COMPULSIVE USE OF SMARTPHONE AND TECHNOSTRESS: A STUDY AMONG INDIAN STUDENTS

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Abstract: *The advancement of ICTs in recent decades has provided an easy and rapid access to information, improved communications, performance gains, and productivity gains. But, this advancement comes with a "bad effect" known as Technostress. Technostress has increased in frequency by the compulsive use of ICT. Now a day's, Smartphone has became a primary device to access ICT among students. This study has investigated the impact of Smartphone on Technostress among post graduate students. This study has been achieved with an online/ offline survey of 310 students of mixed demographics. The findings show that there are moderate correlation between the compulsive use of Smartphone and Technostress. This indicates that further research is needed in this area to probe the established relation further.*

Keywords: *Smartphone, Technostress, Compulsive Use, ICT*

1. INTRODUCTION

Smart products (e.g Smartphone) are leading this era of ICT. The market share of Smartphone, which is representative of the smart products, is increasing. According to a survey by market research firm Nielsen, a majority (50.4%) of U.S. mobile subscribers owned Smartphone in March 2012, up from 47.8 percent in December 2011. Consumers purchasing new phones are selecting Smartphone more often (Bianchi, A., & Phillips, J. G., 2005). India has no exception. According to Mary Meeker Report (2014), India ranks third among the top countries for Smartphone users with an estimated 117 million subscribers and growing at 45% in 2014. Out of which, majority of users are from age group 18-24. The use of Smartphone has brought many changes in society particularly among young people. Due to the increased use of personalized content, people can easily obtain their information that they need in real time. Smartphone that use real-time media such as Facebook, Twitter, and others help create online communities. People in the future will be able to exert more power in a way that they could not have imagined before, by using mobile devices like Smartphone (Bennett, C. , 2001). However, the evolution of these technologies can lead to increased Technostress. The term Technostress was first coined by a clinical psychologist Dr. Craig in 1984 (Brod, C., 1984) and defined as:

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> "Technostress is a modern disease of adaptation caused by an inability to cope with the new computer technologies in a healthy manner. It manifests itself in two distinct but related ways: in the struggle to accept computer technology, and in the more specialized form of over identification with computer technology."

Technostress, which is the stress that one suffers from as a direct or indirect result of technology, has been shown to cause a wide range of both psychological and physiological symptoms, resulting in reduced productivity, reduced job satisfaction, exhaustion, and commitment issues (Tarafdar *et al.*, 2007). While technostress is a widely researched area, there is a lack of research that has identified specific technologies and the impacts that they have on technostress.

In this paper, the concept of compulsive use of Smartphone has been defined, and examines its influence on Technostress in an educational context. It is necessary to be aware of the compulsive use of Smartphone and Technostress in the field of education, which is now quickly becoming a fashion among students. To have the intention for continuous use of Smartphone is critical as it means that Smartphone-based education can be more broadly applied to allow practitioners to better implement smart devices in learning environment.

The aim of the study is to understand the effects of the compulsive use of internet enabled phone (Smartphone) usage on Technostress of students in higher educational institution. Starting from this point, the main objectives of this paper are two-folds:

- Description of the phone usage habit of the students
- Examine the effect of Compulsive use of Smartphone on Technostress.

2. LITERATURE REVIEW

According to Bennett's (2001) societal equity framework, an educator adopts knowledge to create a diverse classroom environment and equal access to different resources. Another research by the DITI (Diversity in Information Technology Institute) point out that offering technology in classroom training for diverse students can motivate young people to learn new knowledge (Kelly, Dawson, & Teresa, 2007). Technology also can enhance the advantages of teaching and learning, which allows teachers to adapt to diverse students' needs. Now a days, students are using Smartphone as a medium of ICT use in academics. The use of Smartphone is becoming a compulsive behavior among most of the students.

Compulsive behavior is defined as ''a 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'' (O'Guinn and Faber, 1989). Its major feature is a pattern of repetitive, senseless behavior (Parylak, Koob, & Zorrilla, 2011). Extreme compulsive behavior is an obsessive–compulsive disorder which induces

symptoms such as distress. The Smartphone's ability to quickly access rewards like social networking and communication induces users to check their phones more often. Repetitive checking of mobile phones is considered a compulsive behavior (Oulasvirta *et al.*, 2012). People who use their phones excessively experience difficulty controlling the time they spend on the device and are easily distracted by phones (Bianchi & Phillips, 2005). Excessive Smartphone users exhibit signs such as (Yu-Kang Lee *et al.*, 2014): (1) preoccupation with the phone, (2) increasing amounts of time spent using the phone in order to achieve the same level of satisfaction, (3) repeated, unsuccessful efforts to control, cut back, or stop the use; (4) feelings of restlessness when attempting to reduce the use; (5) jeopardizing significant relationships, jobs, or educational or career opportunities because of phone use; and (6) using the phone as a way to relieve a dysphonic mood (e.g., a feeling of hopelessness, guilt, anxiety, and depression). Since users' top priority is getting connected (Sanfilippo, 2007) and technological advancements augment the over-attachment of users to their phones (Takao *et al.*, 2009), the signs above may become more serious as Smartphone adoption becomes more prevalent. When compulsive behaviors are perceived to be inescapable, adverse consequences of psychological distress such as depression and stress are more likely to be induced as well (Matusik & Mickel, 2011). In the Smartphone context, Technostress can serve as a useful indicator of stress. It is thus predicted that compulsive usage of Smartphone will result in Technostress.

Technology has changed very fast since from 1988, when the term Technostress was coined by Dr. Craig. The utilization of information and communication technologies (ICTs) in today's information driven society is very essential. There is no meaningful professional and economic growth and development can be possible without its utilization. Several benefits such as increased productivity, efficiency, accuracy, space economy and routine are derivable from the utilization of ICT (Francis, 2013). On the other hand Technostress is becoming an un-avoiding part of technology use and many factors have been indentified to define Technostress more precisely. Tarafdar, Tu, Ragu-Nathan, and Ragu-Nathan (2007) described Technostress as a problem of adaptation due to a person's inability to cope with or to get used to the technology. Compulsive use of Smartphone creates Technostress among students (Yu-Kang Lee *et al.*, 2014).

Based on the above discussion, the following hypotheses are formulated to see the effect of Smartphone in student's life:

H1: There is no gender difference in the compulsive usage of Smartphone

H2: There is no significant relation between technological exposure and compulsive usage of Smartphone

H2: There is significant effect of compulsive use of Smartphone on Technostress

3. RESEARCH METHODOLOGY

The study is based on theoretical and empirical methodology. Primary data was collected during the period (January -August 2014). Survey questionnaire and interviews were triangulated for the purpose of data collection. A set of 600 semi-structured questionnaires was administered with a purposive sampling technique for students that have internet enabled phones using both online and offline. 310 filled questionnaires are collected with a response rate more than 50% returned by the respondents. The mixture of respondents with regard to their sex, engineers, non-engineers and work experience is adopted for uniform representation. The table (table 1) below represents the demographic information about the participants. It shows that majority (68%) of the respondents are male in compare to female (32%). The sample has 63% of engineer in compare to 37% of non-engineer. The non-engineers are those, who don't have enough exposure to information and communication technology.

Table 1
Demographic Information

Gender	Male	212
	Female	98
Technical Exposure	Engineer	196
	Non-Engineer	114

During the analysis stage, data collected through the administered questionnaires were analyzed with the aid of SPSS version 18.0. Both descriptive statistics involving frequency distributions and cross tabulation analysis and inferential statistics were used to test the proposed hypothesis.

3.1. Measuring Instruments

The constructs were adopted from various pieces of literature and were measured by multiple items. Compulsive usage of Smartphone was measured by thirteen items (Yu-Kang Lee *et al.*, 2014). The dimensions included withdrawal symptoms, loss of control, salience, life dysfunction, conflict, and compulsion/persistence. Six items technostress scale was adopted from Yu-Kang Lee *et al.* (2014). Yu-Kang Lee *et al.* (2014) in their study found internal consistencies of all the items of compulsive use and Technostress satisfactory (Cronbach Alpha above 0.6).

4. RESULTS AND DISCUSSION

4.1. Descriptive Statistics

From the collected data, it is found that more than 60% of the students having more than one phone. 85% of students are using internet enabled phones. 97% of

them are actively used internet mobile services to enable them to surf and browse the net. Figure 1 shows the time spend by the respondents in every day with Smartphone.

Figure 1 : The Browsing Frequency of Respondent
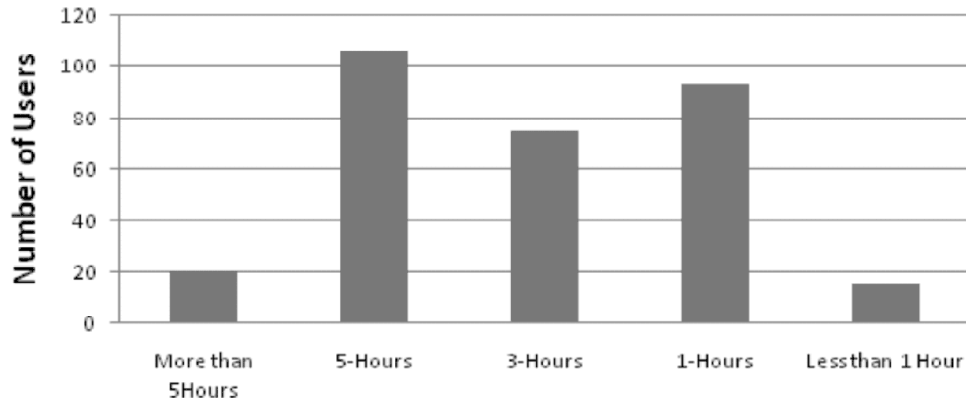
The figure 1 shows that the maximum students browse a minimum of 5hrs intensive daily while some browse and chat at every single available opportunity. The data also indicate that they browse more on social site than academic purpose. They cited the reason for browsing the social site that it helps them to cool off during their stay and study in the institution otherwise it will be boring for them without connecting to their friends and loved ones. The responses to the question relating to the use of mobile phone are presented in figure 2. From the pie chart

Figure 2: Smart Phone Usage
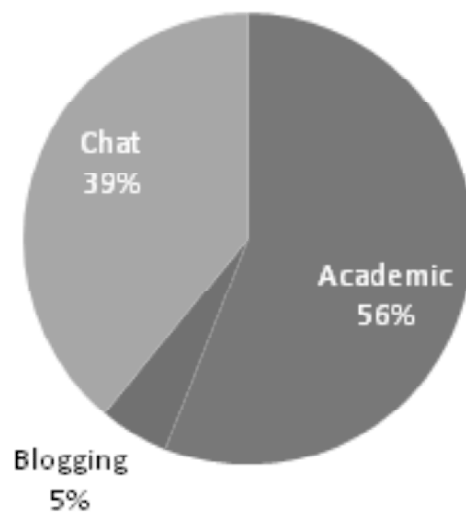
shown in figure 2, it signifies that majority of the respondents indicated that they browse for academic information as students and chatting came second, while Networking and blogging was the third on the chat in the terms of percentage of respondent . From findings and analysis, this is to say in a nutshell that the students browse more with their phone on academic information. The use of social network is one of the important activities among young generation. The responses to the question relating to the preference of social sites using Smartphone is shown in figure 3.

Facebook, Twitter, Instant messengers (2go, yahoo messengers, and etcetera) messenger were listed in the study instrument. The number of students prefer Facebook users is 203, Twitter respondents are 51, Instant Messengers such as 2go, Yahoo messengers, etc. are 56.

Figure 3: Social Site Preference
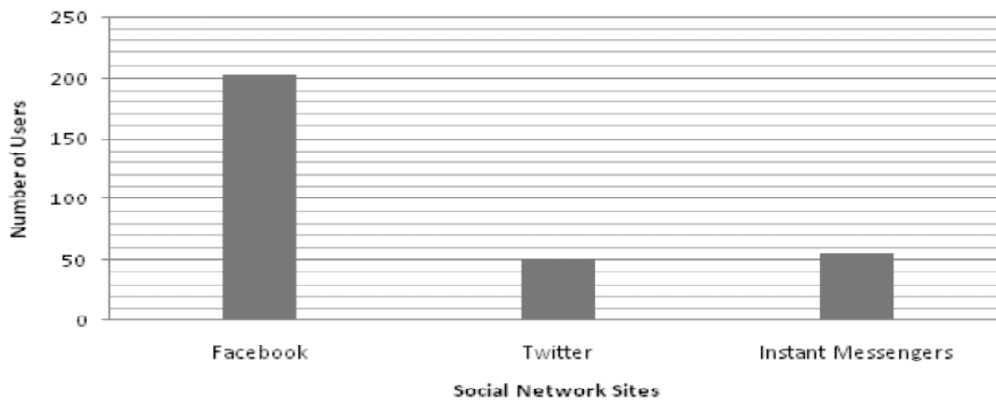
The study was also found that the decision on choosing a Smartphone rest on the Smartphone's functions followed by the usability. Other factors included budget, other's influence, following trend and fashion statement etc. This finding is contradicting the earlier findings of Katz, and Sugiyama (Katz, and Sugiyama, 2006). They found fashion play a significant role in mobile phone's adoption; however in this research it seemed that the students are more interested in the Smartphone's function rather than fashion statement. Few students are revealed that they have no choice with the decision on choosing the Smartphone as some of them received their Smartphone as a presents from others. Some of others chose their Smartphone based on others influence, fun, design, inexpensive, and also because it has longer battery life.

It is also found that more than half (61%) of the respondents are responsible for their own phone bills. The reason may be that post-graduate students are already considered an adult and many of them received study loans, scholarship, or

allowances from sponsors and family members. It is also revealed that many of them subscribed to prepaid plan (89.2%) as they could manage their monthly phone bill according to their budget. The most popular non academic activities preferred by the students are to send and receive text messages (98.9%), take pictures (81.1%), play music (84.1%), setting the alarm (96%), referring to the calendar (69.5%), recording videos (96.8%) and play games (96.9%). It is found from this research that most of the respondents used their smartphone for sending and receiving text messages. This result is conforming to the previous researches (Thulin, & Vilhelmson, 2007; Lenhart, Ling, Campbell, & Purcell, 2010; Noor Mayudia Mohd Mothar *et al.*, 2013).

Finally the descriptive statistics of the collected data is presented in table 2. The mean and standard deviation (SD) of compulsive use of Smartphone are 3.12 and 0.81 respectively. Similarly the mean and standard deviation of Technostress are 2.82 and 0.91 respectively. The reliability of the scales are 0.71 and 0.77, which are more than the 0.6, the standard accepted value for social science research (Nunnally and Bernstein , 1994) .

Table 2
Descriptive Statistics

Scale	N	Mean	SD	Cronbach Alpha (α)
Compulsive Usage	310	3.12	0.81	0.71
Technostress	310	2.82	0.91	0.77

4.2. Inferential Statistics

Inferential statistical tools like t-test, chi-square test are used to test the proposed hypothesis in our study. The result presented in table-3 shows that the null hypothesis "there are no significant difference of usages of Smartphone with respect to gender" (H1) is accepted (P = 0.13, t = 0.52). Similar result has be reported by Sang-Zo Nam (Sang-Zo Nam, 2013) in their study in South Korea. Yu-Kang Lee *et al.* (2014) in their study in Taiwan also found that gender does influence the compulsive usage of Smartphone.

Table 3
Gender Difference in the Most Frequent Usage of Smartphone

	t- value	Asymp. Sig.(2-sided)
Compulsive Use of Smartphone (Boys/Girls)	0.52	0.13*

*p = 0.05

The result in table 4 shows no significant relationship between technological exposure and compulsive use of Smartphone (P = 0.19, t = 0.87). Thus hypothesis H2 is accepted. The reason could be the user friendly interface provided by the

Smartphone, which make the Smartphone usage very easy and require less technical expertise.

Table 4
Compulsive use of Smartphone and Technological Exposure

	t- value	*Asymp. Sig.(2-sided)*
Compulsive Use of Smartphone (Engg./ Non Engg)	0.87	0.19*

*p=0.05

At the end of the study, an hypothesis (H3) on the relationship between compulsive use of Smartphone and Technostress is tested using Pearson's Correlation Co-efficient the result is shown in table-5. The result shows a negative impact of the use of Smartphone on Technostress (r =-0.52), but the relation is not significant (p> 0.05). So the hypothesis (H3) is rejected. That means, the significant relationship between compulsive Smartphone use and Technostress couldn't established using the sample data.

Table 5
Compulsive use of Smartphone and Technostress

	df	*Pearson's Correlation Co-efficient (r)*	*p*
Compulsive Smartphone use and Technostress	308	-0.52*	0.089

*p=0.05

The relationship between compulsive usage and technostress suggests that overdependence on Smartphone leads to user stress and compulsive usage of Smartphone. Compulsive usage of Smartphone can be an indicator of user's stress induction. Since Smartphone is an indispensable part of life for students and some might even feel irritation, frustration and impatience without a Smartphone. The increased use of Smartphone could also damage relationships with others. Again it could result in psychological distress for students (James & Drennan, 2005).

5. CONCLUSION

This study has generated new insights that have focused on Technostress and compulsive usage of Smartphone among students. These insights can be used by both individuals (students) and organizations when considering the impacts of adopting new technologies, as well as for future research. Contrary to previous research (Tarafdar *et al.* 2007), males and females did not show any substantial difference. More research is needed to investigates the differences between genders to address these conflicting results. In the last part of this research, it was found

that there is no strong association between compulsive use of Smartphone and Technostress. But more in-depth research is required to generalize the findings.

Our results also present implications/recommendation for intervention management to be implemented in the educational fields. If people with these psychological traits (compulsive use, Technostress) are discovered during screening they should be informed of their inclination toward compulsive usage and be educated about the accompanying stress (Technostress) so that they can learn self control for proper Smartphone usage. Such actions would help them avoid the dark side of Smartphone (e.g., compulsive usage and Technostress).

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