

# The Effect of Smartphone that Influence the Compulsive Usage among Students

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## Abstract

This paper presents the effect that can influence the compulsive usage and technostress. The proposed model has been empirically tested using collected data from a survey selected sample of respondents. The survey consists of questionnaire responded by 180 students with 90 % response rate among students in UiTM Puncak Perdana that located in Shah Alam, Malaysia. Data was analyzed by using descriptive analysis, correlation and multiples regression analysis other than common analysis technique. Findings indicated that all variables are positively associated with compulsive usage. Among them, there are three predictors have been identified which are locus of control (LOC), materialism (MAT) and need for touch (NFT) that contribute to more compulsive usage of smartphone. This finding contributed in terms of allowing us to understand the effects of psychological traits towards compulsive behavior and technostress. The outcome of this paper provides supplementary information which beneficial to the related industries, researchers and practitioners as discussed.

**Keywords:** Compulsive Usage, Locus Of Control, Materialism, Psychological Traits, Technostress

## 1. Introduction

The evolution of the smartphone has changed the communities on people lifestyle and thoughts. Smartphone becomes more vibrant nowadays, and every person must have it in their possessions. The development of technology in the smartphone make every person more accessible and get connected to each other in their daily life. In addition this make people only depend on the technology to make their life more alive by being linked up with the technology. Therefore, this makes an assumption of having a smartphone is really essential, and people may not be able to live without it. The study about smartphone has been done by other researchers in many countries, especially developed country such as Japan, Taiwan and Australia. Their study had been conducted in various subjects and topic that related to technology of smartphones. In Malaysia, the research topic about the smartphone is still lacking and the emergence of smartphones is slowly moving to become popular like some other research topic.

Various studies have been done to investigate and explore the smartphone usage in every angle of study in the field like as well as to study the effect of psychological traits towards compulsive behavior and techno stress. Some of the studies only focusing the factors, user behavior of the smartphone usage and also the impact of user behavior in smartphone usage. In order to understand and knowing more about the smartphone usage, the exposure of the knowledge about the effect of the smartphone as technology driven will get the answer will be resolved. The smartphone users will become more addicted and more obsess if the users do not control the usage of it. They have to balance their needs and requirement so that they will not face the problem. One of the problems of smartphone usage within the students is, less focus on the class. These obsessions of the smartphone make students do not focus in class and they will check their phone every time, although there are no messages, phone call or email that comes into the smartphones. In other words, the addiction of smartphone will make the student less socializes in their life. We can see the situation when the student gathers together and sit between them at one table, their hands and their eyes are only on the smartphone. They only looked at the smartphone rather than asking and talking to each other. This impact will effect on community and also in their social life. The safety aspect will also be abandoned with this obsession. Smartphone users will not have full focus while driving and this will cause an accident to happen which is dangerous to their life and other people. They will always tend to check their smartphone while driving, and the possibility of an accident to happen is absolutely high. Meanwhile, they will cause other people get a risk with their behavior and without thinking about other people's life. The last problem statement for this study is the increasing of crime for under age. They will shot a video and upload the video on YouTube especially to show to people what they had done. They will feel proud of themselves if they show all the videos to other people. The case of bullying in school or college is increasing currently and the smartphone is the main contribution to the social problem.

The purpose of this paper is to evaluate the effect of smartphone toward student compulsive usage. This paper also explores the research framework of the study. Meanwhile, the literature also has been divided into sub topic on the definition of the terms, previous research, theoretical review, methodological review and theoretical framework. In other words, the sub - topic of every definition is to help in better understanding the term that will be used.

## **2. Literature Review**

The usage of smartphone has been increasing every day and year by year due to the requirement by the user. The innovation of technology in smartphone will make user, addicted what is new application that had been provided. All the application that had been provided in the smartphone usually will make the user more convenient and also user friendly. As we know, the student as our benchmark of leadership in the future. If they are not capable to be a leader in the future, nobody else will inherit the future leader. The technology of smartphone will give the impact to the student in their campus life. The previous research by Roberts and Pirog (2013) has been determined to investigate the drivers of technological addiction in college students – heavy users of Information and Communication Technology (ICT). The study had been used. The quantitative method which the respondents that involved within the two universities in the United States with 191 college undergraduates.

The findings result found that materialism and impulsiveness drive both a dependence on cell phones and instant messaging. The findings of above previous study will support the variables that will be used in this study which is materialism. Besides that, the previous study by S.P Walsh et al. (2008) in their research is to explore the psychological factors relating a mobile phone use amongst Australian youth. The research method that had been done was qualitative method with 32 participants aged between 16 and 24 years which took part in focus group discussion. The result of this study provided a solid foundation for further work investigating addictive patterns of mobile phone use amongst youth.

Meanwhile, the other previous study by M. Salehan & A. Negahban (2013) has been found that the use of technology of a Social Networking Service (SNS) mobile application was a significant predictor of mobile addiction. This research has been used quantitative with 214 respondent's students. The finding in this study was shown that the use of SNS mobile applications was affected by both SNS network size and the SNS intensity of the user. Yusuf Levent Sahin et al. (2009) has conducted a study to analyze the technostress levels of social networking website users through different variables. This study had been gathered from the online questionnaire with 765 participants. The study concluded that the social networking website users have a medium level of technostress, mainly caused by environmental reasons as opposed to social reasons. In addition, this study also found that age and familial monthly income also caused differentiation in technostress. The result of this study will support the variable that had will be used in this study which is technostress. Therefore, this will help the effect of smartphone usage by the students of UiTM.

Research by Lee et al. (2014), had highlighted the aim of the study of investigating the dark side of smartphone trend. The study was conducted 325 participants and compared Structural Equation Modeling with competing models. In this study, they had suggested that compulsive usage of smartphones and technostress are positively related to psychological traits, including locus of control, social interaction anxiety, materialism and the need for touch. In addition, the gender differences also found in the aforementioned relationship. The results of this study had given a practical implication of user-oriented smartphone design and also companies as well as government agencies as they combat the social ills brought on by smartphone (Lee et al.2014).

### *2.1 Locus of Control (LOC)*

Rotter (1954) has defined locus of control as a person's about control over life events which was being widely used as antecedent to individual's social behaviors or decision-making. A few years later, the locus of control refers to an individual's perceptions about the cause of event in people's life and also the ability to affect the outcome through the people's own actions (Rotter, 1966). Basically, the locus of control has been applied in various fields, especially in health psychology according to research by (N. Park et al, 2013). A previous study by Wallston, Maids and Wallston (1976) found that health –related information seeking is a joint function of the person's locus of control beliefs and the value placed on health. Meanwhile, Martin and Saleh (1984) have been explored that person with an internal locus of control derive greater benefits from social support than do those who have a more external orientation. In addition, some of the researcher's thoughts that locus of control had a relationship between the technologies used in the area of ICT. For example, the research by Chak and Leung (2004) had been exposed that a higher internal locus of control is associated with less addictive internet behavior. Leong (2011) had discovered that an increased sense of control over the environment was positively associated with successful computer use. In this

study the assumption can be made is the investigation the relationship between locus of control and technology use in not directly. The working hypothesis is stated in the following way:

### *2.2 Social interaction anxiety*

Schlenker and Leary (1982) have been defined that social interaction anxiety is an excessive fear of social situations or interactions with others, and being evaluated or scrutinized by other people, particularly when encountering strangers in public settings. In addition, Caplan (2007) found that the need to reduce anxiety motivates socially anxious people to minimize their chances of making undesired impressions on others. Leary (1983) also explored that acute social anxiety leads to social withdrawal and isolation. Meanwhile, Morahan- Martin and Schumacher (2003) and Yen, et al. (2012) have shown that lonely and anxious individuals positively benefit from on-line interaction. Takao, et al. (2009) had been found that the problematic internet use and smartphone use may share the same properties because both of them are related to communication tools and interpersonal interaction. However, the group of people is likely to develop problematic or excessive Internet use behavior. The working hypothesis is stated in the following way:

### *2.3 Need for Touch*

The need for touch has been defined as a preference for the extraction and utilization of sensory information obtained through touch or the haptic system (Peck & Childers, 2003a; Peck & Childers, 2003b). Therefore, Oulasvirta et al. (2012) also indicated that 35% of phone usage sessions are touching behaviors. In addition, Y.K Lee et al. (2014) found that need for touch is emphasized in this research since the more hedonic satisfaction the smartphone brings, the more users with a stronger need for touch may become more compulsive and depend on the smartphone. The working hypothesis is stated in the following way:

### *2.4 Materialism*

Richins & Dawson (1992) have explored that materialism is, a person's belief about the importance of material possession in people's life. In addition, Belk (1985) has been found that an individual with a high level of materialism, described as "materialistic", considers material possessions to be central to people's life and identity. As generally, the material is based on the person's perception of the thing that they want in their life. The materialism is affected by consumer's reasoning when evaluating purchases, and influences their post-purchase satisfaction (Richins, 2004). While the other research by Rindfleisch, Burroughs & Wong (2009) and the result was positively that is related to the luxury goods (Tatzel, 2002; Wong & Ahuvia, 1998). In addition, the previous study by Chang (2008) had been defined that individuals consider the latest smartphone model to be a symbol of material possessions. In the study of Lee et al., (2014) had predicted that materialism may be resulted in compulsive usage of the smartphone. The working hypothesis is stated in the following way:

### *2.5 Compulsive usage*

The compulsive usage has been defined by O'Guinn and Faber (1989) as "response to an uncontrollable drive or desire to obtain, use, or experience a feeling, substance, or activity that leads the individual to repetitively engage in behavior that will ultimately cause harm to the individual and/or others". Therefore, it will measure the pattern of competitive which including all the person's behavior such as window shopping, eating and also all activities that

have been doing every day as mentioned by (Parylak, Koob & Zorrilla, 2011). 2012). Other than that, the study by Matusik & Mickel (2011) had been found that the compulsive behaviors are addicted to be more certain, adverse consequences of psychological distress such as depression and stress are more likely to be induced as well. Lee et al., (2014) has been found that the technostress can be served as a useful sign of stress. The working hypothesis is stated in the following way:

The technostress is defined as “The Consequence of Technology” by Champion (1988) which concluded that the rapidly and changing technology would be affecting the person’s life. In the research by Brod (1982) has been found that the probability factors that can effect on technostress as being depend on the level of technical experience of the user, age, pressure of supervision during used, general working and also environment in the situation or event. The technostress has been studied by some of the previous research. Some of the research is by Enis (2005) which had been determined the six fundamental factors that librarians used in connecting with technostress which action that's been regarding to this issue. In addition, Enis (2005), also defined that the technological innovations will change very rapidly because of that, the technostress will be more affected to the user.

## 2.6 Research Framework

There are four independent variables and two dependent variable involve in this study as presented in Fig. 1. These variables have been identified from the theoretical review and previous study section. The definition of each variable can be found in this section along with the variable description and related with another study. In this study the relationship between the independent variables and dependent variables will be examined and hypotheses are proposed in this section.

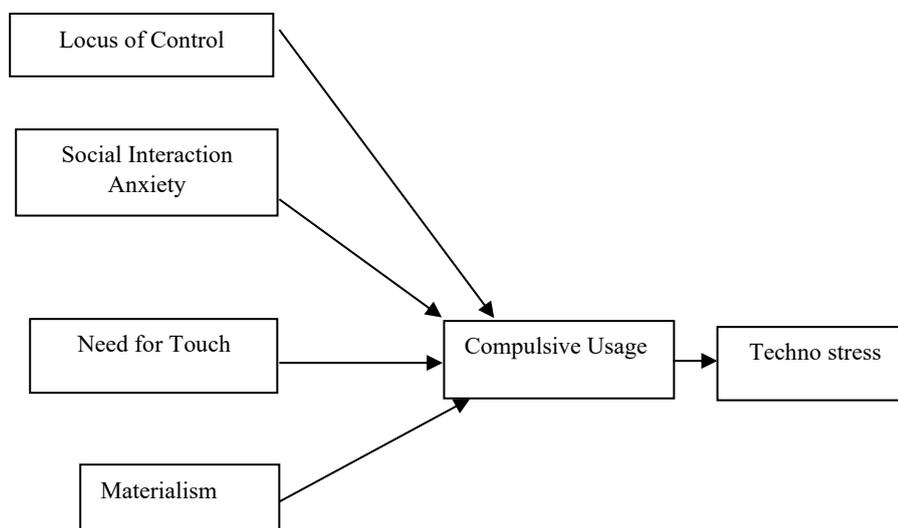


Fig. 1. Theoretical Framework.

## 3. Methodology

The research process is the series of step taken in completing this study. The first step, on the wish to conduct this research, was derived from the need of the course taken and to fulfill the requirements for this Master Science of Information Management program. During

the literature review process, it seems that this study is not much suitable plus may derive a problem during data collection. Since this study is positivist, deductive approaches have been selected for this research. The researcher then moves towards constructing the research design that involves identification of best-fit method and methodology, data collection process and others which are explained in this chapter later on. In each of the stage taken in this study, the researcher has considered ethical issue, especially with the access to information as well as during the data collection and finding analysis.

The respondents consist of undergraduate student at the University Technology MARA campus Puncak Perdana. The researcher intends to apply the simple random sampling technique (one of the sampling method under probability sampling technique) as this technique allows for the researcher to do the parametric test to examine the relationship and perhaps the result can be applied to the whole population. The survey will be applied as a data collection strategy and questionnaire is developed as an instrument for conducting the survey. After having a valid and satisfactory number of returned questionnaires, data analysis will be done through quantitative methods, which this study will analyze the data collected using the system of Statistical Product and Service Solutions (SPSS) and then examine the relationship of the variable tested to confirm or reject the hypothesis. From the results of data analysis and interpretation, deductions were finally made. After that, a final report from this research will be developed and presented. Submission of the project will be based on the timeline given by the supervisor. There is no data collection or pilot study has been taking place, but the questionnaire has been adopted.

## **4. Findings**

### *4.1 Reliability Analysis*

In this section, the variable will be measured to explain the factor analysis that involved. The Cronbach Alpha is defined an index of reliability associated with the variation accounted for by the true score of the "underlying construct" which had been measured by Hatcher (1994) for hypothetical variable. The value of the Alpha coefficient ranges in value from 0 to 1 and may be used to describe the reliability of factors extracted from dichotomous (in this case the questions with two possible answers) and/or multi-point formatted questionnaires or scales (i.e., Rating scale: 1 = poor, 5 = excellent). The higher the score, the more reliable the generated scale is. The study by Nunnaly (1978) has indicated 0.7 to be an acceptable reliability coefficient, but lower thresholds are also sometimes used in the literature. The result of this study for each variable through the value that was using Cronbach Alpha as per Table 1 below.

Table 1. Cronbach Alpha value of the variables

Factor	Variable	No of the Items	Cronbach Value	Alpha
Locus of Control	Independent Variable	6	0.817	
Materialism	Independent Variable	6	0.871	
Need for Touch	Independent Variable	6	0.912	
Social Interaction Anxiety	Independent Variable	7	0.792	
Compulsive Usage	Dependent Variable	9	0.727	
Techno stress	Dependent Variable	6	0.912	

From the Table 1 above, the results showed that the variable with the highest Cronbach Alpha is both factor need for touch and technostress, which is 0.912 while the lowest value of the Cronbach Alpha is compulsive usage which value at 0.727. This result showed that the value of all variables is valid and reliable in this study.

#### 4.2 Mobile Phone Ownership

Table 2 showed the result of mobile phone ownership of the students. Most of the student owns their mobile phone that about 98.3% with the number of them were 177. While about 1.7% the percentage of students without having their ownership of mobile phone with the number of students was three only.

Table 2.  
Mobile Phone Ownership

	Mobile Phone Ownership	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	3	1.7	1.7	1.7
	Yes	177	98.3	98.3	100.0
	Total	180	100.0	100.0	

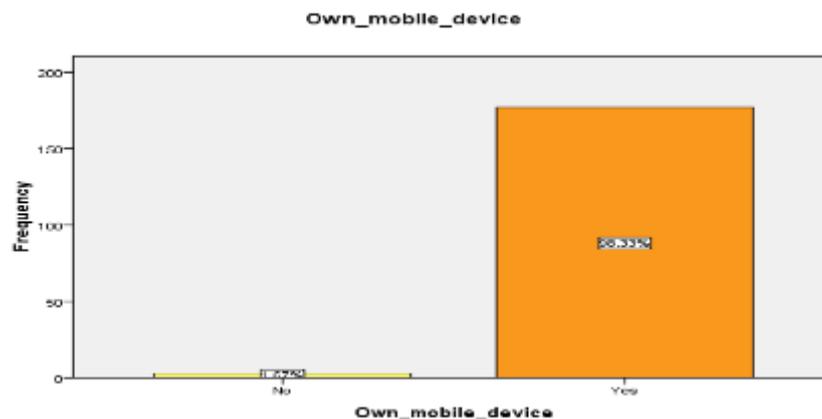


Fig. 2. Mobile Phone Ownership

### 4.3 Mobile phone Application Services

#### 4.3.1 Mail Services

Table 3 showed the mail services that had been used by the student in their mobile phone. Most of the students using the mail services on their mobile phone that were about 73.3% with a number of students were 132. Meanwhile, the number of students that did not use the mail services were 48 with the percentage 26.7%.

Table 3. Mail Services

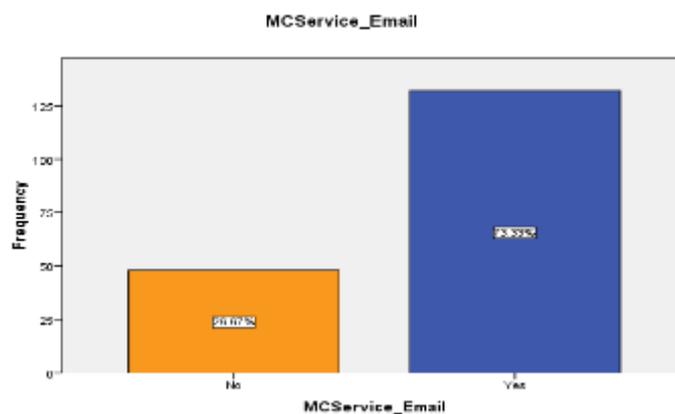


Fig. 3. Mail Services

#### 4.3.2 Mobile Banking Services

Table 4 showed the mobile banking that had been used by the student with the percentage of using the mobile banking were only about 37.8% with the number of students were 68. While, most of the students which were 62.2% did not use the mobile banking with the number of students were 112.

Table 4.  
Mobile Banking Services

	Mobile Banking Services	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	112	62.2	62.2	62.2
	Yes	68	37.8	37.8	100.0
	Total	180	100.0	100.0	

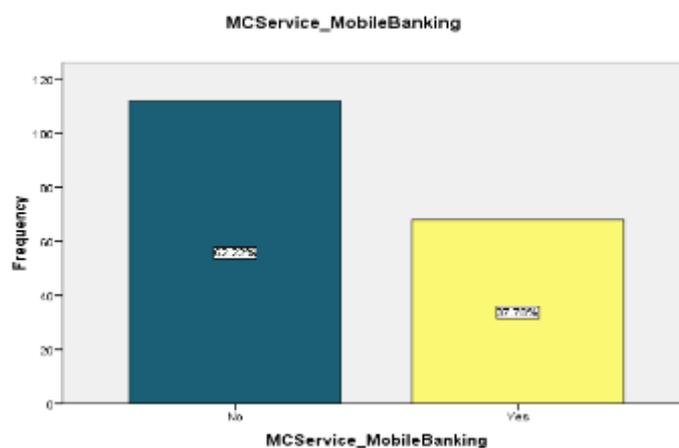


Fig. 4. Mobile Banking Services

4.3.3 SMS

Table 5 showed the distribution of the Short Message Services (SMS) of the student that used in their mobile with the number of students were 103 which about 57.2%. Meanwhile, the number student has not used the SMS were 77 with the percentage were 42.8 %.

Table 5. SMS

	SMS	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	77	42.8	42.8	42.8
	Yes	103	57.2	57.2	100.0
	Total	180	100.0	100.0	

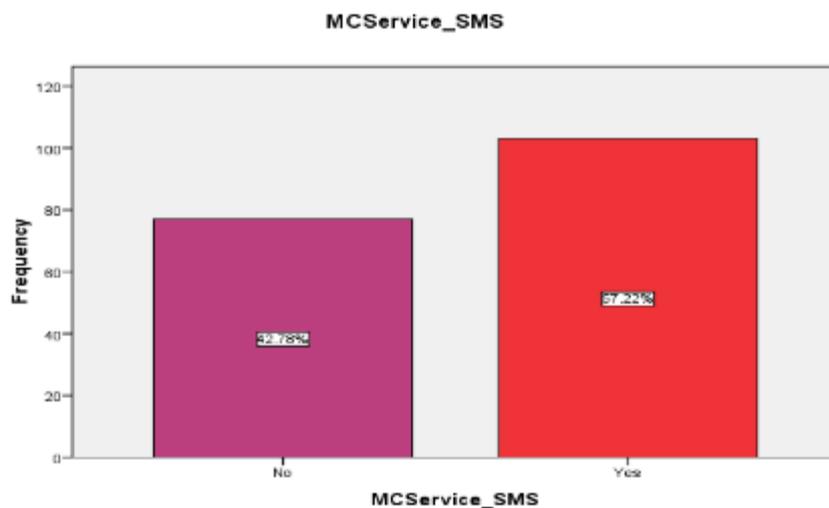


Fig. 5. SMS

4.3.4 Social Networking (Twitter, Facebook, Instagram, MySpace)

Table 6 showed the distribution of the Social Networking that had been used by on the mobile phone by students because the percentage was 88.3% with the number were 159. Meanwhile, the percentage of students that did not use the social networking were 11.7% with a number of students were 21.

Table 6.

Social Networking (Twitter, Facebook, Instagram, My Space)

	Social Networking	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	21	11.7	11.7	11.7
	Yes	159	88.3	88.3	100.0
	Total	180	100.0	100.0	

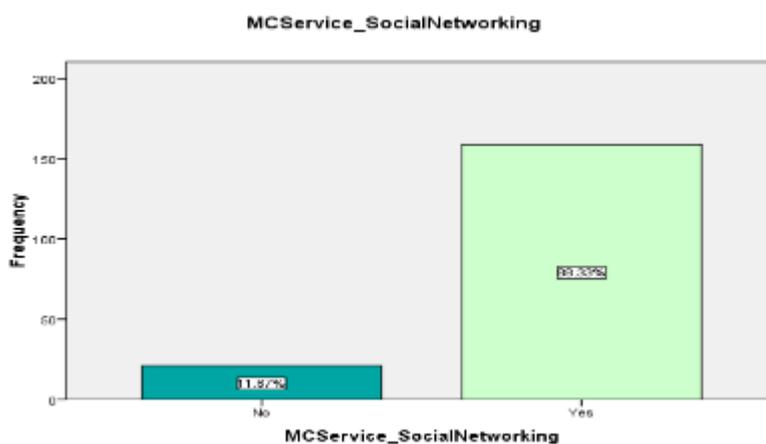


Fig. 6. Social Networking (Twitter, Facebook, Instagram, My Space)

#### 4.3.5 Music Player (Windows Media Player, Real Player, iTunes)

Table 7 showed the distribution of the Music Player Services that had been used by students in their mobile phone which the number student were used about 52.2 % in the number of students were 94. Meanwhile, the number of students, that not used, were 86 with the percentage about 47.8 %.

Table 7.

Music Player (Windows Media Player, Real Player, iTunes)

	Music Player Services	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	86	47.8	47.8	47.8
	Yes	94	52.2	52.2	100.0
	Total	180	100.0	100.0	

#### 4.3.6 Online Purchase (Zalora.com, Ebay.com, Mudah.com)

Table 8 showed the distribution of the used for Online Purchase such as Zalora. Com, Ebay and Mudah.com with the number student was used about 31.1% in the number of students 56. Meanwhile, the other student has not used the online purchase with the number 124 which about 69.9%.

Table 8.

Online Purchase (Zalora.com, Ebay.com, Mudah.com)

	Online Purchase	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	124	68.9	68.9	68.9
	Yes	56	31.1	31.1	100.0
	Total	180	100.0	100.0	



Fig. 8. Online Purchase (Zalora.com, Ebay.com, Mudah.com)

4.3.7 Games (Clash of Clans, Candy Crush, and Facebook Online Games)

Table 9 showed the distribution of games application that's been used in the mobile phone by student, because the number of students did not use were 95 with the percentage 52.8%. Meanwhile, the number of students that used the games service were 85 with 47.2%.

Table 9.  
Games (Clash of Clans, Candy Crush, and Facebook Online Games)

	Games	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	95	52.8	52.8	52.8
	Yes	85	47.2	47.2	100.0
	Total	180	100.0	100.0	

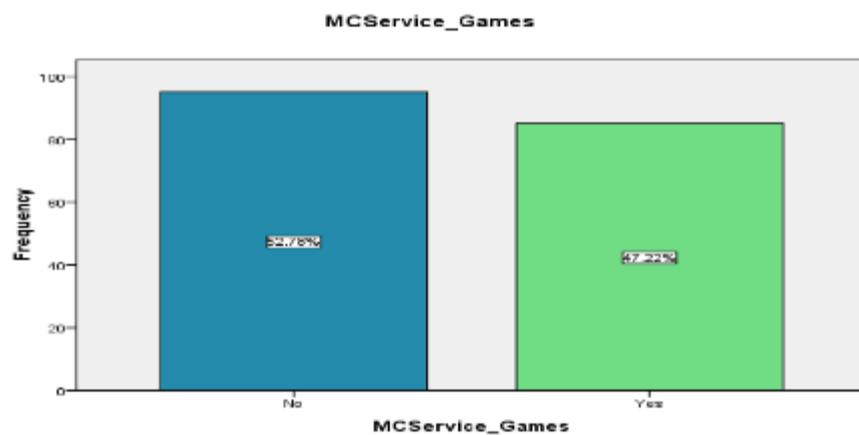


Fig. 9. Games (Clash of Clans, Candy Crush, and Facebook Online Games)

4.4 Descriptive Statistic of Compulsive Usage (CU)

The descriptive statistic of this variable is shown in Table 10. The result showed the average mean score was 3.223. The highest mean score was CU34, that the question was about “I feel lost and frustrated without my mobile phone” with the score at 3.422. Meanwhile, the lowest mean score was CU35, that the question was about “I risk an important relationship, a job, an academic opportunity or a career development opportunity because I overuse my mobile phone” with mean score 2.828.

Table 10.

## Descriptive Statistic of Compulsive Usage (CU)

	N	Mean	Std. Deviation	
	Statistic	Statistic	Std. Error	Statistic
The first thing I do each morning is to check my mobile phone for missed calls or messages	180	3.761	.082	1.105
I find it hard to control my mobile phone use.	180	3.356	.077	1.028
I feel lost and frustrated without my mobile phone.	180	3.422	.080	1.083
I risk an important relationship, a job, an academic opportunity or a career development opportunity because I overuse my mobile phone.	180	2.828	.085	1.142
I often anticipate my next use of my mobile phone.	180	3.211	.062	.832
I often get angry if someone interrupts me during my mobile phone use.	180	2.894	.082	1.101
I can't concentrate in class because of mobile phone use.	180	2.850	.085	1.141
I check for missed calls and messages all the time when I am awake.	180	3.350	.089	1.189
Valid N (listwise)	180	<b>3.223</b>		

Sources: Ehrenberg et al. (2008), Jenaro et al. (2007), Koo (2009), Meerkerk et al. (2009)  
Average Mean Score: 3.223

## 5. Discussion

### 5.1 Factor that influenced need for touch on compulsive usage

The need for touch was one of the psychological traits also contributed the influenced the compulsive usage in a smartphone. One of the factors that could be influenced were the natural of the habit as human need to touch something. They like to do it because want to make themselves very confidence. In addition, most of recent smartphone designs may have been influenced by users' need for touch which had been known as "touch phones", the newest phones (especially smartphones) feature high-resolution touch screens which allow tasks to be accomplished tactilely with the fingers which been explained by (Lee et al. 2014) which totally support the hypothesis that 'Smartphone users with a stronger tendency toward need for touch demonstrate more compulsive usage of smartphones'.

The result showed that the need for touch is one of the predictor to the correlation analysis and a moderate relationship between the compulsive usage. As a human, the natural behavior that like to touch which support the study of Such autotelic touch (Peck & Childers, 2003a) conclude that instant gratification to phone users and can potentially create a compulsion. Meanwhile, the locus of control is one of the predictors of the study that can influence the compulsive usage of smartphone by students. The excessive of the usage will lead the student to use it without any control could be effect their emotional and also physical. They tend to be alone and anti-social although they are with their friends.

### 5.2 Factor that influenced materialism on compulsive usage

The factor that could be influenced materialism on compulsive usage in smartphone was the desire to have the possession to impress the people. By having, their own smartphone will make the student be connected and not far away due the latest technology. This statement is agreed to the study by Caronia & Caron (2004) explained that many people use expensive and prestigious phones as a form of social performance, simply to show off actually.

Besides, the factor that influence materialism on compulsive usage depend on the individual desire. Some people like to have a branded thing to make them satisfied with their life. With the smartphone usage for the aforementioned purposes enhances self-centered traits (Twenge & Campbell, 2009) which combine with the spirit of materialism as per explanation by (Campbell, Brunell, & Finkel, 2006; Van Boven, Campbell, & Gilovich, 2010). Based on that research, the hypothesis is agreed on the materialism is one of the predictors that can influence the compulsive usage of smartphone by students. Besides, the human natural with the desire to get something that can satisfied them can contribute the materialism to influence compulsive usage of smartphone.

### 5.3 Factor influence locus of control on compulsive usage

Based on the result in the previous chapter, there was a significant relationship between locus of control and compulsive usage. The result showed locus of control as the psychological traits except social interaction had a strong relationship toward compulsive usage. The factor that could be influenced were the addiction of the using smartphone in themselves. They could not control the habit and have to rely on it in any circumstances. Meanwhile, those factors could agree with the study by (Lee et al. 2014) in the research stated that because of their passive tendencies and reduced powers of self-control, individuals with an external locus of control are more likely to use their smartphones compulsively.

Besides, the locus of control was based on the individual performance. Although the result showed locus of control one of the predictors in correlation analysis which was moderate in relationship, the compulsive usage of smartphone will be affected. Therefore, the study by Rotter (1966) determined the locus of control refers to an individual's perceptions about the cause of event in people's life and also the ability to affect the outcome through the people's own actions. That study showed that the locus of control is about the individual performance that support the hypothesis that smartphone users with a stronger tendency toward an external locus of control demonstrate more compulsive usage of smartphones. In addition, the relationship between the compulsive usage is moderate and will influence the compulsive usage by students.

## **6. Conclusion**

As the smartphone become more essential in a new generation, the usage of the smartphone should be used in a positive side. The excessively of the usage could influence to the bad condition. Theoretical contribution included in terms of additional study based on proposed extended model. This also could be used as support or disapproval evidence for prior studies. Meanwhile, the practical contribution was that this research will be beneficial to the relevant marketing personnel and researcher to understand better of smartphone users. Besides, the study of a smartphone could help the student to get better understanding the use of the smartphone. Nowadays, smartphone become the replacement for the notebook or desktop because the advancement of technology in smartphone could help the students in their study. The application that could get easy in the smartphone will become more convenience to the study. The benefit of the smartphone should look deeply so that they did not took for granted to make themselves more negative and no value at all.

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