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IMPACT OF SMART PHONE USAGE ON ACADEMIC PERFORMANCE OF COLLEGE GOING STUDENTS

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Abstract - *Smart phones have nowadays become an integral part of our daily life and made our life much simpler. But the excessive use of smart phones can have adverse effects in our life. It can lead to poor academic performance of students. The aim of this study was to find out the impact of excessive use of smart phone on academic performance of college going students. Questionnaire was prepared and distributed among 380 random samples selected. Data collected was analyzed using SPSS software. Correlation and regression analysis were done. A strong negative relationship was found between time spend in front of smart phone andacademic performance which was measured by self reported Cumulative Grade Point Average (CGPA)of students.*

Keywords: *Smart phones, Excessive use, Academic performance, CGPA,Correlation,Regression.*

I. INTRODUCTION

The smart phone combines different sophisticated features. It allows users to keep pictures, memories, personal information, correspondence, health and financial data in one place. Smart phones also became an integral part of modern telecommunications facilities. The phones allow people to maintain continuous communication without interruption of their movements and distances. Smart phones combine advanced computing capability, such as internet communication, information retrieval, video, e-commerce and other features, that makes the device one of the basic necessities for many people. But the excessive use of smart phones can have adverse effect in our life.

In two studies specifically targetingmulti-tasking and academic performance, *Junco and Cotten (2012)* examined large samples of college students and found that sending text messages and checking Face book while studying or doing homework was common behavior. Furthermore, this behavior interfered with schoolwork and was negatively related to overall college GPA(). They suggested that media use has become so much a part of young adults' lives that many do not realize their level of dependence and/or addiction to their cell phones. A survey of over1649 college students found that they spend 97 minutesa day texting, 118 min searching the Internet, 41 minutes on Face book, 49 minutes emailing, and 51 minutes talking on their cell phone.This heavy investment of time interacting with a cell phone may be related to college students' academic performance. They also found that using technology while studying was inversely associated with GPA. *Karpinski et al. (2014)* also found a negative relationship between college students' cell phone use and GPA. Excessive cell phone use can also negatively affect job performance and one's relationships with family, friends, classmates, and instructors. *Roberts et al. (2014)*concluded that cell phone addiction undermines scholastic achievement as students use their cell phones to 'remove' themselves from classroom activities, cheat, and disrupt their studies.

Research investigating smart phone use and academic performance is limited and methods vary substantially from study to study. Nevertheless, results suggest a relationship exists. *Jacobsen and Forste (2011)* identified a negative relationship between the use of a variety of electronic media including cell phones (calling and texting) and academic performance (self-reported GPA) among first year university students in the United States. Using data collected from a sample of Taiwanese adolescents, *Yen et al. (2009)*found an associationbetweensmart phone(calling and texting) and participants' self-assessmentof whether or not they had allowed smart phone use to interferewith ''important social, academic, or recreational activities'' during the previous year. *Hong, Chiu, and Hong (2012)* found dailysmart phone use (calling and texting) to be correlated with a self-reportedmeasure of academic difficulty among a sample of female, Taiwaneseuniversity students.

Otero et al. (2009) found thatalthough smart phone use was typically prohibited in the classroom, half of the students in their sample reported bringing the device to school and keeping it on during class. Finally, using a sample of Spanish high school students, found a relationship between ''intensive'' smart phone use and school failure. School failure was operationalized as having repeated the previous year's grade level or failing four or more courses during the previous academic year. Although these studies utilized a variety of self-reported measures, academic performance was consistently and negatively associated with smart phone use (calling and texting).Several researchers have pointed to multi-tasking as an explanation for the negative relationship identified between smart phone use and academic performance. It was also reported that over two-thirds of the university students in their study used electronic media (including cell phones) while in class, studying, or doing homework.

Wood et al. (2012) measured the influence of multitasking with an array of digital technologies (texting, e-mail, Face book, MSN messaging) on real-time learning. Participants were randomly assigned to various conditions (multi-tasking with one of the four technologies or no multitasking) while participating in classroom learning activities. After the learning activities were complete, a 15-item multiple choice test was used to assess learning. Results showed that multi-tasking with any of the technologies examined had a negative impact on learning. Most recently, *Rosen, Carrier et al. (2013)* observed the study behaviors of a sample of middle school, high school, and university students and found participants typically became distracted by media such as Face book and texting in less than 6 min after initiating a studying session. Furthermore, measurements of daily Face book use and daily texting behavior predicted off-task behavior during study periods. Notably, all of the media related technologies associated with increases in multi-tasking and decreases in academic performance are now commonly accessed with a single, Interneconnectedcell phone. Like the research investigating smart phone use and academic performance, research investigating smart phone use and anxiety is limited. Furthermore, measures of anxiety vary from study to study. Nevertheless, there is evidence of a positive relationship between smart phone use and anxiety, particularly among individuals identified as problematic cell phone users *(Lu et al., 2011)*. Problematic cell phone use has been described as an addiction-like behavior leading individuals to use the cell phone compulsively. However, it is not clear whether the relationship between smart phone use and anxiety exists independent of problematic behavior. For example, *Hong et al. (2012)* found a positive correlation between daily smart phone use (calls and texts) and anxiety, but further investigation suggested that the relationship was mediated by cellphone addiction. Taken as a whole, these studies identify a positive relationship between problematic smart phone use and anxiety. Moreover, these studies suggest a need to expand our understanding of this relationship beyond problematic users. As *Merlo (2008)* suggests, even typical cell phone users may experience some level of anxiety as a result of perceived obligation to remain constantly connected with others. In support of this idea, *Carrier et al. (2013),* investigated anxietyrelated to technology use among a large sample of teens, young adults and adults. Their results show that not being able to connect with technology, particularly Facebook, text messages and cell phone calls, as frequently as desired was associated with feelings of anxiety. Furthermore, technology use and technology related anxiety was predictive of mood and personality disorders. Increasingly, diversity of media-related technologies is accessible through the modern cell phone. Thus, when exploring the behavioral impacts of smart phone use, there is a need to consider other cell phone uses such as Face book, surfing the Internet, and playing video games. Research has explored many of these activities in relation to academic performance and anxiety independent of smart phone usage.. In many ways, the findings are similar to what has been described above for calling and texting. For example, video game playing has been associated with lower GPAs *(Fitzgerald et al., 2011).* High levels of Internet use have been associated with anxiety and low levels of Internet use have been associated with improved academic performance. However, there is research to suggest that it is not the amount of time that a student spends online but rather what a student does online which affects these variables. *(Chen and Tzeng, 2010)* found that female high Internet users who engage in information seeking and chatting had better academic performance than low users. On the other hand, the same group of female high users felt more depressed than low users. Likewise, heavy Internet users who focused on information seeking, chatting and video games had lower levels of academic performance and felt more depressed than low users.

When considering specific Internet-based activities, social networking (e.g., Face book, MySpace, and Twitter) has become extremely popular in recent years, and several studies have identified a negative relationship between social-networking site (SNS) use and academic performance *Kirschner and Karpinski(2010)*demonstrated that Facebook users have lower GPAs and spend fewer hours per week studying than non-users. Likewise, studies by *Junco (2012a, b)*have examined the relationship between Facebook use, time spent studying, and overall GPA. Results indicated that time spent on Face book was strongly and negatively related to overall GPA while only weakly related to time spent studying. Because all of these Internet-based activities are now easily accomplished with a cell phone, there is a need to expand our understandingofcell phone use beyond calling and texting. Current and future studies should operationalize cell phone use to consider a wider range of activities. In this study the relationship between average time spend in front of smart phone per day and self-reported CGPA was analyzed. Results indicated a strong negative relationship between the two.

II. OBJECTIVE &METHODOLOGY

The objectives of this study were to study the excessive use of smart phones among college going students and to find out the impact of excessive use of smart phone on academic performance of college going students. Questionnaire was prepared based on the literature review. The scope of this study is limited to college students of age 17-25 & from 10 engineering colleges in Kottayamdistrict,Kerala. Population size is 13,500 students and using Krejcie's & Morgan's table for finite population, 380 random samples were selected.Sample consisted of 196 males & 184 female respondents.Questionnaire survey was done among the selected sample. Collected data was analyzed using SPSS software. Descriptive statistics is used to analyze the data.

III. RESULTS & DISCUSSIONS

The different factors leading to excessive use of smart phones were found out from the literature review. They are:

(1) Calling (calls received & made)

(2) Messaging (messages received &sent), and

(3) Other purposes which includes: Gaming, Video Streaming, Social Networking Sites, Camera, Internet search for information, Other Applications etc.

From the literature review, checking smart phone more than 75 times a day for above mentioned purposes was considered as excessive use.

3.1 Excessive Use of Smart Phones

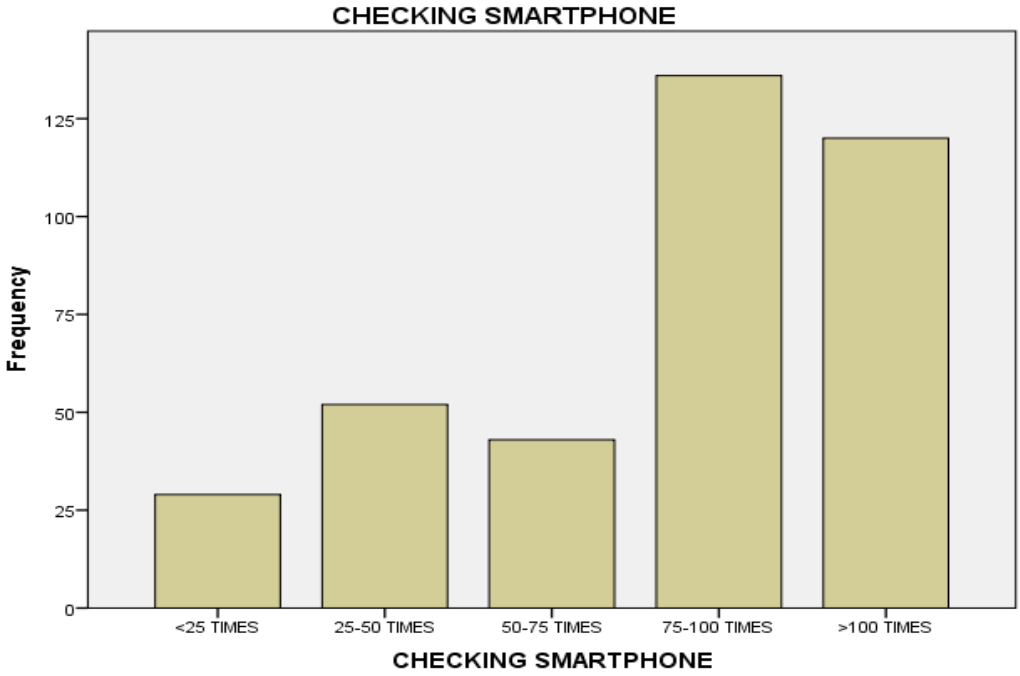

Figure 1: Excessive use of smart phones

Total number of excessive users: 256(67.368%), non-excessive users: 124(32.63%).

3.2 Priority of Usage of Smart Phones

Table 1 Priority of usage for excessive users

		CALLING	WHATSAPP AND OTHER CHATTING APPS	FACEBOOK INSTAGRM ETC	GAMING	VIDEO STREAMING AND WATCHING MOVIES	READING	ACADEMIC PURPOSES	CAMERA	OTHER APPS
N	Valid	256	256	256	256	256	256	256	256	256
	Missing	0	0	0	0	0	0	0	0	0
Mean		2.9609	1.8711	3.8672	5.6953	2.7695	6.4063	6.3125	6.0117	8.2852

There was a part in the questionnaire where users were asked to rank nine parameters of smart phone usage in ascending order according to the priority of usage of smart phones. They were asked to rank a distinct number between 1 and 9 for each of the 9 factors, 1 for most important to 10 being least important. From the table above, and from the mean values of each parameter, the priority of usage of smart phone for excessive users in descending order can be written as:

Whatsapp & other chatting apps, Video streaming & watching movies, Calling, Face book & other Social Networking Sites(SNS),Gaming, Camera, Academic purposes, Reading & data search, other apps.

It was found that academic purposes were given only seventh priority by excessive users.

Table 2 Priority of usage for non-excessive users

		CALLING	WHATSAPP AND OTHER CHATTING APPS	FACEBOOK INSTAGRM ETC	GAMING	VIDEO STREAMIG AND WATCHING MOVIES	READING	ACADEMIC PURPOSES	CAMERA	OTHER APPS
N	Valid	124	124	124	124	124	124	124	124	124
	Missing	0	0	0	0	0	0	0	0	0
Mean		2.5081	1.9194	3.9355	6.5968	3.8306	5.7016	5.5323	6.4597	8.9194

From the table above, from the mean values of each parameter, the priority of usage of smart phone for non-excessive users in descending order can be written as:
Whatsapp & other chatting apps, Calling,Video streaming & watching movies, Face book & other Social Networking Sites(SNS),Academic purposes, Reading & data search, Camera, Gaming, other apps.
It was found that academic purposes were given fifth priority by non-excessive users.

3.3 Impact of Excessive Use on Academic Performance

3.3.1 Hypotheses Testing

The following hypothesis was formulated & tested for finding significance of relationship between three variables: average time spend using smartphone daily, average time spend for studying daily & CGPA respectively. They are:
Average time spend using smartphone daily & CGPA.

H_{0a}: There is no significant relationship between average time spend using smartphone daily & CGPA
H_{1a}: There is a significant relationship between average time spend using smartphone daily & CGPA.
Average time spend for studying daily & CGPA
H_{0b}: There is no significant relationship between average time spend studying daily & CGPA
H_{1b}: There is a significant relationship between average time spend studying daily & CGPA.
Average time spend using smartphone daily & Average time spend for studying daily.
H_{0c}: There is no significant relationship between average time spend using smartphone daily & average time spend studying daily.
H_{1c}: There is a significant relationship betweenaverage time spend using smartphone daily & average time spend studying daily.

Pearson product-moment correlation coefficients were computed between the dimensions of stress factors and the overall stress. The Pearson correlation coefficient is a measure of linear association between two variables. The values of the correlation range from -1 to 1. The sign of the correlation coefficient shows the direction of the relationship (positive or negative). The absolute value of the correlation indicates the strength, with larger absolute values indicating stronger relationships. The significance of each correlation coefficient is also displayed in the correlation table. If the significance level is very small (less than 0.05) then the correlation is significant and the two variables are linearly related.

Table 3: Correlation Matrix

		AVERAGE TIME SPEND USING SMART PHONE DAILY	CGPA	AVERAGE TIME SPEND FOR STUDYING PER DAY
AVERAGE TIME SPEND USING SMART PHONE DAILY	Pearson Correlation	1	-.742**	-.753**
	Sig. (2-tailed)		.000	.000
	N	256	256	256
CGPA	Pearson Correlation	-.742**	1	.836**
	Sig. (2-tailed)	.000		.000
	N	256	256	256
AVERAGE TIME SPEND FOR STUDYING PER DAY	Pearson Correlation	-.753**	.836**	1
	Sig. (2-tailed)	.000	.000	
	N	256	256	256

**. Correlation is significant at the 0.01 level (2-tailed).

Correlation between average times spends by students (in hours) in front of smart phones and Cumulative Grade Point Average(CGPA) was checked. Strong negative correlation of -0.742 was obtained which is shown in the Table 3. It means that average times spend by students (in hours) in front of smart phones has inverse relationship with CGPA. That is, increase in time spend in front of smart phone can lead to decrease in CGPA of the students.

Table 4: Hypothesis Testing

SL. NO	HYPOTHESIS	RESULTS
1	**H_{1a}:**There is a significant relationship between average time spend using smartphone daily & CGPA.	Strong negative relationship (r= -0.742, p<0.01)
2	**H_{1b}:**There is a significant relationship between average time spend studying daily & CGPA.	Strong positive relationship (r=0.836, p<0.01)
3	**H_{1c}:**There is a significant relationship betweenaverage time spend using smartphone daily & average time spend studying daily.	Strong negative relationship (r= -0.753, p<0.01)

3.3.2 Regression Analysis

3.3.2.1Linear regression between average time spend using smart phone daily & CGPA

Linear regression was done between average time spend using smart phone daily & CGPA. Here, time spend in front of smart phone per day was taken as the independent variable & CGPA as the dependent variable.

Table 5: R Square value

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.742[a]	.550	.549	.58618

a. Predictors: (Constant), AVERAGE TIME SPEND USING SMART PHONE DAILY

In the regression analysis, R square value was found to be 0.550 which means that time spend in front of smart phone has an effect on CGPA for 55 % of the total number excessive users considered.

Table 6: Beta Coefficient

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	8.946	.105		84.866	.000
	AVERAGE TIME SPEND USING SMART PHONE DAILY	-.555	.031	-.742	-17.631	.000

a. Dependent Variable: CGPA

Also Beta value(B) was found to be -0.555 which indicates the negative relation between average time spend using smart phone daily& CGPA. So the linear regression equation can be written as:

CGPA=8.946-0.555*(Average Time Spend using smart phone daily).

IV. CONCLUSION

The results from the study shown that excessive use of smart phone brings negative results on academic performance of college students. Also, 67.4 % of the samples were found to be excessive users.The main reason for excessive use is found to be Whatsapp and other Chatting apps, followed by video streaming.Correlation between average time spend by students (in hours) in front of smart phones and Cumulative Grade Point Average (CGPA) was checked. Strong negative correlation of -0.742 was found, which indicated a negative relationship between CGPA and time spend in front of smart phones. Students need to be aware of the negative impact smart phones can have in our life.

REFERENCES

[1] AndrewLepp , Jacob E. Barkley, Aryn C. Karpinski (2014).“The relationship between cell phone use, academic performance, anxiety, and Satisfaction with Life in college students.”Computers in Human Behavior 31 (2014) 343–350.
[2] ReynolJunco ,Shelia R. Cotton(2011)“Perceived academic effects of instant messaging use”.Computers& Education 56 (2011) 370–378.
[3] Aryn C. Karpinski , Paul A. Kirschner , IpekOzer , Jennifer A. Mellott , Pius Ochwo(2013). “An exploration of social networking site use, multitasking, and academic performance among United States and European university students”.Computers in Human Behavior 29 (2013) 1182–1192.
[4] Paul.A.Kirschner,Aryn.C.Karpinski.(2010).“Face book and academic performance”.Computers in Human Behaviour 26(2010) 1237-1245.
[5] ReynolJunco(2012).“Too much face and not enough books: The relationship between multiple indicesof Facebook use and academic performance”.Computers in Human Behavior 28 (2012) 187–198.

