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Effect of computer-mediated communication competency on young adults' personal development: The mediating roles of online engagement

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Abstract

This study was conducted to investigate the effects of computer-mediated communication competency (self-efficacy, motivation and knowledge) on young adults' personal development (i.e. self-esteem, satisfaction with university life and acceptance). In addition, the study examined whether young adults' online engagement mediates the relationships between components in the computer-mediated communication competency and personal development. A survey was administered in three public universities where young adults were found to be heavily engaged online. A total of 600 questionnaires were distributed and a total of 548 questionnaires were returned, cleaned and used in the analysis. The study found several relationships: i) Motivation affects the young adults' self-esteem, satisfaction with university life and acceptance; ii) Knowledge affects self-esteem and satisfaction with university life: iii) Self-efficacy only affects satisfaction with university life. However, online engagement was found to mediate motivation with acceptance as well as knowledge with acceptance. The implications of the findings are also discussed.

Keywords: Computer-mediated communication competency, young adults, personal development, online engagement.

Introduction

Social Network Site (SNS) is defined as a web-based service that allows individuals to construct a public or semi-public profile, articulate a list of other users with whom they share a connection and to view and traverse their list of connections and those made by others within the systems (Boyd and Ellison 2007). The Pew Internet and American Life Project found that although 73% of teens between the ages of 12 and 17 use social media, the rates of social media use are even higher (83%) for young adults between ages of 18 and 29 (Lenhart et al. 2010; Madden and Zickuhr 2011).

SNS has been used by young people for various purposes and there are a number of platforms currently available for them to use. For example, Liu (2010) investigated students' use of different social media tools, their perceptions and attitudes towards these tools, and their preference of social networking groups. The results showed that the three top-used social media tools are

Facebook, Wikipedia and YouTube. The top four reasons for using social media tools are for social engagement, direct communication, speed of feedback, and relationship building. This new phenomenon is already evident among society especially students, who are the heaviest users of these sites (Social Baker 2013). As reported by a social media analyst in June 2013, Social Baker (2013), Facebook user in South East Asia reached nearly 11 million with Malaysia ranked 8th in Asia, one of the leading countries actively using Facebook. Furthermore, the statistic showed that among Malaysians, people ages of 18–24 (typically students) are the major users with a consumption rate of 33.1%.

Based on these statistics, there is a need to have a deeper understanding of the nature of Facebook usage among young adults in Malaysia to ensure the impact would be beneficial to their personal development, particularly in terms of their self-esteem, satisfaction and acceptance. The study also addresses the role of computer mediated communication competency towards online engagement. This paper proceeds by discussing past literatures pertaining to computer-mediated communication competency (CMC), online engagement and young adults' personal development. This is followed by the discussion on the methodology used and approaches taken to conduct the research. Subsequently the results are described and discussed.

Literature Review

Computer-Mediated Communication (CMC) Competency

Theories related to CMC take a different approach to the analysis of participant's interaction in CMC medium. Theories related to CMC are grounded in the study of interpersonal communication theories such as social penetration and uncertainty reduction to develop predictions for participant communication in a CMC medium (Wang et al. 2011). In addition, CMC theories focus on how people learn to use CMC strategically to construct their messages and develop their relationships within the constraints imposed by the characteristics of the person, relational context and medium (Sherblom 2010).

CMC is becoming an important part of people's private and professional lives. However, most of the CMC theories only focused on or described related phenomena and user behaviour. Very few focused on information or guide on what type of behaviours by means of CMC would be more effective and appropriate (Bubaš 2001). Perhaps one of the most comprehensive models that outline numerous CMC factors was developed by Spitzberg (2011). The model is based on interacting factors which involve Motivation, Knowledge and skills. Spitzberg (2006), explained that the Motivation for CMC can be positive (approach motivation) or negative (avoidance motivation). Knowledge is more related to the characteristics of individual either by cognitive form, content or procedures. Finally, the CMC skills component is a repeatable goal-oriented behaviour that manifests the ability of an individual to perform a certain communication related task (Bubaš 2001).

A skill is to develop the knowledge and motivation that determines the efficiency of CMC competency, within the restrictions in the context of communication, media and messages (Spitzberg 2006; Spitzberg 2011). Therefore, knowledge, motivation and skills are built upon each other that can affect the participant's attentiveness and expressiveness in a computer–supported collaborative learning environment (Sherblom 2010). For example, CMC was used in education to produce more attractive learning environments, encourage students' participation and become part of an active learning community (Sherblom 2010; Sundararajan 2009).

The CMC outcomes are linked with the level of competence in the CMC interactions of a person (Harrison and Rainer 1996; Straus et al. 2001; Westmyer et al. 1998). For example, self-efficacy is the belief in one's ability to use CMC effectively, although it has also been defined as an "expectation of mastery" (Beckers and Schmidt 2001). Self-efficacy refers to individuals' beliefs in their ability to produce desired results (Wigfield et al. 2006), as well as to learn and perform (Bandura 1997). Self-efficacy has impact on learning for this belief in one's own ability influences one's choice of activities and effort (Schunk and Zimmerman 2006), influences engagement in the behaviours that are necessary to attain goals, influences academic interest and motivation (Bandura 1986; Bandura 1997); and influences growth of cognitive competencies and accomplished achievement (Pajares 1996; Zimmerman 2000). In the realm of CMC, two different forms of self-efficacy commonly discussed in the literature are computer self-efficacy and Internet self-efficacy. Computer self-efficacy is the extent that the individual perceives he or she may be using computer technology. Previous studies by Compeau and Higgins (1995), found that individuals who are aware of their ability to use computer technology are more likely to engage in behaviour of computer usage in the future when compared with people who do not have computer skills. While Internet Self-efficacy is the extent to which an individual perceives he or she can use the Internet. Early research on Internet self-efficacy (Nahl 1996; Nahl 1997) focused primarily on the creation of websites and the various behaviours that are necessary for creating websites. All of these would have impact to a person's achievement. Hence, it is important to understand the influences of each component in CMC on young adults' personal development.

Young Adults' Personal Development

There are many impacts of SNS usage on young adults depending on the environment or context being studied. For example, in an educational environment, Kuh (2009) argued that student competency; in this case CMC is positively related to multiple desired outcomes of a college education (such as cognitive development, psychosocial development, self-esteem, locus of control, moral and ethical development, and persistence). Ellison et al. (2007) found that students with low self-esteem benefit from using SNS (Facebook) because they expand their social capital. Another study done by Kalpidou et al. (2011) indirectly supported this interpretation whereby they found that low self-esteemed students who use Facebook reported positive association with high scores of emotional and total adjustment in college.

Young adults spend their time online for social connections. For example, Sheldon (2008), Raacke and Bonds-Raacke (2008) and Pempek et al. (2009) found that they use Facebook to maintain relationships with people they already knew, to meet new people and to communicate information about their identity such as their political and religious beliefs. Individual who has Self-efficacy may use the social media to build, expand, and maintain their relationships with others (Olson et al. 2012). Those who possess Self-efficacy are the group of people who have a strong belief in their own capabilities. Therefore, these are the kind of people who will make an extra effort to socialize and share information with each other, thus enhancing the relationship to the next level. SNS provides a platform for individuals to cultivate strong relationships and explore their peer culture, to give and receive feedback and to seek and show affection, affirmation and acceptance (Ginsburg-Block et al. 2006). Thus being online would enable young adults to attain Acceptance among their connections.

There have been many studies that review the impacts of SNS on individuals. For example, Chen et al. (2010); and Suldo et al. (2006) found SNS have a positive psychological and contributor of young adults' academic performance (Besides the impact on academic performance, impact can also be observed in terms of satisfaction with university life. Young adults depend on their

relationships with parents, friends and colleagues (González et al. 2011; Chen et al. 2010). A study carried out in Sweden found that the usage of Facebook enhance satisfaction with university life among young adults who were mostly college students (Rouis et al. 2011). Another study conducted in an US academic institution suggested that Facebook is a valuable venue not only for creating new and maintaining old relationships, but also for being informed about social events that occur on campus (Kalpidou et al. 2011). The researchers believed that the relationship between social college adjustment and Facebook underlines the relationship between Facebook and a general satisfaction with university life among the young adults. Thus, the study focuses on three aspects of youth's personal development i.e. self-esteem, satisfaction with university life and acceptance in society.

Online Engagement

Online engagement (OE) is defined as website's ability to hold a visitor's attention or induce the visitor to participate with the website (Meares 2013). Some refer OE as the connections between students' engagement and students' learning, and how it can impact peer interactions, collaboration and knowledge creation (Bevelander et al. 2013). Student engagement represents the time and effort that the students invested in collaborative and educational activities (Kuh 2001), it is often linked with the achievement of positive student learning outcomes, such as critical thinking and individual student development (Carini et al. 2006; Kuh 1993).

Previous researchers found that among the social network users, 57% are between the ages of 18-29 years old and they are likely to have profiles on multiple social media websites which they used for online engagement (Lenhart et al. 2010). A study on students online usage in 26 countries around the world done by QS Topuniversities.com in 2013 reported that more than 50% of respondents said they use five key social media networks which are Facebook, Twitter, YouTube, LinkedIn and Pinterest all the time (QS Topuniversities.com 2013). Out of these, Facebook which began as a social network site only for Harvard students in 2004 is the most popular applications used by students (Freiert 2007). Researchers found that between 85 and 99% of college students use Facebook (Jones and Fox 2009; Matney and Borland 2009). The recent data, collected by the EDUCAUSE Center for Applied Research (ECAR) from a sample of 36,950 students from 126 U.S. universities and one Canadian university, showed that of the 90% of students who use social networking websites, 97% said they used Facebook (Smith and Caruso 2010). Nonetheless, the younger students are more likely to report high usage of YouTube and Pinterest, while older respondents are more likely to report frequent use of LinkedIn (QS Topuniversities.com 2013). Thus, young adults spend their time being online to engage themselves using Facebook (QS Topuniversities.com 2013).

There are a few indicators that can be used to reflect online engagement especially in terms of Facebook usage (Ellison et al. 2007). In term of number of times and the amount of time spent daily on social media websites varied greatly among Facebook users (Pempek et al. 2009). In particular, young adults spent an average of 47 minutes a day on Facebook (Sheldon, 2008). However, it was found that older people, residing in Latin America and Africa from engineering and technology backgrounds are more likely to report spending 5+ hours online per day. Young adults who studied arts and humanities were found to be the least in terms of hours online per day which indicates that young adults in Latin America and Africa do not engage themselves heavily online (QS Topuniversities.com 2013). Previous researcher found that more than 50% of young adults go on a social networking site several times a day (Sheldon 2008) while in another study

done two years later, 82% of young adults reported logging into Facebook several times a day (Quan-Haase and Young 2010). Facebook usage can also be measured in terms of the number of "friends" a student have to measure the extent to which the person was actively engaged in Facebook activities (Ellison et al. 2007). On average, young adults had between 150 and 200 Facebook friends (Kalpidou et al. 2011).

Motivation and Personal Development

Generally Motivation can be divided into extrinsic and intrinsic. Extrinsic motivation focuses on the goal-driven reasons, apart from its own sake, to commit an action, such as economic rewards or the performance of improvement (Lee et al. 2005). On the other hand, intrinsic motivation is to do an activity for its own sake, and could result in pleasure and inherent satisfaction from this activity (Lee et al. 2005). Motivation is important as the communicators tend to better activate their potential for effective communication (e.g. their related knowledge and skills). Thus it can be concluded that motivation represents the energizing component of competence performance, thus motivation in relation to CMC is defined as the ratio of approach to avoidance attitudes, beliefs and value (Spitzberg 2006).

Kim et al. (2010) reported that those who are highly concerned with relationships with others and their surrounding are motivated to enhance their social relationship and enjoying greater satisfaction by using SNSs. Higher non-social motivation may lead to greater time spent for Facebook usage per week. Orchard et al. (2014) studies showed that the strength of motivation to predict SNS usage in term of time spent per day seem to support logical assertions underlying each motivation. The following hypotheses were derived to examine the association between motivation competence factors on young adults' personal development.

H_1: Motivation positively affects Self-esteem

H_2: Motivation positively affects Satisfaction in University Life

H_3: Motivation positively affects Acceptance

Knowledge and Personal Development

Knowledge is defined as the cognitive comprehension of content and procedural processes involved in conducting appropriate and effective interaction in the computer-mediated context. Knowledge is represented primarily as by cognitive characteristics reflecting construct planning, uncertainty reduction, familiarity, expertise and other indicator of comprehension (Spitzberg 2006). When technology use increases, knowledge and skills should increase. Knowledge consists of both content and procedural forms of Knowledge (Greene 1997). Generally, the more knowledgeable a person, the more motivated the person to use CMC. Eastin and LaRose (2000) and LaRose et al. (2001) stated that the more knowledgeable the person, the more motivated the person will be in the use of CMC experience. The following hypotheses were derived to examine the association between knowledge competence factors on young adults' personal development.

H4: Knowledge positively affects Self-esteem

H_5: Knowledge positively affects Satisfaction with University Life

H_6: Knowledge positively affects Acceptance

Self-Efficacy and Personal Development

Self-efficacy is defined as confidence in their ability to successfully understand, navigate and evaluate online content (Eastin and LaRose 2005). A person with higher levels of Internet self-efficacy should have more favourable attitudes towards SNS (Ajzen and Sexton 1999). Self-efficacy also refers as the belief in one's capabilities to organize and execute the courses of action required to produce given attainments or one's believe in one's ability to succeed in a specific situation (Bandura 1997). In terms of CMC, self-efficacy is defined as one's ability to use CMC effectively (Beckers and Schmidt 2001).

Internet self-efficacy, need to belong and collective self-esteem have positive effects on attitudes towards SNS (Gangadharbatla 2008). Participants with higher self-efficacy are willing to adopt online service (Eastin 2002). Confidence to use the Internet positively influences the willingness to adopt and use SNS. Self-efficacy depends on several factors, inclusive of computer experience, time spent and physical limitation. Research by Peng et al. (2012), demonstrated that computer self-efficacy has effects on users intention to use (Peng et al. 2012). Thus, the following hypotheses were derived to examine the association between the Self-efficacy on young adults' personal development.

H_7: Self-efficacy positively affects Self-esteem

H_8: Self-efficacy positively affects Satisfaction in University Life

H_9: Self-efficacy positively affects Acceptance

Competency, Online Engagement and Self-Esteem

Self-esteem is defined as being "the subjective evaluation a person makes and maintains about himself or herself and the extent of belief in their capability, worth and significance, which is conveyed through their attitudes and verbal behavior" (Wilson et al. 2010). There is growing evidence that Internet use in general and SNS like Facebook, may be associated with a person's sense of self-worth and other measures of psychosocial development. The relationship between Facebook use and bridging social capital was greater for low self-esteem students (Ellison et al. 2007). Steinfield et al. (2008) found a stronger association between Facebook use and social capital for the lower self-esteem students compared to the higher self-esteem students.

Pettijohn et al. (2012) argued that more active Facebook users are those who have higher self-esteem in their relationships. The study by Zywica and Danowski (2008) showed that those who are extrovert and have high degree of self-esteem are more popular both offline and online on Facebook. On the other hand, the introverted ones have lower self-esteem and are less popular offline. Low self-esteem users may be trying to enhance their image while the high self-esteem users may be trying to protect their self-image popularity (Zywica and Danowski 2008). Mehdizadeh (2010) stated that there is a negative correlation between self-esteem and time spent on Facebook. This is consistent with finding found by Kalpidou et al. (2011), Pettijohn et al.

(2012); and Steinfield et al. (2008). The following hypotheses were developed to analyze the impact of competency, mediated by online engagement on self-esteem.

H_{10}: Online Engagement mediates the relationships between Motivation and Self-esteem.

H_{13}: Online Engagement mediates the relationships between Knowledge and Self-esteem.

H_{16}: Online Engagement mediates the relationships between Self-efficacy and Self-esteem.

Competency, Online Engagement and Satisfaction with University Life

Online engagement is correlated with learners' sense of increased social belonging, and it is well established that learners who feel socially connected to their communities perform better (Greenhow et al. 2009). Through social networking, young adults can acquire attitudes, behavior, and knowledge for assuming a role in their communities such as universities, which can nurture their socialization. In turn, this socialization influences their performance. Jung et al. (2002) found that social interaction group outperformed the other groups and the collaborative interaction group expressed the highest level of satisfaction with their learning process. Social network sites users perceived a greater level of emotional support and companionship than the general Internet users (Hampton et al. 2011). SNS allows people to constantly keep in touch with current issues, perpetually have effectively communication and interaction with each other and they are able to enhance relationships. Peers have a strong effect and information individuals share/post have the ability to create positive emotions in others and accelerate the impact of positive change (Aaker and Smith 2010). They can provide informational social support that would facilitate other people's efficacy and ability to achieve goals. Interacting more on SNS elicits stronger feelings of support and satisfaction (Olson et al. 2012) more profoundly in the context of university life. Thus, the following hypotheses were developed to examine the impact of competency, mediated by online engagement on satisfaction with university life.

H_{11}: Online Engagement mediates the relationships between Motivation and Satisfaction with University Life.

H_{14}: Online Engagement mediates the relationships between Knowledge and Satisfaction with University Life.

H_{17}: Online Engagement mediates the relationships between Self-efficacy and Satisfaction with University Life.

Competency, Online Engagement and Acceptance

Developing and satisfying the relationship with peers is an important facet of socialization. Interaction with peers and developing strong ties will create social support and sense of belonging, which enable them to understand peer's interest, experience, and development of commonality and social acceptance from them (Yu et al. 2010). Social network provides a platform for individual to explore their peer culture, to give and receive feedback and to seek and show affection, affirmation and acceptance, which provide valuable learning opportunities. They are

exposed to a lot of information and resources, which are indicative of the learning potential that social network offers (Ünlüsoy et al. 2013). This process is consistence with the socio-cultural learning theories which suggest that learning occur as a result of interactions between cognition and culture when individual participate in the culturally defined activities with social others (Ünlüsoy et al. 2013). It has been said that the higher the Facebook usage, the lower the level of social acceptance (Kalpidou et al. 2011). This however has been refuted by some researchers whereby they found the opposite (Kirschner and Karpinski 2010). Therefore, the following hypotheses were developed to examine the impact of competency, mediated by online engagement on social acceptance.

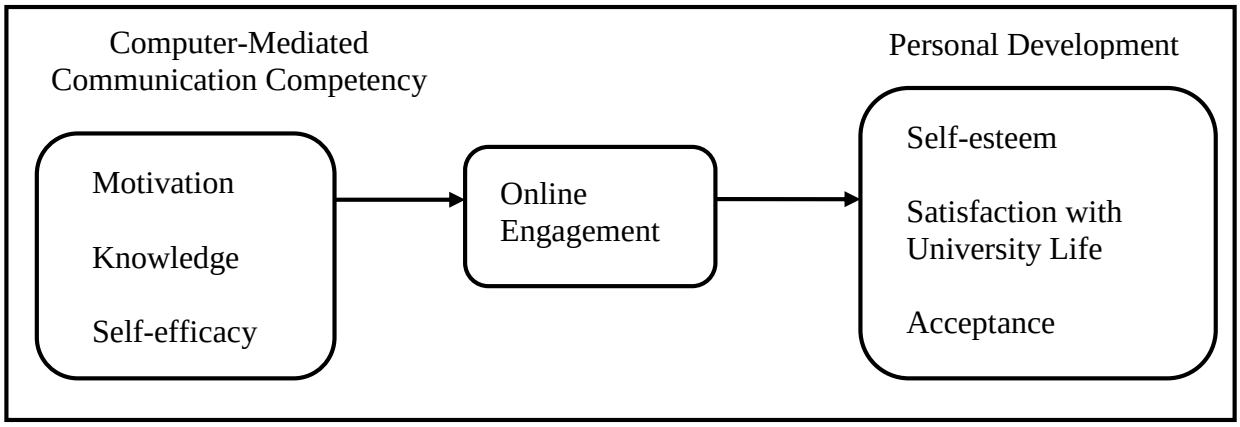
H_{12}: Online Engagement mediates the relationships between Motivation and social Acceptance.

H_{15}: Online Engagement mediates the relationships between Knowledge and social Acceptance.

H_{18}: Online Engagement mediates the relationships between Self-efficacy and social Acceptance.

Based on the discussion above, the following framework was proposed and used for this study (see Figure 1).

Figure 1: Research Framework



Methodology

Sample and Procedure

The survey questionnaire method was adopted to collect empirical data for the study. The survey questionnaire was administered to students in three public universities in Malaysia. It was distributed at the beginning of the class and collected at the end of the class. Permission to distribute the questionnaires was sought at the beginning of the semester from the respective

lecturers that have agreed to help distribute the questionnaire. In total, 600 questionnaires were distributed and, after cleaning the data, a total of 548 questionnaires were considered clean (Hair et al. 2010) and thus used for data analyses. All the analyses were carried out using AMOS v21 and SPSS v.21.

Measurements

We adopted measurements from past studies for all the variables of this study. Motivation, knowledge and self-efficacy were measured using 5, 5 and 8 items respectively adopted from Spitzberg (2006). Online engagement was measured using 5 items (Ross et al. 2009; Yu et al. 2010). Self-esteem was measured with 5 items adopted from Stenfield et al. (2008) and Yu et al. (2010). Satisfaction with university life and acceptance were measured using 4 and 5 items respectively adopted from Yu et al. (2010). The respondents were required to answer items for all the variables using a 5-point Likert scale ranging from 1 = strongly disagree to 5= strongly agree. In addition, the respondents were asked to fill in their demographic profile (age, gender, and ethnicity) using categorical scales. Table 1 shows the items for measurements used in the study.

Table 1: Items for Measurements

	Items	Coding	Construct
1.	Facebook is part of my everyday activity.	US1	Online Engagement Ross et al. (2009) Yu et al. (2010)
2.	I am proud to tell people I'm on Facebook.	US2	
3.	Facebook has become part of my daily life.	US3	
4.	I feel I am part of the Facebook community.	US4	
5.	I would be upset if Facebook shut down.	US5	
6.	I enjoy communicating using Facebook.	MO1	Motivation Spitzberg (2006)
7.	I feel cool about using the Facebook to communicate with others.	MO2	
8.	I am very motivated to use Facebook to communicate with others.	MO3	
9.	I look forward to use Facebook to communicate to others.	MO4	
10.	Communicating through Facebook makes me calm	MO5	
11.	I am very good in communicating through Facebook.	KN1	Knowledge Spitzberg (2006)
12.	I am never at a loss for something to say on Facebook.	KN2	
13.	I am very familiar with how to communicate through Facebook.	KN3	
14.	I always seem to know how to express myself on Facebook	KN4	
15.	I know how to post my messages on Facebook.	KN5	
16.	I don't feel very competent in learning and using Facebook.	EF1	Efficacy Spitzberg (2006)
17.	I feel completely capable of using all of the Facebook applications.	EF2	
18.	I am confident I can use any new Facebook applications	EF3	
19.	I'm nervous when I have to use a new Facebook application.	EF4	
20.	I find changes in Facebook applications very frustrating.	EF5	
21.	I quickly figure out how to use Facebook applications.	EF6	

22.	I know I can learn to use any new Facebook applications	EF7	
23.	If a Facebook application isn't user friendly, I'm likely not to use it.	EF8	
24.	The friendships developed at my University have been personally satisfying.	A1	Acceptance Yu et al. (2010)
25.	I feel comfortable around other students in the University.	A2	
26.	The students in my cohort seem to accept me as one of them.	A3	
27.	My interpersonal relationship with other students has a positive influence on my intellectual growth.	A4	
28.	My interpersonal relationship with other students has a positive influence on my personal growth, values and attitudes.	A5	
29.	I feel that I have a number of good qualities.	SE1	Self-esteem Stenfield et al. (2008) Yu et al. (2010)
30.	I feel that I'm a person of worth.	SE2	
31.	I am able to do things as well as most other people.	SE3	
32.	I take a positive attitude towards myself.	SE4	
33.	On the whole, I am satisfied with myself.	SE5	
34.	In most ways my life at my University is close to my ideal.	SU1	Satisfaction with University life Yu et al. (2010)
35.	The condition of my life at my University is excellent.	SU2	
36.	So far I have gotten the important things I want at my University.	SU3	
37.	I am satisfied with my life at my University.	SU4	

Data Analysis and Results

Respondents' Profile

Students from three Malaysian universities participated in this study. Table 2 below shows that a majority (52.7%) of the students approached for this study had more than 500 Facebook friends. Most students (52.6%) had been using Facebook for 3-4 years while 26.3% had been using for an even longer period of 5-6 years. This illustrates that the respondents are very well versed on the impact online engagement in their life. A majority 66.6% of the users used Facebook for 0-3 hours daily while another 23.9% used for 4-6 hours daily. Most of the students surveyed (83%) were 20-24 years old while 10% were 25-29 years old. On a 4-point scale, a majority of students (50.4%) stated that they obtained CGPA 3 to 3.49 while 30.5% scored CGPA 2.50 to 2.99. In total, 65% of the students were female while 35% were male. The majority of them were Malays (61.9%), 18.4% were Chinese, 0.9% were Indians while 18.8 % of the responding students described themselves as "others".

Table 2: Demographic Characteristics of Respondents (*n* = 548)

Variable	Categories	Frequency	Percent
No. of Facebook Friends	Less than 100	24	4.4
	101-200	65	11.9
	201-300	47	8.6
	301-400	57	10.4
	401-500	66	12.0
	more than 500	289	52.7
Time period using Facebook	Less than 1 year	16	2.9
	1-2 years	44	8.0
	3-4 years	288	52.6
	5-6 years	144	26.3
	More than 6 years	56	10.2
Daily Facebook use in hours	0-3	365	66.6
	4-6	131	23.9
	7-10	40	7.3
	More than 10	12	2.2
Respondent Age	20-24	455	83.0
	25-29	55	10.0
	30-34	24	4.4
	35-40	10	1.8
	41 and above	4	.7
Respondent Current CGPA	Below 2	2	.4
	2.01 - 2.49	24	4.4
	2.50 - 2.99	167	30.5
	3.00 - 3.49	276	50.4
	3.50 - 4.00	79	14.4
Gender	Male	192	35.0
	Female	356	65.0
Ethnicity	Malay	339	61.9
	Chinese	101	18.4
	Indian	5	.9
	Others	103	18.8

Confirmatory Factor Analysis

We assessed the validity and reliability of the measures by submitting them to a confirmatory factor analysis (CFA) via AMOS v.21. Thirty-six (36) items measuring all the variables of this study were entered in the initial CFA. As shown in Figure 2 below, a good model fit was not obtained: CMIN/DF = 2.83; CFI = .887; RMSEA = .040. Based on low factor loadings of items and modification indices, items were removed from the model and model fit was reassessed in the revised model. The revised model (Figure 3) fitted the data acceptably: CMIN/DF = 2.40; CFI = .945; RMSEA = .035. This revised model was retained as the final model.

Figure 2: Initial Model

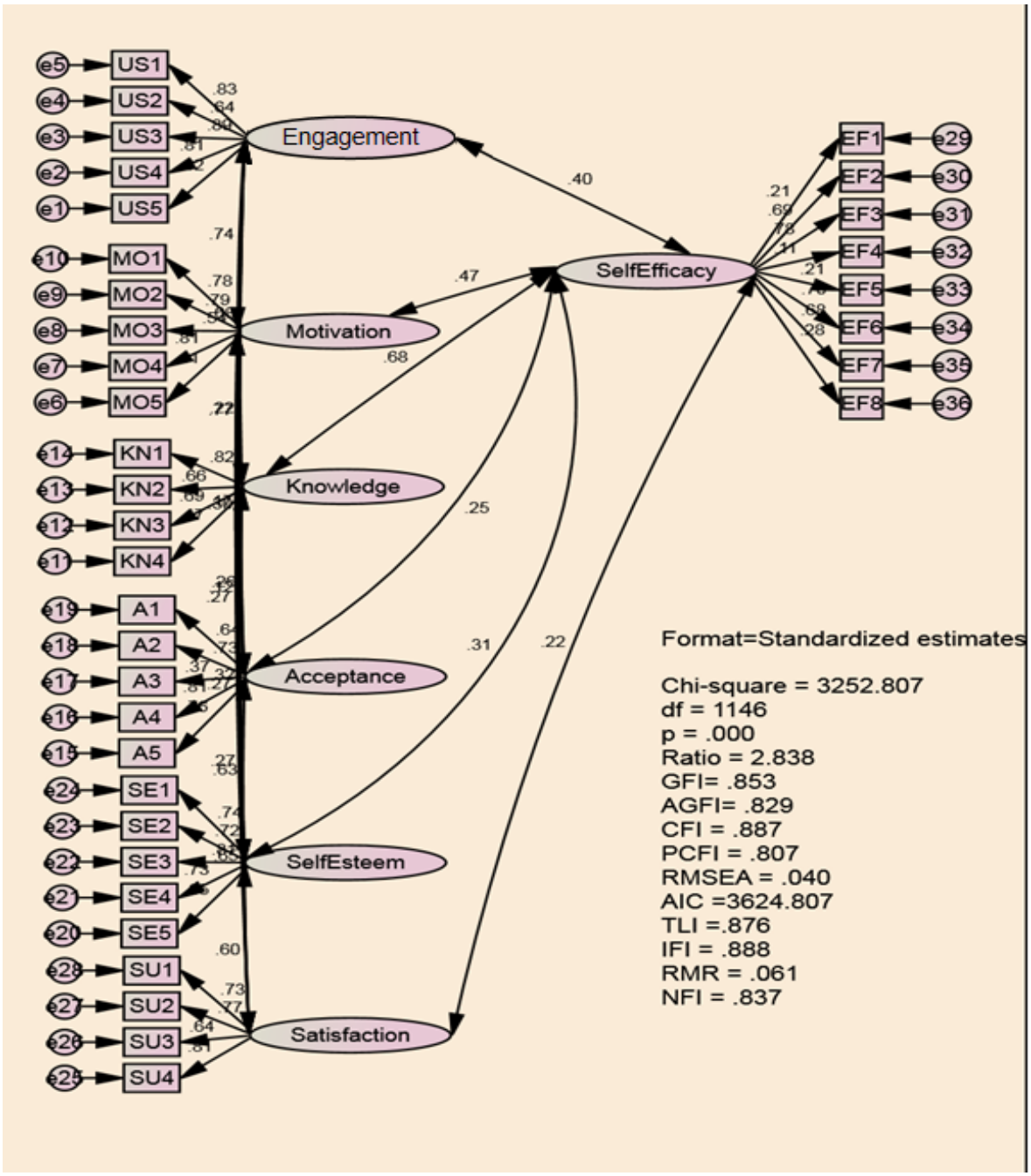
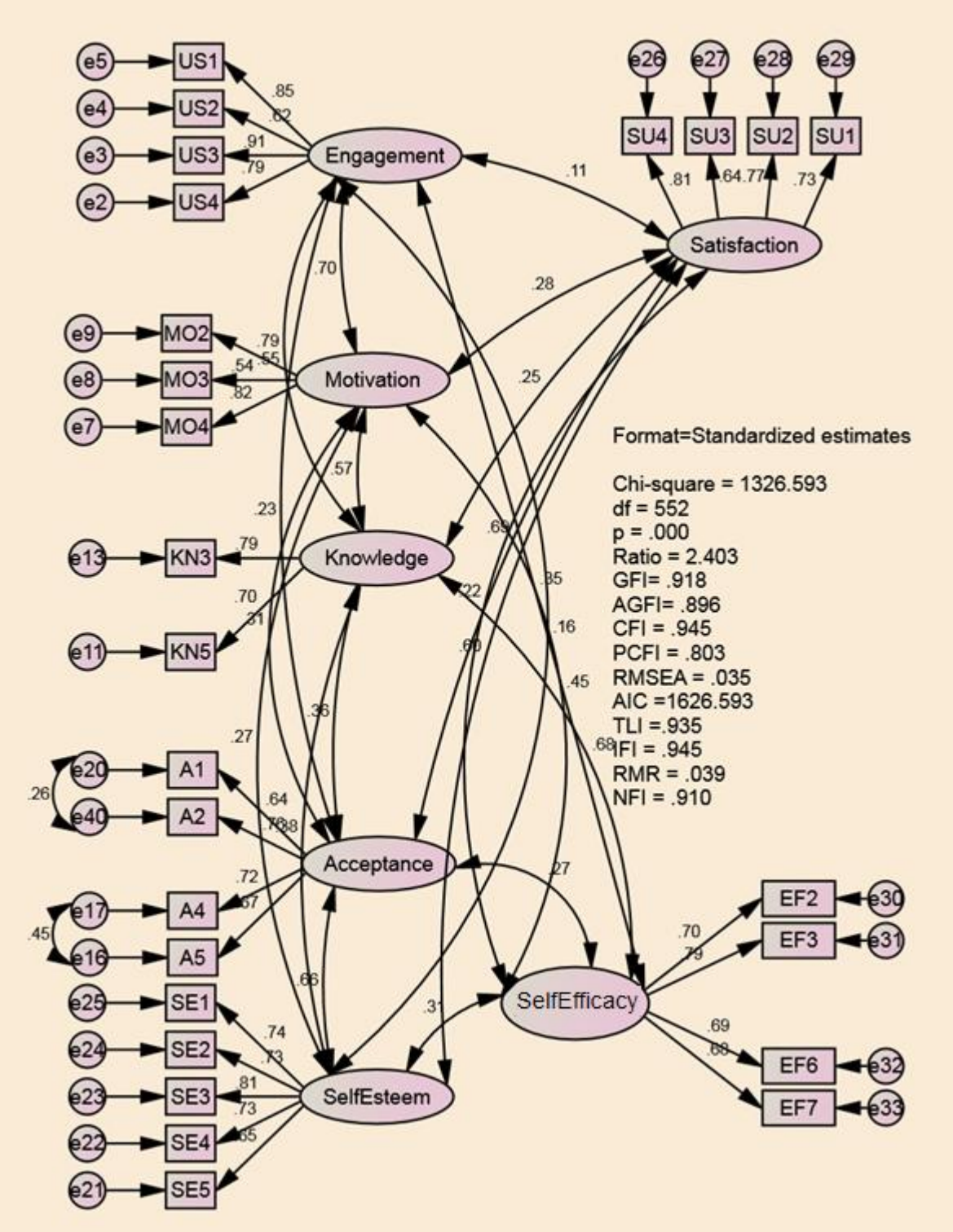


Figure 3: Final Model



Convergent validity and discriminant validity of the variables was assessed. As Table 3 below shows, Maximum Shared Squared Variance (MSV) and Average Shared Squared Variance (ASV) are less than Average Variance Extracted (AVE) for all the variables, providing evidence of discriminant validity of the variables (Hair et al. 2010). Similarly, Composite Reliability (CR) for all the variables of this study is greater than AVE and AVE is 0.5 or greater for all the variables, indicating convergent validity of the variables (Hair et al., 2010). In addition, CR for all the variables is greater than 0.7 while factor loadings of all the items are above the cutoff point of 0.5. This provides evidence of unidimensionality of the variables and reliability of the measures used in this study (Hair et al. 2010).

Table 3: Discriminant Validity, Convergent Validity and Reliability of Measures

Dimensions	Items	CR	AVE	ASV	MSV
Satisfaction with University Life	SU1 SU2 SU3 SU4	0.828	0.549	0.174	0.480
Online Engagement	US1 US2 US3 US4	0.874	0.638	0.166	0.487
Motivation	MO2 MO3 MO4	0.766	0.530	0.210	0.487
Knowledge	KN3 KN5	0.715	0.557	0.236	0.465
Acceptance	A1 A2 A4 A5	0.792	0.50	0.211	0.480
Self-esteem	SE1 SE2 SE3 SE4 SE5	0.854	0.539	0.190	0.438
Self-efficacy	EF2 EF3 EF6 EF7	0.807	0.512	0.167	0.465

Descriptive Statistics, Correlations and Reliability

A correlation analysis of the variables used in this study was conducted to explore associations among them. Table 4 below shows that motivation correlates positively with knowledge (r =.487; p<.01), self-efficacy (r =.410; p<.01), online engagement (r =.658; p<.01), self-esteem (r =.253; p<.01), satisfaction with university life (r =.289; p<.01) and acceptance (r =.293; p<.01). Self-efficacy positively correlated with knowledge (r =-.520; p<.01), online engagement (r =-.485; p<.01), self-esteem (r =-.289; p<.01), satisfaction with university life (r =-.228; p<.01), and acceptance (r =-.317; p<.01). Online engagement positively correlated with self-efficacy (r =-.360; p<.01), self-esteem (r =-.213; p<.01), satisfaction with university life (r =-.246; p<.01) and acceptance (r =-.254; p<.01). Self-esteem correlated positively with online engagement (r =-.200;

p<.01), satisfaction with university life (*r* =-.177; *p*<.01) and acceptance (*r* =-.318; *p*<.01). Also, satisfaction with university life correlated positively with self-esteem (*r* =-.505; *p*<.01) and acceptance (*r* =-.504; *p*<.01). Lastly, acceptance correlated positively with satisfaction with university life (*r* =-.553; *p*<.01). Table 3 below also shows the mean and standard deviation of the variables. Reliability coefficients, provided in the parentheses, suggest that the measures used in this study are reliable and internally consistent (Hair et al. 2010).

Table 4: Descriptive Statistics and Correlations

	Mean	SD	1	2	3	4	5	6	7
Motivation (1)	3.32	0.87	(.85)						
Knowledge (2)	3.61	0.85	.487**	(.70)					
Self-efficacy (3)	3.33	0.79	.410**	.520**	(.80)				
Online Engagement (4)	3.26	0.97	.658**	.485**	.360**	(.87)			
Self-esteem (5)	3.86	0.61	.253**	.289**	.213**	.200**	(.83)		
Satisfaction with University Life (6)	3.62	0.69	.289**	.228**	.246**	.177**	.505**	(.84)	
Acceptance (7)	3.85	0.65	.293**	.317**	.254**	.318**	.504**	.553**	(.83)

***Correlation is significant at the 0.01 level (2-tailed).*
Cronbach's Aplha in parenthesis

Structural Model

A structural model was developed to test the hypothesis of the study (see Figure 2 and Figure 3). A good model fit was observed for this model: CMIN/DF = 3.25; CFI = .908; RMSEA = .064. As Table 5 shows, Motivation was found to positively predict self-esteem (β=0.135; *p*<.01), satisfaction with university life (β=0.207; *p*<.01) and acceptance (β=0.164; *p*<.01), thus providing support for H1, H2 and H3. Similarly knowledge was found to positively predict self-esteem (β=0.193; *p*<.01) and acceptance (β=0.192; *p*<.01) thus supporting H4, H6. However, a significant relation was not found between knowledge and satisfaction with university life (β=0. 06; *p*>. 05); hence H5 is not supported. Also, self-efficacy was found to positively predict satisfaction with university life (β=0.13; *p*<.01), however, self-efficacy did not relate significantly to self-esteem (β=0.056; *p* >.05) and acceptance (β=0.082; *p* >.05). Hence H7 and H9 are not supported while H8 is supported in this study.

Table 5: Results of Hypothesis Testing

Relationship	Direct without Mediator*	Direct with Mediator*	Indirect	Results
Motivation > Self-esteem	0.135 (0.004)	0.139 (0.014)	0.899	No Mediation
Motivation > Satisfaction	0.207 (0.000)	0.243 (0.000)	0.319	No Mediation
Motivation > Acceptance	**0.164 (0.000)**	**0.076 (0.169)**	**0.006**	**Full Mediation**
Knowledge > Self-esteem	0.193 (0.000)	0.195 (0.000)	0.891	No Mediation
Knowledge > Satisfaction	0.06 (0.236)	0.073 (0.156)	0.279	No Mediation
Knowledge > Acceptance	**0.192 (0.000)**	**0.159 (0.002)**	**0.004**	**Partial Mediation**
Self-efficacy > Self-esteem	0.056 (0.244)	0.057 (0.243)	0.687	No Mediation
Self-efficacy > Satisfaction	0.13 (0.007)	0.131 (0.007)	0.316	No Mediation
Self-efficacy > Acceptance	0.087 (0.069)	0.082 (0.083)	0.340	No Mediation

**Online Engagement*

This study involved testing the mediating role of online engagement in the predictor-outcome relationships. We used the Baron and Kenny (1986) approach and the bootstrapping method to investigate the mediating effects. As Table 5 above shows online engagement fully mediates the relationship between motivation and acceptance. Online engagement was also found to mediate the relationship between knowedge and acceptance. Online engagement was not found to mediate other predictor-outcome relationships studies in this research. Both the approaches confirmed these results. As a result, H12 and H15 are supported while H10, H11, H13, H14, H16, H17, H18 are not supported. Table 6 below summarizes these findings.

Table 6: Summary of Findings

	Hypotheses	Result
H1	Motivation positively affects Self-esteem.	**Supported**
H2	Motivation positively affects Satisfaction with University Life.	**Supported**
H3	Motivation positively affects Acceptance.	**Supported**
H4	Knowledge positively affects Self-esteem.	**Supported**
H5	Knowledge positively affects Satisfaction with University Life.	Not Supported
H6	Knowledge positively affects Acceptance.	**Supported**
H7	Self-Efficacy positively affects Self-esteem.	Not Supported
H8	Self-Efficacy positively affects Satisfaction with University Life.	**Supported**
H9	Self-Efficacy positively affects Acceptance.	Not Supported
H10	Online Engagement mediates the relationship between Motivation and Self-esteem.	Not Supported
H11	Online Engagement mediates the relationship between Motivation and Satisfaction with University Life.	Not Supported
H12	Online Engagement mediates the relationship between Motivation and Acceptance.	**Supported**
H13	Online Engagement mediates the relationship between Knowledge and Self-esteem.	Not Supported
H14	Online Engagement mediates the relationship between Knowledge and Satisfaction with University Life.	Not Supported
H15	Online Engagement mediates the relationship between Knowledge and Acceptance.	**Supported**
H16	Online Engagement mediates the relationship between Efficacy and Self-esteem.	Not Supported
H17	Online Engagement mediates the relationship between Efficacy and Satisfaction with University Life.	Not Supported
H18	Online Engagement mediates the relationship between Efficacy and Acceptance.	Not Supported

Conclusion

The study found that computer-mediated communication competency (motivation, self-efficacy and knowledge) affects the personal development (acceptance, satisfaction with university life and self-esteem) of the young adults. In specific, motivation affects self-esteem, satisfaction with university life and acceptance. The second component of the CMC competency that is knowledge affects two components of the personal development namely the self-esteem and acceptance while the third component of CMC competency, which is self-efficacy only affects satisfaction with

university life. Thus, the young adults showed that their personal development is affected by their ability to communicate using computers. This is similar to the studies done by Eastin and LaRose (2000), Fang (1998) and LaRose et al. (2001) where they found that the more knowledgeable and proficient students were with computers, the higher the acceptance they feel among their friends. This will affect the personal development of the young adults. Nonetheless, the effects caused by each of these components are not the same for all the components measuring the personal development.

The other important aspect of the study was to examine the mediation effect of online engagement on the relationships between CMC and personal development. The study found that online engagement mediates the relationship between motivation and acceptance; and online engagement also mediates the relationship between knowledge and acceptance. These findings show that the effect of motivation on acceptance and the effect of knowledge on acceptance could be best explained through the young adults' online engagement. While motivation and knowledge themselves both have effects on acceptance, spending more time on computers for activities such as communication, learning and entertainment would have greater impact on young adults personal development especially in situations where they are highly motivated and have the knowledge for CMC. These findings from the study are similar to Yu et al. (2010) and Ünlüsoy et al. (2013).

As with any research, this study has its limitations. It uses a cross-sectional data and the respondents were selected from three public universities. Future research should consider collecting longitudinal data and use of more respondents, not only those from institutions of higher learning but also those from other segments of the population.

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