On usage of WhatsApp by the students in Mysore

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Abstract

Communication is an important aspect for building a successful relation amongst the members of the society. Members in the society tend to communicate their emotions to their networks as soon as they are exposed to them and vice-versa. They expect a quicker communication in cases where think that the information they are transferring is important as well as the receiver is a close peer. In the process, the use of technology has become more relevant and due to the demand from the society there has been tremendous developments in the technology. One such development is the use of WhatsApp, which stands first among the social media apps. Student community is not an exception and one can assume that any technology gets prominence if the student community accepts it. Thereafter, studies have been conducted to check how the students are using the app and its effect on them. This study, conducted among the undergraduate and post-graduate students of Mysore, is an attempt to understand the usage of the app by them. Especially we are interested to check whether the demographics and other factors like time since using the app etc., have an association with the usage of the app. Among

other usage, we are interested in opinion of students on using the app for study purpose, network building etc. Also, their opinion on teachers using the app. As an additional aspect, we look at why students mute the app. We found that no significant association exists between the demographic characteristics, other characteristics and students' opinion on using the app for academic related activities. Associations exists with respect to reasons for students' muting the app, time points they check their status on the app. Finally, we conclude that students of Mysore are positive in using the app for academic related activities as well as their teachers using the app.

Keywords: *Academic use, Demographics, Muting, Network building, Students, WhatsApp.*
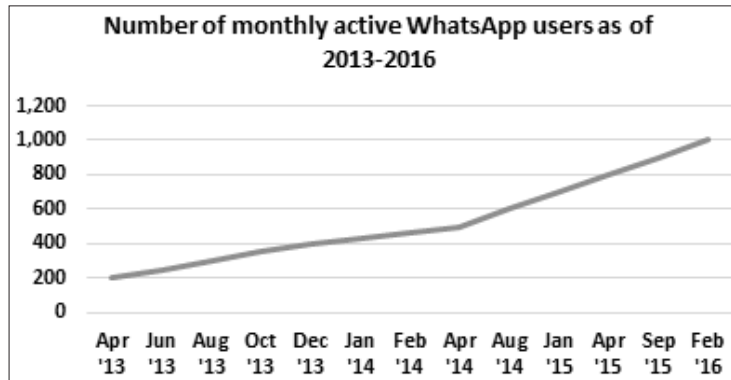
Introduction

"Communication" is one skill that one needs to develop to build a good network around. A good communication leads to a harmonious relation that last long and also helps in construction of a harmonious society. This is one good quality that leaders should possess and it becomes crucial in developing even business relations. Members of the society gets bonded quicker at times of emotions and wish to get closer to their dear ones through a quicker communication process. At times when it is necessary to communicate the information faster, individuals tend to use that means that takes the information faster. In the process, with the developments in the technology, the society has started using the smart phones to communicate. The developments are from using a post card to sending a

message using an app. Among other apps, WhatsApp occupies first place and is being used by most of the individuals in the society. It has become a regular practice now-a-days to text a message via WhatsApp to the networks, as soon as an event takes place. Student community is not exception to it. One can assume, without any proof, that the success of a technology like WhatsApp depends on how the younger generation receives it. Once they accept it, its usage will be spread to other sections and generations of the society. The following table and graph gives the statistics on the number of users worldwide.

Table 1: Number of monthly active WhatsApp users worldwide from April 2013 to February 2016 (in millions)

S.No.	Apr '13	200
1	Jun '13	250
2	Aug '13	300
3	Oct '13	350
4	Dec '13	400
5	Jan '14	430
6	Feb '14	465
7	Apr '14	500
8	Aug '14	600
9	Jan '15	700
10	Apr '15	800
11	Sep '15	900
12	Feb '16	1,000

Source:http://www.statista.com/statistics/260819/number-of-monthly-active-whatsapp-users/-retrieved on 28.11.2016.

### Number of monthly active WhatsApp users as of 2013-2016

Graph-1

Source: Obtained by the researcher based on table-1

Table 2 : Number of monthly active WhatsApp users in India from August 2013 to November 2014 (in millions)

S.No.	Month	Data
1	Aug '13	20
2	Nov '13	25
3	Dec '13	30
4	Jan '14	35
5	Feb '14	40
6	Apr '14	48
7	May '14	50
8	Aug '14	60
9	Nov '14	70

Source: http://www.statista.com/statistics/280914/monthly-active-whatsapp-users-in-india/-retrieved on 28.11.2016

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Number of monthly active WhatsApp users in India from
August 2013 to November 2014 (in millions) data
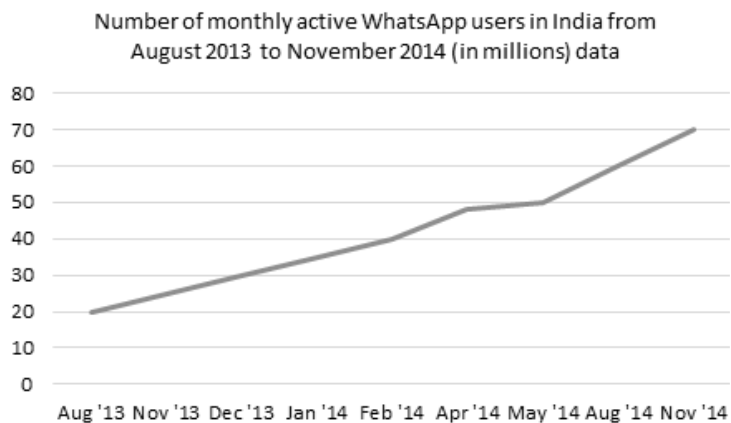
Graph-2

Source: Obtained by the researcher based on table-13

From the above two statistics, one can understand how famous the app has become among the individuals of the society.

Students have been using the app for communication amongst their peers and any information is usually communicated through the app. The information shared usually will be either academic related or non-academic related. The app has brought the students closer to their peers than compared to any other means. But, the excessive use of the app has made others to comment on the negative impact of the app on the students learning. These comments have motivated researchers to take up studies, in different parts of the world, to find the patterns in the usage of the app. While few are positive, other have revealed the negative aspects. But, these studies are specific to those places and this made us to re-consider the

study in Mysore. Also, the earlier studies have used two approaches. One to conduct a survey among the students and other way is to experiment amongst the students. In our study, we have used a survey approach to find the opinion of the students on the usage of the app. We have considered the undergraduate and post-graduate students of the Mysore to conduct the survey. Our focus is on how the undergraduate and post-graduate of the students of Mysore are using the app for regular as well as academic aspects. Note that, before concluding that it is negatively impacting the students' learning, one has to obtain their opinion on this. That is, answer a question "Do they feel that it is negative to their learning process?" This can be obtained by asking them on their usage and knowing how it is being used for their regular communication. The first one will lead to understanding their view towards the usage of the app, while the second will help us to cross check their opinion on the usage. Hence, one of the key objective of our study is, to understand the opinion of the students on the usage of the app for academic related activities and their opinion on teachers becoming part of the WhatsApp groups, for academic related activities.

In a study like we have considered, one can expect that there may be some difference of opinions between the male and female categories or between individuals belonging to different age groups etc. That is, to study whether heterogeneity exists with respect to these factors. Hence, we consider to study the association between the opinion of the students and demographic characteristics.

Demographic characteristics include gender, age, educational qualification, family status, number of family members. It will be interesting if there exists difference. This will lead to another study on why there exists difference.

Another aspect that we have considered, is to understand when the students mute the usage of the app. This will help one to know the reasons for students getting disturbed due to the app and will be useful to the organisation to add more features to the app so that, they optimise the app. We provide these suggestions towards end of the study.

The last aspect that we have considered is the time points at which they check their status. Few students tend to check their status very often and this may have a negative impact (a hypothetical situation). To know this, first one has to know the frequency of different time points at which they check their status. We later check if this has difference with respect to different levels of demographic characteristics.

In addition to the above mentioned, we also study the association between the characteristics like average time spent on the app, time since using the app, number of times check the status and the students' opinion on using the app. This is because, if one spent more time on the app, then they tend to use it for other purposes as well. With this assumption, we test the association between these characteristics and students' opinion on the usage of the app.

The current study has been taken up to know whether the

opinions expressed by researchers in different parts of either in India or other parts, holds good in the city of Mysore. It looks at student's opinion on using the app for academic related activities and find if there exists differences with respect to demographic characteristics. The new aspect in our study is with respect to finding the students opinion on teachers using the app and also find out the reasons that make them to mute the app. Another aspect is, to find at what time points they check their status and the role of their friends in using the app. Also, the association with the characteristics like average time spent, number of time check the status etc.

In the next section, we present the literature review, sections 3, 4 and 5 cover the motivation for the study, research gap and problem statement respectively. Sections 6 and 7 cover the research questions and objectives of the study. The later sections cover the methodology, data analysis. The data analysis section covers the way we have achieved the objectives of the study.

Literature review

In this section, we present the details extracted from the earlier studies on WhatsApp.

Bere's (2012) study looks at students' preferences with respect to learning environment. It reveals that students prefer WhatsApp social networking to Blackboard learning management system (known as e-thutho). The study also show that free access, edutainment and multitasking are among the aspects that made WhatsApp a popular. In order

to check whether the learning process through WhatsApp improves students' reading and regularity, Gutiérrez-Colon et.al. (2013) conducts a study amongst the students in Spain. It looks at the usage of WhatsApp to improve learners' reading skills in English as a foreign language (EFL). The study concludes that a vast majority of students reported a high level of satisfaction and agreed that not only their willingness to read in English increased, but the experience had also had a positive impact on their reading habits, and had resulted in more regularity and confidence.

Tulika and Dhananjay (2014) through their study notes that, students find learning through WhatsApp very interesting and educationally useful. They also found that their social interactivity with their peers and teacher has increased and moreover they learned collaboratively. The attitude of the students toward WhatsApp learning was favourable. The study also revealed that married students found learning through WhatsApp disruptive and that they prefer learning in traditional classroom, as it does not collide with their family time. This study was conducted in India and more studies conducted at different geographical regions will show the diversity. Annie and Syamimi (2014) studies the usage of WhatsApp among the undergraduate students at Universiti Brunei Darussalam and finds that, WhatsApp-use benefits the undergraduates in terms of discussing and sharing information related to study matters, apart from the regular daily communication. Their study also finds few critical issues arising from its frequent use, such as need to attend WhatsApp messages immediately, exposure to false or unregulated information or media contents. However,

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the study reveals that the undergraduates are rather responsible and cautious in relation to the highlighted issue of disseminating information or media contents of unregulated nature. This opens questions related to the time the students wish to spend on the app and what other features they look in the app. Jyothi Kumari (2014) conducts a survey and notes that WhatsApp is used widely by youth (also includes the working professionals) and most of the respondents use WhatsApp all the time. The study also notes that users of WhatsApp want video call as one of the features and privacy as another. Is this true in other places and also are the youth willing to joining the groups due to the comfort the app is providing? Avani and Aanal (2014) notes from a survey in Vadodara city that majority of the respondents are using WhatsApp and also wish to join groups in the app.

The previous study on the usage of the app has informed that it has improved the reading skills. When it comes to the question on writing skills, Ahmad (2014) conducts a study among the students in Saudi, to find whether messaging through WhatsApp has improved writing skills especially with respect to selection of words. The study notes that the students involved in the survey enjoyed messaging through the app and results have shown that there is a significant difference between overall writing scores of the pre-test and post-test of the students, who have participated in the experiment. Another interesting study that contradicts the above was conducted in Ghana. Yeboah and Ewur (2014) observes that, WhatsApp instead of making communication easier and faster thereby

enhancing effective flow of information and idea sharing among students, rather has impacted negatively on the performance of tertiary students in Ghana. The study among other things unveiled the following: WhatsApp takes much of students study time, results in procrastination related problems, destroys students' spellings and grammatical construction of sentences, leads to lack of concentration during lectures, results in difficulty in balancing online activities (WhatsApp) and academic preparation and distracts students from completing their assignments and adhering to their private studies time table. If the app has distracted few in their learning process, then the question will be "did it effect their achievements and also will the face-to- face learning improve their achievements"? Amry (2014) conducts an experiment to check whether there exists difference between students' learning via WhatsApp and learning face-to- face with respect to their attitudes and achievements. The study find that there is a significant difference between the achievements of students that use WhatsApp for online interaction and students who discuss face-to-face. It shows that the mobile learning technology has helped them in constructing their knowledge base and to share the same with the peers in the group. This method of learning might have affected the phone calls that the students tend to make in need. Yeboah, Nondzor, and Alhaji (2014) conducts a study among the polytechnic students in Ghana, to find their preferences towards a WhatsApp message to a voice call. Their study reveals that though students tend to use

WhatsApp more for their daily communication, they haven't ignored the use of a voice call in situations where they have to be more expressive and effective, as well as in their formal communications.

From the above, it is very clear that WhatsApp is preferred mostly for informal communication and a voice call (regular phone call) is preferred for formal communication. Jesha and Jebakumar (2014) investigates the usage of WhatsApp among the Chennai youth and finds that most of the students spend maximum time on WhatsApp and is helping them to build networks. These studies have focused more on the students. Bouhnik and Deshen (2014) conducts a study, by employing a qualitative method, among the teachers in Israel. They found that teachers use the app for communication related to academic aspects especially for four main purposes: communicating with students; nurturing the social atmosphere; creating dialogue and encouraging sharing among students; and as a learning platform. The teachers also mentioned that there are advantages in using the app and also challenges.

Another interesting study was conducted by Alfonso and Olga (2015). They looked at different WhatsApp statuses and examined the types of statuses that were updated by the users of WhatsApp. Their study finds that 65% of the total sample (400 statuses) made an attempt to modify the default status provided by WhatsApp. Also, they look at how different age groups update their statuses. They observe that lower age ranges were prone to make a wider use of purely-iconic statuses, many of them characterised

by a severely-marked cryptic character. Conversely, they also noticed that participants belonging to higher age ranges clung to either automatically generated statuses or purely-verbal self-generated ones. This may be explained by the technological skills required both to access the space devoted to one's status (which is not straightforward) and to download the set of emoticons, add to the smartphone keyboard and use it.

Jefferey and Musah (2015) looks at using social media in education system in Ghana and observes that WhatsApp stands first among the other social media platforms. The study revealed that majority of respondents used WhatsApp and Facebook for making friends and chatting. In addition, majority of respondents experienced negative effects such as poor grammar and spelling, late submission of assignment, less study time and poor academic performance due to the heavy participation on social media networks. Furthermore, there was a high addiction rate among students in the usage of social media networks. Nevertheless, there were cases where others experienced improvement in their readings skills as a result of participation on social media networks. Also, respondents shared ideas, discussed and shared examination questions among themselves on social media networks. The study recommended the strict enforcement of Ghana Education Service rule on electronic devices usage in schools, promotion of social media usage for academic purpose, counselling for addicted students and the use of the right grammar and spelling when participating on social networks.

Chokri (2015) conducts a survey among the students of Saudi and compares the experimental group and the control group with respect to learning. The study notes that WhatsApp is a good tool for mobile learning when it is used in a blended course strategy. In a blended mobile lecture, mobile applications such as WhatsApp are preferred over face-to-face, in- class discussion in regard to completing course activities.

Shobha et.al. (2015) conducts a study among the post-graduate students of Karnataka state Women's University, Vijayapura and identifies PG students' conceptualization and usage of WhatsApp messenger. They also note that a greater majority of post-graduate students access WhatsApp messenger quite regularly for various purposes including educational purposes and concludes that the University has to integrate the mobile technology into learning process and library has to take necessary measures to form groups in the app.

Hashim et.al. (2015) looks through a survey in Malaysia among the students and notes that WhatsApp has enhanced effective flow of information and idea sharing among students. It also notes that though WhatsApp is helping the students, it has negative impact on the students. The app has taken away much of the study time and lost concentration in classes, academic discussions, distracted from completing assignments, affected students spelling. Sunita and Seeza (2015) tried to show that usage of WhatsApp has negative impact on students in Thane, India. Smit (2015) shows that use of WhatsApp is useful to

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the students, based on a survey done in South Africa. Shravan (2015) studies the WhatsApp usage among the male and female and found that there is significant difference between the two.

Note from above literature survey that there are studies that claim and try to show that usage of WhatsApp has negative impact on the students. But all these studies are conducted at different places. This may lead to a conclusion that the region and ethnicity plays a role in the opinion towards use of the app.

Motivation for the study

In this section, we present the motivation for considering the survey on usage of the app by the students in Mysore city.

The literature review presented shows one that, most of the researchers (either academic or corporate) are looking at how the student community is reacting to the app. They look at how it is impacting the students either positively or negatively. There are diversified view points on this and one has to investigate afresh, the impact of the app in his/her region before drawing any conclusions. This is very apparent from the literature review. Few studies supported the use of app by the students while others did not. This could be from the general assumption that the students may get perturbed from their goals, objectives and waste their time on the app. Another point is that the studies were conducted within India and also outside India. Among those that were within India, few oppose the use of the app and

few other support the use of the app. The same can be seen even outside India. The perception of the students on the usage (negative or positive) may depend on two aspects: the way the app is used and the purpose of its usage and also the region the students belong to. So one has to investigate on these aspects before drawing any conclusions.

The following are few points extracted from the literature review, which motivated us to conduct the study on students.

1. The app is widely used by the students and students use it regularly for daily communication.

2. It is useful to get connected to the peers quickly and communicate with ease.

3. It helps the teachers to interact with the students with ease and learning using the app is better than face-to-face learning.

4. The app disturbs the students from attending the classes, concentrate properly in the class etc. Also, the app impacts negatively on the students.

These are some statements or conclusions drawn by the researchers with respect to students using the app. We wish to check does the same continue to hold good among the students of Mysore or not.

Research gap

The following are few gaps that we have identified from the literature review

a. The studies earlier have considered the students opinion on using the app for academic purposes. But, they haven't looked at asking whether students support teachers using the app for academic purposes.

b. Students' opinion on their friend's influence on them to use the app.

c. According to students, what makes them to mute the app?

d. Association between the demographic characteristics and the students' opinion on the above mentioned.

e. Association between the characteristics like average time spent, time since using the app, number of times check the app, on students' opinion.

f. A study on WhatsApp was not conducted before in Mysore city.

To address the above mentioned issues, we have considered the current study. Note that, throughout the study, we call the characteristics like average time spent, time since using the app, number of times check the app etc., as other characteristics.

Problem statement

Student community gets attracted to the latest technology and wishes to use it optimally. One such development in the technology is the "WhatsApp" messenger. Students are using it for their regular communication and its excessive usage has led to comments on its negative impact on the students. Few studies have taken up this issue and studied the impact of the app on students' written communication, vocabulary, its usefulness in learning etc. Each study has given results specific to the region and also specific to its usage. This indicates that, before concluding on the usage of the app in a given region, one has to do the study again rather than relying on the study done in other regions. Note that, it can be with respect to the same specific usage. Also, researchers have concluded either positively or negatively, based on the experiments they have done on the students. But, not many have asked students directly on their usage of the app as well as not many have looked at the way students are using the app. That is, the way they are using the app for regular communication and also their opinion on its specific usage.

Another aspect is heterogeneity, which considers the gender, age, educational qualification etc., and their association with the students' opinion on the app. The earlier studies haven't focused on finding the reasons for muting the app (reasons for considering it as disturbance).

Last but not the least, the time points at which they check their status. Knowing this may help one to comment on their usage as well as to associate their opinion with other

related aspects. For example, one can associate the time points with their opinion on using the app for academic related aspects. The idea is that, if one check their status all the time, he may prefer to use it for academic related aspects as well. Finally, the association between their level of usage of the app and their opinion on using the app for academic related activities.

To answer all these questions, the current study has been taken up. If these question are answered, then the future studies can be constructed as a continuation of the current study. Based on the above, the following research questions have been framed.

Research questions

a. At what time do the students check their status on the app? Will there be any relation between the demographics and other characteristics?

b. Will there be any association between the average time spent on the app, time since the students are using the app etc., and their opinion on the usage of the app?

c. Is there any relation between the demographic characteristics and opinion on using the app for academic related activities?

d. What are the reasons for students to mute the app and also their relation with the demographics?

e. What is the influence of friends on them with respect to the usage of the app and will there be any difference

with respect to demographics and other characteristics?

f. Do the students suggest teachers using the app and will there be any difference with respect to demographics and other characteristics?

Objectives of the study

a. To evaluate the opinion of the students on the usage of the app for academic related activities in association with demographic characteristics, and other characteristics.

b. To analyse students' opinion on teachers using the app for communication and its association with the demographics, and other characteristics.

c. To understand what makes students to mute the app and its association with demographics, and other characteristics.

d. To examine the time points they check their status, along with frequency and association with demographics, and other characteristics.

e. To evaluate the friend's influence in students using the app and association with demographics, and other characteristics.

8. Research hypotheses

a. The time points at which students check their status is not same at different levels of demographic characteristics, and other characteristics.

b. Students' opinion on using the app for academic purpose has an association with demographics, and other characteristics.

c. Students supporting teachers using the app has association with demographic characteristics and other characteristics.

d. Student's opinion on muting the app has association with demographics, and other characteristics.

Methodology

To achieve the above mentioned objectives, we have adopted the following methodology.

Data collection instrument: A structured questionnaire was used to collect the necessary information from the students. Before using the questionnaire, it was tested by conducting a pilot study. The questionnaire has a Cronbach alpha value of 0.78, which indicates that the questionnaire has required consistency levels.

Sampling method: The sampling method used was a non-probability sampling method and the sample was tested against randomness and normality. Randomness was tested using run test and normality was tested using Kolmogorov-Smirnov (K-S) test. Run test has proved that the sample has the property of randomness and K-S test has proved that the sample do not support the assumption of normality. Hence, non-parametric statistical methods have been used to analyse the data. However, the confidence intervals were constructed based on t-distribution and

we have assumed normality. This is only to check the estimation bands under normality.

Statistical methods used: The data collected is analysed using descriptive statistics and, confidence intervals have been constructed to understand the fluctuation of the opinions. To test the hypotheses, we have used Chi-square analysis. Since the focus is on understanding the differences in opinions with respect to demographics, we have used only Chi-square analysis. This should be sufficient as the study is exploratory in nature. But for specific objectives, we have used correspondence analysis. Correspondence analysis is a multivariate technique that gives the associations between the categories of different attributes graphically. Using this, one can find the categories that are very close not only for within the attributes but also between the categories of the attributes.

Place of data collection: Data has been drawn from undergraduate and post-graduate students from selected colleges in Mysore. The colleges are selected based on acceptance of students to participate in the survey.

Duration of the Survey: The survey has been conducted for three months from August 2016 to October 2016.

Scaling: All the questions related to knowing the opinion of the students on the usage of the app are measured using 5-point Likert scale. While 5 stands for strong-agreement, 1 stands for strong disagreement.

Level of Significance: 5% level of significance is considered throughout the study.

Sample Size: The sample size considered for the study is 450, estimated using the pilot sample results. The variable considered is students' agreement for using the app for academic purpose. The level of precision fixed is 0.13 with a standard deviation of 1.297. Using these pilot sample estimates, we have estimated the sample size minimum as 383 and we have ended with a sample of 450.

The sample collected was analysed using appropriate statistical methods (as mentioned earlier) and the following sections give the details of the complete analysis and the results for each of the objectives.

Data analysis and addressing the objectives of the study.

We first present the description of the sample, followed by detailed analysis of the data pertaining to each of the objectives. The later sections cover the conclusion, suggestions, limitation of the study and future work.

Description of the sample

In this section, we present the details of the sample respondents. We do not present any description of the tables below, as they are self-explanatory.

Gender	Frequency	Percent	Valid Percent	Cumulative Percent
Male	266	58.8	58.8	58.8
Female	186	41.2	41.2	100.0
Total	452	100.0	100.0	

Table 3: Gender distribution of the respondents

Source: constructed by the researcher based on data analysis

Table 4: Age distribution of the respondents

Age	Frequency	Percent	Valid Percent	Cumulative Percent
18-20	22	4.9	4.9	4.9
21-25	383	84.7	84.7	89.6
26-30	42	9.3	9.3	98.9
31-35	5	1.1	1.1	100.0
Total	452	100.0	100.0	

Source: constructed by the researcher based on data analysis

Table 5 : Distribution of respondents as per educational qualification

Educational qualification	Frequency	Percent	Valid Percent	Cumulative Percent
Graduation	155	34.3	34.3	34.3
Post-Graduation	296	65.5	65.5	99.8
Others	1	.2	.2	100.0
Total	452	100.0	100.0	

Source: constructed by the researcher based on data analysis.

Table 6 : Distribution of respondents as per the family status

Family Status		Frequency	Percent	Valid Percent	Cumulative Percent
	Nuclear	364	80.5	80.9	80.9
	Joint	86	19.0	19.1	100.0
	Total	450	99.6	100.0	
Missing	99	2	.4		
Total		452	100.0		

Source: constructed by the researcher based on data analysis

Table 7 : Distribution of respondents as per the number of family members

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2-3	94	20.8	20.9	20.9
	4-6	296	65.5	65.9	86.9
	6-8	36	8.0	8.0	94.9
	<2 or >8	23	5.1	5.1	100.0
	Total	449	99.3	100.0	
Missing	99	3	.7		
Total		452	100.0		

Source: constructed by the researcher based on data analysis.

Addressing the objectives of the study

a. **To evaluate the opinion of the students on the usage of the app for academic related activities in association with demographic characteristics.**

Table 8 : Support to academic related activities

Likert Scale	Frequency	Percent	Cumulative Percent	95% Confidence Interval	
				Lower	Upper
1	11	2.4	2.4	1.1	4.0
2	34	7.6	10.0	5.3	10.0
3	8	1.8	11.8	.7	2.9
4	285	63.3	75.1	58.9	67.6
5	112	24.9	100.0	21.1	28.9
Total	450	100.0		100.0	100.0

Source: From researcher's analysis

From the above table, one can observe that almost 88% (including 4 and 5) support the use of the app for academic related activities. The confidence intervals give the fluctuation of the same. That is, if the app gains more importance amongst the students, then the percentage can increase to 95%. Similarly, it can decrease to 80%. This indicates that students support the use of the app for academic related activities.

Table 9 : Cross tabulation of age and opinion on academic related activities

			Age			Total
			18-20	21-25	>=26	
Opinion on using the app for academic purpose	1	Count	0	10	1	11
		% of Total	0.0%	2.2%	0.2%	2.4%
	2	Count	1	32	1	34
		% of Total	0.2%	7.1%	0.2%	7.6%
	3	Count	1	6	1	8
		% of Total	0.2%	1.3%	0.2%	1.8%
	4	Count	10	246	29	285
		% of Total	2.2%	54.7%	6.4%	63.3%
	5	Count	10	87	15	112
		% of Total	2.2%	19.3%	3.3%	24.9%
Total		Count	22	381	47	450
		% of Total	4.9%	84.7%	10.4%	100.0%

Source: From researcher's analysis
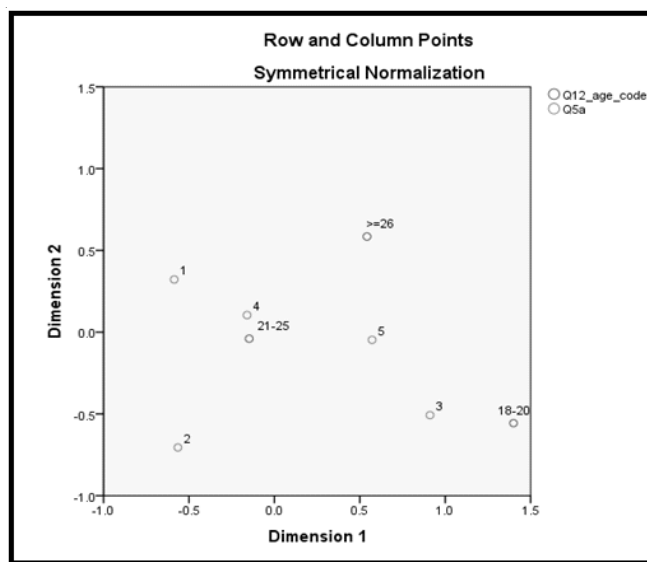
Graph-1

Source: From researcher's analysis

From the above table and graph, one can note that the age group 21-25 has more agreement towards the usage of the app for academic related activities. Other age groups are not much inclined, relatively, to the usage of the app. We hence have tested the hypothesis on significant difference between these groups. The corresponding p-value for Chi-square analysis is >0.05 (look at table-14). This indicates that the association is not significant. This indicates that, age has nothing to do with the students' opinion on using the app for academic related activities. That is, if one is looking at the students' opinion on using the app for academic related activities, then age need not be considered as a factor that influences the opinion.

Table 10 : Cross tabulation of gender and opinion on academic related activities

			Gender		Total
			Female	Male	
Opinion on using the app for academic purpose	1	Count	3	8	11
		% of Total	0.7%	1.8%	2.4%
	2	Count	15	19	34
		% of Total	3.3%	4.2%	7.6%
	3	Count	2	6	8
		% of Total	0.4%	1.3%	1.8%
	4	Count	123	162	285
		% of Total	27.3%	36.0%	63.3%
	5	Count	41	71	112
		% of Total	9.1%	15.8%	24.9%
Total		Count	184	266	450
		% of Total	40.9%	59.1%	100.0%

Source: From researcher's analysis

From the above table, one can note that male have more agreement in using the app for academic related activities, as compared with the female. But from the Chi-square analysis (look at table-14) we note that, the difference is not significant. That is, the difference that appears is only due to sample fluctuation. Hence, if one is trying to understand the students' opinion on usage of the app for academic related activities, then gender need not be considered as a critical factor.

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Table 11 : Cross tabulation of educational qualification and opinion on academic related activities

| | | | Educational qualification | | Total |
			Under-graduate	Post-graduate	
Opinion on using the app for academic purpose	1	Count	1	10	11
		% of Total	0.2%	2.2%	2.4%
	2	Count	10	24	34
		% of Total	2.2%	5.3%	7.6%
	3	Count	1	7	8
		% of Total	0.2%	1.6%	1.8%
	4	Count	101	184	285
		% of Total	22.5%	41.0%	63.5%
	5	Count	41	70	111
		% of Total	9.1%	15.6%	24.7%
Total		Count	154	295	449
		% of Total	34.3%	65.7%	100.0%

Source: From researcher's analysis

From the above table, one can note that Post-graduates support the usage relatively to undergraduate students. But, the chi-square analysis (look at table-14) has revealed that the difference is not significant. It indicates that the educational qualification of the students do not have any impact on the students' opinion on usage of the app for academic related activities.

Table 12 : Cross tabulation of family status and opinion on academic related activities

|			Family status		Total
			Nuclear	**Joint**	
Opinion on using the app for academic purpose	1	Count	9	2	11
		% of Total	2.0%	0.4%	2.5%
	2	Count	28	6	34
		% of Total	6.3%	1.3%	7.6%
	3	Count	4	3	7
		% of Total	0.9%	0.7%	1.6%
	4	Count	223	61	284
		% of Total	49.8%	13.6%	63.4%
	5	Count	98	14	112
		% of Total	21.9%	3.1%	25.0%
Total		Count	362	86	448
		% of Total	80.8%	19.2%	100.0%

Source: From researcher's analysis

From the above table, one can note that Students from Nuclear family support the use of the app for academic related activities. From the chi-square analysis (look at table-14), we conclude that family status has no association with the students' opinion on using the app for academic related activities.

Table 13 : Cross tabulation of family members and opinion on academic related activities

			Family members				Total
			2-3	**4-6**	**6-8**	**<2 or >8**	
Opinion on using the app for academic purpose	1	Count	2	6	0	2	10
		% of Total	0.4%	1.3%	0.0%	0.4%	2.2%
	2	Count	11	18	1	4	34
		% of Total	2.5%	4.0%	0.2%	0.9%	7.6%
	3	Count	2	5	1	0	8
		% of Total	0.4%	1.1%	0.2%	0.0%	1.8%
	4	Count	58	187	25	13	283
		% of Total	13.0%	41.8%	5.6%	2.9%	63.3%
	5	Count	21	78	9	4	112
		% of Total	4.7%	17.4%	2.0%	0.9%	25.1%
Total		Count	94	294	36	23	447
		% of Total	21.0%	65.8%	8.1%	5.1%	100.0%

Source: From researcher's analysis
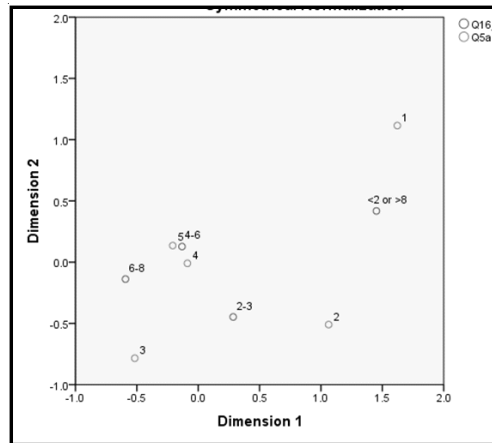
Graph-2

Source: From researcher's analysis

From the above table and graph, one can note that Students with family members between 4 and 6 support the use of the app for academic related activities, relatively higher as compared to other groups. From the chi-square analysis (look at table-14), we conclude that family status has no association with the students' opinion on using the app for academic related activities. It is also very apparent that the support for usage of the app is more amongst the students who family size is between 4 and 6.

We now present the table that summarizes the Chi-square analysis for associations.

Null hypothesis: Either the demographic characteristics or level of usage characteristics are not associated with the opinions.

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Alternative hypothesis: Either the demographic characteristics or level of usage are significantly associated with the opinions.

The following table summarizes the results of the Chi-square analysis.

Table 14 : Chi-square analysis

Opinion / Characteristic	Use for academic related activities
Gender	p-value=0.512; No difference
Education Qualification	p-value=0.226; No difference
Family Status	p-value=0.148; No difference
Age	p-value=0.221; No Difference
Number of family members	p-value=0.285; No Difference
Average time spent on the app	p-value=0.696; No Difference
Time since using the app	p-value=0.915; No Difference
Number of times check the status	p-value=0.398.; No Difference

Source: From researcher's analysis

No difference: There is no association or there is no significant difference with respect to the characteristic.
Difference: There is an association or there is significant difference with respect to the characteristic.

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From the table, one can also note that average time spent on the app, time since using the app, and number of times checking the status do not have significant association with the student's opinion on using the app for academic related activities. That is, there is not much difference exists between the students' opinion belonging to different categories of each of the attribute.

b. **To analyse the students' opinion on teachers using the app for communication and its association with the demographics, and other characteristics.**

Table 15 : Frequency distribution of students' opinion on teachers using the app

|	Frequency	Percent	Cumulative Percent	95% Confidence Interval	
				Lower	Upper
1	15	3.3	3.3	1.8	5.1
2	104	23.1	26.4	19.3	27.1
3	12	2.7	29.1	1.3	4.2
4	222	49.3	78.4	44.7	53.8
5	97	21.6	100.0	18.0	25.5
Total	450	100.0		100.0	100.0

Source: From researcher's analysis

From the above table, one can note that majority of the students wish that their teachers join the groups and participate in the discussions.

Table 16 : Cross Tabulation of age and students' opinion on teachers using the app

			Age			Total
			18-20	**21-25**	**>=26**	
Opinion on teachers using the app	1	Count	0	14	1	15
		% of Total	0.0%	3.1%	0.2%	3.3%
	2	Count	6	84	14	104
		% of Total	1.3%	18.7%	3.1%	23.1%
	3	Count	1	8	3	12
		% of Total	0.2%	1.8%	0.7%	2.7%
	4	Count	9	199	14	222
		% of Total	2.0%	44.2%	3.1%	49.3%
	5	Count	6	77	14	97
		% of Total	1.3%	17.1%	3.1%	21.6%
Total		Count	22	382	46	450
		% of Total	4.9%	84.9%	10.2%	100.0%

Source: From researcher's analysis
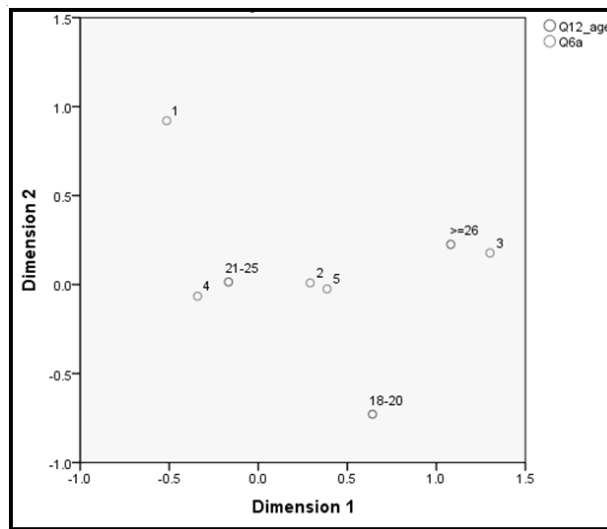
Graph-3

Source: From researcher's analysis

From the above table and graph, one can note that the age group 21-25 has relatively more agreement as compared with other age groups. Also, the p-value for Chi-Square test (look at table-21) is more than 5% level of significance and this indicates that students' age and their opinion on teachers using the app has no association. Another interesting fact is that age group >=26 is more on the neutral side than supporting. This may indicate that as the students grow, they may want to be more independent and do not want to be monitored by the faculty each time. Whereas the other age group (21-25) seems to be more on the positive side to get monitored frequently.

Table 17 : Cross Tabulation of gender and students' opinion on teachers using the app

| | | | Gender | | Total |
			Female	Male	
Opinion on teachers using the app	1	Count	4	11	15
		% of Total	0.9%	2.4%	3.3%
	2	Count	42	62	104
		% of Total	9.3%	13.8%	23.1%
	3	Count	6	6	12
		% of Total	1.3%	1.3%	2.7%
	4	Count	103	119	222
		% of Total	22.9%	26.4%	49.3%
	5	Count	30	67	97
		% of Total	6.7%	14.9%	21.6%
Total		Count	185	265	450
		% of Total	41.1%	58.9%	100.0%

Source: From researcher's analysis

One can note that, male students are supporting more than the female students, with respect to teachers using the app. Chi-square analysis (look at table-21) revealed that there is significant difference between the genders.

*Table 18 : Cross Tabulation of educational qualification and
students' opinion on teachers using the app*

			Educational Qualification		Total
			Under-graduate	Post-graduate	
Opinion on teachers using the app	1	Count	4	11	15
		% of Total	0.9%	2.4%	3.3%
	2	Count	41	63	104
		% of Total	9.1%	14.0%	23.2%
	3	Count	1	11	12
		% of Total	0.2%	2.4%	2.7%
	4	Count	70	152	222
		% of Total	15.6%	33.9%	49.4%
	5	Count	39	57	96
		% of Total	8.7%	12.7%	21.4%
Total		Count	155	294	449
		% of Total	34.5%	65.5%	100.0%

Source: From researcher's analysis

The above table indicates that post-graduates are supporting the teachers in using the app, relatively higher. But, chi-square analysis revealed that the difference is not significant (look at table-21).

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Table 19 : Cross Tabulation of family status and students'
opinion on teachers using the app

|			Family Status		Total
			Nuclear	Joint	
Opinion on teachers using the app	1	Count	9	6	15
		% of Total	2.0%	1.3%	3.3%
	2	Count	80	24	104
		% of Total	17.9%	5.4%	23.2%
	3	Count	8	3	11
		% of Total	1.8%	0.7%	2.5%
	4	Count	180	42	222
		% of Total	40.2%	9.4%	49.6%
	5	Count	85	11	96
		% of Total	19.0%	2.5%	21.4%
Total		Count	362	86	448
		% of Total	80.8%	19.2%	100.0%

Source: From researcher's analysis

One can note that, students from nuclear family supports teachers using the app most, as compared to joint family. But, chi-square analysis revealed that the difference is not significant (look at table-21).

Table 20 : Cross Tabulation of number of family members and students' opinion on teachers using the app

			Number of family members				Total
			2-3	**4-6**	**6-8**	**<2 or >8**	
Opinion on teachers using the app	1	Count	3	8	1	3	15
		% of Total	0.7%	1.8%	0.2%	0.7%	3.4%
	2	Count	20	76	4	4	104
		% of Total	4.5%	17.0%	0.9%	0.9%	23.3%
	3	Count	4	7	1	0	12
		% of Total	0.9%	1.6%	0.2%	0.0%	2.7%
	4	Count	45	146	18	13	222
		% of Total	10.1%	32.7%	4.0%	2.9%	49.7%
	5	Count	21	58	12	3	94
		% of Total	4.7%	13.0%	2.7%	0.7%	21.0%
Total		Count	93	295	36	23	447
		% of Total	20.8%	66.0%	8.1%	5.1%	100.0%

Source: From researcher's analysis

Graph-4
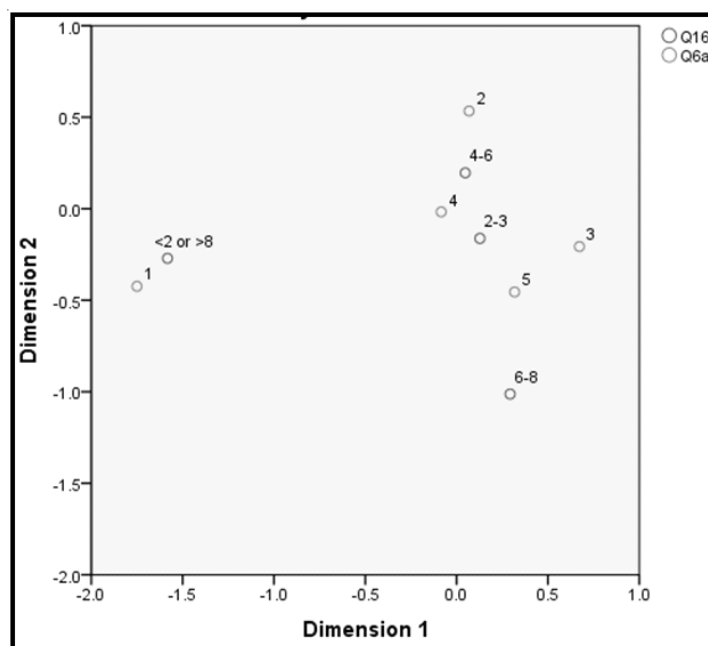
Source: From researcher's analysis

The figures presented in the above table suggests that students with family members 4 to 6 are supporting the teachers using the app. But, chi-square analysis revealed that the difference is not significant (look at table-21). The graph also gives more details on the same.

We now present the table that summarizes the Chi-square analysis for associations.

Null hypothesis: Either the demographic characteristics or level of usage are not associated with the opinions.

Alternative hypothesis: Either the demographic characteristics or level of usage are significantly associated with the opinions.

Table 21: Chi-square analysis

Opinion / Characteristic	Teachers joining the groups and using the app
Gender	**p-value=0.041; Difference**
Education Qualification	p-value=0.092; No difference
Family Status	p-value=0.069; No difference
Age	p-value=0.127; No Difference
Number of family members	p-value=0.182; No Difference
Average time spent on the app	**p-value=0.001; Difference**
Time since using the app	p-value=0.190; No Difference
Number of times check the status	**p-value=0.005; Difference**

Source: From researcher's analysis

No difference: There is no association or there is no significant difference with respect to the characteristic.

Difference: There is an association or there is significant difference with respect to the characteristic.

c. To examine the reasons for students muting the app and its association with demographics.

Under this we look at when the students tend to mute the app. We also, look if there is any difference with respect to demographic characteristics and level of usage.

Table 22 : Statistics on reasons for muting the app

Reason	Yes	No	Total
Many messages at a time disturbs me	258(57.5 %)	191(42.5%)	449
95% confidence interval	(52.93%, 62.07)	(37.93%, 47.07%)	
I am busy with the work	198(44.1%)	251(55.9%)	449
95% confidence interval	(39.51%, 48.69%)	(51.31%, 60.49%)	
I feel bored looking at the messages	103(22.9%)	346(77.1%)	449
95% confidence interval	(19.05%, 26.83%)	(73.17%, 80.95%)	
I am noticed by others when online	34(7.6%)	415(92.4%)	449
95% confidence interval	(5.13%, 10.02%)	(89.98%, 94.87%)	
Others	25(5.6%)	424(94.4%)	449
95% confidence interval	(3.45%, 7.69%)	(92.31%, 96.55%)	

Source: From researcher's analysis

Note that the question is a multiple options question and those who have selected the first option would also have opted other options. One can observe that maximum preference has been given to "messages at a time disturbs the students" and hence they mute the app. Also least preference has been given to "I am noticed by others when online". These indicate that students do not prefer to have many messages at one time and would prefer to have few messages at one time. Also, they do not mind others noticing them online. In terms of probability, chance that a student mutes the app due to many messages at a time is 0.575 and it fluctuates between (0.5293, 0.6207). Similarly, the reasons have their respective probabilities and the same can be found from the table above. The percentages can be treated as probabilities and the confidence intervals give the extent to which the probabilities fluctuate. We now look at cross tabulation of the same.

Table 23 : Cross tabulation of each A1 with other reasons

			Reasons for muting the app					Total
			A1	**A2**	**A3**	**A4**	**A5**	
Reasons for muting the app	**A1**	Count		74	58	19	8	258
		% within each Ai		37.4%	56.3%	55.9%	32.0%	
	A2	Count	74		21	16	4	198
		% within each Ai	28.7%		20.4%	47.1%	16.0%	
	A3	Count	58	21		9	0	103
		% within each Ai	22.5%	10.6%		26.5%	0.0%	
	A4	Count	19	16	9		1	34
		% within each Ai	7.4%	8.1%	8.7%		4.0%	
	A5	Count	8	4	0	1		25
		% within each Ai	3.1%	2.0%	0.0%	2.9%		
Total		Count	258	198	103	34	25	449

Source: From researcher's analysis

A1: Many messages at a time disturbs me.

A2: I am busy with the work.

A3: I feel bored looking at the messages.

A4: I am noticed by others if I am online.

A5: Others.

One can note that within A3 (in column), 56.3% of them also chose A1 (in row) as one of the reasons for muting the app. That is, within those who preferred to mute the app when they feel bored of the messages they receive, also preferred to mute the app due to rush in messages. This means that students are preferring to receive the messages less in number and those messages have to be interesting so that they do not mute the app. Please note that the above matrix is not a symmetric matrix.

We now test whether there exists significant difference between categories of demographic characteristics with respect to opinions mentioned relating to muting the app. The same is also done with respect to level of usage characteristics. We use Chi-square test for association to achieve this.

Null hypothesis: Either the demographic characteristics or level of usage are not associated with the opinions.

Alternative hypothesis: Either the demographic characteristics or level of usage are significantly associated with the opinions.

Table 24 : Association between the demographic characteristics, level of usage with opinions

Opinion / Characteristic	Many message at a time disturbs me	I am busy with the work	I feel bored looking at the messages	I am noticed when I am online	Others
Gender	**p-value=0.046** **Difference**	p-value=0.152 No difference	p-value=0.898 No difference	p-value=0.997 No difference	p-value=0.900 No difference
Education Qualification	p-value=0.385 No difference	p-value=0.391 No difference	p-value=0.277 No difference	p-value=0.526 No difference	p-value=0.297 No difference
Family Status	**p-value=0.008** **Difference**	**p-value=0.021** **Difference**	p-value=0.745 No difference	p-value=0.439 No difference	p-value=0.805 No difference
Age	**p-value=0.043** **Difference**	p-value=0.388 No Difference	p-value=0.342 No difference	p-value=0.056 No difference	p-value=0.939 No difference
Number of family members	p-value=0.240 No Difference	**p-value=0.047** **Difference**	p-value=0.732 No difference	p-value=0.922 No difference	p-value=0.395 No difference

Average time spent on the app	p-value=0.093 No difference	p-value=0.165 No difference	p-value=0.957 No difference	p-value=0.409 No difference	p-value=0.282 No difference
Time since using the app	**p-value=0.0001 Difference**	p-value=0.159 No difference	p-value=0.663 No difference	p-value=0.560 No difference	p-value=0.692 No difference
Number of times check the status	p-value=0.481 No difference	p-value=0.665 No difference	p-value=0.466 No difference	p-value=0.795 No difference	p-value=0.808 No difference

Source: From researcher's analysis

No difference: There is no association or there is no significant difference with respect to the characteristic. **Difference:** There is an association or there is significant difference with respect to the characteristic.

d. **To examine the times at which the students check the app regularly and study the associations with respect to demographic characteristics and other characteristics**

We first present the frequency distribution on "During what time students check the app regularly?"

Table 25: Frequency distribution of checking the status

Checking the app	Yes	No	Total
As soon as I wake up in the morning	287 (65.2%)	153(34.8%)	440
During free time	400(90.1%)	44(9.9%)	444
Before going to sleep	348(79.8%)	88(20.2%)	436
Always since it is an integral part of my life	153(35.5)	278(64.5)	431

Source: From researcher's analysis

From the above, one can conclude that 90% of them check the status during their free time and 79.8% of them check the status before going to sleep. In terms of probability, one can conclude that, the chance a student checks the status on the app during free time is 0.9 and fluctuates between (0.8822, 0.9360). Similarly, the chance that a student checks the status before going to sleep is 0.798 and fluctuates between (0.7605, 0.8358).

Since this is also a multiple options question, we look at cross tabulation that gives the choices within each of the options.

Table 26 : Cross tabulation of checking status on the app

			Checking status				Total
			Early in the morning	**During free time**	**Before going to sleep**	**Always-integral part of my life.**	
Checking status	Early in the morning	Count	-	255	246	129	287
		% within row		63.8%	85.7%	44.9%	
	During free time	Count	255	-	319	136	400
		% within row	63.8%		79.8%	34.0%	
	Before going to sleep	Count	246	319	-	119	348
		% within row	70.7%	91.7%		34.2%	
	Always-integral part of my life.	Count	129	136	119	153	153
		% within row	84.3%	88.9%	77.8%	-	
Total		Count	287	400	348		445

Source: From researcher's analysis

Note from the above table that 400 of them have said that they check the status during their free time only. Within these 400, 319 students also said that they check their status before going to sleep, again within these 400, 255 also said that they check their status early in the morning. The important aspect here is that majority of the students who tend to check their status on the app during free time also check status before going to sleep and early in the morning. This is with respect to those who check the status during free time only.

Now, if we question exactly how many of them have said that they check status before going to sleep, the number is 348. Within these 246 said that they check their status early in the morning. This indicates that those who check the status before going to the bed also check their status early in the morning. Similarly, 287 check their status only early in the morning and within these 129 said that it is integral part of their life. 153 of them only said the app is integral part of their life. One has to be very cautious while interpreting the above table. It is not like usual contingency table with mutually exclusive tabulation.

We now look if there exists any difference between the categories of demographic characteristics, categories of level of usage with respect to checking the app.

Null hypothesis: There exists no association between the demographic characteristics, level of usage and students' time of checking the app status.

Alternative hypothesis: There exists significant association between the demographic characteristics, level of usage and students' time of checking the app status.

Table 27 : Association between the demographic characteristics, level of usage with opinions

Opinion Characteristic	Early in the morning	During free time	Before going to sleep	Always-integral part of my life.
Gender	p-value=0.055 No difference	p-value=0.738 No difference	p-value=0.640 No difference	p-value=0.052 No difference
Education Qualification	p-value=0.0001 Difference	p-value=0.349 No difference	p-value=0.851 No difference	p-value=0.0001 Difference
Family Status	p-value=0.306 No difference	p-value=0.828 No difference	p-value=0.101 Difference	p-value=0.241 No difference
Age	p-value=0.581 No difference	p-value=0.405 No difference	p-value=0.705 Difference	p-value=0.890 No difference
Number of family members	p-value=0.011 No difference	p-value=0.781 No difference	p-value=0.931 Difference	p-value=0.159 No difference

members	No difference	No difference	Difference	No difference
Average time spent on the app	p-value=0.0001 Difference	p-value=0.049 No difference	p-value=0.017 Difference	p-value=0.0001 Difference
Time since using the app	p-value=0.0001 Difference	p-value=0.002 Difference	p-value=0.0001 No difference	p-value=0.0001 No difference
Number of times check the status	p-value=0.0001 No difference	p-value=0.447 No difference	p-value=0.767 No difference	p-value=0.0001 Difference

Source: From researcher's analysis

No difference: There is no association or there is no significant difference with respect to the characteristic. **Difference:** There is an association or there is significant difference with respect to the characteristic.

From the above analysis we conclude that, time since using the app has significant association with respect to students checking their status all the times. Average time spent on the app also has association with checking the status all the time. That is the average time one spends on the app and time since they are using the app matters if one wish to know during what time the students check their status on the app. In other words if one wish to know the time a student check his/her status on the app, then one has to question on average time he/she is spending on the app and also time since he/she is using the app.

Number of times one check the status obviously has association with the answer "always as it integral part of my life" and checking status early in the morning. Checking the status early in the morning and checking the status always, have association with educational qualification.

e. **To evaluate the friend's influence in students using the app and association with demographics, and other characteristics.**

The following table gives the frequency distribution of the opinion students gave on the motivation from friends for using the app.

Table 28 : Frequency distribution of friends influencing the students using the app

	Frequency	Percent	Cumulative Percent	95% Confidence Interval	
				Lower	Upper
1	39	8.6	8.6	6.2	11.3
2	143	31.7	40.4	27.1	36.1
3	18	4.0	44.3	2.4	6.0
4	164	36.4	80.7	31.9	40.4
5	87	19.3	100.0	15.5	23.3
Total	451	100.0		100.0	100.0

Source: From researcher's analysis

From the above analysis, one conclude that many of the students felt that their friends have influenced them to use the app, while 40% said they do not influence. This may indicate that others (family members, siblings etc.) may also influence students to use the app.

We now look if there exists any difference between the categories of demographic characteristics, categories of level of usage with respect to checking the app.

Null hypothesis: There exists no association between the demographic characteristics, level of usage and students' time of checking the app status.

Alternative hypothesis: There exists significant association between the demographic characteristics, level of usage and students' time of checking the app status.

Table 29 : Association between the demographic characteristics, level of usage with opinions

Opinion / Characteristic	Friends influencing the students using the app
Gender	p-value=0.516; No Difference
Education Qualification	p-value=0.030; Difference
Family Status	p-value=0.175; No Difference
Age	p-value=0.603; No Difference
Number of family members	p-value=0.339; No Difference
Average time spent on the app	p-value=0.037; Difference
Time since using the app	p-value=0.224; No Difference
Number of times check the status	p-value=0.004; Difference

Source: From researcher's analysis

No difference: There is no association or there is no significant difference with respect to the characteristic. **Difference:** There is an association or there is significant difference with respect to the characteristic.

Conclusion

From the analysis of the data, we conclude the following

a. Many students support the use of the app for academic related activities and also it is independent of demographic characteristics, other characteristics.

b. Students support teachers using the app and except gender, average time spent, and number of times check the status, other characteristics are independent of their opinion.

c. With respect to students muting the app, we conclude that they mute the app due to the reason "Many messages disturb me" more as compared to other reasons. We also conclude that there exists association between gender, family status, Age, Time since using the app and students' opinion on "Many messages disturb me". Association exists between family status, Average time spent on the app and students' opinion on "I am busy at the work". In other cases, there exists no association.

d. From the analysis on time points at which students check their status, we note that most of the students prefer to check their status during their free time as well as before they go to bed. Also, 35% of the students mentioned that they check the status always and this is interesting. Associations exists between gender, educational qualification, average time spent, time since using the app, number of times checking the status and checking the status always. Associations exists between gender, educational qualification, number of family members, average time spent on the app, time since using the app, number of time checking the status and checking the status early in the morning.

e. Many of the students agreed that they are using the app because of their friends. With respect to influence by the friends form using the app, we have noted the association between educational qualification, average time spent on the app, and number of times checking the status with opinion on friends influencing the students for using the app.

Finally we conclude that students of Mysore (undergraduate and post-graduate) are positive in using the app for academic related activities and also they wish that their teachers are also part of their learning process via the app.

Suggestions

From the analysis of the data and observations, we have the following recommendations

1. Since the students are preferring to use the app for academic related activities, we suggest that the institutions should encourage students to use the app for distribution of the knowledge amongst them.

2. Irrespective of age, gender and educational qualification, there is no association with the usage of the app. Hence, we suggest that all the students can use the app for their communication.

3. We suggest that teachers should also be a part of the groups and become active in the discussions. This will help in spreading the knowledge with ease.

4. We suggest that students should not be sent many messages in the groups, as they tend to get irritated if many messages were sent at one time.

5. We suggest that the messages has to be sent during the free time.

6. If one wishes to bring more students into the learning groups, then we suggest that their friends have to be brought in first. It is a chain process.

Limitations and future work

As every study has its limitations, our study also has got limitations. The following are the limitations.

1. The study is restricted to on Mysore. If one has to generalize the same to other places, then the study has to be done in those places. AS a future work, one can take up pan India study and stabilize the instrument for India.

2. We have asked the students regarding the usage of the app for academic related activities. But, haven't found the factors that motivate them to use the app for academic related activities. One can take up the same as future work.

3. A similar point as in limitation 2 can be taken up with respect to students' opinion on teachers using the app for academic related activities.

4. The study only looks at associations between the characteristics and students' opinion. One can also

consider studying the cause and effect as a future work.

5. As future work, one can look at building a predictive modelling for understanding the behaviour of students with respect to usage of the app.

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