Students' Mobile Learning Practices in Higher Education

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Abstract:

The use of electronic devices such as Mobile phones, Laptops, Tablet and Internet service for studies in modern education system are rapidly growing and are soon expected to take over the books and newspapers. Now-a-days institutions and universities in India have started allowing the use of mobile phones and Internet for educational purposes like document sharing, news analysis, market intelligence etc. With the enhanced capabilities present in the latest devices, Mobile learning (M-learning) is expected to become an integral part of the higher education system like Management and Business studies. The overall purpose of this descriptive research paper is to analyse demographically, the usage of Mobile apps and devices by the students of Management Education. For this purpose, Management students' responses were analysed through an analysis tool. An attempt has been made to find out mobile learning practices in higher education.

1. INTRODUCTION

India being demographically rich, there are about 650 million mobile phone users in India, and just over 300 million of them have a smartphone which makes India a bigger smartphone market after the United States of America and China. With mobile phones just being used for calling purpose initially, they slowly started gaining importance for various actions right from sending text messages to video messages through Multimedia messaging, moving towards internet browsing and Instant messaging and are now enriched with so many capabilities that they are no less than a personal computer. Since India is a developing nation, digitization is constantly gaining pace which allows for the use of electronic devices such as Laptops, Mobile phones and Tablets for several purpose. One of such purpose where the use of these devices is wide spread is learning and education. Institutes for higher education have started promoting the use of Laptops and Tablets for knowledge transfer. The pattern of teaching is slowly shifting from black boards to white boards where the tutors use interactive aids such as presentations and video lectures for enhancing the learning in student. This pattern is highly followed in higher education courses such as Engineering, Medical and Management Studies.

The students pursuing Management Studies are required to perform several tasks which involves Data gathering, Researching and Analyzing, self learning etc. Accessing and Referring books and journals physically seems practically impossible due to the huge amount of data available as well as required. The data gathering and analysis requires access to several sources of data such as book, internet, research journals etc. Over the recent years,

internet has emerged as one of the most used and reliable search which provides access to large data present anywhere in the world at any point of time. This has promoted development of several web portals, web applications and mobile apps for data sharing. This data is available at minimal charged rates or many a times its available for free. This need for large amount of data and presence of several sources has been a boon for management students and with the enhanced capabilities of smartphones, new apps are being built everyday which provide access to new as well as past data.

The apps which are majorly used by Management students are built for Android and ios platform however there are other operating systems present in the market such as Windows and Blackberry OS whose market share is being reducing day by day and is soon expected to become obsolete.

The Apple's App Store is built on a curated model, it implies Apple's control over apps quality and their compliance to certain standards, defined by Apple. On the positive side of this model is the ability to provide app users with apps, free of malware, bugs and content, which is inappropriate for minors. On the negative side, there are inescapable issues with disapproving for publication of apps that mistakenly fall under Apple's app content publication guidance. The reason for Apple for choosing a curated model is that it's extremely important for the company to keep mobile apps quality on par with its iconicity high hardware standard and keep customer satisfaction rate as high as possible.

The Google's Google Play store app publication process implies much less strict guidelines for Android app developers to comply. An app review process takes much less time than the Apple's App Store one does. As a consequence, app developers can publish their apps much faster but the flip side is that a significant number of malicious Android apps being published on Google Play and its ongoing problem Google has to deal with. Google see its Android app store as yet another channel to distribute software, where the company can place ads and being able to profit on it.

Along with these official sources, there are other unofficial sources from which the apps are downloaded. Some of these are Getjar, BlackMart, Samsung Apps etc.

All of these sources host Lakhs of apps which are classified into different categories. Students make use of these categories to explore the apps required for their respective purpose.

There are several categories of apps which are used by the students and are available on the major app stores. Students make use of Business news app such as ET and Financial express which keep them updated through an informative UI as well as notification in the dropdown menu. Documents related to studies such as ppt's, pdf's, docx etc. are regularly circulated within the group of students. This makes mobile app an efficient source of accessing document rather than accessing it through an email in the laptop's browser. Cloud services and Dropboxes allow users to store such documents by categorically dividing them without even eating up the device's memory. Students, especially the ones with interest in financial

aspects, constantly analyze equity and derivatives market through apps such as money control, ET etc.

2. LITERATURE REVIEW

Robert Godwin-Jones (2011) of the Virginia Commonwealth University who did a research on Mobile Apps for language learning states that As mobile devices become even more powerful and versatile, the world is likely to see users make them their primary, perhaps their sole computing devices and something that trend language educators can't ignore.

Kyle Bowen & Matthew Pistilli (2012) state that M-learning is increasingly an integral part of higher education, and colleges and universities developing mobile learning apps generally face the decision to pursue either device-neutral web applications or "native" apps built for a specific platform. Universities and Institutions have started encouraging M-learning where in the students are expected to carry out their educational activities using Tablets and mobile phones. Some of the coaching institutes in India provide edu tablets while enrolling for the course itself. These devices come with inbuilt applications which allows the students to access facilities such as paper solving, quiz participations, e-lectures, educational forums etc.

A few researchers have raised concerns over the use of smartphones and tablets in the education system. These concerns include issues right from leisure resulting in wastage of time to the ill effects on the health of the smartphone user.

Smartphone addiction is considered to be rooted in Internet addiction due to the similarity of the symptoms and negative effects on users. Internet addiction is defined as an impulse control disorder, characterized by pathological Internet use **(Goldberg 1996).**

Lin et Al (2014) stated four features of smartphone addiction which are compulsion, functional impairment, tolerance, and withdrawal. Continuous usage of mobile phone has had some serious effects on the health of people. Issues right from eye sight problems to spondylosis to cancer, especially brain cancer.

Lexi Sydow (2017), in her article for **App Annie**, an app intelligence portal states that when students return to their institute in the month of August and September, the download rate of these apps for both Android and ios increases steeply to complement their classroom experience. But it's not just students who use them, apps are now a part of the entire education ecosystem. Students use apps to turn in homework, take quizzes, do research or access school information such as their syllabus. Parents, teachers and students use apps to communicate directly and instantly; parents use them to access grades, bus routes, and lunch menus; and teachers use them to keep classes organized. In both the United States and the United Kingdom, the research shows a surge in downloads of Education apps as students head back to institute in the autumn. In the UK, the weekly average of Education app downloads across iOS and Google Play combined grew 60% during the back-to-school time period compared to the four weeks prior. In the US, this growth was even larger at 75%. However there is no evidence of such pattern in India. Also, the apps used by students in the U.S and U.K are quite different from those used in India.

Nahorniak (2012) in his research paper explained how a group of students and professors created an app that would allow trading virtually to get the essence of the activity actually performed on the floor. Connecting the theories and economic laws being taught in classes, the app allowed students to develop a better understanding of the functioning of markets and economic theories. There are variety of apps now-a-days in India which provide virtual trading facilities. So such apps could be used to participate in markets, virtually yet live.

Tally (2012) conducted research study for comparing the student preference of mobile apps compared to smartphone web browsers and discovered that whenever a student wants to check the weather he goes to the weather app rather than a web browser. These results suggest that the students want to use apps over a regular web browser; furthermore, in Tally's (2012) study 85% of students answered that they preferred the app over the web. This shows that due to quick access to large amount of data online, people prefer using the the web browser however there is no such evidence of usage especially after the androids and apples started coming with high capability devices which can handle larger apps.

Chen (2013) in his research states the educational versus non-educational app usage among college students. Findings include: 58% of the college students used their mobile devices for academic purposes and freshers as well as 2nd year students tended to use their mobile devices for educational use.

Jesse (2015) states the limitations of using a smartphone in the class. In the research performed by him, it was found that 83% of the respondents used their mobile phones in the class for send text messages. Other limitations include incoming call vibrations which cause distraction to the teachers as well as students. It was also found that the students used social media apps such as facebook and twitter while the lectures were going on. This research was however restricted to only 2 universities but in case of Indian Institutes, the case could be different as the students are under strict control of the instructors.

Some researchers are in favor of mobile apps for teaching and research. **Hinze and Vanderschantz(2017)** quote Mobile apps are being used by teachers and researchers and there is scope for better support of mobile app use for both teaching and research activity and that the non-users would consider using mobile apps if there were suitable apps available and if training or support was offered within the University. The complexity of the apps plays a critical role in the preference for usage of an app. An App which is complex in nature from operating point of view would have a negative influence on the user of the app who has downloaded the app at first instance.

Over the past two decades, India and ASEAN have established themselves as dependable trading partners due to their proximity, shared values, and similar economic objectives. They have now accomplished new levels in their excursion that began in 1992 when they became sectoral accomplices. It is anticipated that e-commerce, agriculture, and logistics will all play a significant role in this expansion. Over the next few years, trade is expected to significantly

increase in manufacturing, textiles, autos, oil, and healthcare. Three principal enterprises, coordinated operations, horticulture, and online business, are supposed to assume a huge part in this extension. Producing, materials, vehicles, oil, and medical services are undeniably projected to see significant expansions in exchange over the course of the following couple of years. India and the ASEAN nations provide multinational corporations in all major industries with ample investment opportunities due to their expanding infrastructure, favourable demographics, aggressive policies, and skilled workforce. These business sectors are turning out to be more appealing because of quick urbanization and the presence of a wide home grown market. India's international strategy depends vigorously on its binds with ASEAN nations. (Dr Kavita Khadse & Manjiri Raut, 23rd February 2020)

A nation can improve production proficiency through the use of information technology to improve workplace interaction and accelerate the economy. As a result, all ASEAN citizens require strengthening the development of the data correspondence and innovation (ICT) framework, such as economic ICT foundation improvement between government and big business and government and government. Nowadays, each country all through the planet including ASEAN nations are doing combating a contention without gunfire to overpower the state of the art correspondence market Accordingly, to help the three pillars of ASEAN People group, a data or information expects a huge part what's more, as a fundamental product. (Khadse D. K., Big Data Challenges and Trends Pertaining to ASEAN Countries, August 2021)

The current development has gained extensive headway from the hours of View-Expert's small cardboard plates containing seven stereoscopic 3D arrangements of little concealing photographs, to the present VR and its close by cousin AR. In point of fact, virtual and expanded truths are increasingly making their way into our newsfeeds on account of significant bets placed on high-value returns by colossal corporations such as Facebook, Google, Samsung, and a number of others. Expanded reality (AR) has turned into one more famous articulation in the high level world, and difficult to find someone's never had some significant awareness of this very front advancement. AR is presently applied in various endeavors, from gaming and online business to guidance and clinical benefits. (Khadse D. K., Exploratory study of Augmented Reality SDK'S & Virtual Reality SDK'S, 2021)

Online Media Organizations are at present an important wellspring of Diversion, Advancements and News information for a creating number of people. This stage consists of online spaces where individuals freely collaborate, sharing and analysing data about one another and their lives with the help of metadata that includes individual words, images, recordings, and sounds. Various casual correspondence objections like Facebook, Twitter, Instagram, Snapchat and YouTube etc yet Facebook is incredibly renowned. Individuals yet associations are furthermore using these districts to advance their things and organizations

and to talk with clients and create by making an electronic media care. (Khadse D. K., To Explore The Effect Of Social Networking Sites On Student Academic Performance, 2020)

OBJECTIVES OF THE STUDY

The objectives of the study are as follows:

i. Find out the different categories and the usage of mobile apps by the students
ii. Determine the preference of students for the usage of the apps for their studies and analysis
iii. Find the perspective of students for paid apps with additional features
iv. Measure the relationship between the specialization and preference for an All-in-one app to propose development of an app which could consist of all the necessary features based on the students' preference

HYPOTHESIS

H1: There is Significance difference of male and female where the person will buy paid apps

H2: There is an association between the specialization and the preference for an All-in-one App

RESEARCH METHODOLOGY

Management students of different reputed institutes across Mumbai are the stakeholders for the survey The primary data was collected through structured questionnaire circulated to 68 students, both male and female, belonging to different institutes and different specializations such as Marketing, Finance, H.R., Operations, Retail and Systems, all in the age group of 20 to 28 across various Management programs Institutes in Mumbai.
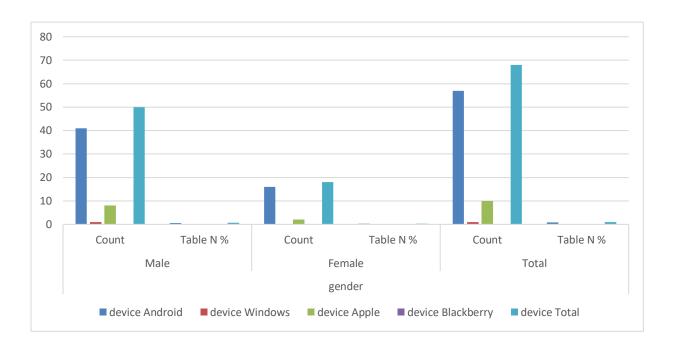
DATA ANALYSIS AND FINDINGS

Q- Device and Operating system used by the student

Table 4.1 - Demographic preference of Smartphone Device according to gender

Graph 4.1

The graph above and the table below show the devices used by the students categorized by the devices and gender. Most of the students were found using Android followed by the Apple's ios. 57 students (41 males and 16 females) used an Android device whereas 10 students (8 male and 2 females) used an iOS powered Apple device

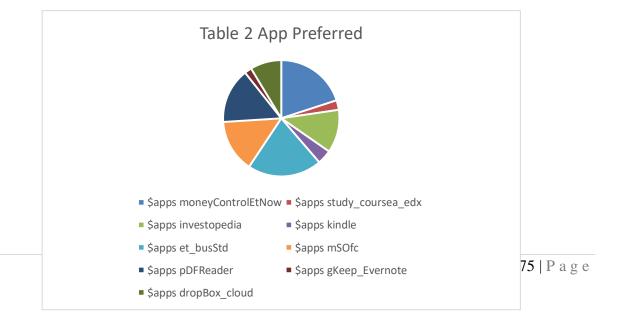|		gender					
		Male		Female		Total	
		Count	Table N %	Count	Table N %	Count	Table N %
device	Android	41	60.3%	16	23.5%	57	83.8%
	Windows	1	1.5%	0	.0%	1	1.5%
	Apple	8	11.8%	2	2.9%	10	14.7%
	Blackberry	0	.0%	0	.0%	0	.0%

Graph 4.1

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		gender					
		Male		Female		Total	
		Count	Table N %	Count	Table N %	Count	Table N %
device	Android	41	60.3%	16	23.5%	57	83.8%
	Windows	1	1.5%	0	.0%	1	1.5%
	Apple	8	11.8%	2	2.9%	10	14.7%
	Blackberry	0	.0%	0	.0%	0	.0%
	Total	50	73.5%	18	26.5%	68	100.0%

Table 4.1

Q – List of Apps which the students are using at present

Table 4.2 – Apps preferred and use by Management students

Table 2 App Preferred

- $apps moneyControlEtNow
- $apps study_coursea_edx
- $apps investopedia
- $apps kindle
- $apps et_busStd
- $apps mSOfc
- $apps pDFReader
- $apps gKeep_Evernote
- $apps dropBox_cloud

Graph4.2

The graph above and the table below show the apps which the students are using currently. Economic Times and Money Control were the most used apps which atleast 40 students were using followed by PDF Reader and MS Office

		gender		
		Male	Female	Total
		Count	Count	Count
$apps	moneyControlEtNow	30	10	40
	study_coursea_edx	4	3	7
	investopedia	18	2	20
	kindle	6	4	10
	et_busStd	31	9	40
	mSOfc	22	5	27
	pDFReader	23	8	31
	gKeep_Evernote	3	6	9
	dropBox_cloud	13	5	18

Table 4.2

Q-Ranking of the apps as preferred by the students

Table 4.3- Features like by the management student based on choice based credit

		Table 1					
		gender					
		Male			Female		
		Count	Column N %	Table N %	Count	Column N %	Table N %
newsReading	Most important	12	24.0%	17.6%	5	27.8%	7.4%
	2nd Choice	11	22.0%	16.2%	3	16.7%	4.4%
	3rd Choice	6	12.0%	8.8%	1	5.6%	1.5%
	4th Choice	6	12.0%	8.8%	2	11.1%	2.9%
	5th Choice	0	.0%	.0%	3	16.7%	4.4%
	Least important	15	30.0%	22.1%	4	22.2%	5.9%
eLearning	Most important	5	10.0%	7.4%	1	5.6%	1.5%
	2nd Choice	10	20.0%	14.7%	5	27.8%	7.4%
	3rd Choice	8	16.0%	11.8%	6	33.3%	8.8%
	4th Choice	8	16.0%	11.8%	1	5.6%	1.5%
	5th Choice	15	30.0%	22.1%	3	16.7%	4.4%
	Least important	4	8.0%	5.9%	2	11.1%	2.9%
documentStorage	Most important	7	14.0%	10.3%	1	5.6%	1.5%
	2nd Choice	5	10.0%	7.4%	5	27.8%	7.4%
	3rd Choice	16	32.0%	23.5%	2	11.1%	2.9%
	4th Choice	15	30.0%	22.1%	8	44.4%	11.8%
	5th Choice	4	8.0%	5.9%	2	11.1%	2.9%
	Least important	3	6.0%	4.4%	0	.0%	.0%
documentSharing	Most important	3	6.0%	4.4%	4	22.2%	5.9%
	2nd Choice	12	24.0%	17.6%	1	5.6%	1.5%
	3rd Choice	14	28.0%	20.6%	6	33.3%	8.8%
	4th Choice	8	16.0%	11.8%	4	22.2%	5.9%
	5th Choice	7	14.0%	10.3%	3	16.7%	4.4%
	Least important	6	12.0%	8.8%	0	.0%	.0%

equityRelated	Most important	6	12.0%	8.8%	1	5.6%	1.5%
	2nd Choice	9	18.0%	13.2%	2	11.1%	2.9%
	3rd Choice	3	6.0%	4.4%	1	5.6%	1.5%
	4th Choice	5	10.0%	7.4%	2	11.1%	2.9%
	5th Choice	12	24.0%	17.6%	4	22.2%	5.9%
	Least important	15	30.0%	22.1%	7	38.9%	10.3%
	65	0	.0%	.0%	1	5.6%	1.5%
instantMsg	Most important	16	32.0%	23.5%	6	33.3%	8.8%
	2nd Choice	4	8.0%	5.9%	2	11.1%	2.9%
	3rd Choice	3	6.0%	4.4%	2	11.1%	2.9%
	4th Choice	9	18.0%	13.2%	1	5.6%	1.5%
	5th Choice	12	24.0%	17.6%	3	16.7%	4.4%
	Least important	6	12.0%	8.8%	4	22.2%	5.9%

Table 4.3

From above preference and choice, we get to know the instances of the students where they will select a feature. So, from the above the table, we conclude that we should take common feature preference. All features cannot be practically included in a single app but we have used the most selected features by management students for this purpose.

Q – Preference for an all-in-one app

Q – Preference for speed

Table 4.4 – Specialization choice-based preference feature

Table 4

		specialization						
		Marketing	Finance	HR	Operations	Retail	Systems	Others
		Count	Count	Count	Count	Count	Count	Count
allInOnePref	Strongly Agree	12	13	2	4	1	1	0

	Agree	5	10	1	1	0	3	0
	Neutral	2	3	0	2	0	1	0
	Disagree	4	2	0	0	0	0	0
	Strongly Disagree	0	0	0	0	1	0	0
speedCriteria	Strongly Agree	2	1	0	1	1	0	0
	Agree	1	1	0	0	0	0	0
	Neutral	1	3	0	0	0	1	0
	Disagree	9	11	1	5	1	2	0
	Strongly Disagree	10	12	2	1	0	2	0
	Total	23	28	3	7	2	5	0

Table 4.4

From above data we get to know the preferences of specialization wise management students for an all-in-one app and their perspective for speed of the app. Most of the students are in favor of an all-in-one app and the speed criteria is a must. Hence it won't be feasible to build a full-fledged app without speed issues.

Testing of Hypothesis using SPSS

H1:

Table 4.5 –ANOVA test of Paid apps in association preference between Male and Female

paidAppPref

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Male	50	104.00	175.499	24.819	54.12	153.88	0	600
Female	18	55.56	133.823	31.542	-10.99	122.10	0	400
Total	68	91.18	165.930	20.122	51.01	131.34	0	600

Test of Homogeneity of Variances

paidAppPref

Levene Statistic	df1	df2	Sig.
3.226	1	66	.077

ANOVA

paidAppPref

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	31061.438	1	31061.438	1.130	.292
Within Groups	1813644.444	66	27479.461		
Total	1844705.882	67			

Table 4.5

On Considering the data, we got from the ANOVA result in excel. Summary data show the significance value is greater than 0.05 which is 0.20. In this case the null hypothesis is accepted where we conclude that buying capacity of male and female is not different. Also, from the data, it is concluded that students won't prefer paying for additional features, therefore, for apps.

H2:

Table 4.6 – Chi square test to determine association between specialization and Preference for an all-in-one app.

specialization * allInOnePref Crosstabulation

| | | | allInOnePref | | | | | |
			Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Total
specialization	Marketing	Count	12	5	2	4	0	23
		Expected Count	11.2	6.8	2.7	2.0	.3	23.0
	Finance	Count	13	10	3	2	0	28
		Expected Count	13.6	8.2	3.3	2.5	.4	28.0
	HR	Count	2	1	0	0	0	3
		Expected Count	1.5	.9	.4	.3	.0	3.0
	Operations	Count	4	1	2	0	0	7
		Expected Count	3.4	2.1	.8	.6	.1	7.0
	Retail	Count	1	0	0	0	1	2
		Expected Count	1.0	.6	.2	.2	.0	2.0
	Systems	Count	1	3	1	0	0	5
		Expected Count	2.4	1.5	.6	.4	.1	5.0
Total		Count	33	20	8	6	1	68
		Expected Count	33.0	20.0	8.0	6.0	1.0	68.0

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	44.086ᵃ	20	.001
Likelihood Ratio	19.871	20	.466
Linear-by-Linear Association	.154	1	.694
N of Valid Cases	68		

a. 26 cells (86.7%) have expected count less than 5. The minimum expected count is .03.

Table 4.6

The cross tabulation above shows the preference of the students as per their specialization which implies that 53 students agree to have all the features required in one single app. 8 are neutral and around 7 Disagree. This implies that around 89% of the students would prefer or would not mind having an All-in-One App.

The Chi-square test result shows that the Pearson chi-square co-efficient is equal to 0.001 which is very less than 0.05 which implies that there is a strong dependence between the specialization and the level of preference for an All-in-one app.

3. CONCLUSION

The data is analyzed from various demographic parameters like age, gender, graduation, specialization. In this we have taken the data on basis of app feature Preferences for the students to have features in an all-in-one app. From the data we found that 53 students i.e., 78% sample was in favour of having all features in one app. 8 were neutral. So, from the analysis we can conclude that having an app with multiple features would be a feasible option. By the ranking wise criteria, the most preferred apps were news reading, document

sharing and storage, e-learning, instant messaging. Speed was common preferred criteria for the app. So while developing the app, speed constraint cannot be ignored.

RECOMMENDATIONS

As per the analysis an app could be developed which would have the preferred features with no compromises on speed and with no additional cost. As many of the researchers have raised concerns over the misuse of mobile phones during the ongoing lectures, careful surveillance and monitoring should be done. However, while handling a large class of students, monitoring could be a difficult task. To overcome this problem, EDU tabs or mobile phones could be provided to the students with additional charge where a set of pre-defined restrictions could be put on the downloads of the new apps.

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