

# A Study of Mobile Application Usage in Bangladesh

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*Abstract-Mobile Applications (apps) are software developed for use on mobile devices and made available through app stores. Mobile apps have developed into a significant industry and app stores have become highly competitive places. This movement has also been felt in Bangladesh, over the past five years, where millions of people have begun to use smartphones and mobile apps for the first time. This research reports the first research done on the behaviour of Bangladeshi mobile users and seeks to understand their preferences regarding all things related to mobile applications. The research was done primarily through online surveys and through personal surveys throughout the megacity of Dhaka. Our findings will be useful for mobile developers to understand the key aspects of the average Bengali consumer and what they expect from their mobile app experience. Users were asked questions regarding the monetary potential of apps, about how their choices are determined in terms of downloading mobile apps as well as their mobile internet usage. Mobile app and mobile internet usage are heavily correlated. Analysis of the results have given us a deeper understanding of the mobile app user mind-set and will be beneficial for the developer.*

**Keywords** — mobile apps, smartphone, app store

## I. INTRODUCTION

Our research is based on the mobile application. In the preceding eight years, from 2007 onwards, the mobile app has ushered with it a brand new

digital economy and changed the lives of millions of people throughout the world. Through its popularity it has changed the lives of consumers, journalists, designers and app developers and has created its own multibillion dollar economy around it. Directly or indirectly, the mobile app has facilitated the creation of numerous businesses.

In the preceding few years, the users have migrated in masses from traditional phones to smart phones, which have multimedia capabilities and access to the internet. One of the key driving forces for the adoption of the smartphone is the mobile application. The mobile application acts as a modular unit, allowing users to customize their phones with the components, experience and the features that they want for them. As the number of people who use smartphones increase, the number of mobile apps users increase as does the number of mobile app downloads.

Globally, there has been much research done on the mobile application. Case studies done by private research groups, individuals and even big companies such as Google or Facebook have sought to uncover the phenomenal success of the mobile app. However, there is a significant gap in this form of research in Bangladesh.

Bangladesh is a country with 156.6 million people with an overwhelmingly large population. According to the World Fact book, over 65% of the Bangladeshi population is under the age of 35. In addition to this, in 2014, the number of mobile phone subscribers reached 116 million people. This number is set to increase greatly in the coming

years as more and more people migrate to more affordable and more powerful phones. As smartphones become cheaper and cheaper, the number of smartphones users in the country will increase and so will the number of mobile app users. Thus, Bangladesh is a country with enormous potential for the mobile app market.

## II. KEY ASPECTS

In our research we hoped to answer the following areas of inquiry regarding the Bangladeshi app user.

### A. Behaviour:

One of our primary goals was to better understand how users used their mobile phones.

### B. Demand:

A goal of our research was to ascertain whether there was any latent or unmet demand found in our user base. We wanted to know whether there was any apps which the people wanted but were unable to find and what was the extent of language preferences when it came to choosing apps.

### C. Data Usage:

A significant component of mobile application usage is usage of the internet. A key point in our research was on how the usage of mobile apps and mobile internet were correlated.

### D. Monetary Potential:

Another key point in our research was about the monetization of mobile apps and the extent to which this can be applied to within the Bangladeshi context. We wanted to know whether mobile subscribers in Bangladesh were willing to pay for apps, and if so, to what features they were willing to pay for. We have also asked questions regarding how they would be willing to purchase mobile apps and mobile app related content in Bangladesh.

### E. Perception:

We have asked questions about which features of an app that customers are most conscious of and which they find the most important to them and their user experience.

### F. App usage:

We have also asked our respondents about the top five apps that they use most frequently. This gives us a greater insight into the behaviour of the average consumer.

## III. DATA COLLECTION

Our data was collected primarily through the use of online questionnaires disseminated through social networking and maintained through a Google Form. Due to this a large portion of our respondents were already technologically savvy and familiar with how to use the internet. This was done so that it better reflects the average user of mobile apps, which must be downloaded from the internet. We have also surveyed another 300 people from all over the other parts of Dhaka to get a more holistic view of the perceptions of people throughout the city.

Our total sample number is roughly 1000 people. We have conducted in total 1024 surveys, including both online and offline versions but we have discarded 24 of these surveys because they were either incomplete or illegible.

Along with our data we have done significant research on the global mobile application economy and ecosystem, detailing the history of the mobile phone and how it has evolved throughout the years. We hope that this paper will allow anyone with sufficient interest in the matter to gain a thorough understanding of the global app economy and through our analysis of our primary data taken from our questionnaires, gain a deeper understanding of the fundamental behavioural patterns and underlying economic demand in Bangladesh.

The crux of our research was collecting data from numerous respondents throughout the city using the questionnaire designed from the lessons learned throughout background research. Our goals were to interview, through online methods or otherwise, one thousand respondents. In the end, after two months of surveying people from all walks of life throughout the city, we collected 760 respondents through the use of online platforms such as Facebook and Twitter and 260 respondents who were surveyed by us personally.

TABLE I  
DISTRIBUTION OF QUESTIONNAIRE

Method	Quantity
Printed Survey	260
Social Media	740

Before embarking on surveying this large number of people, we had planned on splitting the contribution to 70% of people done through social media and the remaining 30% done through traditional methods.

For digital distribution, the questionnaire was first designed in Google Docs. This questionnaire was then disseminated amongst a small pilot group of students and colleagues from whom valuable feedback was taken. This pilot group consisted of twenty people, from a variety of backgrounds – this was done to test the efficacy of the questionnaire and to ensure that the maximum number of people are able to answer the questions with the minimum of hassle. The pilot questionnaire was modified with the feedback received – some of the questions were written and edited for clarity. With the final approval of our advisers, we created the final version of the questionnaire.

The questionnaire was disseminated in the following places in the capital (Note: this is only for the printed version of the survey).

The areas were chosen because of two reasons – one was that the areas offered a heterogeneous population of consumers who were likely to use mobile apps and so offered the best chance for answering the questions. The second reason was that these areas were populated with people from all walks of life and that we could expect a varied opinion of them.

These areas are

- Bashundhara City Shopping Mall
- Dhaka University
- North South University
- Jamuna Future Park
- Dhanmondi Park
- Baily Road
- Ramna Park

These areas were chosen carefully as these were places where there was a large number of people from all walks of life. We approached each of our respondents in a similar manner. This method included greeting the respondent, explaining ourselves and the purpose of our survey and asking them for a few moments of their time. All interviews conducted in this manner were done in front of us for maximum efficacy.

A notable exception was a number of these surveys which were filled out with the help of our thesis advisor by his students during his classes.

For social media distribution, we sought to target the widest range of people we could. To do this, we devised the following message which was sent to a large number of people through Facebook messages. Respondents were greeted with a small introduction, told about the nature of our research and asked if they could spare a few moments of their time to assist us in the research. After that, they were asked if they were willing to share the link to the survey to a few of their friends if possible.

The rationale behind this was that we could reach a wider range of people if we asked our respondents to share the form through the use of social media. Thus 100 first degree respondents could yield 200 second degree respondents and so on.

Along with that, we collaborated with a number of Facebook pages who were willing to share the form to their followers. In this manner, a larger number of people were reached through the use of social media.

#### **IV. QUESTIONNAIRE DESIGN**

The questionnaire was designed with the express intent on answering the following broad research questions.

##### ***A. How do people use their mobile apps?***

This could be pertaining to quantitative and qualitative questions describing the usage of mobile phones and mobile applications.

##### ***B. What kind of apps were people using?***

A large portion of the research was to understand the type of mobile applications which people used.

##### ***C. How much internet does one use regularly?***

Since a significant component of mobile applications is online based content, understanding the usage of internet, especially through Wi-Fi and mobile data plans was key.

##### ***D. What is a user's Individual preferences regarding certain aspects of mobile app design and performance?***

The usage preference for an application has a relation with the design and performance of the app, we plan to investigate this correlation

##### ***E. What is the monetary potential of an app amongst consumers and latent demand for paid apps and additional content?***

This question deals with the possible optimum opportunists for a developer to earn using his application

With these in mind, the questionnaire was designed to have eighteen questions.

## V. ANALYSIS

The data was gathered and then collated. For the written surveys, we rejected all of those which we deemed as incomplete or not written seriously. For the online surveys, we rejected all of those which were incomplete or had insincere answers.

After gathering the data, we analysed them and cross referenced them with similar studies done throughout the world. We wanted to compare how the Bangladeshi market conditions differ from that of the rest of the world and how they are similar. This has led us to a deeper understanding of how the Bangladeshi ecosystem compares with that of the rest of the world.

### A. Demographics

**Introduction**

Hello,

We are Zubair Abdullah and Saif Ahmed, two engineering students from North South University who are conducting research on mobile app usage in Bangladesh. Our objectives are to understand how consumers use their mobile phones and to find out what kind of applications users demand to see in the future. The responses from this survey will be used only for our undergraduate research and all privacy will be maintained.

Thank you for taking part in this survey.

- How many phones do you own?
  - ☐ Zero
  - ☐ One
  - ☐ Two
  - ☐ More than two
- Since when have you used mobile apps?
  - ☐ Never
  - ☐ Less than 1 year
  - ☐ Less than 2 years
  - ☐ More than 2 years
- What is type of mobile phone do you use?
  - ☐ Apple
  - ☐ Android Phone
  - ☐ Windows Phone
  - ☐ Others: \_\_\_\_\_
- On which device do you prefer using your mobile apps?
  - ☐ Smart phone
  - ☐ Tablet
- Do you use mobile internet using mobile data or through Wi-Fi?
  - ☐ Do not use internet.
  - ☐ Mobile data only
  - ☐ Wi-Fi only
  - ☐ Both
- How much mobile internet data do you use per month?
  - ☐ 100 MB++
  - ☐ 500 MB++
  - ☐ 1 GB++
  - ☐ not at all
- How many apps do you use regularly?
  - ☐ 0
  - ☐ 2-5
  - ☐ 5-10
  - ☐ 10-20
- Do mobile apps make your life more productive?
  - ☐ not at all
  - ☐ not much, neutral
  - ☐ yes
  - ☐ yes, very much.
- How many hours do you use your mobile phone per day?
  - ☐ 1 hour
  - ☐ 2 hours
  - ☐ 3 hours
  - ☐ More than 3 hours
- Have you ever spent money on a mobile application?
  - ☐ No.
  - ☐ Yes I have downloaded paid apps
  - ☐ Yes but only for upgrades and in app content.

If yes, how \_\_\_\_\_
- How do you decide which app to download?
  - ☐ Popularity
  - ☐ Ratings and reviews
  - ☐ Developer
  - ☐ User recommendations.

Fig. 1 Page one of our printed questionnaire

- What is the most important quality of an app for you?
  - ☐ Don't care
  - ☐ Look and Feel
  - ☐ Performance
  - ☐ Both
- Is there any type of app that you have wanted in the app store but were unable to find? \_\_\_\_\_
- If you could buy mobile apps or in app content in Bangladeshi Taka, how would you?
  - ☐ Would not
  - ☐ Mobile talk time
  - ☐ Credit card
  - ☐ Mobile banking
- Do you prefer your apps to be in Bengali or in English?
  - ☐ Don't care
  - ☐ In English
  - ☐ In Bengali
  - ☐ Both
- What kind of problems have you faced using mobile apps? \_\_\_\_\_
- What category of apps do you want more of?
  - ☐ Health
  - ☐ Agriculture
  - ☐ Education
  - ☐ Lifestyle
  - ☐ Games
  - ☐ Social
  - ☐ Other \_\_\_\_\_
- Rank the top five apps you have used in the past (please put numbers 1 2 3 4 5 in the blanks)
 

Clash of clans	Facebook
Viber	Instagram
Whatsapp	Youtube
Sound cloud	Shazam
Subway surfer	We chat
Candy crush saga	Roblox
Camera 360	Piccollage
Facebook Messenger	Gmail
Temple run	Evernote
Skype	App lock

☐ Other (please specify) \_\_\_\_\_

**Respondent Demographics**

a. Age: \_\_\_\_\_

b. Sex: ☐ Male ☐ Female

c. Profession: \_\_\_\_\_

d. Income Level:
 

- ☐ Less than 1 lakh taka per year
- ☐ Less than 3 lakh taka per year
- ☐ Less than 10 lakh taka per year
- ☐ Greater than 10 lakh taka per year

Educational Level:
 

- ☐ Up to SSC/O levels.
- ☐ Up to HSC/A levels.
- ☐ Bachelor's Degree.
- ☐ Master's Degree.

Thank you for completing this survey. Have a nice day.©

Fig. 2 Page two of our printed questionnaire

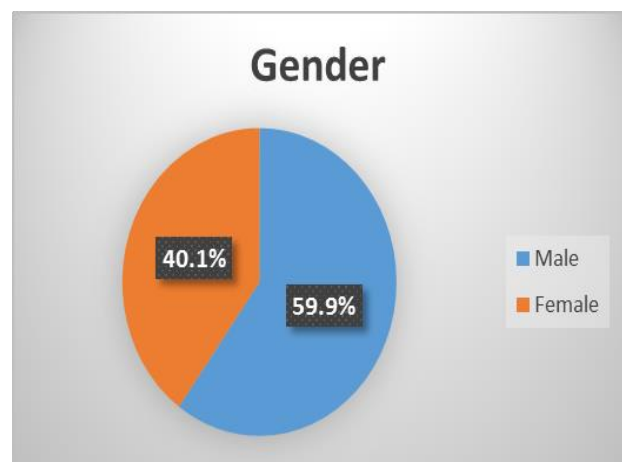


Fig. 3 Gender Distribution of our survey

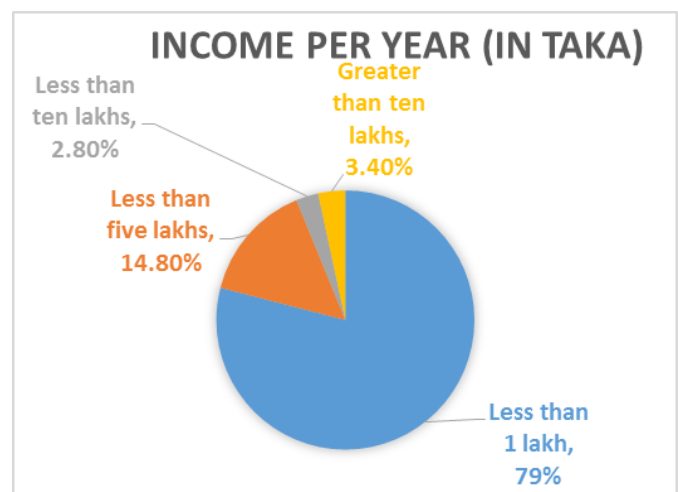


Fig. 4 Income per year (in Taka) of our survey population



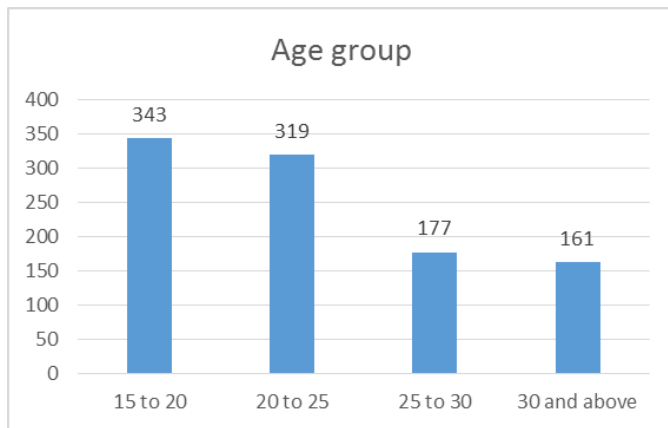


Fig. 5 Age group of our survey population

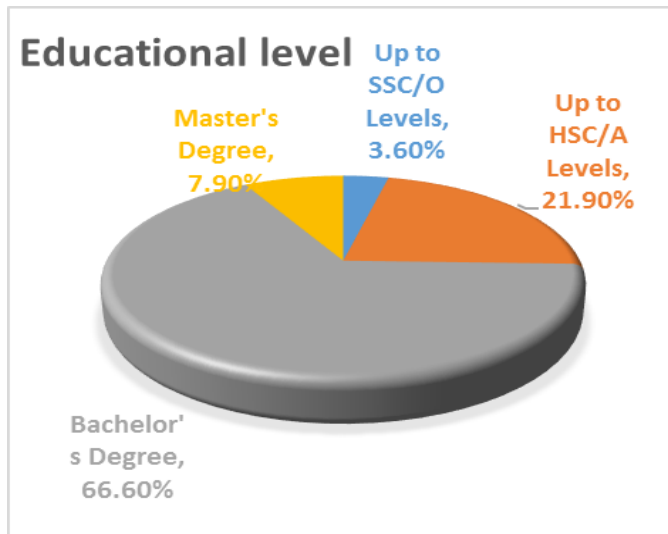


Fig. 6 Education level of our survey population

### B. Question: How many phones do you own?

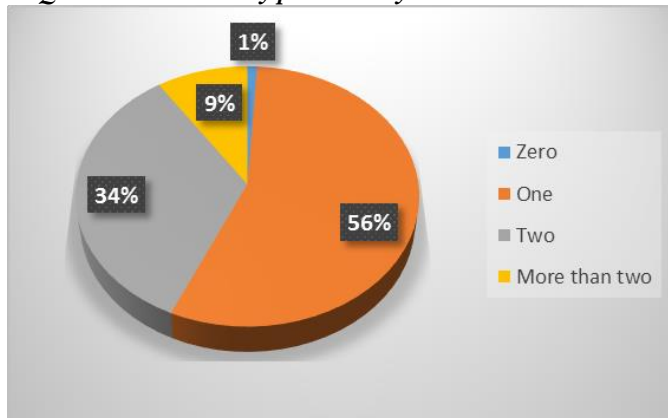


Fig. 7 Number of phones per respondent

The majority of respondents (55.7%) answered that they own one phone. However, it is also noticeable that the second highest value is two phones and it is very close to the common answer, on the other hand only one percent of the entire questioned population does not own a phone.

This situation is clearly explained by the current situation of mobile market. With the emergence of less costly cell phones in the market, more people have started to use cell phones and more importantly, people who used one cell phone before started to prefer to use a spare one along with it.

There are numerous reasons for having a second phone such as taking advantage of different packages and benefits offered by the different telecommunications providers in the country, as well as having an extra phone should something happen to the primary phone. This serves as an example to the increasing necessity to having a cell phone.

As the research and development for less costly cell phones continue we can only predict that in the future more people would start to use two phones and people who do not own one yet will buy very soon.

Comparing to the current data that a single citizen in United States owns an amount of 1.57 cell phone in average[1], which suggests that they are quite ahead of us in cell phone usage department, which is very understandable since United States is a country with the largest economy in the world, further there are many affordable cell phone offers the United States comparing to our country. The weighted average, gained from our study is 1.517 cell phones per person. This is only slightly less than that of the US and shows that, in terms of usage, Bangladesh is growing at a remarkable rate.

### C. Question: Since when have you been using mobile apps?

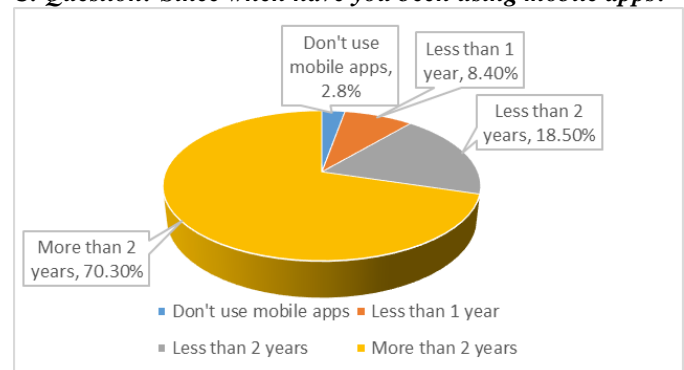


Fig. 8 Representation of how long has one been using mobile applications

Our second question provided us with a clear response that says that a vast majority of people have been using mobile apps for more than 2 years and a very small percentage do not use apps at all.

Also the percentage of app users are increasing almost every year.

This clearly explains that almost anyone that uses a cell phone attempt to make the best use of their device and in the coming years there would probably be even lesser or maybe even zero percent of users who do not use apps.

An extensive research called “Portio research” suggests the projected number of mobile app users in the coming year of 2017 where the Asia Pacific region where Bangladesh resides seem to be the largest percentage of application consumers with an overall of 4.4 billion app users all over the world which is more than 50% of the entire population of the entire world.

**D. Question: What type of mobile phone do you use?**

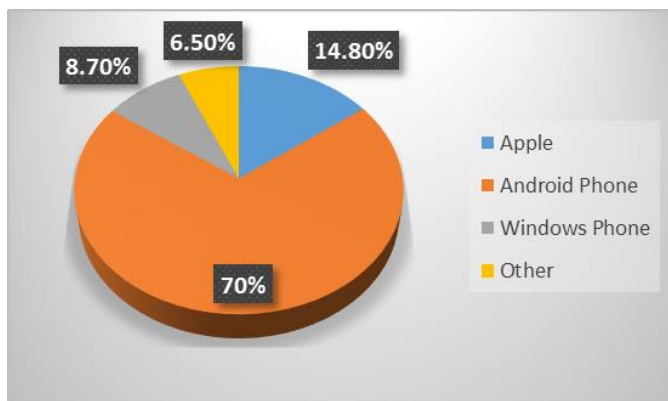


Fig. 9 Operating System used by respondents.

When asked about which operating system one uses, a very dominant amount answered with what is somewhat a very predictable answer: Android Phone. Apple users came at second place with a very large difference with the amount of android users and even lower is the amount of windows phone users, further down the table is people who use other operating systems like blackberry, Symbian, tygen or bada.

Users suggest that the dominance of android devices are because of their variety of apps in app stores, low cost devices, easy to use interface and large amount of free app availability.

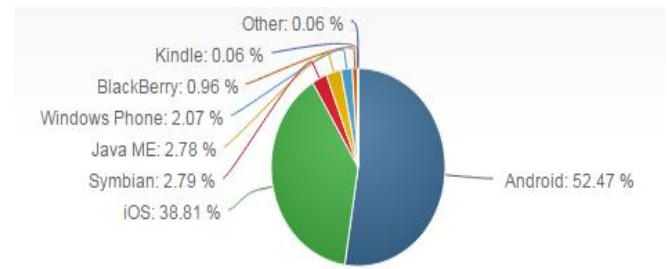


Figure 10: The current share of mobile operating system throughout the entire world

The diagram above clearly suggest that android is a dominant operating system not only in Bangladesh, but the entire world[2] is currently by dominated by the android operating system, if we compare the two pie charts we can see a significant difference in the number of people who use Android phones in Bangladesh, compared with Apple manufactured phones

Apple devices (Iphone, Ipod, Ipad) are quite costly comparing to the average budget of a cell phone user in Bangladesh. There are less costly android smartphones with similar features including some very cheap phones sold by Symphony and Walton, which cost a third of what an Iphone costs.

Unlike other countries, any mobile service operator does not provide the option for buying Apples devices in an affordable price. In the West, cell phones are sold in installment plans, thus making it much more affordable to the average user. In Bangladesh, this form of payment system hasn't caught on as well despite the efforts of many Telco's.

What seems to also be a very interesting issue is that the usage of windows smartphone in Bangladesh is a lot more comparing to the entire world's statistics, this is clearly because of the recent launch of the affordable cell phone with notable specifications in Bangladesh.

**E. Question: On what device do you prefer using mobile apps?**

The question asked next had some very insightful answers. When people of their preferred device for app usage, a majority asked stated that smartphone is the most preferred device for them.

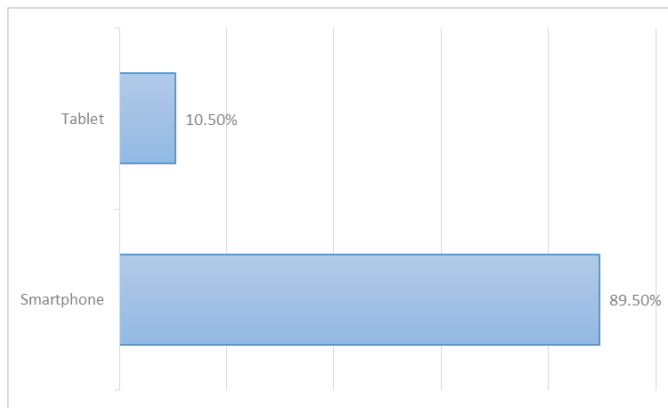


Figure 11: Device preferences for usage of mobile apps.

The reason for this is somewhat explained by a few very common situations in Bangladesh

- A large amount of population in our country prefer buying low cost mobile phones, crossing out their probability of using mobile apps in tablets which is a supplementary device a very small amount of our population prefer using.

- Most mobile users use applications on the go, since smart phones are smaller and more mobile devices they can be accessed for mobile apps anywhere

- Most smart phones have more high end specifications like camera, cpu clock speed or ram, compared to a common tablet

**F. Question: How many hours do you use your mobile phone per day?**

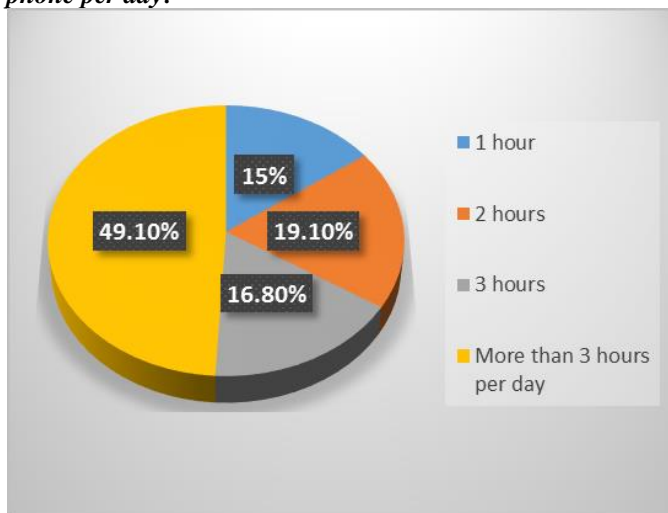


Figure 12: Mobile app usage per day.

Here we see that there is almost a tie around the number of population who use their phones for 3 hours or less, leaving a majority of people use their mobile for three or more hours a day. This vast

difference accounts significantly due to the presence of mobile apps in their devices as our previous questions refer.

According to mobilstatistics.com, recent studies have shown that normal people spent an average of 90 minutes on their mobile phone every day, which is quite less than what our survey concluded, this suggests that, around the world, people are less prone to mobile usage in their daily lives than we currently are. Another reason for this might be that, due to the majority of our respondents being students, they simply have more free time than people who are already working and so can afford to spend more time on their mobile phones than others.

**F. Question: How many apps do you use regularly?**

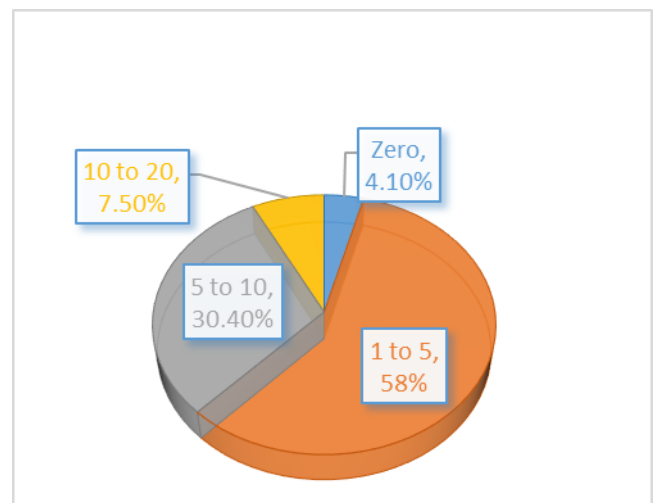


Figure 13: Number of Apps frequently used by respondents

The next question concentrated on the quantity of mobile app one prefers using regularly, here the most frequent amount of app one use regularly is seen to be around 1 to 5 and the very next most frequent amount is 5 to 10. This allows us to conclude that people use quite a significant amount of apps in their mobile devices regularly. Also a very small amount of population uses excess mobile applications (10 to 20), which briefly states that people prefer a particular set of essential apps for their devices to be used regularly instead of downloading in excess amount. A very few, in fact the lowest amount of population do not use any mobile apps regularly which just tends to reassure our statement stated before that “a majority of people prefer making the best use of their smartphone using mobile apps”.

**F. Question: Do you use internet through mobile data or Wi-Fi? How much mobile internet do you use per month?**

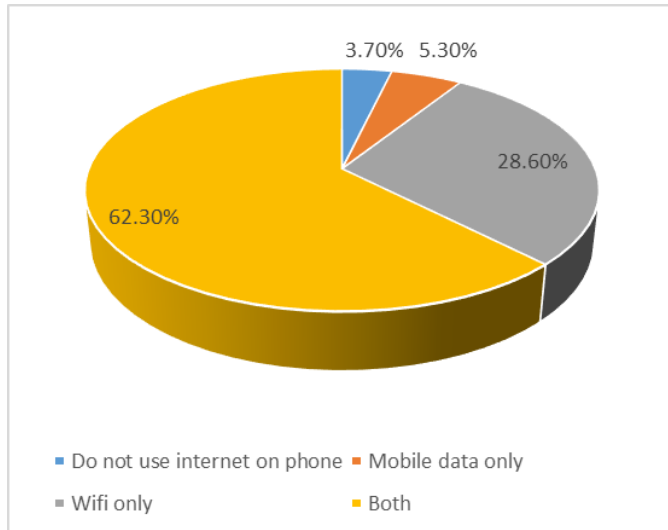


Figure 13: Preferred internet system for the respondents

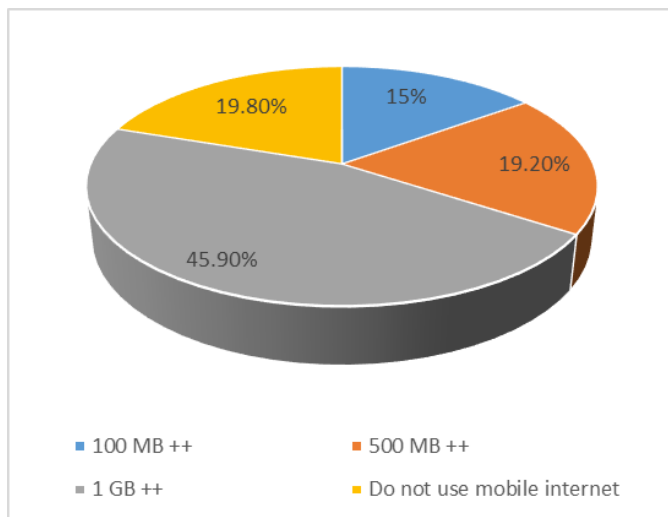


Figure 14: Mobile internet usage amongst respondents

The next two questions deal with internet usage of mobile app users.

The first asked how one prefers using internet in his or her mobile device, the answers stated that a very small percentage of people do not use internet in their devices while an almost equivalent percentage use mobile data only. On the other hand a large amount of people prefer using Wi-Fi only and even larger is the percentage that use both Wi-Fi and mobile data.

The second question then investigates the amount of mobile data one uses, we can see that almost half of the total population use more than 1Gb per month, suggesting that they are heavy data users who prefer spending their time on internet using multiple

apps for work, playing games, browsing the internet and social networking. There is also a significant amount of medium data users which suggest that there is still an amount of users who only use internet for essential purposes and less or not at all for recreation.

Both the pie charts together clearly states the effect of low cost internet in the lives of mobile app users and further explains how people prefer Wi-Fi to mobile internet due to its lower cost and faster bit rate. Using Wi-Fi is also significantly cheaper than using mobile internet as most people use Wi-Fi at home, where there is no added surcharge except for their monthly internet cost which they pay to their ISP, or they use Wi-Fi at places where free Wi-Fi is offered.

**G. Do mobile apps make your life more productive?**

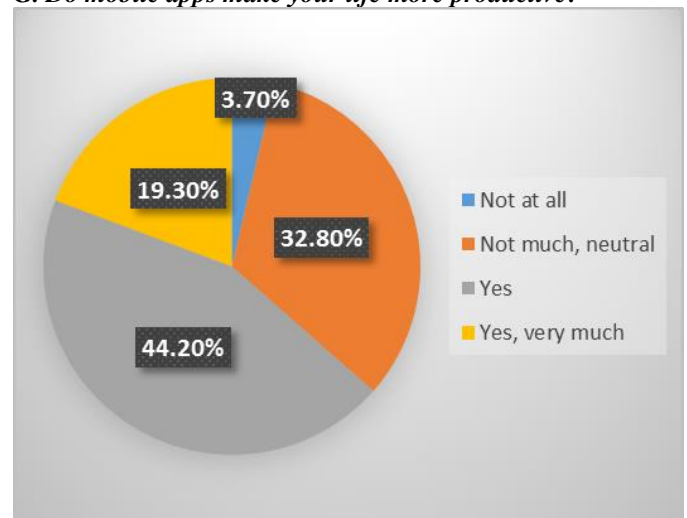


Figure 15: Response about productivity of using mobile apps.

This question is based on whether consumers believe that mobile apps make their lives more productive. 44.2% of the respondents answered yes whereas another 19.3% responded very positively about mobile apps. A small minority

The next question was based on what people think about mobile apps and how much they believe it has made their lives productive. What seems to be very significant from this answer is that a small percentage of the population believe that mobile applications have not made their lives productive. On the other hand the amount of person who are neutral and positive about the productivity of mobile apps in their lives are quite close where the latter is the highest amount in the survey. There is also a small yet significant amount of people who



are extremely positive about the productivity of mobile apps.

**H. Question: What is the most important quality in an app for you?**

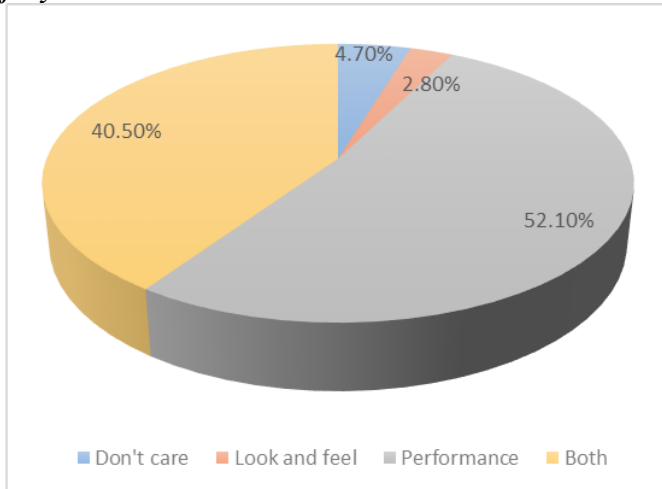


Figure 16: Response for App Quality Preference

While examining the priorities of a mobile app user we see even though most users prefer good performance by an app and expect no sorts of crashes or hangs, quite a large and significant amount of the survey population seek for an app that may provide both, a good outlook and a very good performance. In contrast a small percent of people do not care about any particular qualities of an application given that it does the described job right and even lower is the amount of people who only prefer the outlook of an application.

This clearly suggests that even though the current population is a heavy app using population, these people do care about their device and seek apps that do not crash and perform well. This is a key finding of our research as developers should focus most on the performance of their apps.

**J. Question: Do you prefer your apps to be in English or Bengali?**

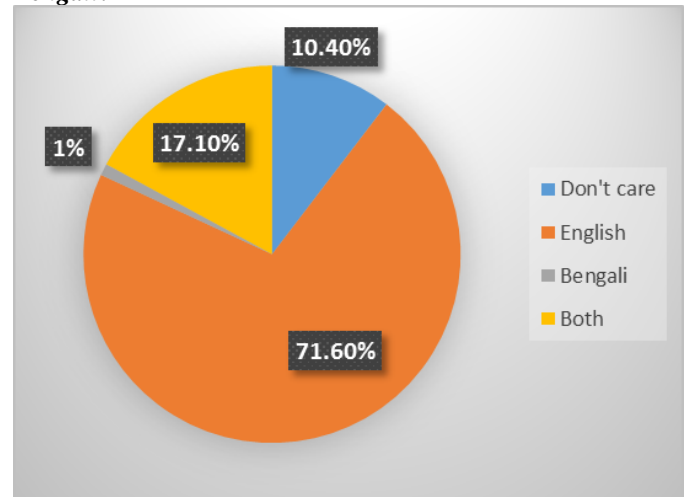


Figure 17: App Language preference of users

As we dig deeper to the features a user prefers in their app we ask their preferred app interface language, resulting a major of population to state that they prefer English language based applications. The second largest by a significantly less amount of preference is the amount of users who prefer both the languages together in an app and closer to that amount are the amount of people who do not at all care about the user interface language as long as it provides the promised functions.

However what is very alarming is the fact that a very small amount of people, insignificant comparatively prefer Bengali as the only user interface language, which probably is because of the fact that there is a very small amount of applications currently available that provide Bengali only, making it somewhat of a habit for users to prefer English for their app.

**I. Question: If you could buy mobile apps or in app content in Bangladeshi Taka, how would you?**

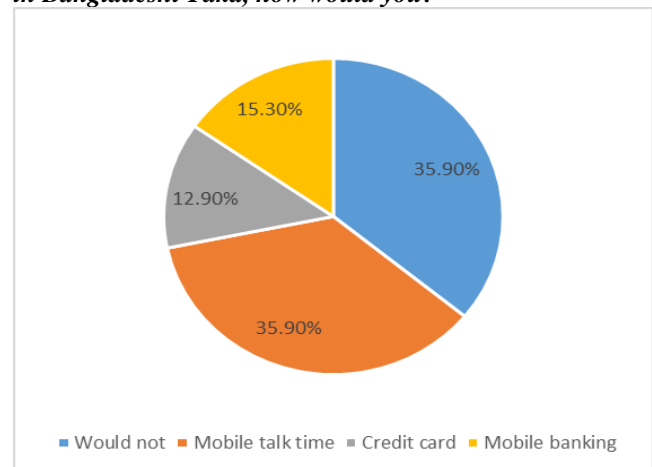


Figure 18: Response of willingness to pay for mobile apps and content

Realizing the fact that there is a very few amount of methods for mobile app purchase or in app purchase in Bangladesh we decided to refine our purchase system question by asking people given that the amount of options for mobile app purchase have been increased, which system do they prefer to purchase in. Still, a large population responded by saying that they do not at all prefer buying mobile apps but along with that many preferred the option of buying apps using mobile talk time. This now allows us to conclude that if there is less complication in the purchase methods of mobile apps people will tend to buy apps more than they currently do. Then there is also a smaller amount of people who prefer using mobile banking and credit card which also seems to be a complicated method for app purchase comparing to the former mobile talk time method which has not yet unfortunately been introduced.

**J. Question: How do you decide which app to download?**

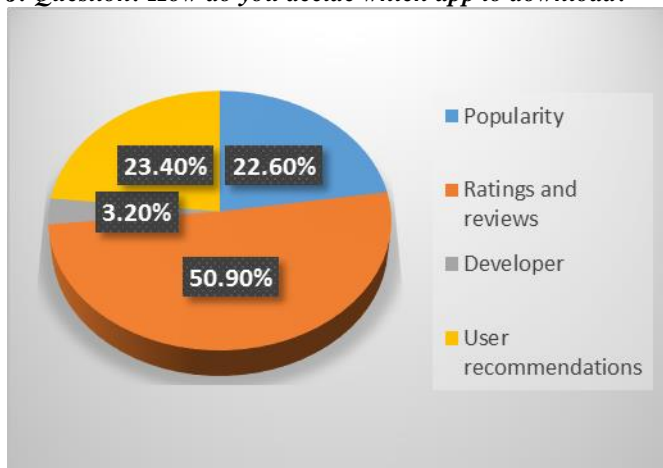


Figure 19: How apps are chosen by respondents

After checking the statistics of app usage, we now examine what causes someone to download an app. Or to be more clear, how does a user find an app or decides which app to download. The answers of this section stated that almost half of the entire population of our survey depend on app rating and reviews in the app store and they carefully examine the app store statistics before installing an app in their device. A very few amount of people look for specific developers or their apps and the amount of people who download apps based on their popularity and recommendations from their friends are almost equal.

Comparing the correlation between the ratings and reviews of popular app stores with the number of downloads they had, it is easy to conclude that like what our survey suggested, people around the world prefer trusting the rating and reviews of an app store.

**K. Question: What category of apps do you want to see more of?**

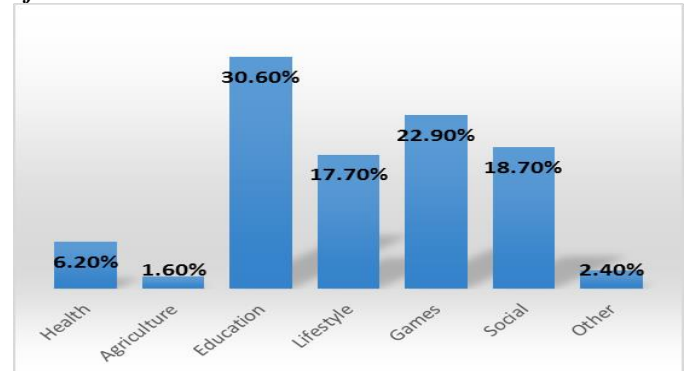


Figure 20: App demand by category

As we continue to analyse further the app demands of mobile app users we ask them their preferred category to see more varieties of apps. Here we placed 6 most popular categories of mobile applications along with an “other” option in case the respondent cannot find his desired category in the list given by us.

The largest amount of population answered education, reasons behind this answer may be because the largest percentage of smartphone and app users in the country are students or related to some part of education.

The second largest majority prefer more of games since it is probably the best recreational function a smart phone can provide.

The social and lifestyle category have been selected as 3rd and fourth and are very closely equal of amount, the amount of social and life style apps present currently in our devices and available in the apps store serve enough of our purposes, but then again, a “smartphone” refers strongly to connectivity and smartening our life style.

There is a small amount of vote for people who look for health related applications because most of the people in our country have not yet chosen to be dependent upon a smartphone for their health or well-being.

Analysing the last parts of our survey we see that there is a small amount of votes for people who

prefer other categories of applications excluding the given options, meaning most people prefer looking for the categories inclusive in our survey question. Finally the least preferred category, “agriculture” gives us an insight that most of the people who use mobile applications are not interested in agriculture and vice versa. Meaning that the population who work with agriculture and the population who use mobile devices barely intersect.

#### **VI. SUMMARIZED RESULTS**

Throughout our analysis we have come to the following findings

- Our respondents were 60% male and 40% female.
- The majority was of the age range 15-25 years old (65% fall into this age range). Most are educated up to a Bachelor's Degree level (66.6%) and the vast majority earned less than one lakh taka per year.
- The majority of our respondents were students and young professionals and so our conclusions will be made with them in mind. However, what we must remember is that this demographic is also the largest demographic in Bangladesh, with over 65% of the Bangladeshi population considered youth.
- 55.7% of our respondents owned one mobile phone. 33.7% owned two cell phones. The weighted average of cell phones per person was 1.517.
- The majority of users use Android OS.
- Smartphones are more preferable for mobile apps than tablets.
- The majority of people spend upwards of three hours a day on their mobile phone.
- 58% of people use between 1-5 apps regularly.
- In terms of mobile internet consumption, 62.3% of people use both mobile internet and Wi-Fi. Only 5.3% of the people use mobile data exclusively. 45.9% use greater than 1GB of mobile data per month.
- The majority of our respondents (63.5%) said that mobile apps made their lives more productive.
- 71% of people preferred their apps to be in English. A very small number preferred them to be in Bengali.
- 89.6% of the respondents have never spent any money on mobile application.

•35% of the people were unwilling to pay for mobile apps and of the ones who were, the most frequent answer was to pay through mobile talk time.

•Almost a third of people were interested in more educational apps. Along with that, the most popular categories was lifestyle, games and social apps.

#### **VII. LIMITATIONS**

The primary limitations of our study was that it the primary respondents are a generally homogenous group. The majority of our respondents were between the ages of 15-30 years old, were university going students or young people entering the work force and earned less than 1 lakh taka per year. Due to this, the data we have gathered has come to reflect this. Also the majority of our data, collected online or through local surveys, is geographically restricted to Dhaka city and its surrounding areas. Further work must be done in other cities, towns and villages so as to have a complete holistic picture of Bangladesh as a whole. Similar studies can be done in large cities like Chittagong, Khulna, Sylhet and so on. Due to financial constraints, we were unable to go out of Dhaka and conduct surveys in this regard.

#### **VIII. CONCLUSION**

The majority of smartphone users in Bangladesh use Android so for any company or individual who wants to develop an app, the android market must be considered the key market. In the coming years, we can expect that the number of Android users will increase even further, due to people from lower income brackets acquiring their first smartphone.

Due to the relative affordability of Android phones, compared to other competitors such as Windows and Apple, Android OS will dominate. In terms of Windows Phone, we have seen a very small market share amongst our respondents. This could be due to more attractive or cheaper packages offered by other brands and the fact that the Windows OS is not seen as favourably, as compared to an Apple Phone or one using Android.

Most of our respondents were already familiar with mobile apps, having used them for at least 2 years. This is evidence of the youth of Bangladesh being familiar with mobile apps and this allows

developers to leverage that familiarity for greater business and social growth. For example, recent efforts by Maya, through the launch of their app, “Maya Apa”, allows social growth through the dissemination of information pertaining to female health through an otherwise conservative society.

In the coming years, we predict that older people will also start using apps regularly as well, using them to augment the efficiency of their businesses.

Bangladeshis are primarily smartphone users – while the tablet market is on the rise, the majority of people own a smartphone and prefer their apps to be used on the smartphone. So developers must keep this into consideration and develop applications with smartphones in prime focus.

Bangladeshis are also heavy smartphone users – with up to 65.9% of our respondents – using their mobile phones at least three hours a day. Respondents were also most likely to use between 1-5 apps per day. This means that for developers to tap into the popular sphere, they must design apps which are considerably sticky and that make users want to use it again and again.

We have seen that our respondents used the internet quite frequently, with only a small minority refusing to use the internet on their mobile. The majority preferred to use a mixture of Wi-Fi and mobile data, allowing them to be connected to the internet while on the go and at an affordable price. In terms of exclusive mobile data usage, the modal range of data used was in excess of 1GB per month. Thus developers of mobile applications shouldn't hesitate to integrate online features into their mobile applications. It is best to have a social integration feature, increasing the reusability and longevity of an app significantly.

The majority of our respondents said that mobile apps made their lives more productive. This sentiment can be leveraged to develop further apps which are exclusively catered to the Bangladeshi market, helping Bangladeshi students and professionals improve their productivity. An example of this would be Go!Traffic, an app which is designed to help Dhaka dwellers have real time updates of which part of the city are traffic congested and plan their route accordingly.

For the developer, the key consideration they must take is the performance. The respondents

considered that the performance of an app is more important than its look and feel. However, the same amount (40.5%) of respondents said that both of these things are equally important. So, while it is better to focus on performance over looks and feel, it is better to have both.

An alarming trend we have found, in terms of language of apps, is that the majority of our respondents prefer English apps. Only a small fraction of our respondents preferred Bengali apps. The language is a core component of any app user experience so developers must reflect this. However, as more and more people start using smartphones, we must also remember to cater to new users. Not all of them will be at ease using mobile applications in English so their needs must also be taken into account.

When asked about whether our respondents had ever spent any money on mobile applications, the overwhelming majority replied that they hadn't. The few who had did so through credit cards or through gift cards. This will prove to be a significant hurdle for developers in the country as this limit the monetization possibilities that they can avail.

A large percentage of the respondents were unwilling to pay for mobile applications, even if they were given the medium. However, a large percentage stated that they would be willing to pay for mobile apps through mobile talk time. Others prefer mobile banking as a form of payment. Developers looking to monetize may wish to avail these business models as well as using the traditional in game advertising model that they use for their applications. If collaboration between the telecom companies and developers ensues, then this could lead to a growth in the Bangladeshi app industry as well as additional value networks being created.

A majority of people choose which apps they download according to ratings and reviews. This must be noted by developers if they wish their apps to be downloaded more. Small incentives such as additional content or other benefits may serve to persuade users to rate and review their products.

30.6% of our respondents wanted more educational apps developed. In Bangladesh education is paramount and apps helping people to



study for standardized exams such as GRE/BCS exams or IBA/BUET will find a significantly large market. Along with this, apps which help foreigners learn the language are also considered to be in demand. Lifestyle apps are also demanded as well as games and apps with social aspects.

Games built on the foundation of the rich heritage of Bangladesh can find a place in the market as well.

While it may be impossible to usurp Facebook in terms of social networks, other forms of apps may be possible in the market. This could be in the form of apps allowing single people to search for spouses.

Specific recommendations for apps were – apps to help with GRE, apps recording cell phone and internet usage, live traffic updates, Bengali learning apps and apps for universities, allowing them to communicate with their students effectively.

Some of the major problems that respondents found were performance issues – too much resource usage by apps making phones slow and apps which quickly drain battery life. Finally too much in app advertisement deters from the experience of the app itself and was considered a major annoyance by users. Developers must develop apps keeping these

factors in mind. The key recommendation is that developers think about the user experience and try to streamline it as much as possible.

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