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Predictors of Smartphone usages among Management Students

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Abstract

Technology becomes an integrated part of today's life and it has significant changed cultural norms of behavior of individual. Most popular application of the technology is the smartphone and it has impacted the students' behavior. The main objective of this research is to examine the predictors of Smartphone usages among Management Students. Following an exploratory approach, a systematic review of the relevant studies has been done to provide an integrated view of the fragmented literature. Convenience sampling technique was used to collect the response of 225 students from the population. Descriptive statistical technique was used for data analysis. Factor analysis has performed to check the outcome variables for investigation through SPSS 20.0. The result shows that there are three main predictors of smartphone usages among management students - sharing & collaboration, Learning, and Creativity & innovation.

Key Words: Smartphone, Sharing & Collaboration, Students, Learning, Creativity and Innovation.

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Today, Education progress simultaneously with the advancement of science and cannot be separated from the advancement of technology and communication. There are distinct numbers of technology and communication devices that can promote educators in their instruction, either as a teaching aid or medium used in the learning process. If observed from the advance of technology, education can be developed in various ways, including learning by using electronic media such as internet, television, to the use of smartphones.

As the rapid increase of the times and technology, mobile phones or hand phone that not only has the function as the sender of a text message but also as a device for the long-distance conversation. Mobile phone operate many functions of a computer, generally having an touch screen interface, Internet access, and an operating system capable of running downloaded application is called smartphone. The Smartphone can be named as a mini computer because it has the function like a computer in its mini version and is portable.

Smartphone allows the 21st Century student to engage in a learning environment while being mobile. Educational applications (i.e. apps) assist students in accessing interfaces to virtual classrooms, researching specific subject matter and much more. This allows the student to have ownership and autonomy in their learning process.

Barakati (2011) examined that smartphones were used not only as a communication tool, or just to keep up with technology, but it could be used to learn and improve students' skills. Dijey concluded that teachers should encourage the student in increasing the use of smartphones in English language learning and apply the use of smartphones by utilizing existing applications to the classroom, result as to enhance students' ability to learn English in a more innovative. The study was focused on learning the English language, but the same method can also be done on another area of learning. Smartphone offers

distinct websites, social account and social network, or internet that can be used to assist students in comprehending the concept of management, as well as to enhance their ardor for learning, and to enhance their knowledge in a more flexible and pleasant way.

Woodcock et al., (2012) concluded that increasing number of students who have smartphones, they begin to operate this gadget for expanding their learning experience. Smartphones use in learning that can guide students to become more attentive of the benefits and advantages, such as the ease of learning anywhere and anytime, as well as can motivate students in learning activities. This research paper will focus to identify the factors which affecting the management students through usages of smartphones.

LITERATURE REVIEW

This literature review considers the relevant studies, both foreign and local provided clearer path and deeper insights and parameters to this study particularly on smartphone usage by students.

Boumosleh1 & Jaalouk (2018) examined that smartphones have a positive impact on the academic performance. They suggested that higher educational institutes should encourage students to use their smartphone in a smart way by choosing to do entertainment activities that sharpen their cognitive skills. The use of mobile phone among secondary school students had the significant relationship with their academic performance (Jairus *et al.,* 2017).

Haruna *et al.,* (2016) revealed that mobile phone usage significantly influence academic performance among male and female senior secondary school students, age difference was not a significant predicator in mobile phone usage on academic performance.

Nortcliffe *et al.,* (2015) discussed the tutor use of smartphone audio apps for giving intrinsic and extrinsic feedback and found that students appreciated feedback given this way (p.147). Rung, Warnke & Mattheos (2014) analyzed that students use smartphones and social media for their learning activities and perceive their smartphones as learning tools. This is an opportunity for teachers to use smartphones to enhance students' learning needs without the constraints of location and teyime. Kuznekoff & Titsworth (2013) examined the impact of mobile phone usage, during class lecture, on student learning. Froese, et al. (2012) evaluated a self-report survey to examine students' cell phone activity in class- room and the effects of such activity on learning outcomes. Tindell and Bohlander (2012) observed that text messages can be sent directly to students' phones informing them of the source of the emergency and instructions on how to respond. Herrington (2009) discussed how smartphones were used to collect video, image and audio data for creating digital narratives or stories for use as curriculum resources (p.138).

OBJECTIVE OF THE STUDY

The main objective of the study was to analyze the predictors of smartphone usages among management Students.

RESEARCH METHODOLOGY

The study focused on undergraduate and graduate students of management studies in Delhi. The research was exploratory in nature. Primary data was collected through self-administered questionnaire. Questionnaire was based on5-point rating scale (Likert Scale) ranging from strongly agree (5) to strongly disagree (1).250 respondents (150 personally distributed and 100 e- mailed) were contacted for the collection of primary data, but only 240 questionnaires (150 personally collected and 90 e- mail received) were completed and returned. 15 copies of the returned questionnaire were considered unusable because either there was no response to some questions

asked or the respondents ticked multiple responses where they would have ticked one. Hence, a total of 225copies were analyzed. Convenience sampling technique was used to select the respondents from the population. Cronbach's alpha was calculated to check the internal consistency reliability. To analyze the data, descriptive statistical technique were used. Factor analysis was done to check the outcome variables for investigation through SPSS 20.0.

ANALYSIS

Table 4.1 represents the demographic profile of the respondents.

TABLE 4.1: SOCIO-DEMOGRAPHIC CHARACTERISTICS OF THE RESPONDENTS

Variables	Measurement	Frequencies	Percentage
Age	16-20 Years	108	48
	20-23 Years	110	48.9
	24-26 Years	7	3.1
Gender	Male	99	44
	Female	126	56
Education	Graduate	135	60
	Postgraduate	69	30.7
	Others	21	9.3
Siblings	Yes	208	92.4
	No	17	7.6
Time Spent on Smartphone per day	0-3 Hours	69	30.7
	4-6 Hours	102	45.3
	7-9 Hours	37	16.4
	10 Hours and above	17	7.6
Family Monthly Income	10,000-30,000 Rs.	24	10.7
	30,000-60,000 Rs.	56	24.9
	60,000-90,000 Rs.	69	30.7
	Above 90,000 Rs.	76	33.8

Table no. 4.1 presents that the majority of respondents were in the age bracket of 20–23 (48.9%). The possible reason may be that 60 per cent of the respondents were Graduate. Out of all, 99 were male and 126 were female. It also shows that majority of the respondents had siblings followed by 92.4 %. On the basis of time spent on smartphone per day, majority of the respondent were 4–6 hours (45.3%) and (33.8 percent) belonged to above 90,000 Rs./monthly family income category.

Table 4.2 represents the descriptive statistics on the items of the respondents.

TABLE 4.2 : DESCRIPTIVE STATISTICS

Items	N	Mean	Std. Deviation
1.Smartphone positively affects my study timings.	225	3.640	1.0304
2.I share study material on smartphone which helps my classmates in learning.	225	4.222	.7526
3.I believe smartphones an effective tool for mobile learning for students.	225	4.076	.7784
4.I feel smartphones make learning in class more interesting.	225	3.600	.9910
5.I find the new trend of mobile learning environment enjoyable.	225	3.818	.8751
6.Trend of learning through smartphone has provided opportunity to reach the content of a lesson online any time and any place.	225	4.227	.7302
7.I learned easily due to smart phones.	225	3.720	.8848
8.Trend of learning through smartphone has given prompt feedback to me through online assessment immediately.	225	3.751	.7502
9.Trend of learning through smartphone has provided opportunity to get into online communication with my teachers in definite times.	225	3.796	.8199
10.Using a smartphone during class is a good idea.	225	2.773	1.1829
11.I believe Working with a smartphone helps in improving my academic performance.	225	3.373	.9322
12. I like working with a smartphone in class for academic purpose.	225	3.422	.9423
13.Smartphone helps me to be more active in class.	225	3.093	1.1041
14.Smartphone has positive impact on my studies in class.	225	3.209	.9141
15.I use my smartphone to check my email in class.	225	3.244	1.1794
16.I use my smartphone to take notes in class.	225	3.347	1.1668
17.I use my smartphone to access social networking sites.	225	4.071	.9794
18.I use my smartphone in class for non-class related purposes.	225	3.120	1.1797
19.I use smartphone in class for class related purposes.	225	3.582	.8933
20.I believe Mobile Phone helps me to share helping materials among my classmates.	225	4.191	.6505
21.In my opinion student utilizes Mobile Phone to share important/useful information with class fellows.	225	3.804	.8593
22.Student uses dictionary/thesaurus/calculator of mobile.	225	4.120	.7785
23.In my opinion Using a smartphone increases my productivity.	225	3.649	.8379
24.I feel that student's academic performance has been increased due to this technology.	225	3.618	.8638
25.I believe that The Mobile Phone has helped to improve the level of the quality of education.	225	3.729	.8196
26.In my opinion Mobile phone Usage leads to increase in information research skills.	225	3.898	.7460
27.I feel that Students can easily contact their teachers for study purposes.	225	4.004	.7763
28.I feel that Students can easily contact with class fellows to get help in studies.	225	4.191	.7158
29.I feel that smart phones increases student engagement in learning.	225	3.529	.8347
30.I feel that It provides way for instruction to be personalized for each student.	225	3.662	.7390
31.Smart phone provides access to online textbooks.	225	4.089	.7741
32.Smart phone improves teacher-parent-student communications.	225	3.836	.9518
33.The (Web site / printed lecture notes and quiz) motivate me to study.	225	3.764	.9027

RELIABILITY

The reliability of the scale was tested by performing the Cronbach's Alpha reliability statistics (Table 4.3). Reliability test was performed on the 33 items. Values of coefficient alpha above 0.7 are considered satisfactory (Nunnally, 1967). The reliability coefficient of Cronbach's Alpha of the scale was 0.954, which indicates the high reliability of the scale.

Table 4.3: Reliability Statistics (Cronbach's alpha) of Scales

Cronbach's Alpha	N of Items
.890	33

FACTOR ANALYSIS

Factor analysis was performed using the principal component analysis. Principal components analysis was used to identify the number of factors underlying the collected data.

For measuring of sampling adequacy KMO (Kaiser-Meyer-Olkin test of sampling adequacy) and Bartlett's Test of Sphericity were applied on the data. The results of KMO (Kaiser-Meyer-Olkin test of sampling adequacy) and Bartlett's Test of Sphericity are shown on table no. 4.4

Table 4.4: Results of KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.851
Bartlett's Test of Sphericity	Approx. Chi-Square	2571.430
	df	528
	Sig.	.000

The results present that Kaiser-Meyer-Olkin Measure of Sampling Adequacy is 0.851 and Bartlett's Test of Sphericity (approx. Chi-Square is 2571.430, degree of freedom is 528 and significance is 0.000, which is highly significant).KMO statistics measures the sampling adequacy which should be greater than 0.6 for a satisfactory factor analysis to proceed Bartlett's Test measures correlation of variables (Garson, 2006).Bartlett's Test probability of less than 0.05 is acceptable. Therefore, the samples were adequate for factor analysis.

The table no. 4.5 presents total variance explained, initial Eigen values, extraction sum of squared loading and rotation sums of squared loadings. Principal component analysis using varimaxrotation was performed for extracting the underlying factors and overall four factors were retained as their eigen values were greater than 1. Kaiser's rule states that only those components with eigen values of 1 or greater are retained.

Table 4.5 : Total Variance Explained

Component	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	7.893	23.919	23.919	3.954	11.981	11.981
2	2.936	8.897	32.816	3.747	11.353	23.334
3	1.943	5.887	38.704	3.565	10.802	34.136
4	1.537	4.658	43.361	3.044	9.226	43.361

Extraction Method: Principal Component Analysis.

The four factors were easy to interpret and explained 43.36% of the cumulative variation (Table 4.5).Factor one explained 23.919 percent of the total variation with an eigen value of 7.89. Factor two explained 8.89 percent of the total variation with an eigen value of 2.93. Factor three explained 5.88 percent of the total variation with an eigen value of 1.94. Factor four explained 4.65 percent of the total variation with an eigen value of 1.53.

Table 4.6 shows the rotated component matrix which is matrix of the factor loading for each variable onto each factor. The factor analysis indicates that all the factor loadings are greater than the cutoff point of 0.30. All factors have values higher than the 0.30 cutoff values, ranging from 0.309 to 0.786.

Table: 4.6 : Rotated Component Matrix[a]

Items	**Component**			
	1	**2**	**3**	**4**
• I feel that Students can easily contact their teachers for study purposes.	.672			
• The (Web site / printed lecture notes and quiz) motivate me to study.	.620			
• Student uses dictionary/thesaurus/calculator of mobile.	.596			
• I feel that Students can easily contact with class fellows to get help in studies.	.592			
• In my opinion Mobile phone Usage leads to increase in information research skills.	.535	.389		
• I believe Mobile Phone helps me to share helping materials among my classmates.	.515			
• Smart phone improves teacher-parent-student communications.	.502			
• Smart phone provides access to online textbooks.	.488			
• I feel that It provides way for instruction to be personalized for each student.	.480	.382		
• Trend of learning through smartphone has provided opportunity to get into online communication with my teachers in definite times.	.464			
• I feel that student's academic performance has been increased due to this technology.		.679		
• I believe that The Mobile Phone has helped to improve the level of the quality of education.		.638		
• Smartphone has positive impact on my studies in class.		.613		.331

• I feel that smart phones increases student engagement in learning.	.407	.611		
• Smartphone helps me to be more active in class.		.546		.478
• I believe Working with a smartphone helps in improving my academic performance.		.484	.446	
• I like working with a smartphone in class for academic purpose.		.471	.342	.378
• In my opinion Using a smartphone increases my productivity.	.313	.448		
• I find the new trend of mobile learning environment enjoyable.			.664	
• I learned easily due to smart phones.		.396	.659	
• I believe smartphones an effective tool for mobile learning for students.			.654	
• I feel smartphones make learning in class more interesting.		.419	.622	
• Trend of learning through smartphone has provided opportunity to reach the content of a lesson online any time and any place.	.338		.601	
• Trend of learning through smartphone has given prompt feedback to me through online assessment immediately.			.542	
• I share study material on smartphone which helps my classmates in learning.	.309		.532	
• I use my smartphone to check my email in class.				.786
• I use my smartphone to take notes in class.				.652
• I use my smartphone in class for non-class related purposes.				.610
• Using a smartphone during class is a good idea.		.349		.581
• I use my smartphone to access social networking sites.				.524
• In my opinion student utilizes Mobile Phone to share important/useful information with class fellows.	.356			.398
• I use smartphone in class for class related purposes.				.320

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

After rotation, it is clear that the factors are correlated with different variables. All the variables have high positive loadings with factors (value more than .3). The variables have been grouped under 4 factors.

Labeling of the factors

The factors were named as follows:

Factor 1: Sharing and Collaboration

This factor stands for sharing and collaboration. Smartphone within and without the classroom make it easier for students and teachers to collaborate. Students have health issues, or miss the class for other reasons would be able to attend class through their Smartphone and keep up with their work, rather than falling behind due to unanticipated circumstances (Kara, 2012).Teachers being able to share course related materials with their students, create student groups, collaborate on projects, providing peer support and facilitating teaching (English and Duncan-Howell, 2008).

Factor 2: Innovation & Creativity

This factor pertains to the innovation & creativity. The positive effects are that smartphone helps students to improve their knowledge and social skills by: 1) increasing student activity in creating and sharing information, 2) asking for academic

assistance and support, and 3) providing a good way to release student pressure. Deng and Tavares (2015) concluded that "web-based discussions can contribute to the development of students' reflective ability and critical thinking skills."

Factor 3:Learning

Third factor is named as learning. Increased smartphone usage which includes phones being used as teaching and learning tools to benefit the students by being able to teaching to the different learning styles (Jesse, 2015; Sung, Chang & Liu, 2015). Elfeky and Masadeh (2016) found that mobile learning had quite significant effect on both students' academic achievement and conversational skills.

Factor 4: Intention to use

This factor pertains to intention to use / usage pattern. Smartphone helps to gain more vocabulary and writing skills (Yunus et al., 2013), exchange assignments, discussions, and resources with fellow students (Asad et al., 2012), formulategroup discussions, communicate, and exchange ideas with fellow students (Salvation and Adzharuddin, 2014).

DISCUSSIONS AND CONCLUSION

The result shows that four factors were successfully constructed using factor analysis and assigned as the predictor of smartphone usage by the management students; which are 1) Sharing and Collaboration, 2) Innovation & Creativity, 3) Learning, 4) Intention to use. Dean, (2010) Ryerson University students' experience and expectancy with their mobile library site, "searching for articles, reading electronic Books, checking out books, and contacting librarian or getting research help" were students' top future request. E-mailing and text messaging are two of the most generally used functions on smartphones among college students, followed by reading news, watching videos and reading books. Smartphones hold many capabilities as computers. These functions include sending out free notices to students and parents, and making PowerPoint presentations interactive (Maguth, 2013). Smartphones could make learning easier and fast without time and place constraints. Smartphone could allow students to easily interact and discuss the learning topics with colleagues or instructor anytime and anywhere. Besides, mobile learning contributed to the support of the interactive characteristics of learning and teaching environment making students' role more effective through the active interaction with the teaching/learning materials via smartphones.

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REFRENCES

Asad, M. D. Abdullah-Al-Mamum & Clement, C. (2012). The effect of social networking sites to the lifestyles of teachers and students in higher educational institutions. *International Journal Basic Applied Science, 1*(4), 498-510.

Barakati, D. P. (2011). Jurnal: *Dampak Penggunaan Smartphone dalam Pembelajaran Bahasa Inggris (Persepsi Mahasiswa). Manado*: Fakultas Sastra Universitas Sam Ratulangi.

http://ejournal.unsrat.ac.id/index.php/*jefs/article/download/1820/1431.*

Boumosleh, J. & Jaalouk, D. (2018). Smartphone Addiction among University Students and Its Relationship with Academic Performance. *Global Journal of Health Science*, 10(1). doi:10.5539/gjhs.v10n1p48

Deng, L. and Tavares, N. J. (2015). Exploring university students' use of technologies beyond the formal learning context: A tale of two online platforms', *Australasian Journal of Educational Technology*,*31*(3), 313-327.

Elfeky, A. I. M. & Masadeh, T. S. Y. (2016). The Effect of Mobile Learning on Students' Achievement and Conversational Skills. *International Journal of Higher Education*, 5(3), 20-31.

English, R. M. and Duncan-Howell, J. A. (2008). Facebook Goes to College: Using Social Networking Tools to Support Students Undertaking Teaching Practicum. *Journal of Online Learning and Teaching, 4*(4), 596-601.

English, R. M. & Duncan-Howell, J. A. (2008). Facebook goes to college using social networking tools to support students undertaking teaching practicum. *Journal Online Learning and Teaching*, *4*(4), 596-601.

Froese, A. D., Carpenter, C. N., Inman, D. A., Schooley, J. R., Barnes, R. B.,Brecht, P. W. & Chacon, J. D. (2012). Effects of classroom cell phone use on expected and actual learning. *College Student Journal, 46*(2), 323-332.

Haruna, R., Muhammed, A. I., Umaru, Y. & Ahmed, H. T. (2016). Impact Of Mobile Phone Usage On Academic Performance Among Secondary School Students In Taraba State, Nigeria. *European Scientific Journal*, *12*(1). DOI: http://dx.doi.org/10.19044/esj.2016.v12n1p466

Herrington, A., Herrington, J., & Mantei, J. (2009). *Design Principles for Mobile Learning.* In Herrington, J., Herrington, A., Mantei, J., Olney, I. and Ferry, B. (Eds). New technologies, new pedagogies: Mobile learning in higher education. Wollongong: University of Wollongong, Australia.

Jairus, E. U., Christian, U. U., Ogwuche, A. J., Thomas, O. I., Taiyol, T.T., Ode, E. J., Ekpo, S. O. & Agama, A. I. (2017). Impact of Mobile Phone Usage on Students' Academic Performance Among Public Secondary Schools in Oju Local Government Area of Benue State. *International Journal of Science and Research Methodology*, *6*(3), 104-118.

Jesse, G. R. (2015). *Smartphone and App Usage among College Students: Using Smartphones Effectivelyfor Social and Educational Needs.* Proceedings of the EDSIG Conference: Conference on Information Systems and Computing Education Wilmington, North Carolina, USA

Kuznekoff, J. H. & Titsworth, S. (2013). The Impact of Mobile Phone Usage on Student Learning. *Communication Education*, 62(3), 233 -252.

Maguth, B. M. & Yamaguchi, M. (2013). The use of social networks in the social studies for global citizenship education: Reflecting on the March 11, 2011 disaster in Japan. *The Georgia Social Studies Journal*, *3*(2), 80-93.

Nortcliffe, A. (2015). HE BYOD—ready or not? In: MIDDLETON, Andrew, (ed.) Smart learning: teaching and learning with smartphones and tablets in post compulsory education', Sheffield, Media-Enhanced Learning Special Interest Group and Sheffield Hallam University.

Nunnally, J. C. (1967). *Psychometric Theory.* New York: McGraw-Hill.

Rung, A., Warnke, F. & Mattheos, N. (2014). Investigating the Use of Smartphones for Learning Purposes by Australian Dental Students. *Journal of Medical Internet Research, 2*(2), doi:10.2196/mhealth.3120

Salvation, M. & Adzharuddin, N. A. (2014). The influence of social network sites (SNS) upon academic performance of Malaysian students. *International Journal of Humanities and Social Science, 4*(10), 131-137.

Sung, Y. T., Chang, K. E. & Liu, T. C. (2015). The effects of integrating mobile devices with teaching and learning on students' learning performance: A meta-analysis and research synthesis. *Computers & Education*, 94, 252-275.

Tindell, D. R. & Bohlander, R. W. (2012). The Use and Abuse of Cell Phones and Text Messaging in the Classroom: A Survey of College Students. *College Teaching*, 60(1), 1-9. https://doi.org/10.1080/87567555.2011.604802

Woodcock, B. A., Middleton, A. & Nortcliffe, A. (2012). Considering the Smartphone Lerner: an investigation into student interest in the use of personal technology to enhance their learning. *Student Engagement and Experience Journal,1*(1), 1-15.

Yunus, M., Nordin, N., Salehi, H., Embi, M. A. & Salehi, Z. (2013). The use of information and communication technology in teaching ESL writing skills. *English Language Teaching, 6*(7), 1-8.