MOBILE PHONE USAGE AND ACADEMIC PERFORMANCE AMONG COLLEGE STUDENTS IN KERALA

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Abstract

High intensity of mobile phone usage among college students is the major issue addressed in this paper. This article examines the relationship between mobile phone usage and academic performance of the students of the four affiliated Universities in Kerala including University of Kerala, Mahatma Gandhi University, University of Calicut and Kannur University. The study is based on primary survey data and the collected data have been analysed by using hierarchical multiple regression model. The major finding of the study is that the excessive usage of mobile phone pulls down their academic performance.

Keywords: mobile phone, academic performance, college students

Introduction

The global landscape of telecommunication technology has witnessed dramatic changes during the last few decades. This is attributed to four major shifts that occurred in the development trajectory of telecommunication industry. Firstly, the digital technology revolution transformed telecommunication gadget from land phones to the mobile phones. Secondly, replacement of featured phones, by the increasing penetration of smart phones. Thirdly, radical change in connectivity from 2G to 3G and subsequently to 4G enabling faster internet connectivity on mobile phones. Finally the digitalisation of services ranging from infotainment to government and e- payment services and one touch solution to many of people's day to day life chores. These gadgets perform as computers that serve them with music player, internet, video camera, game, calculator, alarm clock and as a platform for increased accessibility to social media. It helps them to articulate freely their views and opinions without the fear of being censored by a third person. It also helps to share chats, photos and videos to their online friendships and thereby to reduce loneliness. It also serves as a means for relieving tensions and a source of security in emergency (Balakrishnan & Raj, 2012).

The availability of high end phones at lower price with meaningful contents in vernacular languages has played an important role in the proliferation of internet through mobile phone handsets. The growth of internet services has now replaced traditional services like voice, SMS. The mobile content usage is now conquered by email, social networking, chat, games and news (Nielson, 2013). These categories gained popularity as they fulfil multiple needs of consumers. "The mobile data services would help to tackle key issues in education, health, finance, agriculture and governance in India. It promotes many transactions and encourages opening a bank account and providing health and educational services in both the urban and

rural areas. That is a simple mobile phone is being touted as one of the greatest mediums of change" (KPMG & IAMAI, 2015).

Apart from the beneficial effects, the mobile phones have deleterious health effects. Careless and prolonged mobile phone use is reported among the college students. This is typically attributed to their behaviour pattern.

Mobile phones have become an integral part of academic life. College students use smart phones, openly and covertly, in campus settings, including the classroom (Andrew, Jacob, & Aryan.C, 2015). Students frequently use cell phones at campuses despite rules and legal restrictions against it (Tindell & Bohlander, 2012). "Mobile phone is capable of contributing to students' learning outcomes and improved academic performance. Modern smart phones provide students with immediate, portable access to many of the education-enhancing capabilities as an internet-connected computer, such as online information retrieval, file sharing and interacting with professors and fellow students" (Bull & McCormick, 2012). Many students recognize the mobile phone mainly as a leisure device, and cell phones are mainly used for social networking, surfing the watching video, Internet, and playing games (Lepp, Li, & Barkley, 2015). If utilized for leisure rather than education, mobile phones may interrupt knowledge and academic settings (Levine, Waite, & Bowman, 2007).

The acceptability of mobile phones as a means of infotainment, communication and as internet services and associated activities has been phenomenal. The usage of mobile phones for various activities by the college students in Kerala has been on the increase in the recent past. The mobile phone which serves as the PC on the pocket eats away a greater chunk of their time. Students often become obsessed with the smart phones as they find themselves busy with social net working sites uploading videos and photos, chatting and sharing and gaming and shopping. Checking up of status, posting photos including selfies on the social sites have become an addiction.

Mobile phone usage may be conflicting with the priority of students, teachers and parents. Teachers concern is about the low academic performance and poor class room discipline. Parents talk about it as a means of contacting their children**.** Owing to these conflicts between various stakeholders there are chaotic situations in class rooms when a mobile phone accidently rings up in between the academic session. The resulting policing by the teachers and the frenzy of silencing the phone happen to be a repeated game. The loss of decorum of the class can also be a disciplinary issue. Since we live in a cyber hub, it's not wise to deny the smart phone to students. What is required is a deft management of its usage so that the students will not be carried away by the dark side of the cyber world. Here our aim is to examine the impact of the usage of mobile phone on academic performance of the UG and PG students of various universities of Kerala.

Objective

The study aims at examining the influence of mobile phone usage on academic performance of university students in Kerala

Hypothesis

There is no significant impact of mobile phone usage on their academic performance.

Methodology

The study is based on primary data collected from four major affiliating Universities in Kerala like University of Kerala, Mahatma Gandhi University, University of Calicut and Kannur University. A sample of 845 students have been selected at random from these four universities. Collected data are analysed using hierarchical multiple regression model. Further, descriptive statistics is used to highlight the positive and negative effects of mobile phone usage.

Analysis

Intensity of Mobile Phone Usage

Time devoted to mobile phone usage among the respondents per day is given in table 1: The table shows the intensity of mobile phone usage by their education level. The table reveals that 214 (26 percent) persons both in UG and PG have more than 6 hours of mobile phone usage per day. Their number is 265 when we come to the second category of mobile phone usage that is the category of mobile phone usage between 3 to 6 hours. It indicates a high intensity of mobile phone usage among the respondents.

Table 1:
Intensity and duration of the use of Mobile Phone

Time in Hours	Under Graduation	Post Graduation	Total
< 3 Hours (Normal Usage)	263(72) (39)	103 (28) (62)	366 (100) (43)
3 to 6 Hours (Over Usage)	220 (83) (32)	45 (17) (27)	265(100) (31)
>6 Hours (Excessive Usage)	196 (92) (29)	18 (8) (11)	214 (100) (26)
Total	679	166	845

Source: Survey Data

Positive Effects of Mobile Phone Usage

Smart phones perform the tasks of portable computers. The users rely on this gadget for information leading to knowledge production. If used for supplementing the knowledge obtained from class rooms, mobile phone would be of great help for the students to accomplish their objective of improving academic activities. Possibilities of accessing, Google, dictionary, online journals and virtual learning facilities are some of the applications that help students to understand the latest development in study area. The study has also examined whether the use of mobile phone enhances their learning activities.

Specifically designed questions were used which can be rated by using likert scale with responses ranging from strongly agree, agree, neutral, disagree and strongly disagree with arbitrary values ranging from 5 to 1, the former for strongly agree and the later for strongly disagree and all other grades between these values are for scale fall within these ranges.

The reliability or internal consistency was checked for these items using Cronbach alpha of scaling statistics. The Cronbach alpha for the 9 items selected by looking at the correlation if items deleted were found to be 0.703 which is an acceptable level of consistency of the items selected. The internal consistency

along with the items and their descriptive statistics are presented in table 2. The highest mean value was 3.9 and the lowest.

Table No 2:

Descriptive statistics of the items included in the positive effects of smart phone use.

Sl No	Positives Effect of Mobile Phones on Academic Performance	Descriptive Statistics		
	Items	Mean	SD	N
PEA1	The calls/messages received before class/exams reduces my stress	3.6	0.9	845
PEA2	The use of mobile phone during study time assist me in learning	3.2	0.8	845
PEA3	I can easily contact teachers for study purpose	3.3	0.9	845
PEA4	I can easily contact classmates to get help In studies	3.9	0.8	845
PEA5	My academic performance has been increased due to mobile phones	3.5	1.1	845
PEA6	Mobile phones helps to improve the level of the quality of education	3.5	1.0	845
PEA7	Music and videos in mobile phone improves my concentration	3.2	1.1	845
PEA8	Dictionary,/thesaurus others utilities improve my academic writing	3.0	1.0	845
PEA9	Mobile phones helps to get access to auxiliary materials for learning	3.0	1.0	845
Cronbach's Alpha		0.7		
No of Items		9		

Source: Computed from the Survey Data

Positive Effects of Smart Phone Use: Explorative Factor Analysis

In order to prove whether mobile phone contributes positively to the academic performance, the study used Explorative Factor Analysis. The Factor validity was assessed by using the Principal Components techniques. The Kaiser-Meyer-Olkin (KMO=0.786) confirmed the adequacy of the sampling size. Bartlett's test of Sphericity supported the use of factor analytic procedure**.** The principal component analysis and verimax rotation method were employed in the extraction of these items to finalise the most appropriate determinants of the students choice behaviour. The analysis using the initial Eigen values sorted out four factors as the most important that loaded heavily on the variables chosen for the analysis

Table 3

Positive effects of Mobile Phone on the Academic Performance of the students

Items	Factors			
	Quality of Education	Materials& Peer Help	Stress Release	Teachers' Help
PEA1	0.589		0.420	0.738
PEA2	0.67	0.577		0.709
PEA3			0.905	0.629
PEA4	0.660	0. 784	0.595	
PEA5	0.759			
PEA6	0.743			0.567
PEA7	0.718.	0.829		
PEA8		0.736		
PEA9				
Kaiser-Meyer-Olkin Measure of Sampling Adequacy				0.786
Bartlett's Test of Spericity				1.094E3 (.000)**
Cumulative % of Variance explained by 5 factors				62
Extraction Method: Principal Component Analysis.				
Rotation Method: Varimax with Kaiser Normalization.				

Source: computed from survey data

The Explorative factor analysis extracted four factors which are classified as Quality Education, Materials and Peer Group Help, Stress Release, and Teacher Assistance. The loading of these factors on the items shows the association with the respective items. The first factor is heavily loaded on increase in quality of education, the perception of improvement of performance, increase in concentration and stress releases all of which contribute to improvements in quality of education. The second factor materials and peer help examines the association of mobile phone help with these factors. The values show that students use mobile phones both as additional materials and peer group assistance. The third factor, the mobile phone as a stress releasing means found to be highly correlated with the items including mobile phone helps to reduce stress, helps contact with teachers for assistance and the help of the friends all of which helpful in the stress release. Finally teacher assistance is correlated with stress release, learning assistances and increase in the quality of education. Thus the analysis shows that the usage of mobile phone has positive impact upon the study habits of the individuals. It helps them in many ways including additional materials, peer group help, teacher assistance and as stress release factor. Thus a mobile phone helps the respondents to increase the quality of their education. The four factors extracted together contribute 62 percentage of the variations in the academic performance of the students in positive direction.

Negative Effects of Smart Phone Use

Notwithstanding the favourable impact of communicating, browsing, sending mails and conducting online businesses and governance, the prolonged use of mobile phone brings forth many adverse effects. With the help of the specially designed questionnaire the study listed the following items for the students to express their view points on the relationship between mobile phone and academic purposes. The scaling for reliability analysis shows that the items are consistent with cronbach alpha of 0.737 for 11 items selected by looking the cronbach alpha after leaving the item with lowest correlation. The result is presented in table.4

Table No 4

Descriptive statistics of the items included in the positive effects of smart phone use.

l No	Negative Effect of Mobile Phones on Academic Performance	Descriptive Statistics			
Code	Items	Mean	SD	N	Cronbach α, if item deleted
NEA1	Friends use mobile phone to disturb my learning	2.9	0.8	845	0.716
NEA2	I waste my time using mob during study time	3.6	0.9	845	0.714
NEA3	The mob. phone is a waste of time for students	3.7	0.9	845	0.699
NEA4	Excessive use of mob phone increases stress	3.3	0.9	845	0.727
NEA5	Mob phone increases the chance of misusing snc	3.7	0.9	845	0.701
NEA6	Mobile phone reduces my academic performance	3.4	0.9	845	0.705
NEA7	SNC victimize me of bullying & cyber crimes	3.4	1.0	845	0.702
NEA8	Unnecessary calls, sms & notifications eat away my learning time	3.6	1.0	845	0.698
NEA9	Mob phone tempts me to use excessively the social media	4.2	1.2	845	0.678
NEA10	The excessive use of social media unnecessarily lengthens my study time	3.7	1.6	845	0.736
NEA11	Mobile phone related activities prevent me from timely completion of works	3.6	1.0	845	0.689
Cronbach's Alpha		0.737			
No of Items		11			

Source: Computed from survey data

Negative Effects of Smart Phone Use: Explorative Factor Analysis

The negative effects of the smart phone use have been subject to the Explorative factor Analysis (EFA) and the result is presented in table. The value of Kaiser-Meyer-Olkin Measure of Sampling Adequacy proved that the study can be pursued and Bartlett's test of Sphericity showed highly significant correlations between the items used in the factor analysis. The principal component analysis and verimax rotation method were employed in the extraction of these items to finalise the appropriate determinants of the choice behaviour of the respondents. The results are presented in table 5.

Table 5
Negative effects of Mobile Phone and Academic Performance

Items	Factors				
	SNC Prolongs Study Time	Delay's Work	Mob Ph Waste of Time	Wasting of Study time	Friends' Distract
NEA1					0.584
NEA2					
NEA3	0.563	0.401			
NEA4					
NEA5	0.578			0.462	
NEA6	0.758				
NEA7	0.759				
NEA8			0.862	0.934	
NEA9		0.57	0.57		
NEA10					0.974
NEA11		0.847	0.573		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy					0.821
Bartlett's Test of Spericity					1.346E3
Significance					0.000
Cumulative % of Variance explained by 5 factors					65
Extraction Method: Principal Component Analysis.					
Rotation Method: Varimax with Kaiser Normalization.					

Source: computed from survey data

a. Rotation converged in 7 iterations.

The factor loadings are given in table 5. Only those items which have a correlation of above of 0.4 only considered. The first factor is heavily loaded on four items namely, mob phone increases the chance of misusing social media, and mobile phone reduces the academic performance. Mobile phone is a waste of time for students and the social media expose victimizes them through bullying and other cyber crimes. The second factor is loaded on three factors namely, mobile phone related activities prevent from timely completion of works, mobile phone tempts to use excessively the social media and mobile phone is a waste of time for students. The third factor, is loaded on two factors, mobile phone tempts to use excessively the social media and unnecessary calls, sms & notifications eat away learning time. The fourth factor, examines the wastage of study time is loaded on unnecessary calls, sms& notifications. The fifth factor which examines the association of friends' distraction is associated with the excessive use of social media unnecessarily lengthens the study time and friends use mobile phone to disturb my learning. The analysis shows that excessive use of Social Networking Community (SNC), mobile phone and wastage of time, study time and friend's distraction are heavily loaded showing the negative impact of the excessive use of mobile phone.

Mobile Phone Usage and Academic performance

Does the intensive use of mobile phone affects students' academic performance? This has been checked by using the average of the marks scored by the students both at SSLC level and in the 3 semester of their programme of study. The result is given in table 6.

Table 6. Mobile Phone Use and Academic performance

Variables	Mobile Phone Usage	Descriptives				Anova	
		No	Mean	SD	Std. Error	F	Sig.
DEGREE/PG THIRDSEM RESULTS	Normal Use	366	76.82	36.07	1.885	14.496	0.00
	Over Use	265	70.68	5.03	0.309		
	Excess Use	214	65.82	8.66	0.592		
	Total	845	72.11	24.69	0.849		
SSLC	Normal Use	366	73.78	7.20	0.376	85.284	0.00
	Over Use	265	77.93	7.61	0.468		
	Excess Use	214	82.07	7.71	0.527		
	Total	845	77.18	8.18	0.281		
HSST	Normal Use	366	75.70	5.25	0.274	13.262	0.00
	Over Use	265	77.86	5.90	0.362		
	Excess Use	214	77.58	6.25	0.427		
	Total	845	76.86	5.80	0.200		

Source: Computed from survey data

The table compares the average percentage of marks obtained by the respondents at various levels of the study from SSLC to the 3 Semester University examination of their programme of study. The table shows that the average percentages of marks obtained at the 3 semester examination remains the same (75 percent) for those group of people who use mobile phone less than 3 hours per day (Normal use). However, as the hours of use of mobile phone increases, the percentage of marks obtained in the 3rd semester exam varies significantly from the marks they obtained at SSLC and HSS level. A variation of 7 percent can be seen in the case of persons who use mobile phone more than 3 hours per day but below 6 hours. The group of students who use mobile phones greater than 6 hours per day have much variation in their marks at the 3 semester of their programme of study from the SSLC and HSS level. Since the value of F is below 0.05 we reject the hypothesis that there is no variation of marks before and after the use of mobile phone among the group of people who have normal, moderately high and very high intensity of mobile phone usage. It can be concluded that the mobile phone usage adversely affects the academic performance of the students.

Factors Influencing the Semester Results

The study has also examined the factors that significantly influenced the students' performance in their third semester examinations of the programme. A hierarchical multiple regression analysis was undertaken towards this objective. The results are presented in table 7.

A hierarchical multiple regression analysis has been used to examine the relationship between academic performance of the students with their socio economic and demographic variables, previous levels of study, time of mobile phone usage, health hazards due to excessive mobile phone usage.

Table 7: Factors Influencing the Third Semester Results

Step	Model	Coefficients(a)					Model summary		
		Unstandardized Coefficients		Standardized Coefficients					
		B	Std. Error	Beta	T	Sig.	Change in R squared	F	Sig
1	Gender	2.172	1.797	0.04	1.21	0.227	0.051	4.369	0.000
	Education of respondents	4.978	2.139	0.08	2.33	0.020			
2	Income	0.154	1.359	0.00	0.11	0.910	0.058	16.3	0.000
3	SSLC	0.344	0.116	0.11	2.97	0.003	0.048	10.66	0.000
	HSS	0.005	0.153	0.00	0.03	0.974			
4	Time	-6.778	1.16	-0.22	-5.84	0.000	0.037	8.516	0.000
5	Health Hazards	3.007	1.69	0.06	1.78	0.076	0.005	5.631	0.037
a. Dependent Variable: Percentage of Marks at Third Sem of the Programme									

Source: Computed from survey data

The model evaluated whether students performance in the examination varies with gender and level of study. The result shows that gender category as a determinant of academic performance. At the same time it is not statistically significant. Education is significant determinant of the 3 Semester results of the students. As the level of education increases, the percentage of marks found to be positively changing and the result is statistically significant. Other factors, that significantly influence the academic performance of the students, are the percentage of mark at the SSLC level, time of mobile phone usage, and he health hazards due to its excessive use. The variables that are statistically significant are gender, income of the respondent and the marks at HSS. It can be seen from the table that the time of mobile phone usage has a negative influence upon the percentage of marks indicating adverse effect of increased use of mobile phone.

Conclusion

The major finding of the study is that the time duration of mobile phone usage adversely affects the academic performance of the students in university examinations**.** The analysis of variance (ANOVA) and the hierarchical multiple regressions confirm that the excessive usage of mobile phone pulls down academic performance.

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