

The Effect of Psychological Traits, Compulsive Behavior and Techno Stress on Smartphone Usage

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Abstract

This paper presents the focus effects on four psychological traits which are locus of control, social interaction anxiety, the need for touch and materialism without considering the gender as indirect 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 findings contributed in terms of allowing us to understand the effects of psychological traits towards compulsive behavior and technostress. Besides, this study 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.

In this study, the psychological traits of students were studied in different a term which is Malaysia, specifically University Technology Mara. Previous studies have exposed various effects of smartphone usage, which has been explored by Oulasvirta, Rattenbury, Ma and Raita (2012) actually found that the subjects check their phones 34 times a day, not necessarily because they really need to check that many times, but because it has simply become a habit. However, almost all of these studies were conducted at country outside the Malaysia and little study has been conducted the effect of psychological traits towards compulsive behavior in information interaction with techno stress on smartphone in Malaysia. Therefore, this study will focus into the effect of three aspects that had mentioned earlier among the students at University Technology MARA.

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 addition. 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).

3. Research Framework

There are four independent variables and two dependent variable involve in this study as presented in Figure 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.

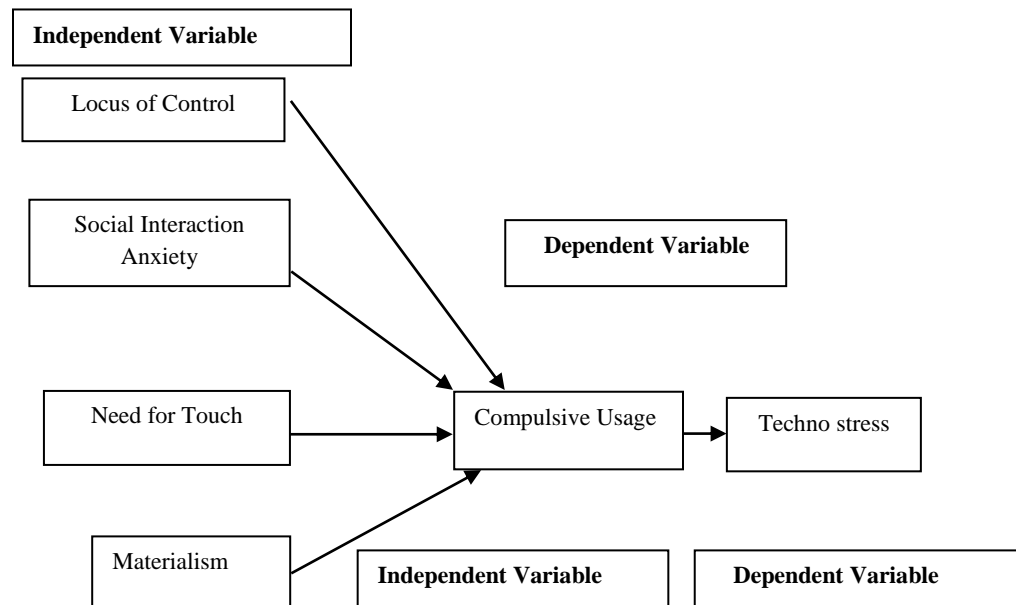


Figure 1. Theoretical Framework

3.1 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:

H1: *Smartphone users with a stronger tendency toward an external locus of control demonstrate more compulsive usage of smartphones.*

3.2 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:

H2: Smartphone users with a higher level of social interaction anxiety demonstrate more compulsive usage of smartphones

3.3 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, 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:

H3: Smartphone users with a strong need for touch demonstrate more compulsive usage of smartphones

3.4 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 Rindfleish, 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:

H4: Smartphone users with a higher level of materialism demonstrate more compulsive usage of smartphones

3.5 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:

H5: Higher compulsive usage of a smartphone can be leads to higher technostress

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.

4. Research Methodology

For this study, questionnaire being developed as the research instrument which is the use of a formulated and written set of questions which answered by the respondents. The questionnaire was adopted from previous studies with some adjustment in term of item development. This questionnaire consists of 45 items to measure each variable and dependent variable excluded demographic items. The SPSS being used to analyze each variable to transform raw data into a significant figure form that would make the data easy to understand and descriptive information while correlation and multiple regression analysis being used to test research hypotheses and to determine the predictors. 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. In this study, the Cronbach's alpha technique being used because this study uses 5- point Likert-scale method in a questionnaire that form a scale and to determine if the measurement items are reliable. If the test conducted show that the Cronbach alpha value is greater than 0.6, therefore the instruments used are reliable.

5. Findings

Based on data collection and analysis the respondents consist of the students with different ranges of age, education level and status. There were 200 questionnaires distributed and 180 returned with the response rate of 90%. Based on the table 1, it shows that female participants contributed 66.1% of overall responses while 33.9% contributed by male respondents. Based on the analysis of age, there are 10.6 % for below 21 years old, 73.9 % are 21- 25 years old which is the highest, 11.7% are 26-30 years old. Meanwhile the lowest are 0.6 % which both 36 -40 years old and above 40 years old, respectively. There is a 78.9 % Degree holder which is the highest, 5.0 % Diploma holder, 15.6% Master holder and the lowest is 1 % PHD holder. Based on the analysis of mobile phone analysis, 98.3% mostly students have their own mobile phone while only 1.7% student that did not have the mobile phone.

Table 1: Demographic Profile

		Frequency	Percent
Gender	Male	61	33.9
	Female	119	66.1
	Total	180	100.0
Age	Below 21 years old	19	10.6
	21 -25 years old	133	73.9
	26 - 30 years old	21	11.7
	31 – 35 years old	5	2.8
	36 – 40 years old	1	0.6
	Above 40 years old	1	0.6
	Total	180	100
Education Background	Diploma	9	5.0
	Degree	142	78.9
	Master	28	15.6
	PhD	1	0.6
	Total	180	100
Mobile Phone Ownership	No	3	1.7
	Yes	177	98.3
	Total	180	100.0

5.2 Reliability Analysis

The selected variables were necessary and essential to test are capable of explaining the associated constructs. Because of that, Cronbach’s Alpha test was being applied and practice in the group of items as included in the model created. Besides, in order to determine a scale’s

internal consistency grade, Cronbach's Alpha coefficient was analyzed the average correlation of each variable with the entire variable on the same scale. A commonly accepted rule of thumb for Cronbach's Alpha is above 0.60 that indicates as acceptable reliability. The result of reliability analysis of each variable using the Cronbach's Alpha value is represented in table 2

Table 2: Summary of Reliability Analysis.

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

5.3 Descriptive Statistics Analysis

The overall mean for all variables produced in this research using descriptive analysis score >3.0 shows that the respondents agreed with the characteristics used to describe each variable and reflects on the respondents' understanding in participating and be able to respond accordingly. Furthermore, this overall mean score indicates the acceptable instrument used to measure nine independent variables and the dependent variable. Table 3 depicts the summary of overall mean scores by each variable.

Table 3: Overall mean scores by each variable.

Variables	Overall Mean Score
Locus of Control	2.43
Social Interaction Anxiety	2.39
Need for Touch	3.01
Materialism	3.30
Compulsive Usage	3.23
Tehnostress	2.87

5.4 Correlations

In this research, the correlation analysis was using bivariate correlation to see a linear relationship. Meanwhile to look the relationship between those two variables in a linear style, Pearson correlation test was used. By using these two tests, researcher will be able to identify the relationship direction, the strength, and a significant relationship towards this study. Table 4 shows the significant value between the independent variables and a dependent variable.

H1: *Smartphone users with a stronger tendency toward an external locus of control demonstrate more compulsive usage of smartphones.*

H2: *Smartphone users with a higher level of social interaction anxiety demonstrate more compulsive usage of smartphones*

H3: *Smartphone users with a strong need for touch demonstrate more compulsive usage of smartphones*

H4: *Smartphone users with a higher level of materialism demonstrate more compulsive usage of smartphones*

H5: *Higher compulsive usage of a smartphone can be leads to higher technostress*

Table 4: Summary of Correlation Value of Variables.

Variables	Hypothesis	Pearson Correlation Value	Hypothesis Status
Locus Of Control	H1	0.412	Accepted
Social Interaction Anxiety	H2	0.216	Accepted
Need for Touch	H3	0.364	Accepted
Materialism	H4	0.379	Accepted
Technostress	H5	0.517	Accepted

5.5 Multiple Regression Analysis

Regression analysis has been used to determine the dependent variable by using five independent variables (IV). It has been set that if the p value is less than 0.05, the IV considered as having significantly related to the dependent variable. Based on the analysis result in table 5, it depicts that all variables were related but when it is combined as a whole, It has been identified that only three independent variables from five independent variables become as significant predictors to dependent variables which is “intention to use”. The three IV that contributes as the significant predictors or main factors which influence the locus of control, need for touch and materialism.

Table 5: Coefficients.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.445	.506		2.854	.005
	Locus of Control	.333	.092	.267	3.60	.000
	Need for Touch	.216	.071	.221	3.05	.003
	Materialism	.180	.060	.215	3.01	.003

a. Dependent Variable: COMPULSIVE USAGE

6. Discussion

Based on the result, the social interaction anxiety was one of the psychological traits in this study. Therefore, some factors that influence social interaction anxiety were low level of confidence, lack of communication skills and lack of knowledge to interact with others. Although social interaction anxiety was one of the psychological traits, but there was weak relationship that influence compulsive usage and not a strong predictor in this study. Based on Lee et al. (2014) explained that the influence of social interaction anxiety on the compulsive use of smartphones is based on that individual may rely on their phones to reduce feelings of discomfort whenever social contacts.

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 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 by 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.

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.

Based on the previous chapter, the result showed the strong relationship and a significant between compulsive usage and techno stress. The reason that could be justified because the excessive of using the smartphone could be influenced to techno stress. The relationship between compulsive usage and techno stress suggests that over reliable on smartphones leads to user stress and compulsive.

Usage of a smartphone, which had been explained by (Lee et al. 2014). Therefore, James & Drennan (2005) justified that since smartphones is an indispensable part of life for people and some might even feel irritation, frustration and intolerance without a smartphone, the expanded smartphone usage could also ruin relationships with others or result in psychological distress for users which can become a source of social problems. The Table 6 showed the summary findings for relationship in hypothesis.

Table 6. Summary findings for relationship in Hypothesis

Hypothesis	Result	Summary
H1: Smartphone users with a stronger tendency toward an external locus of control demonstrate more compulsive usage of smartphones.	Supported	Correlation analysis shows that there is a significant and a moderate relationship between them
H2: Smartphone users with a higher level of social interaction anxiety demonstrate more compulsive usage of smartphones.	Supported	Correlation analysis shows that there is a significant but a weak relationship between them
H3: Smartphone users with a stronger tendency toward need for touch demonstrate more compulsive usage of smartphones.	Supported	Correlation analysis shows that there is a significant and moderate relationship between them
H4: Smartphone users with a stronger tendency toward materialism demonstrate more compulsive usage of smartphones.	Supported	Correlation analysis shows that there is a significant and moderate relationship between them
H5: Higher compulsive usage of a smartphone can be leads to higher techno stress	Supported	Correlation analysis shows that there significant and strong relationship between them

7. Conclusion

As per conclusion, based the number of the respondents did not enough to make a count as a representative of the community. The student should have more than 500 people to get involved in this research. Meanwhile, the questionnaire should be distributed accordingly to make sure no bias in this research. In addition, all the students whether different programs should be involved. This reason, because to get more reliable information and did not focus only certain programs. The venue of other branches should be compiled to show the difference between urban areas and also in urban areas. As the smartphone become more essential in new generation, the usage of the smartphone should be used in 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 better understand of smartphone users. Basically, there were several limitations of this study that had been identified through this research during the research was done. The first limitation was the size of the population in this study. In addition, the lower of respondents in this study could not help the result to get a clear picture and greater impact to justify the whole respondent. The second limitation was the research model of the study should be tested in the context of university or Malaysia as a whole. The result will be more accurate and could more reliably to the future study as a reference.

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