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# Psychological Impacts of Smartphone on College Students –Nomophobia (No-Mobile-Phone Phobia)

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***Abstract:*** ***This study elucidate 'Nomophobia' by developing a research model that identifies various determinants of the Smartphone taking apart of usage among students it leads to addiction and self-control, cyber addiction and positive aspects of using the Smartphone. Structural equation modeling of the proposed model indicates that students were using for long duration and its analysis the purpose of using the Smartphone positive and negative aspects, poor self-control, cyber addiction and problem using Smartphone, they are more fond of to the Smartphone devices, which, in go-round, lead to the Smartphone addiction "Nomophobia".***

***Keywords: education, health, lifestyle, psychological well-Being Smartphone.***

## I. INTRODUCTION

A mobile phone is user-friendly to everyone's life. Everyone feels its mandatory and part of the lifestyle. Mobile phones act as lifesavers as they can avail people in emergencies. It's a comfortable way of communication across the globe. Nowadays a mobile phone is such a personal contrivance that everyone takes it virtually everywhere with them; they victoriously triumphed leave their abode without the mobile phone. If they failed to carry the mobile phone, they would feel handicapped. Apart from receiving calls from the mobile phone, they are utilizing it for a variety of purposes like taking pictures, instant messaging, convivial media, work-cognate activities, visually examining videos, gaming, and other activities.

One of the Statistics shows that the number of mobile phone users in India from 2013 to 2017 is 730.7 million. The number of mobile users in India is expected to increase t o 813.2 million in 2019 [1]. Convivial media and Multimedia regalement occupy top positions among the most-used functions, followed by gaming and visually examining videos, chatting. In this digital age, once we return home and attach the game console to practice, we often don't have the time to sit in front of the TV.

### A. Significance of the study:

A mobile phone is binding for everyone in this contemporary world. Digitalization connects our world globally, leading to that usage of Smartphone increases rapidly especially among college students, they stick on to mobile phone like part of the hand, enormous usage affects the body and mind. To analysis the positive and negative effects of smartphone usage. Hence, this type of research gains importance.

## II. LITERATURE REVIEW

**Below are some findings from some of the more reliable studies:**

The United Kingdom, with 2163 people on mobile phobia, reported that 53 percent of the subjects appear to be nervous if they lose their mobile phone, run out of battery or credit, or have no network coverage. Based on the study, 58% of men and 48% of women suffer from phobia and an additional 9% feel stressed when their mobile phones are off[2].

Market Analysis and Consumer Research Organization (MACRO) in Mumbai to research sundry mobile phone usage patterns and sodalities announced that 58 percent of respondents were unable to manage without a mobile phone even for one day.

Most people around the world are affected by smartphone addiction. The smartphone is used by over 1.8 billion people and one study found that the average user checks their screen 150 times a day. Because of these figures, it should not come as a surprise if 44% of people agree that they are nervous when they can not access their mobile[3].

### A. Objectives

The principal object of this research was to discover students"' impact of mobile phone and other effects of mobile

[1]https://www.statista.com/statistics/274658/forecast-of-mobile-phone-users-in-india/

[2] *Katharine B. Phone-reliant Britons in the grip of nomophobia, The independent. March 31, 2008. Available from: http://www.independent.co.uk/news/uk/home-news/phonereliant-britonsin-the-grip-of-nomophobia-802722.html [last accessed on 2008 Sep 5]*

[3] *http://www.drug-addiction-support.org/Smart-Phone-Addiction.html*

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phone usage among students in Jain University-Bangalore.
The specific objectives that the study sought to achieve were:

a. To discover whether students having cyber addiction, poor self-control.
b. To ascertain other Psychological effects of mobile phones
c. To examine the model for assessing the psychological impact of using a smartphone.
d. To determine whether all the quantifications match the prescribed value, a good structural model fit for the cumulative data is assigned.

### B. Data collection

An online survey was developed to assess the levels of Smartphone users' Smartphone usage and duration, Addiction, poor self-control, Problem facing using a mobile phone, positive aspects of usage and Nomophobia. Questionnaire items in the survey were prepared based on 7-point Likert scales. All variables were measured on 7-point Likert scales, ranging from ‘‘1 = strongly disagree to ‘‘7 = strongly agree." To address the research questions, a close-ended question. The survey was created and distributed by using Google Form via various online communities for university students in Bangalore on December 2018, collecting a total of 108 valid responses (81 Male, 27 Female). Respondents' ages ranged from 17 years (54.6%) to 24 years (45.4%) ; (M= 2.45, SD = 0.500). Additional demographic information, including education level, frequency of daily smartphone use, and cost of Smartphone brand, is reported in **Table 1**

### C. Data analysis:

A confirmatory factor analysis (CFA) and SEM using the AMOS 16 statistical software were conducted on the collected data. The validity and reliability of the adapted measurements were analyzed via CFA, while the direction and significance of the proposed paths in the research model were examined via SEM.

## II. RESULTS AND DISCUSSION:

**Table 1** shows the demographic profile of the college students involved in this study. As per Table 1, out of 108 college students, 75% were male and 25% were female. Concerning the level of education, 12% of students are postgraduate, 88% of the college students are undergraduate, with reverence to 84.3 % of students using Android smartphones, 13.9% of students using I Phone and1.9% of students using windows phone. With reference to49.1 % of students mobile phone cost 11000-20000,12% of students mobile phone cost 21000-30000,19.4% of students mobile phone cost above 31000 and 19.4% of students mobile phone cost below 10000.

**Table1: Demographic profile of the College students (n=108)**

| *S/N* | *Characteristics* | *Categories* | *Number of respondents* | *Percentage (%)* |
|---|---|---|---|---|
| *1* | *Age* | *17-19* | *59* | *54.6* |
| | | *20-24* | *49* | *45.4* |
| *2* | *Gender* | *Female* | *27* | *25.0* |
| | | *Male* | *81* | *75.0* |
| *3* | *Course* | *PG* | *13* | *12.0* |
| | | *UG* | *95* | *88.0* |
| *4* | *Mobile Phone* | *Android* | | *84.3* |
| | | *I phone IOS* | | *13.9* |
| | | *Windows* | | *1.9* |
| *5* | *Mobile phone price* | *11000-20000* | *53* | *49.1* |
| | | *21000-30000* | *13* | *12.0* |
| | | *<31000* | *21* | *19.4* |
| | | *>10000* | *21* | *19.4* |

**Profile of the respondents:**

**Construct reliability and validity analysis for NOMOPHOBIA dimensions**

**Table 2: Result of reliability analysis for NOMOPHOBIA dimensions.**

Table 2 shows the component and total reliabilities of mobile phone impact scores. The findings show that Cronbach„s alpha for all dimensions is above 0.70 which indicates a high level of internal consistency for the scale. Moreover, as per Table 2, the overall Cronbach‟s alpha value for the NOMOPHOBIA dimensions is 0.716. The Cronbach‟s alpha values for the perceptions subscales are 0.718, 0.729, 0.750, 0.741, 0.722 and 0.705 for SmartPhone Usage Purpose & Duration, Smart Phone Addiction, Poor self-control, Cyber Addiction, Problem facing using a mobile phone, Positive Aspects of Usage and Overall reliability analysis for Psychological Impact

**Table:2 Exploratory factor analysis:**

| *Dimensions* | *Attribute number* | *Cronbach's alpha* |
|---|---|---|
| *Smart Phone Usage Purpose & Duration* | 12 | 0.718 |
| *Smart Phone Addiction* | 5 | 0.729 |
| *Poor self-control* | 4 | 0.750 |
| *Cyber Addiction* | 5 | 0.741 |
| *The Problem facing using a mobile phone* | 6 | 0.722 |
| *Positive Aspects of Usage* | 14 | 0.705 |
| *Overall reliability analysis for Psychological Impact* | *Cronbach's alpha No. of. Items 46* | 0.716 |



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**Table 3: Pearson Correlation Coefficient between factors of Perception Of Impact of Smart Phone**

| *Factors of Perception on the Impact of Smart Phone* | *Smart Phone Usage Purpose & Duration* | *Smart Phone Addiction* | *Poor self-control* | *Cyber Addiction* | *The Problem facing using a mobile phone* | *Positive Aspects of Usage* |
|---|---|---|---|---|---|---|
| *Smart Phone Usage Purpose & Duration* | *1* | *0.367*** | *0.246** | *0.601*** | *0.268*** | *0.449*** |
| *Smart Phone Addiction* | - | *1* | *0.449*** | *0.371*** | *0.428*** | *0.288*** |
| *Poor self-control* | - | - | *1* | *0.247*** | *0.486*** | *0.124* |
| *Cyber Addiction* | - | - | - | *1* | *0.292*** | *0.298*** |
| *The Problem facing using a mobile phone* | - | - | - | - | *1* | *0.251*** |
| *Positive Aspects of Usage* | | | | | | *1* |

**Correlation Analysis On Factors Of Perception On Quit able Impact Of Smart Phone**

**Note: ** Denotes significant at 1% level**

The correlation coefficient between Perception on Smart Phone Usage Purpose & Duration and Smart Phone Addiction is 0.367, which indicates 36.7 percentage positive relationships between Perception on Smart Phone Usage Purpose & Duration and Smart Phone Addiction on co-ordination and is significant at 1% level.

The correlation coefficient between Smart Phone Usage Purpose & Duration and Poor self- control is 0.246, which indicates 24.6 percentage positive relationships between Smart Phone Usage Purpose & Duration and Poor self-control and is significant at 1% level.

The correlation coefficient between Perception on Smart Phone Usage Purpose & Duration and Cyber Addiction is 0.601, which indicates 60.1 percentage positive relationships between Perception on Smart Phone Usage Purpose & Duration and Cyber Addiction and is significant at 1% level.

The correlation coefficient between Perception on Smart Phone Usage Purpose & Duration and Problem facing using mobile phone is 0.268, which indicates 26.8 percentage positive relationships between Perception on Smart Phone Usage Purpose & Duration and Problem facing using a mobile phone and is significant at 1% level.

The correlation coefficient between Perception on Smart Phone Usage Purpose & Duration and Positive Aspects of Usage is 0.449, which indicates 44.9 percentage positive relationships between Perception on Smart Phone Usage Purpose & Duration and Positive Aspects of Usage and is significant at 1% level. And similarly, the other factors are positively correlated with each other as shown in the Table 3.

**HYPOTHESIS:**

Null hypothesis (H0): The hypothesized Nomophobia model has a good fit.

THE ALTERNATE HYPOTHESIS (H1): THE HYPOTHESIZED NOMOPHOBIA MODEL DOES NOT HAVE A GOOD FIT

**Structural equation modeling (SEM): Model fit assessment**

**Table 4: Model fit summary of Structural Equation Model**

Model Fit Indices:

| *[1] Fit Indices* | *[2] Result* | *[3] Suggested values* |
|---|---|---|
| *[4] Chi-square value/DF* | *[5] 1.767* | *[6] < 5.00 ( Hair et al., 1998)* |
| *[7] CMIN* | *[8] 1.767* | *[9] 1.0-5.0 Wheaton et al. (1977)* |
| *[10] RMSEA* | *[11] 0.085* | *[12] <0.05 Browne & cudeck,1993* |
| *[13] ECVI* | *[14] 18.855* | *[15] < Independent model (21.74)* |
| *[16] HOELTER* | *[17] 50* | *[18] >200 Hu and Bentler (1998)* |

Structural Equation (SE) modeling was used to analyze the fittingness of the model-based upon the collected samples.
Structural equation modeling evaluates whether the data fit a theoretical model. To evaluate the model, the emphasis was given to Chi-square/degrees of freedom (x2/df), CMIN, RMSEA, ECVI and HOELTER (Table 4). As per the result, Chi-square statistics with p = 0.000 does not show a good fit of the model. A sample size of over 100 (108 in this research), could affect Chi-Square statistics to indicate a significant probability level (p=0.00). Consequently, this model is considered for further interpretation in the goodness of fit measures. Common model-fit measures like chi-square/degree of freedom (x2/df), the comparative fit index (CFI), root mean square error of approximation (RMSEA), ECVI and HOELTER were used to estimate the measurement model fit.
Table 4 shows the estimates of the model fit indices from AMOS structural modeling.
Table 3 it is found that the Chi-square value/DF value is 1.767 which is less than 5.00 which indicates perfectly fit. Chi-square equivalent in Confirmatory Factor Analysis (CMIN) value (1.767) and Expected Cross-Validation Index (ECVI) value (18.855) is less than21.74 which represents it is a good fit. HOELTER value (50) indicates that it is less than 75 so it's not fit and also it is found that Root Mean Square Error of Approximation (RMSEA) value is 0.085 which is less than 0.08 which indicated it is perfectly fit.

**Table5: Regression weights: (group number 1 - default model).**

| *Construct* | *Item* | | | *Factor loading* | *S.E* | *C.R* | *P* |
|---|---|---|---|---|---|---|---|
| *Positive Aspects of Usage* | *PA1* | <--- | *PA* | *1* | | | |
| | *PA8* | <--- | *PA* | *1.554* | *0.633* | *2.456* | *0.014* |
| | *PA9* | <--- | *PA* | *0.776* | *0.625* | *1.242* | *0.214* |
| | *PA10* | <--- | *PA* | *2.26* | *0.611* | *3.696* | *** |
| | *PA11* | <--- | *PA* | *2.933* | *0.793* | *3.7* | *** |
| | *PA12* | <--- | *PA* | *2.097* | *0.53* | *3.959* | *** |
| | *PA13* | <--- | *PA* | *2.056* | *0.524* | *3.924* | *** |
| *Smart Phone Usage Purpose & Duration* | *PU2* | <--- | *PU* | *1* | | | |
| | *PU7* | <--- | *PU* | *1.916* | *0.711* | *2.694* | *0.007* |
| | *PU8* | <--- | *PU* | *2.01* | *0.724* | *2.777* | *0.005* |
| | *PU9* | <--- | *PU* | *3.789* | *1.378* | *2.749* | *0.006* |
| | *PU10* | <--- | *PU* | *2.131* | *0.775* | *2.748* | *0.006* |
| | *PU12* | <--- | *PU* | *1.944* | *0.755* | *2.573* | *0.01* |
| *Smart Phone Addiction* | *SA1* | <--- | *SA* | *1* | | | |
| | *SA2* | <--- | *SA* | *1.528* | *0.523* | *2.922* | *0.003* |
| | *SA3* | <--- | *SA* | *1.335* | *0.428* | *3.119* | *0.002* |
| | *SA4* | <--- | *SA* | *1.246* | *0.418* | *2.984* | *0.003* |
| | *SA5* | <--- | *SA* | *1.288* | *0.465* | *2.769* | *0.006* |
| *Poor self-control* | *PS4* | <--- | *PS* | *1* | | | |
| | *PS3* | <--- | *PS* | *1.291* | *0.897* | *1.439* | *0.15* |
| | *PS2* | <--- | *PS* | *1.898* | *1.202* | *1.578* | *0.115* |
| | *PS1* | <--- | *PS* | *3.462* | *2.133* | *1.623* | *0.105* |
| *Cyber Addiction* | *CA5* | <--- | *CA* | *1* | | | |
| | *CA4* | <--- | *CA* | *0.754* | *0.2* | *3.76* | *** |
| | *CA2* | <--- | *CA* | *1.238* | *0.302* | *4.102* | *** |

*p < 0.001 Items measuring nomophobia were divided into FIVE sub-factors.

**Significance tests of individual parameters**

The unstandardized coefficients and associated test statistics are shown in **Table 5**. The sum of transmutation in the dependent or mediating variable is betokened by the unstandardized regression coefficient for each one-unit vicissitude in the variable predicting it.

Table 7 shows the unstandardized estimate, its standard error (abbreviated S.E.), and the standard error estimate (abbreviated S.E.), and A standard error figure divided (abbreviated C.R. for Critical Ratio). The probability value associated with the null hypothesis that the analysis is Zero is shown below column P.

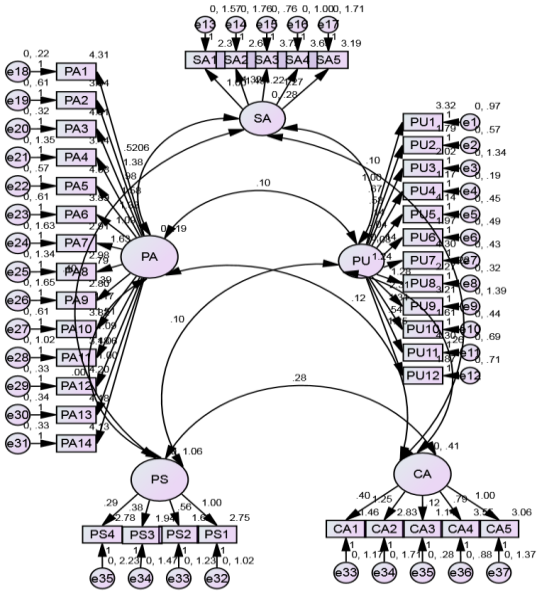


**Figure1: NOMOPHOBIA structural model -confirmatory factor analysis.**

**Table 6: Standardized Regression Weights: (Group number 1 - Default model)**

| | | | *Estimate* | | | | *Estimate* |
|---|---|---|---|---|---|---|---|
| *PA2* | <--- | *PA* | *.609* | *PA13* | <--- | *PA* | *.624* |
| *PA3* | <--- | *PA* | *.600* | *PU7* | <--- | *PU* | *.563* |
| *PA4* | <--- | *PA* | *.510* | *PU8* | <--- | *PU* | *.644* |
| *PA5* | <--- | *PA* | *.609* | *PU9* | <--- | *PU* | *.614* |
| *PA6* | <--- | *PA* | *.520* | *PU10* | <--- | *PU* | *.612* |
| *PA10* | <--- | *PA* | *.548* | *SA2* | <--- | *SA* | *.513* |
| *PA11* | <--- | *PA* | *.549* | *SA3* | <--- | *SA* | *.621* |
| *PA12* | <--- | *PA* | *.637* | *SA4* | <--- | *SA* | *.542* |

*Scalar estimates (group number 1 - default model)*

**Maximum Likelihood Estimates:**

Table 6 displays the fitted model's standardized estimates. Standardized calculations can determine the relative contributions of each soothsayer variable to each outcome variable.

Figure 1 shows the structural model of NOMOPHOBIA. Of the psychological impact for smartphone use by 108 college students, 46 items are taken for confirmatory factor analysis. Figure 1 indicates that college students have a psychological impact on smartphone usage. However, confirmatory factor analysis is known as the measurement model.

The root means a square approximation error illuminates how the model will match the matrix of population covariance with uncertain parameter estimates (Byrne, 1998). According to Kline (2005), CFI, RMSEA can be used to calculate the fit of the measurement model together with a Chi-square test. The Expected Cross-Validation Index (ECVI) is an alternative to the Chi-square test. Root Mean Square Error of Approximation which indicated it is perfectly fit.

**Conclusion:**

The research study aimed to carry out an experimental analysis of the factors determining the college students‟‟ Impact of Smartphone‟‟ Utilization of Smartphone and duration, poor self- control, cyber addiction, positive aspects of utilizing a mobile phone, about NOMOPHOBIA model, utilizing an SEM(structural Equation Modeling).The present study indicates and analysis the students and examines the impact of Smartphone utilization and psychological impact among poor self-control, cyber addiction, positive aspects of utilizing Smartphone.

The proposed model (NOMOPHOBIA) is then calibrated utilizing the data accumulated from college students both UG & PG- Jain University, Bangalore of India. Five paramount determinants of Keenly intellective Phone Utilization Purport & Duration, Keenly Intellective Phone Addiction, Poor self-control, Cyber Addiction, Quandary facing utilizing a mobile phone, Positive Aspects of Utilization.

The result shows that Cronbach’s alpha for all dimensions except for students' accessibility is above 0.70 which denotes a high competence of internal consistency for the NOMOPHOBIA scale (NOMOPHOBIA model with performance only measure). Moreover, the overall Cronbach‟‟s alpha value for the NOMOPHOBIA dimension is 0.716 which is above the cut off value of 0.70.

Based on the confirmatory factor analysis, it can be concluded that the NOMOPHOBIA scale (NOMOPHOBIA model with performance only measure) utilized in this study adequately fits into the amassed data. It could be very well concluded that the hypothesized Five-factor model fits the sample data.

Predicated on the feasibility and statistical consequentiality of consequential parameter estimates; the considerably good fit of the model (Chi-square value/DF, CMIN, RMSEA, ECVI, HOELTER), it can be concluded that the five-factor model shown in Figure 1 represents an adequate description of NOMOPHOBIA structure for psychological impact of Smartphone on college students goodness of fit indices support. The model fits and stresses the indices betoken this structural model's acceptability.

The present study is helpful to understand the positive and negative impact of smartphones among youngsters. In sum, the study confirms the findings of such earlier studies that the Smartphone has become an indispensable accessory to students studying in higher learning centers and by the same token, the addiction to the Smartphone is prone to harm students' studies. It points to the fact that students need to use the Smartphone as judiciously as possible and concentrate on their studies as well in the interest of their future and our nation's future.

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