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SMART PHONE USAGE PATTERN: A STUDY OF COLLEGE STUDENTS

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Abstract *With the advancement in technology the smart phones have grown ever more in past few years and the imperative segment of smart phone users is comprised of college students. In the present paper an attempt has been made to analyse the smart phone usage pattern of college students. The study has been conducted with a sample of 124 college/ university students studying in Gurgaon. The study reveals some interesting facts about student's mobile addiction and the way they use their smart phones. The results show that participants reported association between the numbers of applications downloaded and gender. It is shown that boys tend to download more mobile applications and replace their phones more frequently than girls. Our results also indicate that there is no relation in type of mobile phone used and gender. Survey also tells us about student's preferences about common use of cell phone. For the purpose of data analysis, R programming software is used.*

Keywords: *Smart Phone, Usage Pattern, College Students, Gender, Data Analysis, R Programming*

Introduction

India has the second largest smart phone users globally after beating US recently by crossing 220 million active users of smart phone in 2015 (http://articles.economictimes.indiatimes.com). Smart phone ownership among young adult especially college going students has been consistently elevated. They use their cell phones as a persistent communication technology. In the recent years, smart phones are getting more powerful by including amazing features. Today's smart phones are providing it's users a one step solution to all their basic needs. Many devices such as watch, camera, GPS, calculator, diary, recorder, music player, etc. have been replaced by smart phones. Students use their smart phones as a tool of entertainment, health guide, knowledge hub, social lifeline, and much more. The impact of smart phones on the world is immense as they create another business arena—mobile commerce or m-commerce.

Few researchers have worked on the usage pattern of mobile phones and it's relation to demographics of respondents. A study conducted on cell device usage found that 57% of cell phone users uses their phones mostly for social purposes and around 50 % users carry their phones with them all the time (Wireless Phone Reliance Grows, 2001). Van Biljon, J. and Kotzé (2008) argued that demographic, social, cultural, and contextual factors influence mobile phone usage that complicate the understanding of mobile phone usage.

In this study, we have investigated the effect of demographics of college students of Gurgaon on their habits of using smart phone. We have studied whether boys are crazier about their smart phones than girls, do they think differently about using cell phones from girls. We have also looked at the differences or similarities among different age groups & class they belong to and studied their main purpose of using smart phone.

The rest of the paper is organised in the following manner. In second section, we have presented an extensive literature review. In third and fourth sections respectively, we have described the objective and methodology used for the same. In fifth section, we have employed data analysis techniques and discussed the results obtained. Finally in sixth section, we have summarised our findings of the investigation done.

Literature Review

Very few studies have been conducted to find out the smart phone usage habits of college students. Reseachers have reviewed major studies conducted in this area.

Aoki and Downes (2003) focused on the social and psychosomatic aspects of cell phone usage among college students. They argued that necessity in modern times, cost efficiency when compared to landline phone, safety or security, and dependency are the reasons for adoption

of smart phones. Butt and Phillips (2008) exposed the relationship between the personality of a mobile phone user and the amount of time spent on the mobile phone and also the preference of using text or making call for communication. Zulkefly and Baharudin (2009) studied mobile phone use particularly for the students of University of Putra Malaysia. They have determined various factors related to its use and impact on student's psychological health.

Farrell (2012) established a pattern in the usage of mobile phones and estimated the age of the mobile phone user by analyzing their call data record. He has shown that mobile user's age is based on the ages of the people they call and the intensity of their relationship.

Smart phones can help students improving to learn more by using academic apps, online courses, open sources, and improved networking by means of q/a sites, discussion forums, blogs etc. On the other hand, phones have been proven to distract students in the classroom as discussed by Shrivastava, Shrivastava, and Muscat (2014). Sarraute, Blanc, and Burroni (2014) detected substantial inconsistencies in mobile phone usage among the subgroups of Mexican population for different age and gender. Patel and Rathod (2011) conducted an exploratory study for mobile usage habits of students commuting from rural area to nearby towns. They discussed the reasons for buying a phone, brand preferences and perceptions regarding service quality.

Objective

The purpose of the current study is to explore the usage of smart phone by college students studying in Gurgaon. The main objective is to study age and gender related differences in habits of smart phone users.

The incidental objectives are:

1. To study association between demographics of respondents and their addiction of using mobile phone.
2. To study association between demographics of students and their perception about/of using mobile phone.
3. To study the difference in opinion of students about their preference of using mobile phone for various tasks like talking, social networking, playing games, managing emails and listening music.

Methodology

The research is conducted by using the procedure of survey method. Primary data have been collected from smart phone user students in Gurgaon through a structure questionnaire. Convenience sampling was used for the purpose of data collection. Sample size used is 124.

Data Analysis

We asked respondents how they use mobile phone (4 questions), what are their product's perception (4 questions), some personal details (3 questions), and how they rate common usages of mobile phone (1 question-5 options).

Out of 125 responses, we found 124 usable, after removing one incomplete response. The demographic characteristics of the responses (as shown in Table 1) depicts that there are 58% of respondents were male while 42 % were female students. Most of the respondents (70%) were from age group 15-20, followed by age group 20-25 (16%), while only 13 % belongs to more than 25 age groups. Also, majority of students (69%) belong to undergraduate courses, as compared to those studying in post-graduation (15%) or higher degree courses (16%).

Fig. 1 depicts student's share of mobile operating system. It shows the Android phone is first choice of students followed by I-phone. Windows, Blackberry, and other phones were found to be less popular among students.

Table 1: Demographics of Respondents

Gender			Age			Admission Status		
Category	Number	%	Category	Number	%	Category	Number	%
Male	72	0.58	15-20	87	0.70	Graduation	86	0.69
Female	52	0.42	20-25	20	0.16	Post graduation	18	0.15
Total	124	1.00	25-30	13	0.10	Doctoral	20	0.16
			30+	4	0.03	Total	124	1.00
			Total	124	1.00			

Table 2: Students Share of Mobile OS with Demography

Students Share of Mobile Operating System												
Mobile OS	Gender			Age					Admission Status			
	M	F	Total	15-20	20-25	25-30	30+	Total	UG	PG	Doctoral	Total
Android	48	30	78	57	11	7	3	78	55	11	12	78
I Phone	13	13	26	17	4	4	1	26	17	3	6	26
Windows	7	6	13	8	3	2	0	13	9	2	2	13
Blackberry	2	1	3	2	1	0	0	3	2	1	0	3
Others	2	2	4	3	1	0	0	4	3	1	0	4
Total	72	52	124	87	20	13	4	124	86	18	20	124

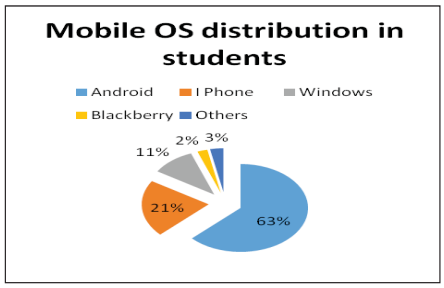

Fig. 1: Total Share of Mobile Operating System among Students

Table 2 shows distribution of types of mobile phone used by demographics of students. As there were very few observations from age group 30+, so we have combined last two categories together for analysis purpose. Similarly, we found less observations of those who use Blackberry phones, windows phones and those who use other operating system as Java, Symbian etc., so we have combined these three categories together.

Research Question-1

Null Hypothesis: There is no association between demographics of respondents and their addiction of using mobile phone.

Alternative Hypothesis: There is an association between demographics of respondents and their addiction of using mobile phone.

Here demographic variables represent classification of students on the basis of three variables, gender, age group, and admission status. While addiction of using mobile phone is measured by four different variables which measure how frequent they check their phones within an hour, how often they browse Internet using mobile phone on daily basis, how many apps they have downloaded on their device, how often they use cell phone for calling people in a day. In order to test (3*4=12) associations between demographic and addiction related variables, we have used EnQuireR package of R software. The results are displayed in Table 3.

Table 3: χ^2 statistics

Chi-2 test			
	Gender	Age.group	Admission.status
check_in_an_hour	2.497	5.067	4.328
browse_net	4.958	7.913	15.29
apps	14.51	3.696	4.878
calling	2.024	7.31	7.269

Table 3 shows the chi-squared (χ^2) values for different pairs of observations. The coloured cells represent statistically significant association among corresponding variables at 5% level of significance.

The results suggest there is significant relation (χ^2 = 14.5108, df = 2, p-value = 0.0007063) between gender of the respondents and number of apps downloaded. The same can be visualised by –Fig. 2 which clearly suggests that there are more females in the 0-10 group as compared to males, whereas maximum numbers of male students have downloaded 10-20 apps. Hence, male students appeared to be more active in using mobile applications in comparison to their female counter part.

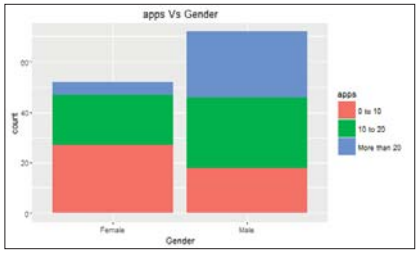

Fig. 2: Gender Bias in Apps Downloads

Table 3 also reveals significant difference (χ^2 = 15.2917, df = 4, p-value = 0.004133) between the frequencies of browsing internet according to different class groups.

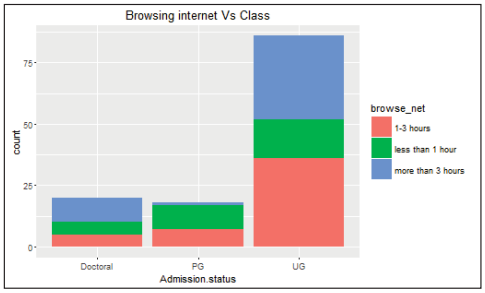

Fig. 3: Net Browsing Vs Class

Research Question-2

Null Hypothesis: There is no association between demographics of students and their perception about/of using mobile phone.

Alternative Hypothesis: There is an association between demographics of students and their perception about/of using mobile phone.

For the purpose of this study, we have tried to measure perception of students about smart phone usage by asking them their choice for operating system, how frequent they change their cell phone, how long they can go without using mobile phone and their opinion about impact of smart phone in social interaction.

Again, the associations between demographic and perception related variables are tested for statistical significance and the results are displayed in Table 4.

Table 4: χ^2 Statistics

Chi-2 test

	Gender	Age.group	Admission.status
Operating.system	1.158	2.262	1.928
replacephone	18.6	4.69	3.178
without_phone	1.852	2.965	5.817
social_int	6.838	1.978	1.544

Table 4 reveals significant (χ^2 = 18.5953, df = 2, p-value = 9.164e-05) gender bias in frequency of replacing their smart phone with a new one. Fig. 4 also supports the result to disclose the fact that male students replace their existing phone more frequently than female students.

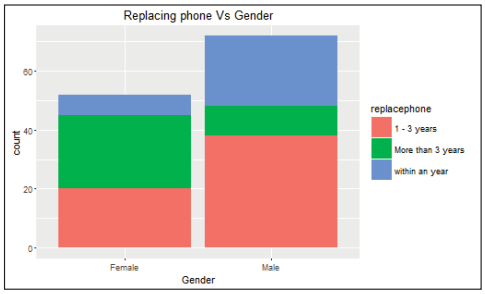

Fig. 4: Gender Bias in Replacing Mobile Phones

Research Question-3

Null Hypothesis: There is no difference in opinion of students about their preference of using mobile phone for various tasks like talking, social networking, playing games, managing emails and listening music.

Alternative Hypothesis: The opinion of students differ about their preference of using mobile phone for various tasks like talking, social networking, playing games, managing emails and listening music.

For the purpose of this study, we measured student's preferences of students using mobile phone for common tasks mentioned above on the scale of 1 to 5, where 1 is the least preferred purpose and 5 is for most preferred purpose.

Fig. 5 shows various plots of average ratings of common usage of smart phone for different groups. It is confirmed from the graphs that more male respondents use their phones for networking, while more female respondents have a preference to use it for listen music. Preference for age group 20-25 for playing games in mobile is lower than other age groups. Doctoral students like to use cell phone more for checking emails, while undergraduates prefer to play games. I-phone users' preferences are listening to music and checking emails, whereas android users' first choice is playing games followed by networking. But to test whether these differences in preferences are significant or not, we have analysed the data.

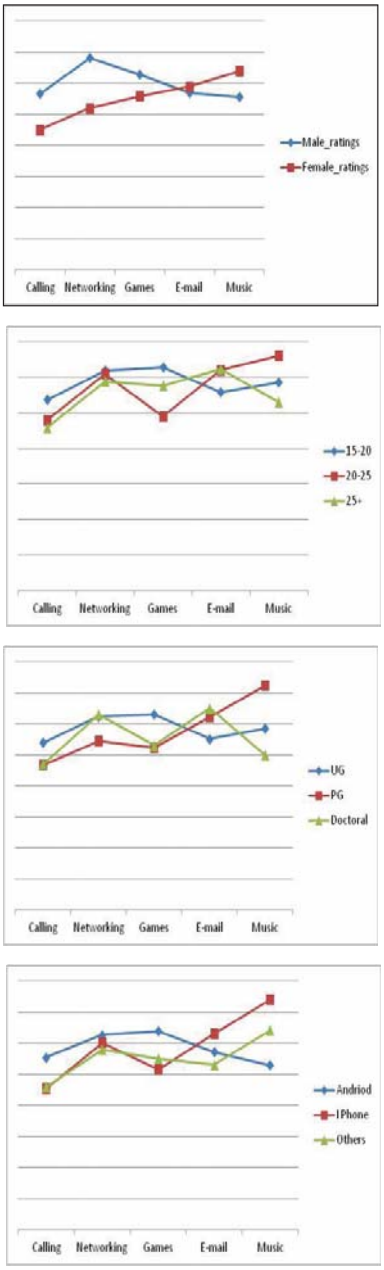

Fig. 5: Average Ratings for Common Usages of Smart Phone

To compare the agreement between different groups of respondents (based on three demographic variables), we have calculated Cohen's kappa and Fleiss's kappa coefficient. Cohen's kappa works as an index of agreement between 2 groups of raters on categorical data. Firstly, to see whether there is an agreement in two groups (male and female) of respondent's preferences of using mobile phone, we have computed Cohen's kappa using irr package of R software. Similarly, to check for agreement between respondent's preferences as per age groups, admission status and mobile operating system, we have computed Fleiss' Kappa values.

The results are summarised in Table 5. Large p-value (> 0.05) suggests that we fail to reject the null hypothesis of no agreement, in other words, there is a statistically significant disagreement between the corresponding groups. Hence, different groups of students (based on gender, age, mobile OS and admission status) have dissimilar preferences of using mobile phones.

Table 5: Measures of Agreement

Measure of agreement	Kappa value	p-value
Gender	-0.292*	0.186
Age groups	-0.0714	0.301
Mobile OS	-0.0714	0.301
Admission status	-0.0714	0.301

*Cohen's kappa

Rest of the values in this column represents Fleiss' kappa

Concluding Remarks

This study indicates student's affection for their smart phones. They use it to navigate life on the campus. They use cell phone for social networking, playing games, listening to music, and many other purposes, even calling is less preferred purpose of using a smart phone.

Although, both boys and girls show similar liking for their phone but it is evident that there is some gender bias in number of apps downloaded and time to replace their phones. Boys tend to download more apps and buy a new phone more frequently than girls.

Due to sampling technique used for the purpose of this study and small sample size, the result cannot be generalised to larger population.

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