Mobile Application and Its Global Impact

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Abstract- **This paper presents the uses and effect of mobile application in individuals, business and social area. In modern information and communication age mobile application is one of the most concerned and rapidly developing areas. This paper demonstrates that how individual mobile user facilitate using mobile application and the popularity of the mobile application. Here we are presenting the consequence of mobile application in business sector. Different statistical data of the past and present situation of mobile application from different parts of the world has been presented here to express the impact. This paper also presents some effect of mobile application on society from the ethical perspective.**

Index Term- **Business consequence, Business promotion, Ethical views, Mobile application, social effect.**

1. INTRODUCTION

In the modern age of Information and communication system, people are habituated to use computer and computer application. But Mobile Application uses and development is a new and rapidly growing sector. There is a global positive impact of mobile application. Using mobile application developed country are becoming facilitate and people, society of developing country are upgrading themselves and making a new type of IT infrastructure. Mobile applications are running on a small hand hold mobile device which is moveable, easy to use and accessible from anywhere and any place. Now a day, so many people are using mobile application to contact friends, browse internet, file content management, document creating and handling, entertainment etc. From everywhere user can get facility of mobile application. People can do many things of his daily life and business life. Not only the mobile application has an impact for user but also it plays an important role in business. Many business companies are earning revenue using mobile application. The mobile application has an impact on society. The mobile application run in a mobile environment which usability depends on several factors such as: Screen resolution, Hardware limitations, Expensive Data Usage, Connectivity issues, Limited Interaction possibilities. Last few years the mobile companies are trying to develop mobile device with more screen resolution, more storage, better connectivity which provide better environment for modern mobile application.

2. MOBILE APPLICATION OVERVIEW

Mobile applications are consist of software/set of program that runs on a mobile device and perform certain tasks for the user. Mobile application is a new and fast developing Segment of the global Information and Communication Technology. Mobile application is easy, user friendly, inexpensive, downloadable and run able in most of the mobile phone including inexpensive and entry level phone. The mobile application has wide uses for its vast functioning area like calling, messaging, browsing, chatting, social network communication, audio, video, game etc

In large number of mobile application some are pre-installed in phone and others user can download from internet and install it in mobile phone. This large number of mobile application market served by increasing no of mobile application developer, publishers and providers. From the technical point of view the different mobile applications are run able in different managed platforms like iPhone, BlackBerry, Android, Symbian, windows; also some virtual machine such as Java/J2ME, BREW, Flash Light, Silverlight.

According to application area, there are different categories of mobile application.

1. Communications: Internet Browsing, email IM client, Social Networking

2. Games: Puzzle/ Strategy, Cards /Casino, Action/ Adventure

3. Multimedia: Graphics /Image viewer, Presentations viewers, Video Players, Audio players

4. Productivity: Calendars, Calculators, Diary, Notepad /Memo/Word Processors, Spreadsheets

5. Travel: City guide, Currency converter, Translators, GPS/Maps, Itineraries / Schedules , Weather

6. Utilities: Profile manager, Idle screen/Screen saver, Address book, Task manager, Call manager, File manager

2.1. Past and Present of Mobile Application

At first the mobile application comes as a simplest way with our early cell phones, alarm clocks, currency calculators etc. At that time people just used mobile application for receiving call messaging, doing simple calculations etc. But the mobile application developers all time kept focus on "Why Simple?" But they knew that, in the future the mobile application will explore with its vast feature and everybody will use it.

In 2000 the mobile application developers were talking about internet based mobile application. By those mobile application people can connect them to internet for their daily importance. There are some parts of the world where the mobile industry was running late like EUA. In that part of the world the mobile network were not so advanced. So, good expectation about mobile application from that part is a funny thing. But if we think about Europe, world biggest mobile company like Nokia, Ericsson etc made their headquarters, from that area the mobile innovation came out. The main problem is that those companies were making cell phone for the mobile operator also they were making the mobile application. But they may be slow things down. Those created a gap between developer and the customer. It was created a frustration for the

developer whatever they developed, when it was coming or it never coming.

In America 6 years ago, a company announced that they were launching a cell phone which will be change the motive of market. They didn't care about the list of request of the operator. They wanted to create a cell phone and mobile application which will be featured for the market, and finally they did. The iPhone, when it was released it became most wanted within last few years. And other cell phone companies are still trying to copy with it. The main feature of this cell phone was it had a fantastic platform which allowed running very dynamic application based on internet. They have been sold so many applications. Also Nokia launched its Application Store. For example, Nokia using Symbian operating system and there is big application market named "Ovi Store". Where we can finds so many applications for our daily needs. Also it is a great place for developer. Also Sony Ericsson has Android OS and Android Market.

The most application is based on Internet and serve fantastic feature. And then the internet use from mobile increase dramatically. Those mobile application are being design to help us in our daily life and allow us to connect with internet, interact with world, getting information from distance place, social communication using facebook or twitter, identifying location etc. You are going back to home so you can open air-conditioner using mobile before reach to home. Also you can get alarm of your car or your home to you cell phone and so on.

In 2008 there was a milestone that the Mobile broadband subscriptions overtook fixed broadband subscribers for the first time [4][5]. But Mobile Web accesses are still now suffers from usability and interoperability problems.
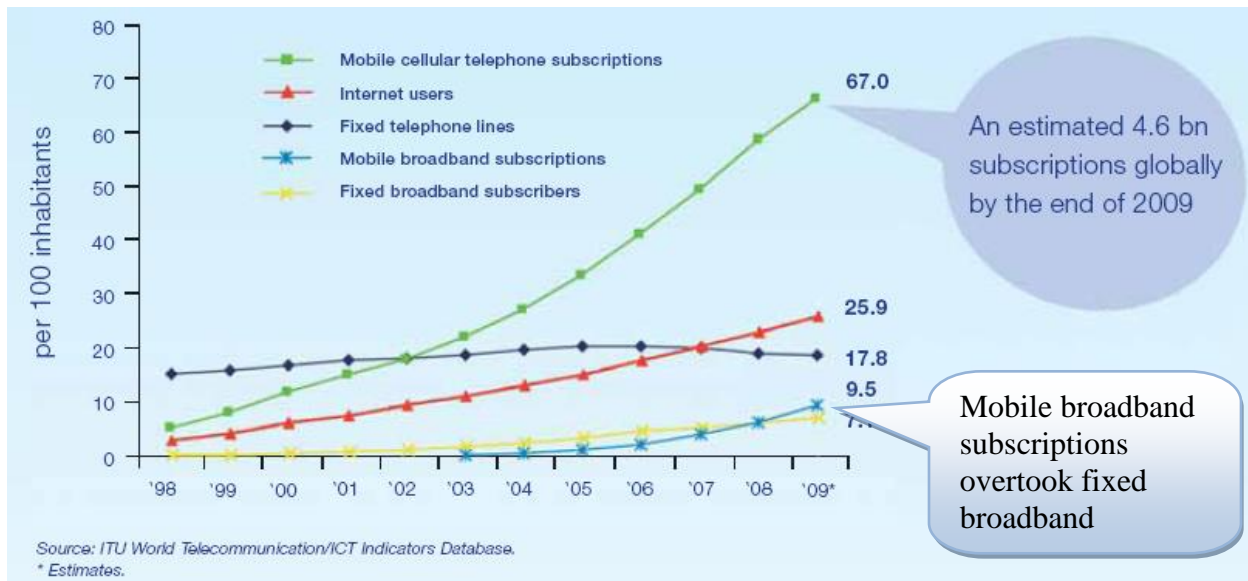

Fig. 1. Mobile broadband subscriptions overtook fixed broadband in 2008 (From [5])

2.2. Present Uses of Mobile Application

From the last few years every mobile company are making the smartphone and feature phone. And increasing the computing power of those mobile phone, rapidly increase the smart mobile application. Most of the people from developed countries including America and Europe can't imagine leaving home without mobile. Not only the developed countries but also the developing countries the mobile application uses rate growth rapidly. The mobile application are using in different areas. We are going to explain some major used area.

Let's think about communication like internet browsing, Voice chat, Facebook, Twitter etc. Now a day every standard mobile has Facebook application. User can share with their friends and family from anywhere and any place like in car, in train. People can use messenger for chatting. We can generate call to any corner of the world with low cost using VoIP application and internet.

Then we can talk about GPS System. Current position locating in map, Road navigation, vehicle tracking etc are the most uses application using GPS system. The Google Map helps us to find out any place.

Using mobile commerce we can view product, select product and order for product. Sometime mobile application Mobile Wallet uses in restaurant or market for completing payment. People can doing business work using mobile application. Mobile banking and eTicketing is another feature of mobile application.

Some time we can use mobile application with support of internet connection for controlling the home device from remote place. Business people are doing business from out of office.

People can watch video and movie from YouTube directly using mobile application. They can play video and audio. Kids can play game in mobile which is also one kind of mobile application.

According to a study by MobiLens [12], the number of mobile application user in US grew by 28% between April 2009 and April 2010. Here is a table of growth rate of all application categories in one year up to April 2010.
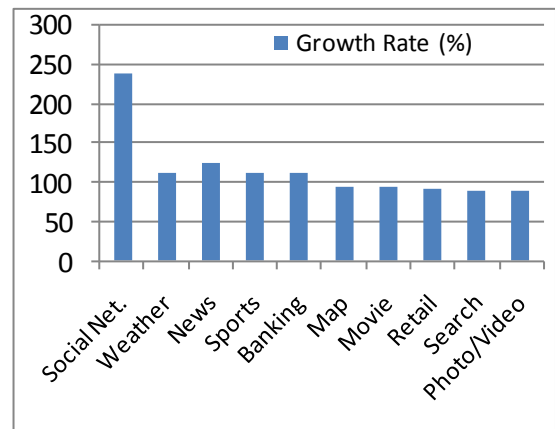

Fig. 2. Growth rate of all application categories in one year up to April 2010 (From [12]).

The Nielsen company, released a survey in September 2010 has been published a report of downloading and mobile application [7]. In that survey they shows some important statistical data of the mobile application of 30 days.

According the survey, the following figure represents the uses rate of different category of mobile application.
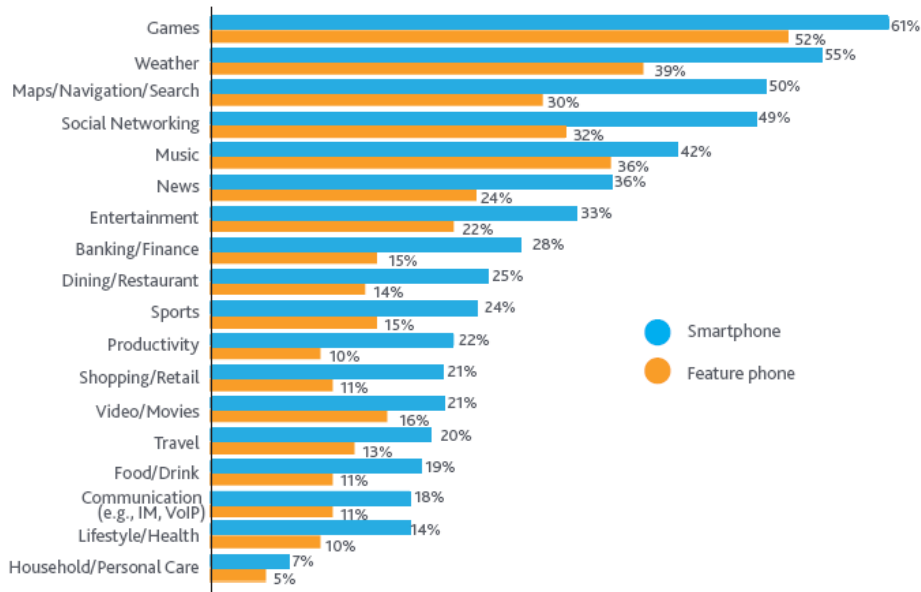
Fig. 3. Category of app used in 30 days at August 2010. (From [7])

2.3. Future of Mobile Application

According to the previous study of mobile application uses we can see the mobile application uses rate increase very dramatically. Before talking about mobile application if we think about the uses of Smartphone then we can see that the uses of smartphone increase very rapidly. According to Wireless Expertise Ltd, Market Report [14], in 2008, the global smartphone sales was 140 million, and the number of smartphones sold per year will be 422.96 million. Wireless Expertise expresses that by 2013 smartphone penetration will be approaching approximately 28-30% of the total mobile market in 2013.
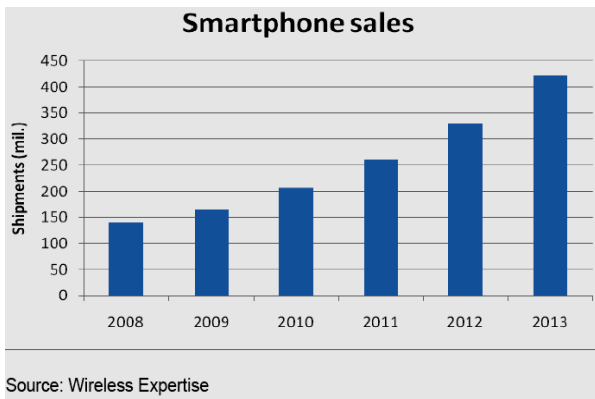
Fig. 4. Global Smartphone sale in differ year and future (From [14])

Those entire smartphone users are using the smart mobile application. Now a day most of the smartphone has WLAN/WiFi. So user can connect to Internet or local network with high data transmission rate. In previous mobile application uses data we can see that maximum used applications are social communication, map navigation, search or entertainment. But, because of better connectivity in future the mobile application provider are going to make application for doing business. In near future we can get that kind of software like desktop software for managing business, office automation, financial management etc.

3. BUSINESS CONSEQUENCE OF MOBILE APPLICATION

Within last few year, smartphone and mobile application uses growth rate is so high. So the Mobile and mobile application also has a great positive impact on Business. There are different areas of business where the mobile applications play an important role. In following paragraph we have tried to discuss some issue about business consequence of mobile application

3.1 Business of Mobile Broadband/Internet

All of the smartphone and feature phone have smart environment and vast number of mobile application. Most of the applications are connect people to the world via Internet/ mobile broadband. For example, Google map, navigation, email, entertainment, gamming, mCommerce. So world wide mobile users are use internet using mobile and the mobile operator and other third party company doing business by providing broadband internet service.

In last few year, the uses of mobile broadband rise dramatically all over the world but not everywhere. According to a report [5] we can see that, in Asia & Pacific and Europe the mobile broadband has a greatest numbers of subscriptions.
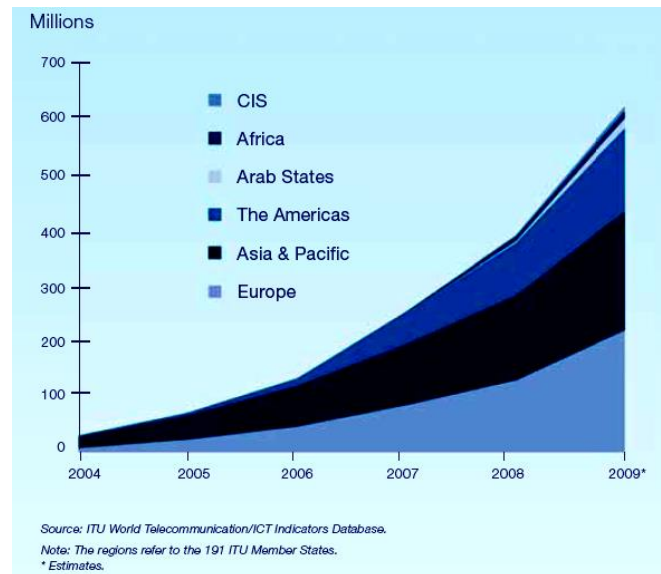

Fig. 5. Uses of mobile broadband in different region (from [5])

3.2 Mobile Application Development Business

In a year round a large number of smart phone being sold, so mobile application development is one of fastest growing business. The smartphone or feature phone or portable devices are easy to change setting and make it customize. There are programs for Blackberry, Androide, iPhone etc. Some Specialize development companies make user friendly software or template which, user can customize themselves for doing their own work like share with friend. Also those software uses for video game or any entertainment. The developer company charge for the software. More users will use their software, the user will promote the software more and the company will earn more.

There are mainly two types of Business model (store): one is Native or on deck and another is Third party or off deck. In one of research "Global Mobile Application Market (2010-2015)" [11], published that In 2009 about 6.4 billion mobile application has been downloaded from native and third-party application store. In that some are free, some are paid and some are ad-supported. In that yeas the total revenues came around $4.5 billion with 2.5 billion download. Now the Google, Nokia and other company entering in application market space with news software which are increase the usability of smartphone and mobile application. According to their research estimates [11], the global mobile applications market is expected to be worth $25.0 billion in 2015.

The Wireless Expertise [14] published that, in 2013 the global mobile app market including games will rise to $16.60 billion.
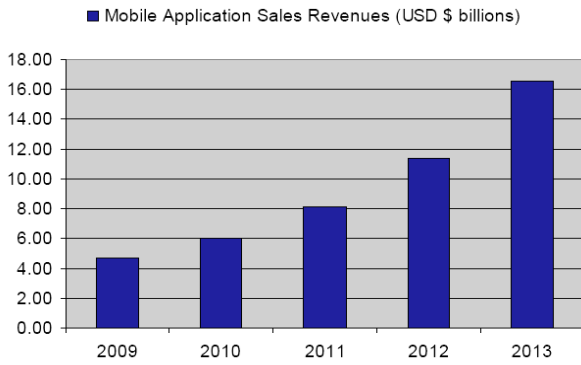
Fig. 6. Mobile Application sales revenues in different year and future (From [14]).

The 2010 IBM Tech Trends Survey [10], conducted to 2000 IT developers and specialists acroos 87 countries and getting response. According to the survey, 55% IT professional expect that, mobile software application development for devices such as iPhone and Android, and even tablet PCs like iPad and PlayBook, will surpass application development on all other traditional computing platforms by 2015.
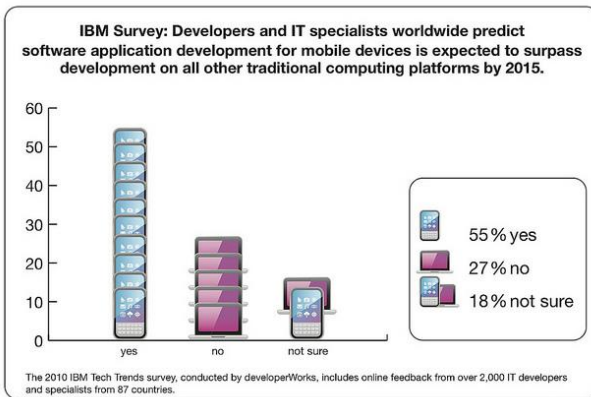

Fig. 7. IBM Survey of mobile software application development (From [10])

On the other hand, if we think from the developer or programmer point of view we can see that developer/programmer can earn a lot by developing the mobile application. Because of the mobile application development is an open market. IT people can learn the mobile application development and can achieve necessary skill. After that they can make mobile application and earn money.

3.3 Mobile Application Market

Different mobile operating system has provided by different mobile company. And for those mobile, most of the mobile company has own mobile application market. For example Ovi market, iPhone application market, BlackBerry application market, Android market etc. From those online market, mobile users can download many useful mobile application. Some application are free or provided by company with handset and some user has to pay for downloading. In every year a large number of mobile application downloaded by mobile user. So this is a big business sector. In this business sector mobile manufacturer company as well as network operators or mobile

application developer companies are earning huge amount of money. Also for downloading those software the smartphone user are using the mobile internet. Not only the mobile application but also the user downloads game, music and other entertainment material.

According to a study by mobile application store operator GetJar [15], the mobile application market will reach $17.5 billion by 2012. By then, the number of mobile application downloads will have also grown to nearly 50 billion from just over 7 billion in 2009. However, as Getjar founder and chief executive officer Ilja Laurs made the bold prediction that "mobile apps will eclipse the traditional desktop Internet," even going so far as to say that "mobile devices will *kill* the desktop."

Fig. 8. Global mobile apps market (From [15])

According to the survey we can see that the market mostly in Europe and North America and the market in Asia is growing. Seventeen percent of GetJar users already spend more time on Internet-linked mobile phones than they do on desktop computers, according to Laurs.

Not only Mobile Phone application but also the mobile devisees like iPod application are another big market. The Mobile analysis firm Flurry on Thu, Apr 01, 2010 released and statistical date [9] for showing the impact of the iPod on mobile application development. According to the report 22% new applications starts registered with the company over the past 60 days targeted the iPod.
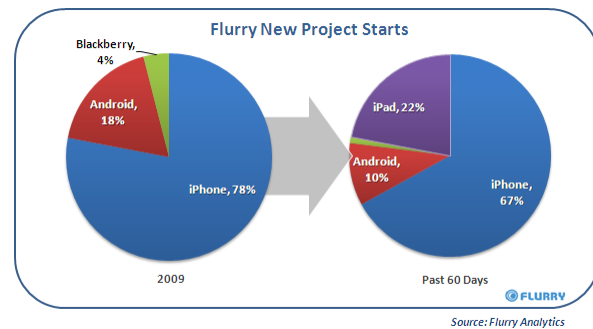

Fig. 9. Impact of the iPod on mobile application development (From [9]).

3.4 Business Promotion or Advertising using Mobile application

The concept, Business promotion or advertising in mobile application is not so old. Now a day this is another positive impact of mobile application for business. Mobile application publisher, distributor and service provider are getting large revenue by providing ads as a part of mobile application. The advantage of advertising in mobile application depends on the popularity of application and uses frequency of that application.

3.5 Business using Mobile application

Here we are not talking about the business or earning money by developing or sale mobile application, we are talking about some specific mobile application by which we can do business and earn money. There are many mobile applications by which the service providers earn al lots money every month. For example, Facebook, YouTube, Twitter, Skype and other VoIP software etc. All over the world so many people using those software and the providers are earning the revenue.

If we think about the mCommerce, there are many companies all over the world doing business by mCommerce, by this time general user getting facilities by this.

4. MOBILE APPLICATION'S EFFECT IN SOCIETY FROM THE ETHICAL PERSPECTIVE

Not only individuals or business, the mobile application also has a great effect in society. The whole society can be facilitate using mobile application. Some issues of social effect describe bellow.

Quick communication:

Some mobile application like Facebook, Twitter, Messenger, Skype, Google Talk are helps the society people for communication to each other. They can stay in touch where the geographical distance is not a factor. So the social relation improves and make strong. And this is good for family, friend and society.

Save time and increase productivity:

In society or in developed country people can do their daily work like check email, contact with business partner from any time in bus, train, car or walk. So, no need to wait in room or office. In this way save the time and people can get more time to work. The manpower's productivity of society or country is increasing gradually.

Improve IT infrastructure in developing country:

In developing country the uses of mobile application improve the knowledge of people. Because, they are accessing Internet from everywhere. As a result the IT infrastructure improves in any developing country.

Increase Job vacancy:

The mobile application development and mobile application business make more job vacancy in society. So many people can get job in this field. This is also good for society/country.

Less computer use less power consumption:

When most of the people will use mobile application for their daily simple work and getting facility from mobile application, the computer uses will be less as well as the power consumption will be less.

Considerable Cost Saving:

Mobile VoIP application can help people to making international call from his mobile. As a result the monthly expenditure reduced.

Entertainment:

Using mobile application people in society can entertained themselves.

There are so many other social effect issues which all are ethically good for the society. On the other hand there are some bad effects of mobile application which are not ethically good for the society. Those issues as follows:

1. When the so many Internet based mobile application is available to the teenager, they are wasting time by using Facebook, skype, YouTube etc. The young generations are in risk when they are using internet game or other bad application.

2. Beside the uses of mobile application most of the people use mobile in every place like bus, train, office, college, university. Some body feels disturb for them.

3. Frequently use of mobile is bad for health.

5. MOBILE APPLICATION USES LIMITATION

One of the big challenges of mobile application is its platform capability and limitation. Beside the interesting usability of mobile application they have some more interesting platform problems and limitation. We are trying to discuss the limitation in bellow.

1. **Small Screen Size:** In mobile platform it is difficult or impossible to view text and graphics like a desktop computer screen.

2. **Lack of windows:** In desktop we can see many windows at a time. But in mobile platform it is difficult.

3. **Navigation:** Most mobile devices do not have mouse like pointer, so it has limited flexibility in navigation.

4. **Types of pages accessible:** The mobile platform do not support all type of file format.

5. **Speed:** The speed of processing and speed of connectivity of mobile platform is slow.

6. **Size of messages or email:** Many device support limited number of characters in message or email.

7. **Cost:** The cost of cellphone, mobile application and the internet bandwidth charge is high.

6.   DISCUSSION & CONCLUSION

After all the limitation of mobile environment and mobile application, the uses and popularity of mobile application are increasing day by day. Most of the people are trying to use mobile device and mobile application instead of desktop for easy task. Gradually the uses of mobile applications are increasing corresponding to the use of desktop applications. All of the mobile manufactured companies and mobile application Developer companies are increasing the capacity, quality and functionality. So the modern mobile applications are more capable and more usable for the user. And the global impacts of mobile applications are going high.

In this paper we have tried to explain the so many things about mobile application and business with some data from modern market. And we think this paper will help to other for further study in the mobile application area.

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