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Technology, Social network, Physiology and Psychology as Risks Factors to Mobile Phone Addiction

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ABSTRACT

Mobile phone was invented to ease communication. However, its usage it is argued has led to addiction. This study aims to explore mobile phone addiction among the generation Y (Gen Y) in Malaysia, by focusing how technology, social network, physiology and psychology become the risk factors. A survey method was employed to gather data from 280 respondents. Factor analysis, reliability test and the structural equation modelling were performed. The results show internal consistency and the correlations between all the determinants and addiction. The findings also revealed that the physiological factor is the most important risk leading to addiction problems with mobile phone (β=0.63, $p<0.01$). However, the technological factor did not predict for the mobile phone addiction (β=-0.008, $p>0.05$).

Keywords: Gen Y Social network in Malaysia, mobile phones addiction, physiological, psychosocial, risk factors of mobile phone addiction

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INTRODUCTION

These days, mobile phone is viewed as the must have gadget. Ismail and Razak (2011) say that smart devices like the mobile phone are viewed as important communication tool. Malaysians use mobile phones rather than fixed line telephone as a tool to keep in touch with their relatives, peers and business partners (Zulkefly & Rozumah, 2009). This trend has led to neglecting other commitments, decrease in social activities and contact with friends, and gaining weight

as a result of giving up physical activity (Porter & Kakabadse, 2006).

Statistics for the first quarter of 2016 showed there are 8.9 million post-paid and 35.2 million pre-paid mobile phone subscription (Malaysian Communication and Multimedia Commission, 2016) in Malaysia. Researchers who studied mobile phone usage among Malaysian youths share general findings that the penetration rate among the group is rapidly increasing (Balakrishnan & Raj, 2012).

Oulasvirta, Rattenbury, Ma and Raita (2011) found mobile phones usage has caused negative checking habits, that could be maladaptive and interfere with people's life. Besides, it could lead to addicted behaviour. The present study will explore the technology, social network, physiology and psychology as risk factors arising from mobile phone addiction among the Gen Y in Malaysia.

LITERATURE REVIEW

The mobile phone is a 24/7 accessible device, in the West online mobile users increased from 31% in 2011 to 42% in 2012 (comScore, 2013).

This trend maybe behind excessive and impulsive behaviour (Oulasvirta et al., 2011), including panic attacks (Haverlag, 2013). Kwon et al., (2013) argue mobile phone usage explains for the addiction.

Consequences arising from mobile phone addiction include headache, stress, sleep disturbances and depression (Borbely et.al., 1999; Binachi & Philips, 2005), an increased risk of glaucoma among users who have started to use mobile phones under the age of 20 (Klaeboe, Blaasaas, & Tynes, 2007), low self-esteem and depression (Moulder, Foster, Erdreich, & McNamee, 2005). Among Gen Y, the compulsive usage and addiction have been found to affect the social life which leads to mental health symptoms such as sleep disturbance and depression (Thomée, Härenstam, & Hagberg, 2011).

Mobile phone addiction is also known as technology addiction. Technology addiction is a mental health condition characterized by a maladaptive dependency on the use of technology, which may lead to a wide range of adverse effects, including technology over-use and increasing usage tolerances, personal withdrawal, conflicts with other activities or tasks and mood changes (Turel, Serenko, & Giles, 2011). Rosen et. al. (2013) found that more than 60% of younger users specifically those in the iGeneration (born in the 1990s) and Net Generation (born in the 1980s) check their mobile phone every 15 min or less, while just 40% of Gen Xers (born between 1965 and 1979) and less than 20% of Baby Boomers (born between 1946 and 1964) engage in this behaviour. Furthermore, the study found about 50% of young people reported anxiety when they could not check their technology, compared to about 25% of Gen Xers and 15% of Baby Boomers who felt the same. After all, the technologies that kept changed rapidly might lead people to be spending more time on social media such as Facebook, Instagram, and Twitter.

Excessive use of mobile phone can affect the physiological health. Musculoskeletal symptoms due to intensive texting on a mobile phone have been reported (Ming, Pietikainen, & Hanninen, 2006), and techniques used for text entering have been studied in connection with developing musculoskeletal symptoms (Gustaffsson, Johnson, & Hagberg, 2010).

A recent study has shown that excessive use of social network site (SNSs) may have negative effect such as on the quality of sleep, health, relationships, and general problems in well-being (Andreassen, 2015). Cao et.al., (2011) investigated the prevalence of problematic Internet use among Chinese adolescents in which it was found those who used the Internet were more likely to suffer from psychosomatic symptoms, emotional and behavioural symptoms as well as physiological dysfunction. Adolescents who have been identified as SNSs site addicts remain on SNSs into the night, resulting in less sleep per night and poor sleep quality compared to non-users. Problems in sleep have been directly related to psychological and physiological impairment over time and may further experience anxiety, significant distress, and depression (Andreassen, 2015).

Based on the discussion, four hypotheses were formulated, which are:

H1: There is a relationship between technology as a risk factor and mobile phone addiction

H2: There is a relationship between social network as a risk factor and mobile phone addiction

H3: There is a relationship between physiology as a risk factor and mobile phone addiction

There is a relationship between psychology as a risk factor and mobile phone addiction.

The prediction is illustrated in the conceptual model in Figure 1.

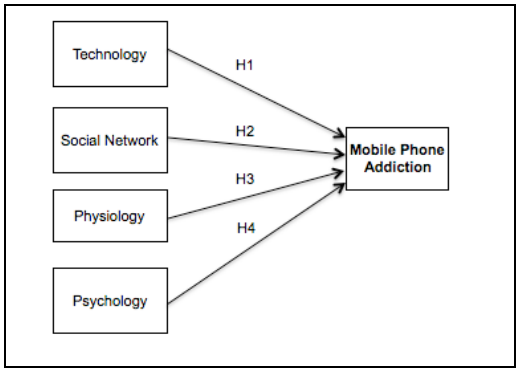

Figure 1. Conceptual Model

METHODS

Data Collection

The survey method was employed to collect primary data from the community in Malaysia. Prior to actual data collection, face and content validity and reliability tests were performed on 30 respondents. The data was analysed using SmartPLS is a professional statistical software package that enables users to do Structural Equation Modeling or PLS path modelling PLS software. The results of the reliability test show the Cronbach alpha was above 0.70. Therefore, the internal consistency was assumed (Hair et.al., 2006). In order to control for the right respondents, there

several items in the survey targeting the potential respondents who owned a mobile phone and have used any social network applications. Overall, 280 respondents who were found to be the target group and aged between 19 to 36 years were used.

RESULTS AND FINDINGS

A descriptive analysis was conducted to describe the demographic background of the respondents. The demographic profiles of the respondents are shown in Table 1. Data results showed that the majority of the respondents were working young adult (n=237; 84.6%). More than half of the respondents were female (n=181; 64.6%) and single (n=160; 57.1%). In terms of technology, over half of the respondents follow the technology updates (n=169; 60.4%) and this is consistent with the criteria related to decision to buy a mobile phone i.e. high technology (n=152; 60.4%). Half of the respondents paid attention to price and the operating system when purchasing a mobile phone (n=140; 50%, n=141; 50.4, respectively). Only 18% (n=50) of the respondents considered battery life to be an issue.

Table 1
Demographic profiles

Variable	Frequency	%	Variable	Frequency	%
Gender			Mobile phone purchase criteria		
Male	99	35.4	High technology	152	60.4
Female	181	64.6	Price	140	50.0
Marital Status			Operating system	141	50.4
Single	160	57.1	Battery life	50	17.9
Married	118	42.1	Application	84	30
Profession			No of mobile phone		
Working	237	84.6	One	180	64.3
Student	30	10.7	Two	69	24.6
Follow technology updates			Three	17	6.1
Yes	169	60.4	Four or more	14	5.0
No	111	39.6			

Prior to the bivariate analysis a missing data analysis was performed, in addition to performing a normality test to fulfil the underlying assumptions in parametric testing. Based on the skewedness and kurtosis results factor analysis with principal component analysis and varimax rotation and internal consistency test were then conducted.

Table 2
Factor loadings, reliability and descriptive results

Factors	Item Loadings	Mean	SD	α	AVE	CR
Technology				.82	.550	.82
Mobile phones make life easier	.808	4.375	.676	1		9
Mobile phone makes communication easier	.814	4.439	.663			
Mobile phone saves time	.066	4.003	.865			
Mobile phone allows flexible routine	.669	3.971	.775			
Social Networking (SN)						
Could not stop using SN	.802	3.075	1.046	.87	.585	.89
Spend most time on SN	.864	3.242	1.099	4		4
Use SN to share photos and express feelings	.773	3.292	1.113			
Use SN to read newsfeed	.730	3.667	.919			
Use SN to get info on work/study	.637	3.450	.956			
Physiology				.87	.698	.874
Stay up late and sleep few hours	.834	2.860	1.196	4		
Too occupied with mobile phone	.785	2.875	1.304			
Do not get enough sleep and rest	.885	2.814	1.264			
Psychology				.87	.587	.87
Feel stress when mobile phone is not with me	.809	3.214	1.159	8		6
Use mobile phone to make life feels better	.705	2.982	1.065			
Feel lonely when phone is not with me	.714	3.160	1.106			
Feel anxious when do not check phone	.806	3.092	1.132			
Feel high level of anxiety, stress and insecure	.790	2.942	1.177			
Addiction				.86	.568	.86
Constantly thinking about mobile phone	.780	2.967	1.180			
Feel incomplete when not logged in SN	.743	2.946	1.108			
Can't stop using mobile phone	.776	2.878	1.148			
Constantly with mobile phone	.762	3.285	1.147			
When wake up, will always check mobile phone	.705	3.696	1.165			

The KMO value of 0.918 specifies that the items were interrelated and the Bartlett's test of Sphericity displays a significant value. It indicates that the significance of the correlation matrix and appropriateness for factor analysis. The MSA fell above the acceptable value of .50.

Thus, the factorability is assumed. The total variance explained accumulated to 66.505%. The internal consistency test shows the results are between 0.821 and 0.878. Thus, the items reliability was assumed. The analysis proceeds to the measurement model. Table 2 shows the results of the factor loadings, composite reliability, the average variance extracted (AVE) to assess the convergent validity and the descriptive results.

All item loadings surpassed the required cut-off level of 0.60 suggested by Bagozzi and Yi (1988). The composite reliability values exceeded 0.70 as recommended by Hair et al. (2006) and the AVEs were above 0.50 as suggested by Fornell and Larcker (1981).

Next, the discriminant validity was tested. It was examined by comparing the correlations between constructs and the square root of the average variance extracted from that construct. As shown in Table 3, the square root of the AVE is greater than the correlation with other constructs indicating adequate discriminant validity. Thus, the reflective measurement model demonstrated adequate convergent and discriminant validity. The correlations between all the determinants and addiction were significant.

Table 3
Inter-construct correlation

Factors	1	2	3	4	5
Technology	0.742				
Social Networking (SN)	0.338	0.765			
Physiology	0.225	0.619	0.835		
Psychology	0.271	0.685	0.752	0.766	
Addiction	0.230	0.657	0.847	0.829	0.754

In order to test the hypotheses, a measurement model using the structural equation modelling was performed. The results are shown in Table 4. The model fit meets the requirement of the structural model, with $\chi^2/df = 2.630$, CFI = 0.912, AGFI = 0.813, TLI = 0.898 and RMSEA = 0.076. The R2 value was 0.696, indicating 69.6% of the variance in mobile phone addiction was determined by the predictors. The highest predictor is the physiological factor ($\beta = 0.630$, $p < 0.01$), followed by the psychological factor ($\beta = 0.522$, $p < 0.01$) and the social network factor ($\beta = .166$, $p <= 0.02$). Therefore, H2, H3 and H4 were supported. On the other hand, the technological factor does not seem to have any relationship with the mobile phone addiction ($\beta = -0.008$, $p > 0.05$). Hence, H1 was not supported.

Table 4
Results of the hypotheses testing

Hypotheses	Relationship	Coefficient	C.R	R^2	Results
H1	Technology -> Addiction	-0.008	-0.148	0.696	Not Supported
H2	Social Network -> Addiction	0.166	3.174		Supported
H3	Physiology -> Addiction	0.630	9.522		Supported
H4	Psychology -> Addiction	0.522	8.193		Supported

DISCUSSION

Addiction refers to irrepressible urge which is often accompanied by loss of control. Mobile addiction indicates uncontrollable abuse of mobile usage which is associated with other pathologies such as social extroversion, self-esteem and social anxiety (Hong, Chiu, & Huang, 2012). This study found that majority group of compulsive mobile usage was Gen Y. Therefore, their dependence on the behaviour towards social networking sites are the causes behind their Internet addiction disorder, i.e.; firstly, problems related to relationships which refer to spending an excessive amount of time starting and maintaining online friendships in chat rooms, which replace real life friends and family. Second, too much social networking application can give the bad effect on the Gen Y especially on their health. From the study, it can be proved that many respondents agreed that some social networking applications can assist in their study or work, but the respondents have to plan their time to use their mobile phone. The study mobile addiction in young adults can lead to serious problems for the individuals, particularly younger generations who are at the time of growing their mental and physical health.

There are many factors that can effect Gen Y addiction towards mobile phone but since Gen Y are knowledgeable they will know what is good and bad.

CONCLUSION

The present study highlights patterns and levels of usage of mobile phones among Gen Y and its effect on performance in studies, works, health, and daily life. The study provides an understanding of addiction problems among mobile phone users and its effect on human relationship. . This study found the risk factors that affect the psychological and physiological attributes of young adults who are addicted to the mobile phone to be health, self-esteem, depression, sleep disturbance, headaches, and loneliness.

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