Identifying Association Between Demographic Profiles And Usage Of Smart Phones By Students:A Study On The Students Of University Of Kalyani

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Abstract: The use of smartphone has turned the world into a small place where everyone can stay connected to each other. This paper focused on the usage pattern of smartphone by the students of University of Kalyani in Nadia District of West Bengal. 297 students were surveyed with a structured questionnaire for the research. Out of 297 students surveyed, it was found that 235 students use smartphones, 5 students use bar phone and 57 students use both. The aim of the paper is to identify the associative relation between demographic profile of the students and their behavioral and awareness pattern regarding the usage of smartphones including that in education. The findings of this study leads to identification of certain demographic profiles which are significantly associated with the usage of smartphones by the students of University of Kalyani.

Index Terms: Smartphone, Contact classroom, Virtual classroom, Students, Education ,post graduate, under graduate, young.

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1. INTRODUCTION
In recent times students' association with smart phones has become a predominant phenomenon across educational institutions. Smart phones have become a part and parcel of today's generation, specially the college students who carry and use smart phones continuously irrespective of place and time. This constant use of and interaction with smart phones have forged an effect on the students in their thoughts, attitude and action. The Networked Readiness Index of World Economic Forum identified the nations which are digitally ahead on a global forum. In 2016 it came up with the report mentioning the names of top 10 countries of the world with Singapore topping the list followed by Finland, Sweden, Norway and United States as the most digitally competitive economy of the world. India's rank in the Network Readiness Index of 2016 published by World Economic Forum was 91st. In 2017 India moved up to the 53rd position in the same index, which was the lowest among the BRIC nations. The list in 2017 was topped by Norway, followed by Sweden, Switzerland, Denmark and Finland(1). In the global ranking in Digital Competitiveness, India exhibited a more-or-less steady improvement with the ranks being 56th, 50th, 53rd, 51st and 48th in the years 2014 – 2018(2). These results indicate that that India is in the developing stage of digitalization. The population of India in March 2019 was 1,350,438,098 and it is the second most populous country in the world with 73% of its population living in villages and the minor 27% in urban areas(3). According to the report published by Central Statistic Office, Ministry of statistics and programme implementation by government of India in the year 2017, India is expected to have 34.33% of youth by 2020(4). As the young generation is the most ardent user of smart phones in India, the demographic trend indicates towards a rising use of smart phones in India by the young generation, most of whom are students. During the last decade, internet has reached out to rural areas as well to a large extent. The lowering of the prices and increasing user-friendly features has enhanced the access to smart phones, specially by the young generation, most of whom are students and have not started to earn. As making India a knowledge-based economy has been accorded priority in the national agenda, the education policy of the nation has identified the use of internet and information technology as a efficiency enhancer. Accordingly, the new revised educational policy of 2016 published by Government of India, the use of information and technology has received a special mention(5).The government has came up with massive open online course (MOOC) which is a free web-based distance learning program for the students who are widely dispersed geographically(6). Students using smart phones can access it at any point of time as per their convenience and without expensive desktop and laptop computers.This study primarily aims at identifying the demographic attributes of the students with their usage patterns of smartphone. This study is a pilot study in nature and has been done on the responses received from 297 students of University of Kalyani, West Bengal across various departments.

2. SURVEY OF LITERATURE
Technology addiction is becoming prevalent everywhere with various forms with the increasing usage of internet, mobile and smart phones. There is a considerable amount of research on the use of mobile devices and smart phones for accessing information and services (7). Nam (2013) surveyed how smart phones are used by the students at a university in South Korea. The data was collected from 135 students which showed the most common and frequent use of smart phones. The study evaluated students' perceived satisfaction with use of smart phones in terms of their gender and academic year. The results showed the most important use of smart phone is real-time communication. On the contrary the use of smart phone by the students in academic purpose received the lowest response(8). Bomhold (2013) came up with the view that the educational usage of the smart phone technology for under graduate students are mainly for information literacy purpose. The study showed the most used apps were social and communication, search engines, tools and productivity, games or music, sports or other entertainment and reference or libraries. Their were certain apps with little or no use including hobbies, finance and banking, casual reading and shopping. The findings of the study revealed that the educational apps used by the students were the normal and familiar ones that they access from the personal computer(9). Alfawareh and Jusoh (2014) studied the usage pattern of smart phone among 324 students in a university in Saudi

Arabia from different academic levels. The survey found that 94.4 per cent of students owned smart phones and the usage pattern was divided into two- normal usage and educational usage. The results showed that mostly the students used smart phone as a computer with an internet connection, as a normal mobile phone and a camera. To know the trends of smart phone usage various types of questions relating to learning activities were asked like the frequency of logging into academic portals, using Blackboard, downloading class materials and taking and recording lecture notes. It was found that 91.7 percent of the students used smart phones to log in to their academic portal. The results also indicated that 60.9 per cent of students are not aware of use of blackboard in smart phone, 66.0 per cent of the students never took the help of smart phone for taking class notes and 66.9 per cent of students never recorded class lectures(10). During 2016, among the developing countries the smart phone market in Bangladesh was in expansion mode. According to the Bangladesh Telecom Regulatory Commission (BTRC), the total number of mobile subscriptions has risen from 122,657 million in February 2016 to125,971 million in May 2016 (BTRC, 2016). It was reported that the growth in smart phone sales in Bangladesh, especially in Dhaka, is much higher than the global average, and smart phone sales account for more than 20 per cent of the total handset sales in the country (Rahman, 2015). The Dhaka university with a population of 33000 students, is believed to have one of the largest hub of academic smart phone users in Bangladesh. The survey conducted in Dhaka University had 316 participants in it. It showed that about two-third of the students used smart phones for academic information. The findings showed that the respondents acquire news, surf social networking sites and try to gather relevant information that are linked to their academics using smart phones. The study also reveals that around 90% of the respondents were eager to download the different educational apps.The survey of literature revealed that there is not much study done in the field on the Indian scenario. This gap in research, formed the background of the current study.

3. OBJECTIVES OF THE STUDY

The objective of the current study is to identify the demographic attributes of the respondents and their behavioral and awareness patterns regarding smart phones.

4. SCOPE OF THE STUDY

The scope of the study is limited to the undergraduate, graduate and post-graduate students of University of Kalyani. The study has been done covering certain selected demographic and awareness aspects only. Accessing online courses & attending virtual class rooms while on the move, have been taken as proxy for the perception of applicability of smart phones for academic purpose.

5. RESEARCH METHODOLOGY

5.1. The respondents:

The study has been carried out on all students of the University of Kalyani including students of affiliated colleges as the population. As such students were essentially from graduate or post-graduate courses, higher-secondary students from a few schools and colleges in the vicinity of University of Kalyani, were also considered to be a part of the population.

Stratified Random sampling has been done to select 300 sample respondents. The proportion of higher secondary, graduation and post-graduation students have been kept at about 15%, 40% and 45% respectively to be commensurate with the awareness of virtual mode of education with the help of smart phones.

5.2. Data:

The data were collected vide an instrument containing 21 questions (Annexure 1) to capture the demographic, awareness and perceptions of the respondents by way of multiple choice question. Out of the collected data, 3 respondents had to be rejected due to faulty filling up of the questionnaire. The data are all categorical (nominal) in nature. Each aspect regarding which data has been captured, has been coded in a three digit abbreviation and the responses against each of the aspects have been coded as numerical e.g. 1, 2, 3…. Etc. All responses have been treated as categorical variables for statistical analysis.

5.3. Methodology:

To meet the first objective of the study, the association between the demographic profiles i.e. age (AGE), gender (GEN), course undergoing (CSE) and domicile (DOM) with the awareness and perception profiles of number of cell phones used (NCP), type of cell phones used (CPM), number of SIM cards used (SIM), use of smart phones in studies (SPS), awareness of virtual class rooms (VCR), comparative assessment of contact & virtual classes (CVC), causes of virtual classes being better (DCB), causes of contact classes are better (CCB), awareness about SWAYAM classes (SWY), class notes (CLN), class lectures (CLL), and online archived lectures (CLY) have been assessed by Pearson's chi squared test, Likelihood Ratio test, Phi test and Cramers V test, all at 5% level of significance by framing the following hypotheses:H0: There is no significant association between the attributes & usage & behavioural pattern of smartphones by studentsH1: There is a significant association between the attributes & usage & behavioural pattern of smartphones by studentsThe second objective of the study has been met by regressing the CVC (a binary attribute) on AGE, GEN, CSE, DOM, NCP, CPM, SIM, VCR, DCB, CCB, OPS, OPF, SWY, CLN, CLL & CLY as predictor variables with 2 to 4 levels each. Statistical packages used:For initial recording of data, coding thereof etc, MS-Excel ® has been used. For subsequent statistical techniques, SPSS Ver 23 ® have been used.

5.4. DATA ANALYSIS

The results of the hypothese testing for which the Null Hypotheses have been rejected indicating presence of statistically significant associations, are appended in Table 1 below:

Table 1
Results of the hypotheses testing (For rejected Null Hypotheses)

	Tests	Test Statistic	df	p-Value	Decision on Null Hypotheses at α = 5%
With AGE					
NCP	Pearson Chi-Square	35.804	4	0.000	Rejected
	Likelihood Ratio	34.659	4	0.000	Rejected
	Phi	0.347		0.000	Rejected
	Cramer's V	0.246		0.000	Rejected
CPM	Pearson Chi-Square	38.388	4	0.000	Rejected
	Likelihood Ratio	33.843	4	0.000	Rejected
	Phi	0.360		0.000	Rejected
	Cramer's V	0.254		0.000	Rejected
SIM	Pearson Chi-Square	47.309	6	0.000	Rejected
	Likelihood Ratio	47.313	6	0.000	Rejected
	Phi	0.399		0.000	Rejected
	Cramer's V	0.282		0.000	Rejected
VCR	Pearson Chi-Square	12.332	2	0.002	Rejected
	Likelihood Ratio	11.508	2	0.003	Rejected
	Phi	0.204		0.002	Rejected
	Cramer's V	0.204		0.002	Rejected
CLN	Pearson Chi-Square	19.067	6	0.004	Rejected
	Likelihood Ratio	19.380	6	0.004	Rejected
	Phi	0.253		0.004	Rejected
	Cramer's V	0.179		0.004	Rejected
	Tests	**Test Statistic**	**df**	**p-Value**	**Decision on Null Hypotheses at α = 5%**
With GEN					
NCP	Pearson Chi-Square	15.383	2	0.000	Rejected
	Likelihood Ratio	15.455	2	0.000	Rejected
	Phi	0.228		0.000	Rejected
	Cramer's V	0.228		0.000	Rejected
SIM	Pearson Chi-Square	10.965	3	0.012	Rejected
	Likelihood Ratio	11.281	3	0.010	Rejected
	Phi	0.192		0.012	Rejected
	Cramer's V	0.192		0.012	Rejected
	Tests	**Test Statistic**	**df**	**p-Value**	**Decision on Null Hypotheses at α = 5%**
With CSE					
	Likelihood Ratio	10.461	4	0.033	Rejected
SIM	Pearson Chi-Square	29.013	6	0	Rejected
	Likelihood Ratio	30.774	6	0	Rejected
	Phi	0.313		0	Rejected
	Cramer's V	0.221		0	Rejected
CCB	Pearson Chi-Square	36.021	6	0	Rejected
	Likelihood Ratio	37.370	6	0	Rejected
	Phi	0.348		0	Rejected
	Cramer's V	0.246		0	Rejected
CLY	Pearson Chi-Square	7.413	2	0.025	Rejected
	Likelihood Ratio	7.415	2	0.025	Rejected
	Phi	0.158		0.025	Rejected
	Cramer's V	0.158		0.025	Rejected
	Tests	**Test Statistic**	**df**	**p-Value**	**Decision on Null Hypotheses at α = 5%**
With DOM					
VCR	Pearson Chi-Square	7.325		0.007	Rejected
	Likelihood Ratio	7.371		0.007	Rejected
	Phi	0.157		0.007	Rejected
	Cramer's V	0.157		0.007	Rejected
CCB	Pearson Chi-Square	13.112		0.004	Rejected
	Likelihood Ratio	13.233		0.004	Rejected
	Phi	0.210		0.004	Rejected
	Cramer's V	0.210		0.004	Rejected
SWY	Pearson Chi-Square	4.489		0.034	Rejected
	Likelihood Ratio	3.901		0.048	Rejected
	Phi	0.123		0.034	Rejected
	Cramer's V	0.123		0.034	Rejected
CLY	Pearson Chi-Square	7.859		0.005	Rejected
	Likelihood Ratio	7.890		0.005	Rejected
	Phi	0.163		0.005	Rejected
	Cramer's V	0.163		0.005	Rejected

Source: Author's own calculations

6. FINDINGS FROM THE ANALYSIS OF DATA AND TESTING OF THE RELEVANT HYPOTHESES

The research conducted reveals the behavioral pattern of smartphone usage of the students in University of Kalyani. The findings of the research suggest that 79% of the students posses smartphone and 19% of the students posses both smartphone and bar phone. The study also reveals that 58% of the students prefer virtual classroom using smartphone as they can get access to it at any point of time and 41% of the students prefer contact classroom. The findings also suggest that the smartphones act as a mean to stay connected to friends and relatives. Out of 297 students, 74% students use digital mode for financial transaction using smartphone and 83% students purchase things online using smartphone. The awareness regarding Swyam classes need to get spread

more. Only 20% students are aware about this initiative taken by government of India.From the analysis of the data and testing the framed hypotheses, the following results transpired:The age of the respondents were found to have no significant association with awareness of use of smart phones in studies, comparative assessment of contact and virtual classes, causes of virtual classes being better, causes of contact classes being better, awareness about SWAYAM, class lectures & online archived lectures, as the null hypotheses were accepted in these cases. However, the attribute of age was found to be associated significantly with number of cell phones owned, type of cell phones, number of SIM cards used, awareness about virtual class rooms and class notes as the null hypotheses in these cases were all rejected at 5% level of significance.The gender of the respondents were found to have no significant association with type of cell phones used, use of smart phones in studies, awareness of virtual class rooms, comparative assessment of contact & virtual classes, causes of virtual classes being better, causes of contact classes are better, awareness about SWAYAM classes, class notes, class lectures and online archived lectures, as the null hypotheses were accepted in these cases. However, the attribute of gender was found to be associated significantly with number of cell phones owned and number of SIM cards used as the null hypotheses in these two cases were both rejected at 5% level of significance. The courses being pursued by the respondents were found to have no significant association with number of cell phones used, type of cell phones used, use of smart phones in studies, awareness of virtual class rooms, comparative assessment of contact & virtual classes, causes of virtual classes being better, awareness about SWAYAM classes, class notes and class lectures, as the null hypotheses were accepted in these cases. However, the courses being pursued by the respondents was found to be associated significantly with number of SIM cards used, causes of contact classes are better and archived class lectures, as the null hypotheses in these three situations were both rejected at 5% level of significance.The domicile of the respondents were found to have no significant association with number of cell phones used, type of cell phones used, number of SIM cards used, use of smart phones in studies, comparative assessment of contact & virtual classes, causes of virtual classes being better, class notes and class lectures, as the null hypotheses were accepted in all these cases. However, the domicile of the respondents was found to be associated significantly with awareness about virtual classrooms, causes of contact classes are better, awareness of SWAYAM and archived class lectures, as the null hypotheses in these three situations were all rejected in these four situations at 5% level of significance. These findings identify which of the demographic profiles of the respondents are significantly associated with which of the awareness and perception profiles of the respondents as far as use of smart phones in education is concerned. Moreover such findings shall also help in identifying the predictor variables for the appropriate response variable in case of a regression analysis.

CONCLUSION

Certain demographic attributes of students i.e. age, gender, course being pursued and domicile were found to be associated significantly with number of cell phones owned, type of cell phones, number of SIM cards used, awareness

about virtual class rooms and class notes, causes for which contact classes are better and archived class lectures, awareness about virtual classrooms and awareness of SWAYAM. These associations could be leveraged on to use smartphones in augmenting education on a digital platform among college students.

FURTHER SCOPE OF STUDY

On the basis of the association between the identified demographic attributes of students and their behavioural and usage pattern of smartphones, their behavioural patterns can be regressed using the demographic attributes as predictor variables. This may be done after a few replicated studies on other college students in West Bengal itself.

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