712	0.198908	0.165401	0.011365	0.0433415	0.0328996	0.0428465
Sample 242	0.314519	0.141468	0.109345	0.199409	0.240137	0.0262578	0.0755276	0.0478855	0.0339717
Sample 243	0.257233	0.240053	0.173939	0.09019	0.17732	0.0308429	0.0456126	0.0159925	0.0425662
Sample 244	0.211751	0.208747	0.168906	0.096302	0.189282	0.0319709	0.0400807	0.0182282	0.039512
Sample 245	0.138993	0.292052	0.19642	0.167398	0.166218	0.0326485	0.0231031	0.0278246	0.0485443
Sample 246	0.264067	0.280635	0.115952	0.071328	0.175818	0.0203864	0.0464277	0.0125407	0.0493407
Sample 247	0.31838	0.162347	0.215928	0.084685	0.163905	0.0353917	0.0521841	0.0138803	0.0266095
Sample 248	0.277971	0.141723	0.21142	0.09784	0.159367	0.0336934	0.0442994	0.0155925	0.022586
Sample 249	0.380471	0.135294	0.089133	0.138758	0.164925	0.0147003	0.0627492	0.0228847	0.0223134
Sample 250	0.410095	0.225703	0.058511	0.073795	0.083237	0.0048703	0.0341351	0.0061425	0.0187868
Sample 251	0.378006	0.097908	0.116696	0.16229	0.199892	0.0233266	0.0755604	0.0324405	0.019571
Sample 252	0.242279	0.170229	0.166921	0.205634	0.177825	0.0296827	0.0430833	0.0365669	0.030271
Sample 253	0.189986	0.209315	0.276418	0.100938	0.180912	0.0500073	0.0343707	0.0182609	0.0378676
Sample 254	0.222089	0.307507	0.128179	0.10141	0.147061	0.0188501	0.0326606	0.0149135	0.0452223
Sample 255	0.287409	0.222336	0.131576	0.11118	0.204565	0.0269158	0.0587938	0.0227435	0.0454822
Sample 256	0.175758	0.195676	0.093326	0.208105	0.226717	0.0211586	0.0398473	0.0471809	0.0443631
Sample 257	0.348129	0.167061	0.061881	0.086114	0.282488	0.0174806	0.0983423	0.0243262	0.0471927
Sample 258	0.178363	0.240248	0.210537	0.095874	0.178988	0.0376836	0.0319248	0.0171603	0.0430015
Sample 259	0.302156	0.145364	0.102983	0.123628	0.182955	0.0188413	0.055281	0.0226184	0.0265951
Sample 260	0.178651	0.163634	0.276349	0.12557	0.199856	0.05523	0.0357045	0.0250959	0.0327032
Sample 261	0.210502	0.279884	0.06176	0.126228	0.286915	0.0177199	0.0603962	0.0362167	0.0803029
Sample 262	0.237466	0.220473	0.159279	0.181001	0.267485	0.0426047	0.0635186	0.0484151	0.0589732
Sample 263	0.246851	0.221058	0.041641	0.177797	0.19932	0.0082999	0.0492023	0.0354385	0.0440613

Sample 264	0.225305	0.217202	0.146074	0.188476	0.12379	0.0180825	0.0278905	0.0233314	0.0268874
Sample 265	0.33914	0.191481	0.086433	0.075418	0.153051	0.0132287	0.0519057	0.0115428	0.0293064
Sample 266	0.285996	0.224965	0.077207	0.169672	0.182932	0.0141236	0.0523178	0.0310384	0.0411533
Sample 267	0.174937	0.233969	0.210486	0.095683	0.1695	0.0356774	0.0296518	0.0162183	0.0396577
Sample 268	0.422809	0.107247	0.122288	0.087586	0.17274	0.021124	0.073036	0.0151296	0.0185258
Sample 269	0.27114	0.166691	0.210699	0.158134	0.149033	0.0314011	0.0404088	0.0235672	0.0248425
Sample 270	0.35088	0.123993	0.150734	0.087343	0.166708	0.0251286	0.0584945	0.0145608	0.0206706
Sample 271	0.218319	0.232204	0.152659	0.175276	0.157491	0.0240424	0.0343833	0.0276044	0.03657
Sample 272	0.246615	0.228067	0.105445	0.198379	0.222966	0.0235106	0.0549868	0.0442318	0.0508512
Sample 273	0.271566	0.160179	0.184707	0.095484	0.214774	0.0396703	0.0583253	0.0205075	0.0344023
Sample 274	0.324352	0.098637	0.033918	0.249456	0.136564	0.004632	0.0442948	0.0340667	0.0134703
Sample 275	0.201398	0.17098	0.122697	0.249412	0.202065	0.0247928	0.0406955	0.0503974	0.0345491
Sample 276	0.113082	0.276587	0.195033	0.21331	0.214753	0.0418839	0.0242847	0.045809	0.0593979
Sample 277	0.279358	0.19207	0.124248	0.168755	0.160974	0.0200007	0.0449694	0.0271652	0.0309183
Sample 278	0.248703	0.252979	0.148536	0.102043	0.209785	0.0311606	0.0521742	0.0214071	0.0530712
Sample 279	0.210051	0.288663	0.029036	0.191684	0.201973	0.0058645	0.0424246	0.038715	0.0583021
Sample 280	0.347197	0.186845	-0.008351	0.164945	0.124344	-0.001038	0.0431719	0.0205099	0.0232331
Sample 281	0.272795	0.234751	0.107226	0.147903	0.224144	0.0240341	0.0611454	0.0331516	0.052618
Sample 282	0.222909	0.190867	0.160886	0.195287	0.152994	0.0246146	0.0341037	0.0298777	0.0292015
Sample 283	0.3727	0.096973	0.119194	0.168196	0.171538	0.0204463	0.0639322	0.028852	0.0166346
Sample 284	0.122632	0.25614	0.215033	0.210714	0.166415	0.0357847	0.0204078	0.035066	0.0426255
Sample 285	0.255618	0.248099	0.073127	0.151986	0.204748	0.0149726	0.0523373	0.0311188	0.0507978
Sample 286	0.370229	0.160274	0.08785	0.147522	0.111605	0.0098045	0.0413194	0.0164642	0.0178874
Sample 287	0.291521	0.153807	0.131771	0.1786	0.194121	0.0255795	0.0565903	0.03467	0.0298572
Sample 288	0.393713	0.141433	0.054671	0.116796	0.165225	0.009033	0.0650512	0.0192976	0.0233683
Sample 289	0.399375	0.226517	0.092243	-0.004235	0.231122	0.0213194	0.0923043	-0.000979	0.0523531
Sample 290	0.259535	0.288313	0.076844	0.141619	0.192342	0.0147803	0.0499195	0.0272393	0.0554547
Sample 291	0.198794	0.20229	0.010643	0.24213	0.206582	0.0021987	0.0410673	0.0500197	0.0417895
Sample 292	0.327237	0.239071	0.088349	0.082794	0.215617	0.0190495	0.0705579	0.0178518	0.0515478
Sample 293	0.338207	0.160744	0.063461	0.185757	0.163058	0.0103478	0.0551474	0.0302892	0.0262106
Sample 294	0.245814	0.206534	0.146851	0.178634	0.171726	0.0252181	0.0422127	0.0306761	0.0354673
Sample 295	0.260911	0.174157	0.142769	0.186556	0.150187	0.021442	0.0391854	0.0280183	0.0261561
Sample 296	0.297752	0.166426	0.159576	0.09894	0.15288	0.024396	0.0455203	0.0151259	0.0254432
Sample 297	0.203666	0.187016	0.144733	0.183144	0.147464	0.0213429	0.0300334	0.0270071	0.0275781
Sample 298	0.320045	0.196232	0.075041	0.165858	0.169786	0.0127409	0.0543392	0.0281604	0.0333174
Sample 299	0.303503	0.207867	0.126072	0.107715	0.161721	0.0203885	0.0490828	0.0174198	0.0336165
Sample 300	0.180161	0.286088	0.151179	0.058606	0.110886	0.0167636	0.0199773	0.0064986	0.0317232
Sample 301	0.283616	0.268082	-0.026566	0.160831	0.20253	-0.00538	0.0574407	0.0325731	0.0542946
Sample 302	0.168094	0.212972	0.178281	0.196415	0.187571	0.0334403	0.0315296	0.0368418	0.0399474
Sample 303	0.261476	0.193208	0.105607	0.199513	0.164625	0.0173856	0.0430455	0.0328448	0.0318069
Sample 304	0.426918	0.070037	0.038137	0.222084	0.160291	0.006113	0.0684311	0.0355981	0.0112263
Sample 305	0.272212	0.138894	0.164986	0.209675	0.205166	0.0338495	0.0558486	0.0430182	0.0284963
Sample 306	0.314317	0.168087	0.014134	0.155737	0.179957	0.0025435	0.0565635	0.028026	0.0302484
Sample 307	0.288296	0.210218	0.16471	0.122813	0.180208	0.0296821	0.0519532	0.0221319	0.037883
Sample 308	0.279952	0.277095	0.074057	0.139301	0.126257	0.0093502	0.0353459	0.0175877	0.0349852

Sample 309	0.290561	0.161323	0.176758	0.156429	0.191643	0.0338744	0.055684	0.0299785	0.0309164
Sample 310	0.243761	0.110025	0.155488	0.203176	0.201266	0.0312944	0.0490608	0.0408924	0.0221443
Sample 311	0.304608	0.256734	0.094463	0.14666	0.17414	0.0164498	0.0530444	0.0255394	0.0447077
Sample 312	0.316225	0.141715	0.159908	0.083749	0.204229	0.0326579	0.0645823	0.017104	0.0289423
Sample 313	0.306023	0.166229	0.050963	0.158486	0.232915	0.01187	0.0712773	0.0369138	0.0387172
Sample 314	0.293593	0.156604	0.088692	0.239538	0.236844	0.0210062	0.0695357	0.0567331	0.0370907
Sample 315	0.161365	0.235634	0.154491	0.189688	0.14037	0.0216859	0.0226508	0.0266265	0.0330759
Sample 316	0.227891	0.21027	0.097497	0.179313	0.197476	0.0192533	0.045003	0.03541	0.0415233
Sample 317	0.402361	0.095447	0.102633	0.121277	0.158002	0.0162162	0.0635738	0.019162	0.0150808
Sample 318	0.19753	0.298436	0.059091	0.224903	0.178178	0.0105287	0.0351955	0.0400728	0.0531747
Sample 319	0.161293	0.232615	0.125368	0.189285	0.18998	0.0238174	0.0306424	0.0359604	0.0441922
Sample 320	0.358373	0.186857	0.124689	0.073532	0.210626	0.0262627	0.0754827	0.0154878	0.0393569
Sample 321	0.312719	0.287092	0.046149	0.074299	0.254015	0.0117225	0.0794353	0.0188731	0.0729257
Sample 322	0.226498	0.149507	0.318099	0.121299	0.206108	0.0655627	0.046683	0.0250007	0.0308146
Sample 323	0.279425	0.259121	0.036496	0.102301	0.191225	0.0069789	0.053433	0.0195625	0.0495504
Sample 324	0.206202	0.161142	0.11517	0.185251	0.139212	0.016033	0.0287058	0.0257892	0.0224329
Sample 325	0.245136	0.148758	0.203892	0.206066	0.203127	0.041416	0.0497937	0.0418576	0.0302168
Sample 326	0.318848	0.118795	0.119301	0.180627	0.228978	0.0273173	0.0730092	0.0413596	0.0272014
Sample 327	0.214163	0.314163	0.077257	0.122794	0.200402	0.0154825	0.0429187	0.0246082	0.0629589
Sample 328	0.30441	0.150346	0.059051	0.222882	0.186648	0.0110218	0.0568175	0.0416005	0.0280618
Sample 329	0.216307	0.211267	0.136687	0.126773	0.220923	0.0301973	0.0477872	0.0280071	0.0466737
Sample 330	0.290605	0.221338	0.025788	0.212731	0.210088	0.0054177	0.0610526	0.0446922	0.0465005
Sample 331	0.333878	0.229977	0.108998	0.118739	0.198618	0.021649	0.0663142	0.0235837	0.0456776
Sample 332	0.140304	0.273531	0.163007	0.164677	0.259176	0.0422475	0.0363634	0.0426803	0.0708927
Sample 333	0.318575	0.183364	0.194172	0.068785	0.177688	0.034502	0.056607	0.0122223	0.0325816
Sample 334	0.20235	0.175502	0.156121	0.151265	0.182293	0.0284598	0.036887	0.0275746	0.0319928
Sample 335	0.37445	0.143025	0.061431	0.172913	0.186488	0.0114561	0.0698304	0.0322462	0.0266724
Sample 336	0.349088	0.177508	0.070678	0.156921	0.189467	0.0133911	0.0661407	0.0297314	0.0336319
Sample 337	0.324184	0.263438	0.048154	0.143425	0.231874	0.0111657	0.0751698	0.0332565	0.0610844
Sample 338	0.271137	0.208032	0.109098	0.092445	0.206382	0.0225159	0.0559578	0.019079	0.0429341
Sample 339	0.327917	0.028593	0.136565	0.24701	0.204037	0.0278643	0.0669072	0.0503992	0.005834
Sample 340	0.185502	0.246453	0.104842	0.207878	0.199318	0.0208969	0.0369739	0.0414338	0.0491225
Sample 341	0.314892	0.108052	0.124239	0.172652	0.123965	0.0154013	0.0390356	0.0214028	0.0133947
Sample 342	0.324266	0.205728	0.133164	0.075215	0.196263	0.0261352	0.0636414	0.0147619	0.0403768
Sample 343	0.246112	0.228048	0.091431	0.16332	0.1784	0.0163113	0.0439064	0.0291363	0.0406838
Sample 344	0.330887	0.232332	0.093562	0.062523	0.233129	0.021812	0.0771394	0.0145759	0.0541633
Sample 345	0.285132	0.137459	0.169327	0.145534	0.145155	0.0245787	0.0413883	0.021125	0.0199529
Sample 346	0.320106	0.099801	0.161771	0.190901	0.211068	0.0341447	0.0675641	0.0402931	0.0210648
Sample 347	0.270996	0.111527	0.136345	0.264004	0.15908	0.0216898	0.04311	0.0419978	0.0177417
Sample 348	0.181006	0.232316	0.135257	0.202297	0.122614	0.0165844	0.0221939	0.0248044	0.0284852
Sample 349	0.279442	0.150896	0.151413	0.191833	0.238127	0.0360555	0.0665427	0.0456806	0.0359324
Sample 350	0.189921	0.335633	0.061654	0.172225	0.281488	0.0173549	0.0534605	0.0484793	0.0944767
Sample 351	0.225494	0.186611	0.104945	0.19202	0.237286	0.024902	0.0535066	0.0455637	0.0442802
Sample 352	0.39421	0.180376	0.096033	0.094136	0.211723	0.0203324	0.0834633	0.0199308	0.0381897
Sample 353	0.179592	0.222245	0.114888	0.220097	0.175565	0.0201703	0.0315301	0.0386413	0.0390184

Sample 354	0.228468	0.189098	0.189155	0.153871	0.174078	0.0329277	0.0397713	0.0267856	0.0329178
Sample 355	0.230555	0.167738	0.170338	0.151973	0.169794	0.0289224	0.0391469	0.0258041	0.0284809
Sample 356	0.233175	0.206619	0.207965	0.089085	0.245838	0.0511257	0.0573233	0.0219005	0.0507948
Sample 357	0.326922	0.296157	0.048459	0.047042	0.191933	0.0093009	0.0627471	0.0090289	0.0568423
Sample 358	0.291453	0.248545	0.166296	0.060443	0.228386	0.0379797	0.0665638	0.0138043	0.0567642
Sample 359	0.229301	0.163655	0.106103	0.242322	0.170371	0.0180769	0.0390662	0.0412846	0.0278821
Sample 360	0.248025	0.150176	0.187791	0.180126	0.180364	0.0338707	0.0447348	0.0324882	0.0270863
Sample 361	0.204654	0.103667	0.142482	0.258507	0.184384	0.0262714	0.0377349	0.0476646	0.0191145
Sample 362	0.262347	0.137797	0.203615	0.166964	0.231123	0.0470601	0.0606344	0.0385892	0.0318481
Sample 363	0.277223	0.122193	0.073525	0.252372	0.193534	0.0142296	0.0536521	0.0488426	0.0236485
Sample 364	0.331855	0.172205	0.094148	0.139138	0.101489	0.009555	0.0336796	0.014121	0.0174769
Sample 365	0.271011	0.181966	0.134494	0.125036	0.174924	0.0235262	0.0474063	0.0218718	0.0318302
Sample 366	0.241116	0.160165	0.192047	0.14573	0.21503	0.0412959	0.0518472	0.0313363	0.0344403
Sample 367	0.276708	0.121632	0.222009	0.152029	0.138838	0.0308233	0.0384176	0.0211074	0.0168871
Sample 368	0.14987	0.189119	0.186898	0.221619	0.196307	0.0366894	0.0294205	0.0435054	0.0371254
Sample 369	0.337361	0.220912	0.104574	0.07549	0.148442	0.0155232	0.0500785	0.0112059	0.0327926
Sample 370	0.414586	0.200156	0.069162	0.052593	0.144219	0.0099745	0.0597912	0.0075849	0.0288663
Sample 371	0.160023	0.252878	0.149232	0.154786	0.147706	0.0220425	0.0236364	0.0228628	0.0373516
Sample 372	0.203478	0.075986	0.289199	0.24838	0.196906	0.056945	0.040066	0.0489075	0.0149621
Sample 373	0.180742	0.169585	0.252908	0.165292	0.139553	0.0352941	0.0252231	0.023067	0.0236661
Sample 374	0.248106	0.192913	0.135684	0.17175	0.258775	0.0351116	0.0642036	0.0444446	0.0499211
Sample 375	0.308725	0.205206	0.017656	0.17159	0.191894	0.0033881	0.0592425	0.0329271	0.0393778
Sample 376	0.233744	0.143063	0.075562	0.266007	0.194346	0.0146852	0.0454272	0.0516974	0.0278037
Sample 377	0.112832	0.26085	0.194235	0.203634	0.253428	0.0492246	0.0285948	0.0516066	0.0661067
Sample 378	0.171826	0.295272	0.143163	0.140405	0.139514	0.0199732	0.0239721	0.0195885	0.0411946
Sample 379	0.275854	0.152451	0.164037	0.1635	0.230482	0.0378076	0.0635794	0.0376838	0.0351372
Sample 380	0.333405	0.17207	0.056953	0.187401	0.214514	0.0122172	0.07152	0.0402001	0.0369114
Sample 381	0.244911	0.146522	0.2288	0.177245	0.180208	0.0412316	0.0441349	0.031941	0.0264044
Sample 382	0.259073	0.21114	0.041429	0.238737	0.157269	0.0065155	0.0407442	0.0375459	0.0332058
Sample 383	0.234548	0.174545	0.145409	0.213202	0.204662	0.0297597	0.0480031	0.0436343	0.0357227
Sample 384	0.339878	0.217074	-0.031105	0.159488	0.234076	-0.007281	0.0795573	0.0373323	0.0508118
Sample 385	0.256511	0.186192	0.163457	0.171127	0.166532	0.0272208	0.0427173	0.0284981	0.0310069
Sample 386	0.293863	0.186065	0.060326	0.226405	0.124774	0.0075271	0.0366665	0.0282495	0.0232161
Sample 387	0.35279	0.209629	0.050331	0.070987	0.146241	0.0073605	0.0515924	0.0103812	0.0306564
Sample 388	0.336554	0.163346	0.028691	0.17381	0.155712	0.0044675	0.0524055	0.0270643	0.0254349
Sample 389	0.251659	0.179424	0.15758	0.189935	0.220936	0.0348151	0.0556005	0.0419635	0.0396412
Sample 390	0.24439	0.185976	0.115418	0.201897	0.156272	0.0180366	0.0381913	0.0315508	0.0290628
Sample 391	0.282169	0.232585	0.057294	0.165404	0.219805	0.0125935	0.0620222	0.0363566	0.0511233
Sample 392	0.268136	0.227805	0.126082	0.166096	0.237865	0.0299905	0.0637802	0.0395084	0.0541868
Sample 393	0.319358	0.131871	0.05904	0.190702	0.175428	0.0103573	0.0560243	0.0334545	0.0231339
Sample 394	0.307875	0.177859	0.185641	0.140998	0.178988	0.0332275	0.0551059	0.025237	0.0318346
Sample 395	0.275606	0.134389	0.235997	0.11049	0.246034	0.0580633	0.0678084	0.0271843	0.0330643
Sample 396	0.234853	0.187767	0.127394	0.215683	0.156649	0.0199561	0.0367895	0.0337865	0.0294135
Sample 397	0.330065	0.191601	0.185838	0.025947	0.147025	0.0273228	0.0485278	0.0038149	0.0281701
Sample 398	0.215467	0.200908	0.086993	0.178744	0.201424	0.0175225	0.0434002	0.0360033	0.0404677

Sample 399	0.289848	0.136721	0.201872	0.133169	0.167037	0.0337201	0.0484153	0.0222442	0.0228375
Sample 400	0.212145	0.148891	0.173681	0.220759	0.193267	0.0335668	0.0410006	0.0426654	0.0287757
Sample 401	0.216658	0.159048	0.30343	0.096536	0.163019	0.0494649	0.0353194	0.0157372	0.0259278
Sample 402	0.289631	0.094871	0.175912	0.176306	0.176012	0.0309626	0.0509785	0.031032	0.0166984
Sample 403	0.293144	0.138295	0.116959	0.223255	0.179752	0.0210236	0.0526932	0.0401305	0.0248588
Sample 404	0.343531	0.220578	0.054202	0.108154	0.168783	0.0091484	0.0579822	0.0182546	0.0372298
Sample 405	0.239611	0.26975	0.122294	0.146145	0.215489	0.026353	0.0516335	0.0314926	0.0581282
Sample 406	0.339404	0.159451	0.105909	0.109275	0.259317	0.027464	0.0880132	0.0283369	0.0413484
Sample 407	0.324918	0.250926	0.104989	0.074085	0.206035	0.0216314	0.0669445	0.0152641	0.0516995
Sample 408	0.376594	0.208584	0.058887	0.104423	0.235343	0.0138586	0.0886288	0.0245752	0.0490888
Sample 409	0.22491	0.130231	0.105493	0.296141	0.251043	0.0264833	0.0564621	0.0743441	0.0326936
Sample 410	0.373973	0.088985	0.19354	0.162011	0.191194	0.0370037	0.0715014	0.0309755	0.0170134
Sample 411	0.320512	0.162319	0.181754	0.128055	0.170421	0.0309747	0.054622	0.0218233	0.0276626
Sample 412	0.352447	0.233085	0.120226	0.102935	0.18082	0.0217393	0.0637295	0.0186127	0.0421464
Sample 413	0.274371	0.095918	0.185547	0.214671	0.22104	0.0410133	0.060647	0.0474509	0.0212017
Sample 414	0.250746	0.171988	0.159243	0.20752	0.178792	0.0284714	0.0448314	0.0371029	0.0307501
Sample 415	0.268392	0.05722	0.220872	0.176812	0.15203	0.0335792	0.0408036	0.0268807	0.0086992
Sample 416	0.176096	0.191661	0.218885	0.216074	0.182407	0.0399262	0.0321211	0.0394134	0.0349603
Sample 417	0.233571	0.118626	0.190004	0.214259	0.124836	0.0237193	0.0291581	0.0267472	0.0148088
Sample 418	0.234091	0.235438	0.058103	0.164109	0.167538	0.0097345	0.0392191	0.0274945	0.0394448
Sample 419	0.196867	0.206371	0.152581	0.152666	0.188764	0.0288018	0.0371614	0.0288178	0.0389554
Sample 420	0.332212	0.172483	0.067914	0.148472	0.132512	0.0089994	0.0440221	0.0196743	0.0228561
Sample 421	0.281154	0.16788	0.13209	0.189027	0.163015	0.0215327	0.0458323	0.0308142	0.027367
Sample 422	0.150192	0.209455	0.212893	0.197578	0.080516	0.0171413	0.0120929	0.0159082	0.0168645
Sample 423	0.181984	0.191022	0.224972	0.160409	0.113896	0.0256234	0.0207272	0.0182699	0.0217566
Sample 424	0.369756	0.131566	0.124692	0.122268	0.235979	0.0294247	0.0872547	0.0288527	0.0310468
Sample 425	0.270921	0.157635	0.153427	0.178664	0.132491	0.0203277	0.0358946	0.0236714	0.0208852
Sample 426	0.261535	0.255429	0.049712	0.199559	0.140659	0.0069924	0.0367873	0.0280698	0.0359284
Sample 427	0.365126	0.116854	0.065831	0.238695	0.233933	0.0154	0.085415	0.0558386	0.027336
Sample 428	0.345039	0.175057	0.00561	0.202421	0.21434	0.0012024	0.0739557	0.0433869	0.0375217
Sample 429	0.315439	0.182371	0.037529	0.170739	0.206336	0.0077436	0.0650864	0.0352296	0.0376297
Sample 430	0.288711	0.194094	0.12275	0.146027	0.138494	0.0170001	0.0399847	0.0202239	0.0268809
Sample 431	0.111438	0.180546	0.289009	0.194588	0.089054	0.0257374	0.009924	0.0173288	0.0160783
Sample 432	0.305514	0.177709	0.061803	0.15893	0.203991	0.0126073	0.0623221	0.0324203	0.036251
Sample 433	0.267817	0.162535	0.100559	0.193593	0.161135	0.0162036	0.0431547	0.0311946	0.0261901
Sample 434	0.29286	0.247151	0.120182	0.052005	0.162474	0.0195265	0.0475821	0.0084495	0.0401556
Sample 435	0.179623	0.277082	0.234428	0.15482	0.113172	0.0265307	0.0203283	0.0175213	0.0313579
Sample 436	0.240635	0.147612	0.154387	0.140283	0.180482	0.0278641	0.0434303	0.0253186	0.0266413
Sample 437	0.350048	0.232011	-0.017621	0.18213	0.180351	-0.003178	0.0631315	0.0328473	0.0418434
Sample 438	0.352941	0.164468	0.112362	0.076602	0.204241	0.0229489	0.072085	0.0156453	0.0335911
Sample 439	0.361861	0.232894	0.019737	0.162613	0.163298	0.003223	0.0590912	0.0265544	0.0380311
Sample 440	0.131641	0.281199	0.159322	0.185989	0.24821	0.0395453	0.0326746	0.0461643	0.0697964
Sample 441	0.244468	0.206501	0.20625	0.127026	0.167932	0.034636	0.041054	0.0213317	0.0346781
Sample 442	0.293696	0.23479	0.071367	0.161013	0.208308	0.0148663	0.0611792	0.0335403	0.0489086
Sample 443	0.183406	0.32887	0.171143	0.120697	0.203777	0.034875	0.0373739	0.0245953	0.0670161

Sample 444	0.121283	0.206906	0.261727	0.106338	0.158244	0.0414167	0.0191923	0.0168274	0.0327416
Sample 445	0.173253	0.196379	0.171602	0.210496	0.220774	0.0378853	0.0382498	0.046472	0.0433554
Sample 446	0.341628	0.169712	0.149271	0.146239	0.171943	0.0256661	0.0587405	0.0251448	0.0291808
Sample 447	0.294218	0.096644	0.209216	0.144475	0.147198	0.0307962	0.0433083	0.0212664	0.0142258
Sample 448	0.334577	0.18874	0.131054	0.114008	0.180146	0.0236089	0.0602727	0.0205381	0.0340008
Sample 449	0.294731	0.146629	0.163846	0.148958	0.24061	0.039423	0.0709152	0.0358408	0.0352804
Sample 450	0.230729	0.095486	0.141781	0.310036	0.185553	0.0263079	0.0428125	0.0575281	0.0177177
Sample 451	0.417891	0.120105	0.083058	0.111623	0.137443	0.0114157	0.0574362	0.0153418	0.0165076
Sample 452	0.205508	0.272262	0.153678	0.153669	0.248447	0.0381808	0.0510578	0.0381786	0.0676427
Sample 453	0.333298	0.142237	0.085054	0.141678	0.188546	0.0160366	0.062842	0.0267128	0.0268182
Sample 454	0.108168	0.313945	0.111278	0.191392	0.232349	0.0258553	0.0251327	0.0444697	0.0729448
Sample 455	0.196849	0.319838	0.095638	0.164784	0.163066	0.0155953	0.0320994	0.0268707	0.0521547
Sample 456	0.245051	0.161686	0.099993	0.187281	0.205701	0.0205687	0.0504072	0.0385239	0.033259
Sample 457	0.374918	0.188236	-0.081444	0.204632	0.231228	-0.018832	0.0866915	0.0473166	0.0435254
Sample 458	0.25073	0.150291	0.150683	0.250188	0.164625	0.0248062	0.0412764	0.0411872	0.0247417
Sample 459	0.351546	0.178122	0.007479	0.15892	0.216061	0.0016159	0.0759554	0.0343364	0.0384852
Sample 460	0.236298	0.293225	0.182172	0.044074	0.204682	0.0372873	0.0483659	0.0090212	0.0600179
Sample 461	0.203088	0.301108	0.127333	0.126813	0.150408	0.0191519	0.0305461	0.0190737	0.0452891
Sample 462	0.304989	0.188844	0.102072	0.165071	0.15887	0.0162162	0.0484536	0.0262248	0.0300016
Sample 463	0.302458	0.251995	0.161121	0.094613	0.164558	0.0265137	0.0497719	0.0155693	0.0414678
Sample 464	0.2702	0.267448	0.098425	0.067712	0.214549	0.021117	0.0579711	0.0145275	0.0573807
Sample 465	0.341666	0.170733	0.101782	0.160643	0.199545	0.0203101	0.0681777	0.0320555	0.0340689
Sample 466	0.272941	0.236259	0.122709	0.130978	0.11894	0.014595	0.0324636	0.0155785	0.0281006
Sample 467	0.147165	0.263105	0.14763	0.211464	0.172344	0.0254431	0.025363	0.0364446	0.0453446
Sample 468	0.371254	0.251496	0.022375	0.089996	0.212544	0.0047557	0.0789078	0.0191281	0.053454
Sample 469	0.225173	0.227404	0.097786	0.168307	0.234751	0.0229554	0.0528596	0.0395102	0.0533833
Sample 470	0.339647	0.208069	0.120068	0.095957	0.177961	0.0213674	0.0604439	0.0170766	0.0370282
Sample 471	0.265224	0.180604	0.094936	0.232648	0.175406	0.0166523	0.0465219	0.0408079	0.031679
Sample 472	0.289534	0.168234	0.165649	0.120215	0.230896	0.0382477	0.0668522	0.0277572	0.0388446
Sample 473	0.314648	0.16207	0.086088	0.174332	0.126356	0.0108777	0.0397577	0.0220279	0.0204785
Sample 474	0.257221	0.220556	0.111127	0.176791	0.060656	0.0067405	0.015602	0.0107234	0.013378
Sample 475	0.292088	0.254898	0.113365	0.119706	0.171829	0.0194794	0.0501892	0.020569	0.0437989
Sample 476	0.191569	0.157821	0.099544	0.255503	0.143904	0.0143248	0.0275675	0.0367679	0.0227111
Sample 477	0.367198	0.227577	0.038528	0.124679	0.174688	0.0067304	0.0641451	0.0217799	0.039755
Sample 478	0.176405	0.25032	0.019213	0.203778	0.246956	0.0047448	0.0435643	0.0503242	0.061818
Sample 479	0.19558	0.139456	0.19125	0.220604	0.138849	0.0265549	0.0271561	0.0306306	0.0193633
Sample 480	0.349853	0.226108	0.057587	0.135475	0.229996	0.0132448	0.0804648	0.0311587	0.0520039
Sample 481	0.353132	0.241782	0.064307	0.09116	0.155857	0.0100227	0.0550381	0.0142079	0.0376834
Sample 482	0.302917	0.333787	0.029096	0.107136	0.24549	0.0071428	0.0743631	0.0263008	0.0819414
Sample 483	0.337778	0.159201	0.112574	0.195681	0.150991	0.0169977	0.0510014	0.0295461	0.0240379
Sample 484	0.218611	0.224633	0.124078	0.203638	0.244513	0.0303387	0.0534532	0.0497921	0.0549257
Sample 485	0.307692	0.174084	0.130687	0.126099	0.171823	0.022455	0.0528686	0.0216667	0.0299116
Sample 486	0.282901	0.185043	-0.018447	0.21635	0.183694	-0.003389	0.0519672	0.0397422	0.0339913
Sample 487	0.388953	0.208186	0.027618	0.075967	0.179911	0.0049688	0.0699769	0.0136673	0.037455
Sample 488	0.379013	0.094731	0.161911	0.118648	0.227744	0.0368743	0.0863179	0.0270214	0.0215744

Sample 489	0.269061	0.257178	0.091712	0.147383	0.222713	0.0204255	0.0599234	0.0328241	0.0572769
Sample 490	0.248424	0.188695	0.157725	0.151668	0.133976	0.0211314	0.0332829	0.0203199	0.0252806
Sample 491	0.222193	0.214924	0.154617	0.159566	0.179926	0.0278196	0.0399783	0.0287101	0.0386704
Sample 492	0.319725	0.219061	0.068897	0.085729	0.191074	0.0131644	0.0610911	0.0163806	0.0418569
Sample 493	0.260997	0.102973	0.243824	0.133957	0.177674	0.0433212	0.0463724	0.0238007	0.0182956
Sample 494	0.28247	0.135423	0.149863	0.187022	0.160007	0.0239791	0.0451972	0.0299248	0.0216686
Sample 495	0.375515	0.167251	0.12714	0.108535	0.164371	0.0208981	0.0617238	0.01784	0.0274912
Sample 496	0.305007	0.166309	0.020144	0.250941	0.212015	0.0042708	0.0646661	0.0532033	0.03526
Sample 497	0.305038	0.142133	0.170783	0.078105	0.15964	0.0272638	0.0486963	0.0124687	0.0226901
Sample 498	0.256957	0.202763	0.073834	0.17943	0.130483	0.0096341	0.0335285	0.0234126	0.0264571
Sample 499	0.216537	0.1626	0.148975	0.188709	0.150919	0.0224832	0.0326795	0.0284798	0.0245394
Sample 500	0.107304	0.299051	0.167352	0.130422	0.117308	0.0196317	0.0125876	0.0152995	0.0350811
Sample 501	0.364627	0.10342	0.131866	0.19005	0.178396	0.0235244	0.065048	0.0339042	0.0184497
Sample 502	0.337917	0.168909	0.116108	0.107586	0.14863	0.0172571	0.0502246	0.0159905	0.0251049
Sample 503	0.254338	0.257282	0.035276	0.137062	0.213752	0.0075403	0.0543653	0.0292973	0.0549945
Sample 504	0.199245	0.17291	0.186395	0.171467	0.198809	0.037057	0.0396117	0.0340892	0.0343761
Sample 505	0.359352	0.169932	0.090247	0.084018	0.228822	0.0206505	0.0822276	0.0192252	0.0388842
Sample 506	0.23992	0.160136	0.189033	0.185226	0.250968	0.0474412	0.0602122	0.0464858	0.040189
Sample 507	0.320062	0.22441	0.072235	0.151727	0.085189	0.0061536	0.0272658	0.0129255	0.0191173
Sample 508	0.267323	0.13855	0.190034	0.144393	0.1561	0.0296643	0.0417291	0.0225397	0.0216277
Sample 509	0.269689	0.308146	0.014982	0.173263	0.184985	0.0027714	0.0498884	0.0320511	0.0570024
Sample 510	0.324271	0.125722	0.205112	0.099149	0.193769	0.0397443	0.0628337	0.019212	0.024361
Sample 511	0.340299	0.265697	-0.070559	0.093921	0.187422	-0.013224	0.0637795	0.0176029	0.0497975
Sample 512	0.2903	0.107625	0.121449	0.193334	0.1979	0.0240348	0.0574504	0.0382608	0.021299
Sample 513	0.282786	0.217813	0.11388	0.120235	0.214364	0.0244118	0.0606191	0.0257741	0.0466913
Sample 514	0.279159	0.167536	0.157264	0.171686	0.167628	0.0263618	0.0467949	0.0287794	0.0280837
Sample 515	0.187676	0.074904	0.129911	0.222261	0.106449	0.0138289	0.0199779	0.0236595	0.0079735
Sample 516	0.310338	0.237678	0.026068	0.20596	0.230701	0.0060139	0.0715953	0.0475152	0.0548326
Sample 517	0.313118	0.233787	0.0865	0.104845	0.209573	0.0181281	0.0656211	0.0219727	0.0489954
Sample 518	0.299765	0.195924	0.14068	0.099048	0.231519	0.0325701	0.0694013	0.0229315	0.0453601
Sample 519	0.360436	0.101346	0.108104	0.080378	0.178398	0.0192855	0.0643011	0.0143393	0.0180799
Sample 520	0.276369	0.267079	0.163134	0.041572	0.134416	0.0219278	0.0371484	0.0055879	0.0358997
Sample 521	0.207501	0.197193	0.231302	0.147008	0.221172	0.0511575	0.0458934	0.0325141	0.0436136
Sample 522	0.259585	0.136377	0.234471	0.120787	0.194698	0.045651	0.0505407	0.023517	0.0265523
Sample 523	0.330677	0.201253	0.145697	0.105561	0.22046	0.0321204	0.0729011	0.023272	0.0443682
Sample 524	0.314163	0.17483	0.015151	0.212639	0.274125	0.0041533	0.0861199	0.0582897	0.0479253
Sample 525	0.318701	0.123121	0.182913	0.10022	0.202631	0.0370638	0.0645787	0.0203077	0.0249481
Sample 526	0.326531	0.263178	0.114245	0.071445	0.200817	0.0229423	0.065573	0.0143474	0.0528506
Sample 527	0.380675	0.003099	0.05224	0.237805	0.144334	0.00754	0.0549443	0.0343233	0.0004473
Sample 528	0.212104	0.330528	0.00124	0.188991	0.238946	0.0002963	0.0506814	0.0451586	0.0789783
Sample 529	0.274697	0.188744	0.117278	0.177836	0.208382	0.0244386	0.0572419	0.0370578	0.0393309
Sample 530	0.202396	0.139072	0.222004	0.22821	0.195798	0.0434679	0.0396287	0.0446831	0.02723
Sample 531	0.265208	0.231064	0.103535	0.171914	0.194195	0.020106	0.0515021	0.0333848	0.0448715
Sample 532	0.31055	0.24851	0.07416	0.0611	0.250538	0.0185799	0.0778046	0.0153079	0.0622612
Sample 533	0.278766	0.164284	0.200634	0.138581	0.21235	0.0426046	0.059196	0.0294277	0.0348857

Sample 534	0.267232	0.143436	0.165696	0.206245	0.19757	0.0327366	0.052797	0.0407478	0.0283387
Sample 535	0.190043	0.136641	0.183819	0.235137	0.12479	0.0229388	0.0237155	0.0293427	0.0170514
Sample 536	0.277152	0.341595	0.052648	0.066752	0.164528	0.0086621	0.0455993	0.0109826	0.0562019
Sample 537	0.352391	0.144393	0.044681	0.194436	0.22222	0.009929	0.0783083	0.0432076	0.032087
Sample 538	0.385387	0.118579	0.080452	0.13658	0.143695	0.0115606	0.0553782	0.0196259	0.0170392
Sample 539	0.2477	0.21299	0.15494	0.162392	0.183999	0.0285088	0.0455766	0.02988	0.0391899
Sample 540	0.317639	0.224648	0.130748	0.126173	0.180839	0.0236443	0.0574415	0.022817	0.0406251
Sample 541	0.164099	0.224659	0.14481	0.162257	0.146373	0.0211963	0.0240197	0.02375	0.032884
Sample 542	0.273273	0.270851	0.111736	0.103548	0.251335	0.0280832	0.0686831	0.0260252	0.0680743
Sample 543	0.287061	0.162824	0.074338	0.193535	0.195106	0.0145038	0.0560073	0.0377598	0.0317679
Sample 544	0.267085	0.223966	0.06081	0.233421	0.185154	0.0112592	0.0494519	0.0432188	0.0414682
Sample 545	0.151769	0.177688	0.15989	0.28967	0.261112	0.0417492	0.0396287	0.0756363	0.0463965
Sample 546	0.350337	0.22009	0.072957	0.081196	0.223548	0.0163094	0.0783171	0.0181512	0.0492007
Sample 547	0.260886	0.325296	0.10515	0.100242	0.1822	0.0191583	0.0475334	0.0182641	0.0592689
Sample 548	0.384645	0.163277	0.027669	0.167333	0.196483	0.0054365	0.0755762	0.0328781	0.0320812
Sample 549	0.289285	0.199149	0.197009	0.079737	0.155509	0.0306367	0.0449864	0.0123998	0.0309695
Sample 550	0.435749	0.205841	0.018265	0.065391	0.187458	0.0034239	0.0816846	0.0122581	0.0385865
Sample 551	0.253315	0.210503	0.111675	0.142522	0.19354	0.0216136	0.0490266	0.0275837	0.0407408
Sample 552	0.363392	0.124557	0.120628	0.176043	0.199825	0.0241045	0.0726148	0.0351778	0.0248896
Sample 553	0.252727	0.156946	0.21225	0.093855	0.201115	0.0426867	0.0508272	0.0188756	0.0315642
Sample 554	0.126799	0.355373	0.120018	0.184153	0.17751	0.0213044	0.0225081	0.032689	0.0630823
Sample 555	0.325708	0.086212	0.17486	0.184946	0.141358	0.0247179	0.0460414	0.0261436	0.0121868
Sample 556	0.380843	0.193327	0.099175	0.089764	0.187095	0.0185551	0.0712538	0.0167944	0.0361705
Sample 557	0.423035	0.166266	0.083741	0.108664	0.183036	0.0153276	0.0774306	0.0198894	0.0304327
Sample 558	0.28014	0.272337	0.11632	0.080513	0.218832	0.0254545	0.0613036	0.0176188	0.0595961
Sample 559	0.231303	0.220676	0.24948	0.088529	0.125228	0.0312419	0.0289656	0.0110863	0.0276348
Sample 560	0.29321	0.212467	0.081431	0.157371	0.277494	0.0225966	0.081364	0.0436695	0.0589583
Sample 561	0.375099	0.110721	0.044184	0.225853	0.124544	0.0055029	0.0467163	0.0281286	0.0137896
Sample 562	0.329171	0.180435	0.165717	0.09878	0.20438	0.0338692	0.067276	0.0201887	0.0368773
Sample 563	0.289988	0.160066	-0.01174	0.168612	0.191353	-0.002246	0.0554901	0.0322644	0.0306291
Sample 564	0.154132	0.225316	0.171218	0.17475	0.232199	0.0397566	0.0357893	0.0405768	0.0523181
Sample 565	0.239791	0.122908	0.167554	0.215644	0.14223	0.0238312	0.0341055	0.030671	0.0174812
Sample 566	0.320438	0.164225	0.170149	0.113984	0.184001	0.0313076	0.0589609	0.0209732	0.0302176
Sample 567	0.305501	0.079003	0.134023	0.21359	0.237828	0.0318744	0.0726567	0.0507977	0.0187891
Sample 568	0.267848	0.2316	0.173333	0.118761	0.177444	0.0307569	0.047528	0.0210734	0.041096
Sample 569	0.306165	0.183793	0.09778	0.1708	0.147802	0.0144521	0.0452518	0.0252446	0.027165
Sample 570	0.339698	0.145424	0.122056	0.174494	0.177168	0.0216244	0.0601836	0.0309148	0.0257645
Sample 571	0.298005	0.295943	0.092111	0.060189	0.126419	0.0116446	0.0376735	0.007609	0.0374128
Sample 572	0.335986	0.111816	0.107375	0.129647	0.186307	0.0200047	0.0625965	0.0241541	0.0208321
Sample 573	0.163039	0.201853	0.22335	0.137732	0.176566	0.039436	0.0287871	0.0243188	0.0356404
Sample 574	0.279373	0.13723	0.207415	0.176236	0.196356	0.0407272	0.0548566	0.034605	0.0269459
Sample 575	0.224914	0.177665	0.082144	0.230252	0.179656	0.0147577	0.0404071	0.0413662	0.0319186
Sample 576	0.341853	0.19332	0.105047	0.066017	0.185825	0.0195204	0.0635248	0.0122676	0.0359237
Sample 577	0.312298	0.102187	0.237312	0.155648	0.154744	0.0367226	0.0483262	0.0240856	0.0158128
Sample 578	0.289362	0.172516	0.186529	0.170583	0.108316	0.0202041	0.0313425	0.0184769	0.0186862

Sample 579	0.282398	0.268295	0.058034	0.165662	0.223404	0.012965	0.0630888	0.0370096	0.0599382
Sample 580	0.278841	0.232669	0.070512	0.165759	0.202113	0.0142514	0.0563574	0.033502	0.0470254
Sample 581	0.25472	0.232775	0.165094	0.096911	0.247167	0.0408058	0.0629584	0.0239532	0.0575343
Sample 582	0.420101	0.126387	0.02779	0.16863	0.13632	0.0037883	0.0572682	0.0229876	0.0172291
Sample 583	0.382377	0.162802	0.156944	0.086861	0.201552	0.0316324	0.0770688	0.017507	0.0328131
Sample 584	0.29449	0.208241	0.061548	0.176186	0.186677	0.0114896	0.0549745	0.0328899	0.0388738
Sample 585	0.298797	0.20034	0.171949	0.088388	0.158449	0.0272451	0.0473441	0.014005	0.0317437
Sample 586	0.278359	0.070884	0.164732	0.175778	0.246489	0.0406046	0.0686124	0.0433273	0.0174721
Sample 587	0.306575	0.101977	0.145955	0.203924	0.201643	0.0294308	0.0618187	0.0411198	0.0205629
Sample 588	0.245189	0.251584	0.133366	0.15514	0.149918	0.019994	0.0367582	0.0232583	0.037717
Sample 589	0.356769	0.18193	0.063799	0.08314	0.175279	0.0111826	0.0625341	0.0145727	0.0318885
Sample 590	0.286541	0.316184	0.094652	0.083353	0.164106	0.015533	0.0470231	0.0136787	0.0518877
Sample 591	0.254666	0.259922	0.065004	0.09629	0.273568	0.017783	0.0696685	0.0263419	0.0711063
Sample 592	0.290082	0.12418	0.152552	0.192	0.148005	0.0225785	0.0429336	0.028417	0.0183793
Sample 593	0.255905	0.086975	0.244238	0.170804	0.198478	0.0484759	0.0507915	0.0339008	0.0172626
Sample 594	0.188018	0.248277	0.089858	0.167009	0.163061	0.0146523	0.0306584	0.0272327	0.0404843
Sample 595	0.318762	0.212988	0.205023	0.037975	0.102304	0.0209747	0.0326106	0.003885	0.0217895
Sample 596	0.326831	0.207564	0.120896	0.110093	0.18233	0.022043	0.0595911	0.0200733	0.0378451
Sample 597	0.345084	0.106059	0.117008	0.180961	0.234261	0.0274104	0.0808397	0.0423921	0.0248455
Sample 598	0.296135	0.221004	0.124101	0.110178	0.15383	0.0190905	0.0455544	0.0169487	0.033997
Sample 599	0.24185	0.214258	0.147998	0.157705	0.201272	0.0297879	0.0486776	0.0317416	0.0431241
Sample 600	0.290061	0.224315	0.146363	0.102982	0.146108	0.0213848	0.0423802	0.0150465	0.0327742
Sample 601	0.249289	0.325313	0.096893	0.110506	0.181485	0.0175846	0.0452422	0.0200552	0.0590394
Sample 602	0.307817	0.169654	0.111785	0.109064	0.189895	0.0212274	0.0584529	0.0207107	0.0322164
Sample 603	0.248983	0.212042	0.116087	0.178277	0.146307	0.0169843	0.036428	0.0260832	0.0310232
Sample 604	0.282325	0.12389	0.194364	0.135293	0.123882	0.0240782	0.034975	0.0167604	0.0153477
Sample 605	0.233061	0.272211	0.099876	0.155807	0.219255	0.0218983	0.0510998	0.0341615	0.0596836
Sample 606	0.381879	0.164246	0.095939	0.067591	0.211021	0.0202451	0.0805845	0.0142631	0.0346594
Sample 607	0.237495	0.223533	0.061034	0.186577	0.181725	0.0110914	0.0431588	0.0339057	0.0406215
Sample 608	0.254825	0.245549	0.049487	0.156396	0.153564	0.0075994	0.0391319	0.0240168	0.0377075
Sample 609	0.285658	0.134338	0.073055	0.19819	0.169453	0.0123794	0.0484056	0.0335839	0.022764
Sample 610	0.224537	0.223854	0.092796	0.25006	0.160199	0.0148658	0.0359706	0.0400594	0.0358612
Sample 611	0.240327	0.234559	0.186006	0.158992	0.168046	0.0312576	0.040386	0.026718	0.0394167
Sample 612	0.264076	0.154689	0.184291	0.11073	0.198418	0.0365667	0.0523974	0.0219708	0.0306931
Sample 613	0.35652	0.152017	0.105117	0.137613	0.243776	0.025625	0.086911	0.0335467	0.0370581
Sample 614	0.271904	0.1493	0.116386	0.150498	0.141213	0.0164352	0.0383964	0.0212523	0.0210831
Sample 615	0.278604	0.182203	0.15067	0.122619	0.151371	0.0228071	0.0421726	0.018561	0.0275803
Sample 616	0.411581	0.119117	0.062965	0.133768	0.188608	0.0118757	0.0776275	0.0252297	0.0224664
Sample 617	0.257956	0.230671	0.11289	0.094256	0.171109	0.0193165	0.0441386	0.016128	0.0394699
Sample 618	0.370299	0.152975	-0.02199	0.204647	0.167238	-0.003678	0.0619281	0.0342248	0.0255832
Sample 619	0.309655	0.190368	0.056195	0.173167	0.127987	0.0071922	0.0396318	0.0221631	0.0243646
Sample 620	0.303323	0.169657	0.111589	0.216791	0.13887	0.0154964	0.0421225	0.0301058	0.0235603
Sample 621	0.319116	0.139706	0.121067	0.171929	0.203366	0.0246209	0.0648973	0.0349645	0.0284115
Sample 622	0.22193	0.181854	0.259602	0.116307	0.213855	0.0555172	0.0474608	0.0248728	0.0388904
Sample 623	0.289794	0.168821	0.148763	0.154214	0.189097	0.0281306	0.0547992	0.0291614	0.0319235

Sample 624	0.26274	0.112579	0.156658	0.235154	0.156568	0.0245276	0.0411367	0.0368176	0.0176263
Sample 625	0.16774	0.271219	0.125109	0.186619	0.145289	0.018177	0.0243708	0.0271137	0.0394051
Sample 626	0.258384	0.232363	0.115071	0.095398	0.149015	0.0171473	0.0385031	0.0142157	0.0346256
Sample 627	0.334902	0.281576	-0.003454	0.083106	0.23241	-0.000803	0.0778346	0.0193147	0.0654411
Sample 628	0.204068	0.220302	0.189296	0.191295	0.295402	0.0559184	0.0602821	0.0565089	0.0650777
Sample 629	0.276373	0.267763	0.033917	0.180416	0.15428	0.0052327	0.0426388	0.0278346	0.0413105
Sample 630	0.334448	0.167281	0.114781	0.10248	0.269235	0.0309031	0.0900451	0.0275912	0.0450379
Sample 631	0.30062	0.134194	0.148698	0.226654	0.104665	0.0155635	0.0314644	0.0237227	0.0140454
Sample 632	0.176555	0.20626	0.121875	0.182795	0.151198	0.0184273	0.0266948	0.0276382	0.0311861
Sample 633	0.348754	0.184507	0.059457	0.155401	0.220956	0.0131374	0.0770593	0.0343368	0.0407679
Sample 634	0.315457	0.185525	0.12948	0.124047	0.171832	0.0222488	0.0542056	0.0213152	0.0318791
Sample 635	0.251522	0.131989	0.205966	0.13537	0.164382	0.0338571	0.0413457	0.0222524	0.0216966
Sample 636	0.327218	0.190115	0.107742	0.174029	0.210509	0.0226807	0.0688823	0.0366347	0.0400209
Sample 637	0.38158	0.084732	0.088954	0.114442	0.173309	0.0154165	0.0661312	0.0198338	0.0146848
Sample 638	0.191255	0.152994	0.198714	0.182504	0.208231	0.0413784	0.0398252	0.038003	0.0318581
Sample 639	0.366416	0.173786	0.128651	0.091244	0.214286	0.0275681	0.0785178	0.0195523	0.0372399
Sample 640	0.280153	0.221837	0.130689	0.118144	0.209188	0.0273386	0.0586046	0.0247143	0.0464056
Sample 641	0.166756	0.227971	0.259278	0.153437	0.17324	0.0449173	0.0288888	0.0265814	0.0394937
Sample 642	0.285881	0.130944	0.173435	0.13974	0.173455	0.0300832	0.0495875	0.0242386	0.0227129
Sample 643	0.262291	0.135326	0.152342	0.200444	0.204347	0.0311306	0.0535984	0.0409601	0.0276535
Sample 644	0.346583	0.172526	0.172509	0.107691	0.146563	0.0252834	0.0507962	0.0157835	0.0252859
Sample 645	0.264004	0.096915	0.255475	0.123079	0.27072	0.0691622	0.0714712	0.0333199	0.0262368
Sample 646	0.210469	0.321069	0.130679	0.158624	0.224541	0.0293428	0.0472589	0.0356176	0.0720932
Sample 647	0.305795	0.181142	0.124662	0.143734	0.196425	0.0244867	0.0600658	0.028233	0.0355808
Sample 648	0.263499	0.048796	0.170013	0.25675	0.187969	0.0319572	0.0495296	0.048261	0.0091721
Sample 649	0.311945	0.220503	0.101075	0.105154	0.184288	0.0186269	0.0574877	0.0193786	0.0406361
Sample 650	0.395262	0.170823	0.040277	0.130869	0.220908	0.0088975	0.0873165	0.02891	0.0377362
Sample 651	0.290711	0.195352	0.088641	0.152532	0.17858	0.0158295	0.0519152	0.0272392	0.034886
Sample 652	0.205095	0.157914	0.106388	0.228972	0.1137	0.0120963	0.0233193	0.0260341	0.0179548
Sample 653	0.255229	0.140903	0.17165	0.181363	0.207517	0.0356203	0.0529644	0.0376359	0.0292398
Sample 654	0.202918	0.13535	0.221199	0.134606	0.229817	0.0508353	0.046634	0.0309347	0.0311057
Sample 655	0.270357	0.16969	0.116793	0.172461	0.144782	0.0169095	0.0391428	0.0249692	0.0245681
Sample 656	0.148185	0.294238	0.202863	0.1357	0.144389	0.0292912	0.0213963	0.0195936	0.0424847
Sample 657	0.165634	0.162776	0.170665	0.278861	0.165017	0.0281626	0.0273324	0.0460168	0.0268608
Sample 658	0.388953	0.117966	0.108307	0.069144	0.153995	0.0166787	0.0598968	0.0106478	0.0181662
Sample 659	0.28914	0.179518	0.091042	0.201106	0.236875	0.0215656	0.06849	0.047637	0.0425233
Sample 660	0.283355	0.18808	0.080118	0.152701	0.134192	0.0107512	0.038024	0.0204913	0.0252388
Sample 661	0.266829	0.216319	0.128574	0.137916	0.203787	0.0262017	0.0543763	0.0281055	0.044083
Sample 662	0.29257	0.135694	0.12638	0.140918	0.193106	0.0244047	0.056497	0.0272121	0.0262033
Sample 663	0.210644	0.251801	0.086466	0.229401	0.236632	0.0204606	0.0498451	0.0542836	0.0595842
Sample 664	0.326384	0.23176	0.112741	0.067222	0.121952	0.013749	0.0398032	0.0081979	0.0282636
Sample 665	0.288737	0.220389	0.030648	0.168141	0.253948	0.007783	0.0733242	0.0426991	0.0559673
Sample 666	0.303122	0.196375	0.133068	0.152653	0.137352	0.0182772	0.0416344	0.0209672	0.0269725
Sample 667	0.163781	0.288156	0.089334	0.171383	0.187322	0.0167342	0.0306798	0.0321038	0.053978
Sample 668	0.22611	0.159539	0.160841	0.259027	0.226836	0.0364845	0.0512899	0.0587566	0.0361892

Sample 669	0.265132	0.242062	0.145869	0.048798	0.176418	0.0257339	0.0467741	0.0086088	0.0427041
Sample 670	0.369784	0.17265	0.043616	0.157411	0.164451	0.0071727	0.0608113	0.0258864	0.0283925
Sample 671	0.33441	0.104298	0.159467	0.212852	0.141275	0.0225287	0.0472438	0.0300707	0.0147347
Sample 672	0.242531	0.128119	0.236908	0.149283	0.12448	0.0294903	0.0301903	0.0185827	0.0159483
Sample 673	0.217499	0.271802	0.125087	0.114775	0.152704	0.0191013	0.033213	0.0175266	0.0415053
Sample 674	0.256843	0.065551	0.165031	0.286696	0.191055	0.03153	0.0490711	0.0547747	0.0125238
Sample 675	0.284723	0.13414	0.152944	0.159776	0.236422	0.0361593	0.0673148	0.0377746	0.0317136
Sample 676	0.301242	0.153886	0.167159	0.154404	0.107783	0.0180169	0.0324688	0.0166421	0.0165863
Sample 677	0.278917	0.241669	0.042837	0.15636	0.179626	0.0076946	0.0501007	0.0280863	0.04341
Sample 678	0.333069	0.201845	0.106116	0.173874	0.264588	0.028077	0.0881261	0.046005	0.0534058
Sample 679	0.277658	0.20758	0.126237	0.094147	0.17921	0.0226229	0.0497591	0.0168721	0.0372004
Sample 680	0.346017	0.26899	0.169217	-0.025866	0.165462	0.027999	0.0572527	-0.00428	0.0445076
Sample 681	0.257917	0.23868	0.168945	0.093846	0.185741	0.03138	0.0479058	0.017431	0.0443327
Sample 682	0.170883	0.296863	0.15343	0.121021	0.164408	0.0252251	0.0280945	0.0198968	0.0488067
Sample 683	0.289392	0.210697	0.164492	0.02696	0.20324	0.0334314	0.058816	0.0054794	0.0428221
Sample 684	0.304293	0.153466	0.089545	0.196885	0.196106	0.0175603	0.0596737	0.0386103	0.0300956
Sample 685	0.180613	0.232906	0.169534	0.178247	0.118605	0.0201076	0.0214216	0.021141	0.0276238
Sample 686	0.351516	0.201479	0.134781	0.049746	0.192325	0.0259218	0.0676053	0.0095674	0.0387494
Sample 687	0.387185	0.143134	0.093886	0.053389	0.171798	0.0161294	0.0665176	0.0091721	0.0245901
Sample 688	0.259164	0.121531	0.131818	0.205714	0.230742	0.0304159	0.0598	0.0474669	0.0280423
Sample 689	0.138558	0.267996	0.091694	0.254344	0.171289	0.0157062	0.0237335	0.0435663	0.0459048
Sample 690	0.245734	0.160734	0.082598	0.196678	0.187594	0.0154949	0.0460982	0.0368956	0.0301527
Sample 691	0.325717	0.101435	0.15932	0.084923	0.210192	0.0334878	0.0684631	0.0178501	0.0213208
Sample 692	0.324405	0.151328	0.119296	0.177534	0.167912	0.0200312	0.0544715	0.0298101	0.0254098
Sample 693	0.228282	0.172103	0.15363	0.222538	0.179094	0.0275142	0.0408839	0.0398552	0.0308226
Sample 694	0.236537	0.150341	0.241051	0.143969	0.265787	0.0640682	0.0628685	0.0382651	0.0399587
Sample 695	0.354915	0.208722	0.036807	0.114302	0.186887	0.0068787	0.066329	0.0213616	0.0390074
Sample 696	0.191853	0.312199	0.12797	0.138437	0.14762	0.0188909	0.0283213	0.0204361	0.0460868
Sample 697	0.240071	0.343463	0.143106	0.071878	0.14949	0.0213929	0.0358882	0.010745	0.0513443
Sample 698	0.291612	0.156779	0.178708	0.121155	0.162124	0.0289729	0.0472773	0.0196421	0.0254176
Sample 699	0.300866	0.185801	0.089393	0.122426	0.165676	0.0148103	0.0498463	0.020283	0.0307828
Sample 700	0.394754	0.165341	0.083281	0.076341	0.211808	0.0176396	0.0836121	0.0161696	0.0350205
Sample 701	0.383084	0.148499	0.138578	0.051189	0.159471	0.0220992	0.0610908	0.0081632	0.0236813
Sample 702	0.196418	0.229719	0.231258	0.105444	0.184654	0.0427027	0.0362694	0.0194707	0.0424185
Sample 703	0.297687	0.203012	0.097425	0.11079	0.154059	0.0150092	0.0458614	0.0170682	0.0312758
Sample 704	0.309138	0.190934	0.110389	0.125828	0.137059	0.0151298	0.0423701	0.0172459	0.0261692
Sample 705	0.145566	0.26187	0.182131	0.173039	0.152133	0.0277081	0.0221454	0.0263249	0.0398391
Sample 706	0.427138	-0.039763	0.080694	0.204819	0.1925	0.0155336	0.0822241	0.0394277	-0.007654
Sample 707	0.390711	0.136362	0.121385	0.097596	0.173322	0.0210387	0.0677188	0.0169155	0.0236345
Sample 708	0.155739	0.284847	0.20917	0.109657	0.199247	0.0416765	0.0310305	0.0218488	0.0567549
Sample 709	0.375073	0.144973	0.113986	0.137078	0.180961	0.020627	0.0678736	0.0248058	0.0262345
Sample 710	0.300943	0.179604	0.037168	0.166814	0.183175	0.0068082	0.0551252	0.0305562	0.032899
Sample 711	0.322081	0.165022	0.079096	0.14444	0.214703	0.0169821	0.0691518	0.0310117	0.0354307
Sample 712	0.200022	0.209769	0.100185	0.218122	0.189824	0.0190175	0.037969	0.0414048	0.0398192
Sample 713	0.298963	0.077775	0.125942	0.171191	0.170809	0.021512	0.0510656	0.029241	0.0132847

Sample 714	0.198171	0.168459	0.179389	0.25346	0.147582	0.0264746	0.0292465	0.0374061	0.0248615
Sample 715	0.414744	0.174726	0.066434	0.11598	0.131306	0.0087232	0.0544584	0.0152289	0.0229426
Sample 716	0.364681	0.205876	0.084154	0.170158	0.154612	0.0130112	0.0563841	0.0263085	0.0318309
Sample 717	0.328543	0.184622	0.038071	0.155889	0.176916	0.0067354	0.0581245	0.0275793	0.0326626
Sample 718	0.311393	0.221409	0.060527	0.076978	0.239467	0.0144942	0.0745683	0.0184337	0.0530201
Sample 719	0.298754	0.14908	0.157568	0.144039	0.18246	0.0287499	0.0545107	0.0262814	0.0272011
Sample 720	0.254894	0.152147	0.189266	0.133487	0.196796	0.0372468	0.0501621	0.0262697	0.0299419
Sample 721	0.331386	0.161317	0.071658	0.117071	0.192204	0.013773	0.0636937	0.0225015	0.0310058
Sample 722	0.208024	0.376632	0.03506	0.135815	0.160648	0.0056323	0.0334186	0.0218184	0.0605052
Sample 723	0.258143	0.181952	0.156148	0.218218	0.140708	0.0219713	0.0363228	0.030705	0.0256021
Sample 724	0.272338	0.207449	0.12753	0.053976	0.094411	0.0120402	0.0257117	0.0050959	0.0195855
Sample 725	0.284244	0.115976	0.248558	0.147571	0.183986	0.0457312	0.0522969	0.027151	0.021338
Sample 726	0.370258	0.117609	0.089223	0.193192	0.148708	0.0132682	0.0550603	0.0287292	0.0174894
Sample 727	0.22912	0.218508	0.195165	0.107253	0.215284	0.0420159	0.0493259	0.0230899	0.0470413
Sample 728	0.302458	0.182006	0.085834	0.122012	0.21052	0.0180698	0.0636735	0.025686	0.0383159
Sample 729	0.170741	0.19159	0.16784	0.211811	0.172251	0.0289106	0.0294103	0.0364847	0.0330016
Sample 730	0.351459	0.163432	0.081242	0.106282	0.179476	0.014581	0.0630785	0.0190751	0.0293321
Sample 731	0.234959	0.183118	0.221826	0.152436	0.21616	0.0479499	0.0507887	0.0329506	0.0395828
Sample 732	0.200676	0.220294	0.139108	0.138637	0.155275	0.0216	0.03116	0.0215269	0.0342062
Sample 733	0.330343	0.155832	0.117407	0.063078	0.174469	0.0204839	0.0576346	0.0110052	0.0271879
Sample 734	0.329482	0.140057	0.035346	0.202751	0.189758	0.0067072	0.0625218	0.0384736	0.0265769
Sample 735	0.314119	0.134824	0.182592	0.20027	0.20915	0.0381891	0.065698	0.0418865	0.0281984
Sample 736	0.256017	0.273461	0.13945	0.085436	0.172127	0.0240031	0.0440674	0.0147058	0.04707
Sample 737	0.274061	0.149769	0.201952	0.174132	0.17436	0.0352124	0.0477853	0.0303617	0.0261137
Sample 738	0.289284	0.208921	0.095366	0.154572	0.275737	0.0262959	0.0797663	0.0426212	0.0576072
Sample 739	0.289886	0.337882	0.006326	0.121253	0.169506	0.0010723	0.0491374	0.0205531	0.057273
Sample 740	0.214991	0.166554	0.211481	0.139628	0.186972	0.039541	0.0401973	0.0261065	0.0311409
Sample 741	0.399355	0.16068	0.126245	0.039085	0.10869	0.0137216	0.0434059	0.0042481	0.0174643
Sample 742	0.253635	0.251559	0.101801	0.130948	0.251606	0.0256137	0.0638161	0.0329473	0.0632938
Sample 743	0.185721	0.23828	0.23899	0.140043	0.147186	0.035176	0.0273355	0.0206124	0.0350715
Sample 744	0.473456	0.220854	-0.067865	0.077965	0.205638	-0.013956	0.0973605	0.0160326	0.045416
Sample 745	0.313116	0.151128	0.170103	0.06758	0.217349	0.0369717	0.0680554	0.0146884	0.0328475
Sample 746	0.197131	0.258165	0.162122	0.132661	0.203186	0.0329409	0.0400543	0.0269549	0.0524555
Sample 747	0.263921	0.20932	0.148644	0.132049	0.203806	0.0302945	0.0537887	0.0269124	0.0426607
Sample 748	0.177164	0.164225	0.273437	0.113333	0.17614	0.0481632	0.0312057	0.0199625	0.0289266
Sample 749	0.301995	0.159233	0.135137	0.13416	0.175219	0.0236786	0.0529153	0.0235074	0.0279006
Sample 750	0.242198	0.207356	0.115941	0.164924	0.215449	0.0249794	0.0521813	0.0355327	0.0446746
Sample 751	0.397286	0.183821	0.024758	0.07221	0.166009	0.0041101	0.0659531	0.0119875	0.0305159
Sample 752	0.275933	0.197049	0.112703	0.203684	0.201255	0.022682	0.0555329	0.0409924	0.0396571
Sample 753	0.239662	0.273327	0.146963	0.099827	0.127058	0.0186728	0.030451	0.0126838	0.0347284
Sample 754	0.258735	0.253787	0.115763	0.155813	0.153054	0.017718	0.0396004	0.0238478	0.0388431
Sample 755	0.181622	0.320295	0.105287	0.067957	0.203033	0.0213767	0.0368753	0.0137975	0.0650305
Sample 756	0.319521	0.173261	0.149645	0.083533	0.210429	0.0314896	0.0672365	0.0175778	0.0364591
Sample 757	0.186083	0.315806	0.12694	0.120089	0.182215	0.0231304	0.0339071	0.021882	0.0575446
Sample 758	0.322366	0.145989	0.191602	0.06645	0.184767	0.0354017	0.0595626	0.0122778	0.0269739

Sample 759	0.405585	0.11061	0.084537	0.104356	0.133389	0.0112763	0.0541006	0.0139199	0.0147542
Sample 760	0.232817	0.218391	0.121567	0.188375	0.151085	0.018367	0.0351752	0.0284606	0.0329956
Sample 761	0.318101	0.089208	0.225278	0.093563	0.16264	0.0366392	0.0517359	0.0152171	0.0145088
Sample 762	0.314753	0.181527	0.166858	0.05115	0.183947	0.030693	0.0578979	0.0094089	0.0333913
Sample 763	0.316434	0.078522	0.188924	0.184064	0.211128	0.0398871	0.0668081	0.0388611	0.0165782
Sample 764	0.20696	0.211681	0.150498	0.20591	0.162135	0.024401	0.0335555	0.0333852	0.0343209
Sample 765	0.234167	0.245597	0.176368	0.070406	0.222934	0.0393184	0.0522038	0.0156959	0.0547519
Sample 766	0.274624	0.271787	0.086474	0.141972	0.152049	0.0131483	0.0417563	0.0215867	0.0413249
Sample 767	0.395701	0.169386	0.016952	0.11597	0.228892	0.0038802	0.0905728	0.0265446	0.0387711
Sample 768	0.267187	0.118967	0.20751	0.200763	0.138591	0.028759	0.0370297	0.0278239	0.0164878
Sample 769	0.321929	0.166546	0.123857	0.156619	0.140461	0.0173971	0.0452185	0.0219989	0.0233932
Sample 770	0.246688	0.096014	0.201954	0.194454	0.141843	0.0286458	0.034991	0.0275819	0.0136189
Sample 771	0.290921	0.193994	0.097604	0.143117	0.225896	0.0220484	0.0657179	0.0323296	0.0438225
Sample 772	0.36525	0.1045	0.062157	0.174469	0.213468	0.0132685	0.0779692	0.0372435	0.0223074
Sample 773	0.301858	0.128855	0.179779	0.102888	0.251418	0.0451997	0.0758925	0.0258679	0.0323965
Sample 774	0.282345	0.189598	0.183228	0.127759	0.228607	0.0418872	0.064546	0.0292066	0.0433434
Sample 775	0.252056	0.163693	0.250343	0.16425	0.16989	0.0425308	0.0428218	0.0279044	0.0278098
Sample 776	0.286235	0.167872	0.180355	0.115763	0.173461	0.0312846	0.0496506	0.0200804	0.0291192
Sample 777	0.342393	0.158706	0.102145	0.081799	0.270755	0.0276563	0.0927046	0.0221475	0.0429704
Sample 778	0.123385	0.235023	0.225885	0.17385	0.189111	0.0427173	0.0233335	0.0328769	0.0444454
Sample 779	0.229054	0.217744	0.155149	0.170554	0.113871	0.017667	0.0260826	0.0194212	0.0247947
Sample 780	0.385825	0.143282	0.036928	0.175049	0.218546	0.0080705	0.0843205	0.0382563	0.0313137
Sample 781	0.315634	0.287207	0.07612	0.003217	0.197703	0.0150492	0.0624018	0.000636	0.0567817
Sample 782	0.407108	0.166479	0.064844	0.152954	0.189645	0.0122973	0.077206	0.029007	0.0315719
Sample 783	0.265511	0.190666	0.029721	0.226282	0.200705	0.0059652	0.0532894	0.0454159	0.0382676
Sample 784	0.338257	0.215901	0.082141	0.161895	0.202075	0.0165986	0.0683533	0.0327149	0.0436282
Sample 785	0.277156	0.167171	0.163883	0.105244	0.187405	0.0307125	0.0519404	0.0197233	0.0313287
Sample 786	0.362538	0.145467	0.058316	0.163982	0.166336	0.0097001	0.0603031	0.0272761	0.0241964
Sample 787	0.259862	0.103356	0.101313	0.251406	0.175519	0.0177824	0.0456107	0.0441265	0.0181409
Sample 788	0.265901	0.16566	0.159623	0.127831	0.162432	0.0259279	0.0431908	0.0207638	0.0269085
Sample 789	0.231057	0.308283	0.194336	0.09471	0.20775	0.0403733	0.0480021	0.019676	0.0640458
Sample 790	0.282274	0.198544	0.120166	0.071028	0.167025	0.0200707	0.0471468	0.0118635	0.0331618
Sample 791	0.227068	0.130769	0.224248	0.200993	0.117324	0.0263097	0.0266405	0.0235813	0.0153423
Sample 792	0.31482	0.23599	0.097984	0.097537	0.17284	0.0169356	0.0544135	0.0168583	0.0407885
Sample 793	0.198038	0.300676	0.101791	0.141365	0.228018	0.0232102	0.0451562	0.0322338	0.0685595
Sample 794	0.355369	0.297401	0.033574	0.040265	0.241347	0.008103	0.0857672	0.0097178	0.0717768
Sample 795	0.219191	0.168731	0.197002	0.17361	0.170727	0.0336336	0.0374218	0.0296399	0.0288069
Sample 796	0.326198	0.190628	0.081505	0.11666	0.191722	0.0156263	0.0625393	0.0223663	0.0365476
Sample 797	0.342136	0.095573	-0.002027	0.276203	0.177078	-0.000359	0.0605848	0.0489095	0.0169239
Sample 798	0.257447	0.197629	0.154891	0.186548	0.243211	0.0376712	0.0626139	0.0453705	0.0480655
Sample 799	0.303993	0.179282	0.070225	0.19708	0.146748	0.0103054	0.0446104	0.0289211	0.0263093
Sample 800	0.356035	0.150907	0.123525	0.099974	0.156414	0.019321	0.0556889	0.0156373	0.023604
Sample 801	0.2545	0.18911	0.081529	0.164192	0.122321	0.0099727	0.0311307	0.0200841	0.0231321
Sample 802	0.29055	0.175101	0.156295	0.153194	0.222576	0.0347875	0.0646695	0.0340973	0.0389733
Sample 803	0.249463	0.17397	0.15535	0.19379	0.167647	0.026044	0.0418217	0.0324883	0.0291655

Sample 804	0.239071	0.172891	0.127458	0.159829	0.235097	0.029965	0.0562049	0.0375753	0.0406462
Sample 805	0.243377	0.214939	0.189998	0.131824	0.119512	0.022707	0.0290865	0.0157545	0.0256878
Sample 806	0.24011	0.07888	0.214398	0.201692	0.181741	0.0389649	0.0436378	0.0366557	0.0143357
Sample 807	0.191823	0.24388	0.155182	0.17037	0.173021	0.0268497	0.0331894	0.0294776	0.0421964
Sample 808	0.301615	0.142021	0.017955	0.269451	0.276582	0.004966	0.0834213	0.0745253	0.0392805
Sample 809	0.168532	0.238946	0.284647	0.109396	0.182236	0.0518729	0.0307126	0.0199359	0.0435446
Sample 810	0.312593	0.168971	0.133696	0.129386	0.168686	0.0225526	0.0527301	0.0218256	0.028503
Sample 811	0.31541	0.255115	-0.004041	0.116253	0.188409	-0.000761	0.0594261	0.0219031	0.048066
Sample 812	0.149368	0.222121	0.229294	0.117582	0.229799	0.0526915	0.0343246	0.0270202	0.0510432
Sample 813	0.221051	0.156359	0.167036	0.12414	0.193644	0.0323455	0.0428052	0.024039	0.030278
Sample 814	0.381002	0.13038	0.041797	0.137552	0.201167	0.0084082	0.076645	0.0276709	0.0262282
Sample 815	0.275162	0.144545	0.106096	0.154617	0.131387	0.0139396	0.0361527	0.0203147	0.0189913
Sample 816	0.188651	0.386307	0.136979	0.041122	0.113575	0.0155574	0.021426	0.0046704	0.0438748
Sample 817	0.205432	0.16466	0.193792	0.159853	0.148867	0.0288492	0.030582	0.0237968	0.0245124
Sample 818	0.159331	0.265369	0.167742	0.136635	0.196828	0.0330163	0.0313608	0.0268936	0.052232
Sample 819	0.174125	0.209985	0.090993	0.256872	0.232145	0.0211236	0.0404222	0.0596316	0.048747
Sample 820	0.264662	0.165857	0.134096	0.106915	0.209054	0.0280333	0.0553286	0.022351	0.0346731
Sample 821	0.306593	0.088203	0.130005	0.165114	0.204035	0.0265256	0.0625557	0.033689	0.0179965
Sample 822	0.128416	0.219415	0.216252	0.19545	0.198211	0.0428635	0.0254535	0.0387403	0.0434905
Sample 823	0.301738	0.22929	0.090683	0.090717	0.17034	0.0154469	0.0513981	0.0154527	0.0390573
Sample 824	0.29681	0.290265	0.062633	0.12089	0.179813	0.0112622	0.0533703	0.0217376	0.0521934
Sample 825	0.289931	0.221137	0.115476	0.117753	0.207731	0.0239879	0.0602277	0.0244609	0.045937
Sample 826	0.233502	0.175442	0.09494	0.225696	0.144468	0.0137158	0.0337336	0.0326058	0.0253458
Sample 827	0.321268	0.241189	0.148086	0.02736	0.184041	0.0272539	0.0591265	0.0050354	0.0443887
Sample 828	0.344671	0.217531	0.088308	0.105449	0.167912	0.014828	0.0578744	0.0177062	0.0365261
Sample 829	0.331677	0.294809	0.083954	0.01386	0.198725	0.0166838	0.0659125	0.0027543	0.0585859
Sample 830	0.26568	0.236765	0.12524	0.102419	0.227967	0.0285506	0.0605663	0.0233482	0.0539746
Sample 831	0.224939	0.256218	0.15391	0.134228	0.171955	0.0264656	0.0386794	0.0230812	0.044058
Sample 832	0.247257	0.179708	0.140061	0.164797	0.218193	0.0305603	0.0539497	0.0359576	0.039211
Sample 833	0.352224	0.151397	0.125491	0.086842	0.15508	0.0194611	0.0546229	0.0134675	0.0234786
Sample 834	0.365988	0.193676	0.020361	0.154868	0.169476	0.0034507	0.0620262	0.0262464	0.0328234
Sample 835	0.27646	0.222651	0.139431	0.153589	0.141373	0.0197118	0.039084	0.0217133	0.0314768
Sample 836	0.232584	0.234456	0.10802	0.196861	0.168938	0.0182487	0.0392923	0.0332573	0.0396085
Sample 837	0.319793	0.336191	0.050255	0.064659	0.247225	0.0124243	0.0790608	0.0159853	0.0831148
Sample 838	0.233811	0.267752	0.1117	0.137006	0.14269	0.0159385	0.0333625	0.0195494	0.0382055
Sample 839	0.274964	0.184458	0.075673	0.179133	0.20146	0.0152451	0.0553942	0.0360881	0.0371609
Sample 840	0.164504	0.22415	0.15079	0.174474	0.14488	0.0218465	0.0238333	0.0252778	0.0324749
Sample 841	0.276671	0.229335	0.141536	0.043479	0.19002	0.0268947	0.052573	0.0082619	0.0435782
Sample 842	0.303807	0.160444	0.153129	0.105459	0.118588	0.0181593	0.0360279	0.0125062	0.0190267
Sample 843	0.341497	0.108977	0.164929	0.149273	0.160299	0.026438	0.0547416	0.0239283	0.0174689
Sample 844	0.14609	0.296879	0.204826	0.116692	0.113057	0.023157	0.0165165	0.0131928	0.0335642
Sample 845	0.302937	0.177449	0.128266	0.145211	0.164581	0.0211101	0.0498577	0.023899	0.0292047
Sample 846	0.250509	0.081506	0.212316	0.236362	0.191192	0.0405931	0.0478953	0.0451905	0.0155833
Sample 847	0.241683	0.212338	0.225521	0.144774	0.134569	0.0303481	0.032523	0.0194821	0.0285741
Sample 848	0.413857	0.125096	0.029833	0.193181	0.120405	0.003592	0.0498305	0.02326	0.0150622

Sample 849	0.223401	0.197918	0.247404	0.072469	0.264784	0.0655086	0.059153	0.0191886	0.0524055
Sample 850	0.341375	0.150993	0.19005	0.072286	0.214407	0.0407481	0.0731932	0.0154986	0.032374
Sample 851	0.340549	0.193782	0.102103	0.143597	0.165543	0.0169024	0.0563755	0.0237715	0.0320793
Sample 852	0.31437	0.074756	0.060291	0.284772	0.161856	0.0097585	0.0508827	0.0460921	0.0120997
Sample 853	0.331748	0.125786	0.101913	0.155989	0.196596	0.0200357	0.0652203	0.0306668	0.024729
Sample 854	0.238579	0.243028	0.01606	0.189117	0.193961	0.003115	0.046275	0.0366813	0.047138
Sample 855	0.264308	0.245969	0.12814	0.135818	0.200851	0.025737	0.0530865	0.0272792	0.0494031
Sample 856	0.199474	0.27643	0.202638	0.128221	0.157488	0.0319131	0.0314148	0.0201933	0.0435344
Sample 857	0.337743	0.12527	0.106014	0.131695	0.238955	0.0253326	0.0807054	0.0314692	0.0299339
Sample 858	0.297188	0.147729	0.159374	0.12552	0.149068	0.0237576	0.0443012	0.018711	0.0220217
Sample 859	0.428731	0.090547	0.131798	0.083018	0.241608	0.0318435	0.1035848	0.0200578	0.0218769
Sample 860	0.34068	0.163116	0.020052	0.190216	0.226237	0.0045365	0.0770744	0.0430339	0.0369029
Sample 861	0.370438	0.285248	0.011488	0.048922	0.21234	0.0024394	0.0786588	0.0103881	0.0605696
Sample 862	0.263266	0.283575	0.078964	0.102461	0.20609	0.0162737	0.0542565	0.0211162	0.058442
Sample 863	0.269302	0.312234	0.127077	0.109029	0.154312	0.0196095	0.0415565	0.0168245	0.0481815
Sample 864	0.275543	0.183861	0.117642	0.179072	0.182857	0.0215117	0.050385	0.0327446	0.0336203
Sample 865	0.233925	0.201346	0.171515	0.078529	0.173489	0.029756	0.0405834	0.0136239	0.0349313
Sample 866	0.443496	0.106234	0.069478	0.138747	0.19084	0.0132592	0.0846368	0.0264785	0.0202737
Sample 867	0.244879	0.118535	0.219427	0.191957	0.200826	0.0440666	0.0491781	0.03855	0.0238049
Sample 868	0.373958	0.216341	-0.0515	0.135001	0.167568	-0.00863	0.0626634	0.0226218	0.0362518
Sample 869	0.185667	0.138043	0.219702	0.179103	0.223045	0.0490034	0.0414121	0.039948	0.0307898
Sample 870	0.166478	0.292423	0.141397	0.125441	0.25496	0.0360506	0.0424452	0.0319824	0.0745562
Sample 871	0.425496	0.147322	0.117116	0.045069	0.190561	0.0223177	0.0810829	0.0085884	0.0280738
Sample 872	0.294307	0.149868	0.113763	0.20303	0.188854	0.0214846	0.0555811	0.038343	0.0283032
Sample 873	0.29904	0.121477	0.202985	0.190393	0.138265	0.0280657	0.0413468	0.0263247	0.016796
Sample 874	0.270833	0.264768	0.039847	0.0986	0.196369	0.0078247	0.0531832	0.019362	0.0519922
Sample 875	0.168589	0.163675	0.228008	0.114785	0.171856	0.0391845	0.028973	0.0197265	0.0281285
Sample 876	0.233974	0.243307	0.058353	0.154511	0.233611	0.0136319	0.0546589	0.0360955	0.0568392
Sample 877	0.290666	0.211801	0.080801	0.129951	0.1588	0.0128312	0.0461578	0.0206362	0.033634
Sample 878	0.276448	0.238998	0.14292	0.101442	0.161951	0.023146	0.044771	0.0164286	0.038706
Sample 879	0.309518	0.25381	0.100929	0.130726	0.241414	0.0243657	0.074722	0.0315591	0.0612733
Sample 880	0.300039	0.173191	0.11576	0.155998	0.168349	0.0194881	0.0505113	0.0262621	0.0291565
Sample 881	0.372082	0.124407	0.04558	0.203972	0.170273	0.007761	0.0633555	0.0347309	0.0211832
Sample 882	0.257676	0.204395	0.038965	0.190012	0.122655	0.0047793	0.0316052	0.0233059	0.0250701
Sample 883	0.322186	0.129905	0.139882	0.151017	0.136005	0.0190247	0.0438189	0.0205391	0.0176677
Sample 884	0.206467	0.17354	0.166827	0.212996	0.258882	0.0431885	0.0534506	0.0551408	0.0449264
Sample 885	0.319243	0.267334	0.004249	0.101656	0.151086	0.000642	0.0482331	0.0153588	0.0403904
Sample 886	0.221704	0.187568	0.170402	0.143712	0.152783	0.0260345	0.0338726	0.0219568	0.0286572
Sample 887	0.148159	0.205686	0.189339	0.213351	0.255566	0.0483886	0.0378644	0.0545253	0.0525663
Sample 888	0.299565	0.13586	0.160201	0.137476	0.158671	0.0254193	0.0475323	0.0218135	0.021557
Sample 889	0.277207	0.14693	0.112326	0.198744	0.180211	0.0202424	0.0499558	0.0358159	0.0264784
Sample 890	0.129977	0.235277	0.144297	0.231097	0.203002	0.0292926	0.0263856	0.0469132	0.0477617
Sample 891	0.348369	0.289532	0.023455	0.063378	0.270507	0.0063447	0.0942363	0.0171442	0.0783204
Sample 892	0.298265	0.118512	0.090626	0.198201	0.210552	0.0190815	0.0628003	0.0417316	0.0249529
Sample 893	0.178296	0.158096	0.239027	0.138086	0.154305	0.0368831	0.027512	0.0213074	0.024395

Sample 894	0.183838	0.276699	0.154779	0.180684	0.273991	0.0424081	0.05037	0.0495058	0.075813
Sample 895	0.186495	0.284528	0.154203	0.173641	0.233862	0.0360622	0.0436141	0.040608	0.0665403
Sample 896	0.1918	0.267781	0.136155	0.123131	0.249418	0.0339595	0.0478384	0.0307111	0.0667894
Sample 897	0.215981	0.207725	0.131091	0.226844	0.138072	0.0181	0.0298209	0.0313208	0.028681
Sample 898	0.24231	0.251001	0.107848	0.095194	0.216888	0.0233909	0.0525541	0.0206464	0.0544391
Sample 899	0.215158	0.26596	0.050601	0.195092	0.148051	0.0074915	0.0318544	0.0288836	0.0393756
Sample 900	0.332314	0.164273	0.151627	0.080313	0.163367	0.0247708	0.0542891	0.0131205	0.0268368
Sample 901	0.27999	0.242763	0.084335	0.088521	0.149281	0.0125896	0.0417972	0.0132145	0.0362399
Sample 902	0.367678	0.192144	0.09575	0.088408	0.185801	0.0177904	0.0683149	0.0164263	0.0357005
Sample 903	0.244556	0.12317	0.154034	0.232007	0.228709	0.035229	0.0559322	0.0530621	0.0281701
Sample 904	0.388953	0.13821	0.035881	0.133371	0.222225	0.0079737	0.0864351	0.0296384	0.0307137
Sample 905	0.316393	0.104995	0.084952	0.258421	0.206926	0.0175788	0.0654699	0.053474	0.0217262
Sample 906	0.35615	0.17271	0.07604	0.146815	0.240407	0.0182805	0.085621	0.0352954	0.0415207
Sample 907	0.21305	0.267757	0.157008	0.073075	0.124489	0.0195458	0.0265224	0.009097	0.0333328
Sample 908	0.207163	0.195994	0.209823	0.160288	0.158888	0.0333384	0.0329157	0.0254678	0.0311411
Sample 909	0.268563	0.230725	0.094775	0.1285	0.202935	0.0192332	0.0545008	0.0260771	0.0468222
Sample 910	0.257288	0.270234	0.05822	0.120564	0.149942	0.0087296	0.0385783	0.0180776	0.0405194
Sample 911	0.339906	0.241117	0.135496	0.078802	0.169827	0.0230109	0.0577252	0.0133827	0.0409482
Sample 912	0.264027	0.199485	0.142966	0.140209	0.184906	0.0264353	0.0488202	0.0259255	0.036886
Sample 913	0.333933	0.198033	0.052279	0.142601	0.164493	0.0085995	0.0549296	0.0234569	0.032575
Sample 914	0.262793	0.204297	0.120379	0.170614	0.228474	0.0275035	0.0600414	0.0389809	0.0466766
Sample 915	0.374216	0.109649	0.032758	0.204343	0.279341	0.0091507	0.1045339	0.0570814	0.0306295
Sample 916	0.247326	0.155524	0.170176	0.132758	0.136615	0.0232486	0.0337884	0.0181367	0.0212469
Sample 917	0.388149	0.128259	0.000751	0.182344	0.196812	0.0001478	0.0763924	0.0358875	0.0252429
Sample 918	0.327059	0.076613	0.108748	0.229643	0.232665	0.0253019	0.0760952	0.0534299	0.0178252
Sample 919	0.44452	0.145156	0.042904	0.108055	0.133224	0.0057158	0.0592207	0.0143955	0.0193383
Sample 920	0.415104	0.15302	0.071087	0.089641	0.190172	0.0135188	0.0789412	0.0170472	0.0291001
Sample 921	0.175423	0.132244	0.248224	0.170899	0.163	0.0404605	0.0285939	0.0278565	0.0215558
Sample 922	0.22484	0.173531	0.177089	0.18192	0.265134	0.0469523	0.0596127	0.0482332	0.046009
Sample 923	0.390017	0.163235	-0.0415	0.137936	0.138129	-0.005732	0.0538727	0.019053	0.0225475
Sample 924	0.310998	0.102325	0.197989	0.142715	0.113386	0.0224492	0.0352628	0.0161819	0.0116022
Sample 925	0.260062	0.253368	0.02935	0.221662	0.209057	0.0061358	0.0543678	0.04634	0.0529684
Sample 926	0.197268	0.187411	0.164265	0.183562	0.191511	0.0314586	0.037779	0.0351541	0.0358913
Sample 927	0.265275	0.170179	0.143398	0.169752	0.182226	0.0261308	0.04834	0.0309332	0.031011
Sample 928	0.351517	0.098263	0.074875	0.221324	0.189012	0.0141523	0.0664409	0.0418329	0.0185729
Sample 929	0.192424	0.203107	0.234804	0.114077	0.206438	0.0484725	0.0397236	0.0235498	0.041929
Sample 930	0.278698	0.158244	0.111788	0.129128	0.184358	0.020609	0.0513802	0.0238058	0.0291735
Sample 931	0.210295	0.118034	0.164423	0.262397	0.237234	0.0390067	0.0498891	0.0622495	0.0280017
Sample 932	0.301842	0.130738	0.084231	0.246269	0.191829	0.0161579	0.057902	0.0472415	0.0250793
Sample 933	0.280745	0.137473	0.138353	0.093901	0.184984	0.0255931	0.0519333	0.0173702	0.0254303
Sample 934	0.286848	0.230796	0.087979	0.113878	0.157436	0.0138511	0.0451602	0.0179285	0.0363356
Sample 935	0.206772	0.258935	0.133916	0.15429	0.155518	0.0208263	0.0321568	0.0239949	0.0402691
Sample 936	0.257791	0.215144	0.040621	0.226948	0.230927	0.0093805	0.0595309	0.0524084	0.0496826
Sample 937	0.242679	0.332771	0.091108	0.053945	0.178391	0.0162528	0.0432917	0.0096233	0.0593634
Sample 938	0.419727	0.187981	0.01109	0.092698	0.180819	0.0020053	0.0758946	0.0167616	0.0339905

Sample 939	0.281177	0.1703	0.179404	0.151849	0.154102	0.0276465	0.0433299	0.0234002	0.0262436
Sample 940	0.126659	0.244786	0.186718	0.208218	0.138624	0.0258836	0.017558	0.028864	0.0339332
Sample 941	0.337426	0.094813	0.172732	0.159204	0.215018	0.0371405	0.0725527	0.0342317	0.0203865
Sample 942	0.26808	0.196574	0.097279	0.153069	0.185066	0.018003	0.0496125	0.0283279	0.0363792
Sample 943	0.296481	0.230241	0.052977	0.128131	0.174502	0.0092446	0.0517365	0.0223591	0.0401775
Sample 944	0.244345	0.107087	0.181718	0.216479	0.241349	0.0438575	0.0589724	0.052247	0.0258453
Sample 945	0.320326	0.065906	0.116972	0.169792	0.13248	0.0154965	0.0424368	0.022494	0.0087312
Sample 946	0.277168	0.206347	0.047615	0.23778	0.151721	0.0072242	0.0420522	0.0360762	0.0313072
Sample 947	0.320442	0.130766	0.098246	0.119472	0.197357	0.0193895	0.0632415	0.0235786	0.0258076
Sample 948	0.320837	0.186687	0.110751	0.143319	0.173562	0.0192222	0.0556851	0.0248747	0.0324018
Sample 949	0.321267	0.240919	0.057595	0.158676	0.212219	0.0122228	0.068179	0.0336741	0.0511276
Sample 950	0.244658	0.282858	0.161025	0.090304	0.254771	0.0410245	0.0623318	0.0230068	0.072064
Sample 951	0.229756	0.250329	0.175864	0.10531	0.207469	0.0364863	0.0476672	0.0218486	0.0519355
Sample 952	0.369333	0.05421	0.106803	0.197776	0.200023	0.0213631	0.0738751	0.0395597	0.0108432
Sample 953	0.19012	0.157351	0.20258	0.234505	0.134709	0.0272893	0.0256109	0.0315899	0.0211966
Sample 954	0.277733	0.125847	0.21367	0.129614	0.1733	0.037029	0.0481311	0.0224621	0.0218093
Sample 955	0.182139	0.261334	0.217624	0.12074	0.224726	0.0489058	0.0409314	0.0271334	0.0587285
Sample 956	0.298622	0.173567	0.126453	0.209428	0.159867	0.0202157	0.0477398	0.0334806	0.0277476
Sample 957	0.293964	0.159277	0.02239	0.2295	0.216412	0.0048455	0.0636173	0.0496666	0.0344695
Sample 958	0.291357	0.296556	0.006978	0.1771	0.212691	0.0014842	0.061969	0.0376676	0.0630748
Sample 959	0.275104	0.173352	0.199578	0.09145	0.159337	0.0318002	0.0438342	0.0145714	0.0276214
Sample 960	0.232954	0.21742	0.050964	0.258541	0.231132	0.0117794	0.0538431	0.0597571	0.0502527
Sample 961	0.382509	0.029847	0.1698	0.180326	0.162209	0.0275431	0.0620464	0.0292505	0.0048415
Sample 962	0.316643	0.203952	0.047489	0.191568	0.232121	0.0110232	0.0734995	0.044467	0.0473415
Sample 963	0.328317	0.149022	0.079235	0.160818	0.164212	0.0130113	0.0539136	0.0264082	0.0244712
Sample 964	0.313977	0.10432	0.168108	0.185115	0.152912	0.0257057	0.0480109	0.0283063	0.0159518
Sample 965	0.221811	0.285848	0.108454	0.048238	0.179254	0.0194408	0.0397605	0.0086469	0.0512394
Sample 966	0.30549	0.19774	0.204815	0.052907	0.209911	0.0429929	0.0641257	0.0111058	0.0415078
Sample 967	0.36588	0.143087	-0.017889	0.233028	0.145675	-0.002606	0.0532996	0.0339464	0.0208442
Sample 968	0.352841	0.135903	0.150873	0.147237	0.156998	0.0236868	0.0553953	0.0231159	0.0213365
Sample 969	0.206457	0.145154	0.102319	0.229739	0.206232	0.0211015	0.042578	0.0473795	0.0299354
Sample 970	0.330721	0.137553	0.173032	0.043584	0.138347	0.0239385	0.0457543	0.0060297	0.01903
Sample 971	0.409117	0.15283	0.017347	0.158836	0.18765	0.0032552	0.0767708	0.0298056	0.0286785
Sample 972	0.327564	0.164613	0.166283	0.098246	0.158233	0.0263115	0.0518314	0.0155458	0.0260472
Sample 973	0.269497	0.255719	0.171977	0.069718	0.142228	0.0244599	0.03833	0.0099159	0.0363704
Sample 974	0.258352	0.10656	0.18415	0.201395	0.150248	0.0276682	0.0388169	0.0302592	0.0160104
Sample 975	0.303615	0.045552	0.175717	0.231214	0.132959	0.0233632	0.0403683	0.030742	0.0060565
Sample 976	0.280111	0.219543	0.144421	0.028103	0.310302	0.0448141	0.086919	0.0087204	0.0681246
Sample 977	0.138914	0.308603	0.180169	0.170718	0.125056	0.0225312	0.017372	0.0213493	0.0385927
Sample 978	0.196413	0.245775	0.120708	0.174175	0.243734	0.0294206	0.0478725	0.0424524	0.0599037
Sample 979	0.192677	0.308814	0.116774	0.132978	0.133417	0.0155796	0.0257064	0.0177415	0.041201
Sample 980	0.185256	0.226067	0.079901	0.184947	0.149285	0.011928	0.0276559	0.0276098	0.0337484
Sample 981	0.266238	0.18729	0.132826	0.170172	0.164005	0.0217841	0.0436644	0.0279091	0.0307165
Sample 982	0.231504	0.197337	0.157031	0.151154	0.167369	0.0262821	0.0387466	0.0252985	0.0330281
Sample 983	0.363277	0.245338	0.040949	0.141112	0.137777	0.0056418	0.0500512	0.019442	0.0338019

Sample 984	0.162219	0.298209	0.246086	0.05993	0.195862	0.0481989	0.0317725	0.011738	0.0584078
Sample 985	0.334811	0.26436	0.061835	0.009259	0.175491	0.0108515	0.0587563	0.0016249	0.0463928
Sample 986	0.390035	0.098836	0.082315	0.174837	0.219998	0.0181091	0.0858069	0.0384638	0.0217437
Sample 987	0.235334	0.142806	0.272394	0.118722	0.132715	0.0361508	0.0312324	0.0157562	0.0189525
Sample 988	0.312185	0.112719	0.19955	0.138675	0.217187	0.0433397	0.0678025	0.0301184	0.0244811
Sample 989	0.169969	0.273132	0.101969	0.244459	0.168897	0.0172223	0.0287073	0.0412884	0.0461312
Sample 990	0.116503	0.296248	0.147714	0.159886	0.182963	0.0270262	0.0213157	0.0292532	0.0542024
Sample 991	0.202152	0.219164	0.138686	0.117628	0.261984	0.0363335	0.0529606	0.0308167	0.0574175
Sample 992	0.300633	0.188529	0.167272	0.137515	0.161845	0.0270721	0.0486559	0.0222561	0.0305125
Sample 993	0.194701	0.200697	0.182759	0.16529	0.204831	0.0374347	0.0398808	0.0338565	0.041109
Sample 994	0.357419	0.105554	0.075069	0.196587	0.185278	0.0139086	0.0662219	0.0364232	0.0195568
Sample 995	0.174117	0.199263	0.220881	0.155745	0.154761	0.0341838	0.0269465	0.0241033	0.0308381
Sample 996	0.336055	0.14885	0.055413	0.202635	0.096238	0.0053328	0.0323413	0.0195012	0.014325
Sample 997	0.157834	0.10733	0.324609	0.125619	0.183478	0.0595586	0.0289591	0.0230483	0.0196927
Sample 998	0.225799	0.11398	0.170491	0.207862	0.181328	0.0309148	0.0409437	0.0376912	0.0206678
Sample 999	0.405557	0.02757	0.100847	0.126375	0.174414	0.0175891	0.0707348	0.0220416	0.0048086

Path Coefficients				
	STDEV	0.012	0.017	0.012	0.014
	Average	0.023	0.051	0.027	0.035
	T Value	1.859	3.094	2.333	2.523
	p value	0.032	0.001	0.010	0.006