

Impact of Smartphone :

A pilot study on positive and negative effects

S. Gowthami¹, S. VenkataKrishnaKumar²

¹M Phil Research scholar, Department Of Computer Science, PSG College of Arts & Science, Coimbatore, India.

²Assistant Professor , Department Of Computer Science, PSG College of Arts and Science, Coimbatore, India.

Abstract: Nowadays, Mobile phones turn out to be a major part of our life due to its advanced features. It is difficult to avoid such new technologies, while we all know the effect of mobile phone on our society and also on environment. The intention of this study is to understand all the positive and negative aspects of Smartphone on the society. The study will primarily focus on impact of Smartphone on business, education, health sectors, human psychology and social life.

Keywords: Smartphone, Mobile Applications, Social Impact, Addiction, Health.

Introduction: The convergence of communication and computing for mobile consumer devices is on the evolutionary course to bring interoperability and leverage the services and functions from each and every industry. As a marketing strategy the Smartphone term was introduced in the market, referring a new class of mobile phones that provides integrated services from communication, computing and mobile sectors including voice communication, messaging, personal information management (PIM) applications and wireless communication capability. In real sense Smartphone is a mobile phone with advanced features and functionality beyond traditional functionalities like making phone calls and sending text messages. The Smartphone are equipped with the capabilities to display photos, play games, play videos, navigation, built-in camera, audio and video playback and recording, send/receive e-mail, built in apps for social web sites and surf the Web, wireless Internet and much more. Due to its ubiquitous nature and social acceptance we can find Smartphone in educational institutes, hospitals, public places and shopping malls etc. the impacts of Smartphone's on diverse sectors of society and

finally this study summarized the impacts of Smartphone's and concludes.

History of Smartphone

Today's Smartphone's has been around since last six years when Apple introduced the Smartphone in mass consumer market, but in reality the Smartphone has been in market since 1993. The Smartphone era is divided into three main phases. The very first Smartphone "Simon" from IBM in 1993. Blackberry is considered as the revolutionary device of this era, it introduced many features including Email, Internet, Fax, Web browsing, Camera. Apple revealed its first smart phone in 2007. End of 2007 Google unveiled its Android Operating System with the intention to approach the consumer Smartphone market. This phase logical started in 2008 with the upgrades in the mobile operating system and within last five year there have been several upgrades in Apple iOS, Android and Blackberry OS. The most popular mobile Operating systems (iOS, Android, Blackberry OS, Windows Mobile) and key Smartphone vendors (Apple, Samsung, HTC, Motorola, Nokia, LG, Sony etc.) The role of Android has been tremendous during this time period as it provided a great opportunity to all vendors to build devices using the great open source Android technology.

Smartphone Growth / Usage:

The adoption of Smartphone's has been tremendous in mainstream consumer markets all over the world. Surveys show

- Advanced mobile technology will be globally ubiquitous by 2020 with 70 percent of people using smartphones and 90 percent covered by mobile broadband networks.

- Smartphone subscriptions will more than double by 2020, reaching 6.1 billion. Almost 80% of these new subscriptions will come from Asia Pacific, Middle East and Africa.
- By 2020 80 percent of all mobile data traffic will come from smartphones. North America and Europe will continue to have highest data usage per smartphone.
- Video traffic to grow 55 percent per year until 2020, driven by video streaming services and increasing prevalence of video in online content.

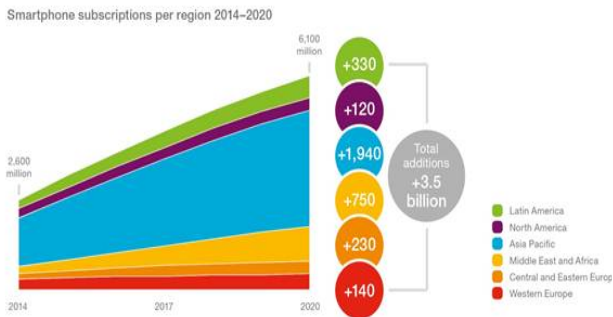


Fig: smartphone subscription per region 2014-2020

The report, a comprehensive update on mobile trends, shows that growth in mature markets comes from an increasing number of devices per individual. In developing regions, it comes from a swell of new subscribers as smartphones become more affordable almost 80% of smartphone subscriptions added by year-end 2020 will be from Asia Pacific, the Middle East, and Africa.

Impacts of Smartphone's

Smartphone has impacted almost all walk of human life. The prominent areas, where impacts of Smartphone are obvious include business, education, health and social life. Mobile technology has drastically changed the cultural norms and behavior of individuals. The impacts are both at the positive side and also at the negative side. The subsequent sub-sections of this study provide detailed account on positive and negative impacts of Smartphone on society.

Business

Smartphone has created new dimensions for business. It is not only the Smartphone vendors enjoying the business but it also created a new domain for mobile application developing companies, Internet services provider and other sectors of life to utilize the Smartphone to gain competitive advantages.

Positive Impacts

Mobile Application Market is another business sector introduced by Smartphone's. Different mobile operating system vendors have their own mobile application technology hence having a different market for Mobile Applications. The most common one are iPhone application market, BlackBerry application market, Android market, Microsoft mobile Application market. These online market places enable users to download useful mobile applications on need basis. Furthermore these market places also provide some free of cost application and some applications have associated with reasonable cost. Smartphone's also impacted advertising business sector as well. Advertising is an old concept but the features of Smartphone have made it more effective and no doubt it is an additional positive impact of mobile application for business. Mobile phones reduce the need to meet face-to-face to conduct business. For example, Wizzit in South Africa offers the option of total substitution of banking. The polarity has reversed in the technology industry and now many exciting developments in the field of information technology (IT) are appearing in consumer market space first and only then making their way into other fields.

Negative Impacts

The major impact of Smartphone is on PC market. a large number of people almost up to 65% are using their smart phones to read news feeds, post status updates, read & reply to messages and post photos. This shows that now people are leaving PCs and moving towards Smartphone's. According to market results in 2011 Smartphone shipments beat those of PCs, with 73 million more units being sold. Today the Smartphone users having are more powerful than the most of the desktops we have 10 year back. Smartphone have outsold PCs in 2011 and soon they could replace our wallets as well. Furthermore in last few years PC upgrades have become less important because developer activity has stagnated on the PC platform. According to analysts, the long dominated Microsoft and Intel alliance is experiencing bad times due to the rise of Smartphone's and tablets, and the pressure to gain market share in the mobile device

market is causing fractures in long partnership. It is true that still millions of PCs will continue to be sold every year, but the Smartphone's and tablets will see more considerable growth in the future.

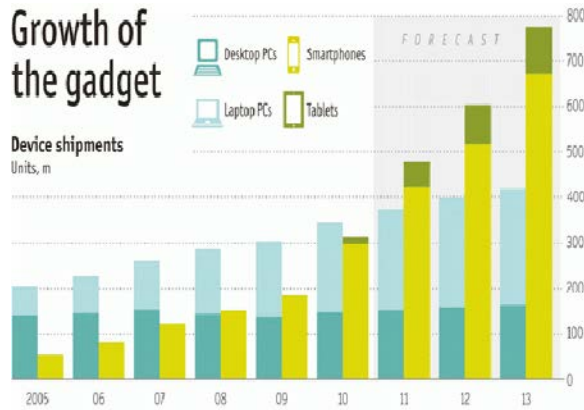


Figure 1: Growth of the Gadgets

Education

The uses of smartphone for educational purpose has increased many folds among society. Smartphone's introduced another means for the knowledge lovers to fulfil their thrust and dreams.

Positive Impacts

Use of the Internet has become a part of life of every student and a mean to search for the information as and when it is needed. Distance education is a learning mechanism that focuses to liberate students from limitations of time and location, while offering flexible opportunities for education. Distance learning enables students to utilize their time such that they can continue their education without impacting their work and family life. The Smartphone with the capability of always connected makes it much easier for the students to avail this type of education facility and makes the Smartphone a perfect fit device for distance learning. Smartphone within and without the classroom make it easier for students and teachers to collaborate. Students on sick leave or with health issues, or miss school for other reasons would be able to attend class through their Smartphone and keep up with their work. The education system of developing countries might unarguably be the most prevalent beneficiary of the mobile technologies. Smartphone's are not just supplementary devices for developing countries, but

these devices can play intergal part of in their education systems. The Smartphone provide access to modern society a massive amount of educational and learning resources. In developing countries Smartphone can easily compensates the limited access of internet and data access. Smartphone is useful for education development.

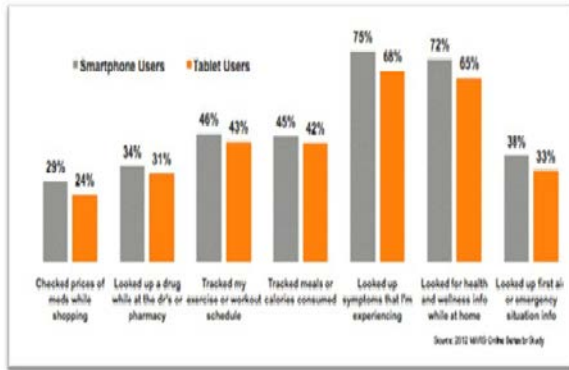
Negative Impacts

Smartphone's enables students to text, cooperate on social networking sites, check e-mails, play online games, and even watch TV channels. This is one of the sources of distraction. This is not only distracting for the student, but it can also become distracting for other students around them and even sometimes for whole class. In addition, it wouldn't be easy for students to make calls during exams to cheat but it may be easy for pupils in a crowded classroom or examination hall to use their Smartphone's to access information online to cheat in exams. In fact some surprising statistics are there about the use of Smartphones for cheating in the classroom. The misuse of Smartphone could be through the use of text message exchange with other students, find answers on the Internet, using advanced calculator and phone applications, reading notes saved on their phones to help on the test. Smartphone's can encourage bullying and hazing also. Bullying and hazing are very serious problems in schools across many countries including United States of America (USA). Smartphone's come equipped with camera and video technology, which can be used to record and photograph bullying and hazing in schools and colleges.

Health

According to a survey almost half of Smartphone users use their phone for access health related services, figure below shows the in health sector.

Figure: Use of Smart phone in Health Sector



Positive Impacts

Accordingly surveys more than 10 million users in USA use Smartphone to search for health information and facilities. In near future we see a breed of mobile applications, which enables doctors and parents to monitor a patient/child blood glucose levels at any point during the day. Even today several apps are available to track exercise, diet and blood pressure. This in turn enables the Smartphone's to play a key role in health sector. At the moment more than 40,000 mobile health apps available for tablets and Smartphone's, and more than 500 health projects underway worldwide with the emphasis to use Smartphone apps in health sector. Analysis show that the number of people using health related apps is growing drastically and 2012 surpassed 247 million. There is huge number of Medical and healthcare apps for Smartphone are, including drug references, medical calculators, reference guides and personal health and lifestyle applications. A survey was conducted on a small number of US healthcare students, administrators, providers, and nurses by a software company and the reports shows that almost 83% use Smartphone's to access, 72% use Smartphone's to write notes and memos, 50% use it for drug references, 28% use Smartphone to access clinical decision support tool and 13% to view medical images.

Negative Impacts

Mobile phones lead to a lot of accidents. A lot of people do their daily work, drive while taking on mobile phones. There is high risk of accident if you are talking on the mobile phone and driving as you are giving your half attention to the mobile call and are having half attention on the road. Research studies have also claimed that mobile phones have a

negative impact on health of an individual. If you are using mobile phone for long hours daily it might lead to serious health issues. According to the article, on average, the targeted users use to check their phones 34 times a day, but not necessarily that it was really needed to check emails instead it is habitually checking, which may result, in relying on phone more than doing things themselves. Another aspect that has been noticed is that lots of parents let their kids carry and use Smartphone's even in their very young age. The convenience offered by these modern devices is indeed great, but on the other side also there are major issues associated. The presence of a cell phone while two or more people are talking face-to-face can generate negative feelings toward the person who has his or her device visible. The high frequency of cell phone use can have negative effects on our stress levels. Overall, excessive cell phone use can be a risk factor for mental health issues in young adults.

Psychological Impacts

Impacts of Smartphone on human Psychology are tremendous there are several ways that Smartphone is impacting human Psychology.

Positive Impacts

According to a survey on use of Smartphone the Smartphone provides a mean to reduce stress in busy work life. In today's busy schedule Smartphone enables users to interact with their friends and family as and when they get time. Interacting with friends and families, while traveling, waiting on bus stop enables users to utilize such time to promote their social life. The concept of "use it or lose it" principle in Psychology is very old and according to this concept the key to keep your brain functioning in its peak condition throughout your life lies in its smart use. The smart use of Smartphone will increase your brain function instead of using the Smartphone only for entertainment it could be used to access useful information.

Negative Impacts

According to recent research, the addiction to Smartphone is increasing rapidly. Smartphone addiction is not just a buzzword but researchers have recognized habitual and compulsive communicating as a serious psychic problem. It is also established that obsession with our Smartphone is also responsible for significantly altering our brain's perception for the device. And now, as it's been

found that 25% of children have smartphones from the ages of 3 and 5 in the UK and that 64% of all adults in the US own a smartphone. the real psychological impact It sounds like sensationalist nonsense, but professor of Psychiatry Dr Gary Small found that technology changes the way that your brain operates. Using two groups: one which was computer savvy and another who were technovices, he performed brain scans as they read a book. He found that those who were computer savvy presented “broad brain activity in the left-front part of the brain known as the dorsolateral prefrontal cortex, while the novices showed little, if any, activity in this area.” After only two weeks of computer training the novices began to show brain activity in this area, suggesting that the use of tech – smartphones included – downright rewires your brain function. A significant positive relationship was found between narcissism and addiction to the phones, suggesting that the more narcissistic a person is, the more likely they are to be addicted to their smartphone. When the participants were asked if they used their phone in banned areas, 35% answered yes.



Fig: Smartphones are rewiring your brain

Smartphones have a very real impact on the way that you operate as a human being. Psychology effects of smartphones are Smartphones are rewiring your brain, Smartphones are impacting your sleep, Smartphones are making you dumber, Smartphones are making you selfish, Smartphones are making you anxious & easily manipulated, Smartphones are making you stressed.

Positive impacts

Accordingly to research around 15% of the current world population has some sort of disabilities and

also the number of elderly persons increasing day by day. Furthermore, this research shows that by year 2020 more than 1000 million people over 60 years age will be living on this planet. Smartphone's are capable to give this group of people the opportunity to live more independently. The more they can do by themselves, the better they will feel and enjoy the life. Smartphone features like, text to speech, GPS and social Websites are some examples, which can help this group of people to easily remain integrated with society. Using these services and many more features, the target group of people can easily communicate their needs, seek assistance from others and remain connected to society. Even in today's busy world Smartphone had also made possible for us to remain connected with our friends and family all the time. Always connected to the Internet through a Smartphone provides a great instrument for individuals for constant communication resulting in great safety for children attending schools or going outside. Smartphone features like the camera, video capture, access to social Websites and nature of always connected to the Internet enable individuals to capture any video at any time and share it with friends and family using social Websites and other Internet based options.

Negative Impacts

Cells phones have changed society in a negative way. There are many reasons why cell phones are bad. Cell phones cause a distraction for children in classrooms, drivers on the road, and they can be addictive. Another negative effect is cell phones disconnect us from the social world. School districts have taken a stand with cell phones in the classroom. For instance, Lenior County Schools student handbook says that high school students may bring cell phones to school but must keep them turned off all day. Cellular Telecommunications Industry Association, the number of cell phone subscribers across the United States, a total of 234 million at the end of 2006. Students cannot concentrate on homework because these devices have shortened people's attention spans. A survey was done and 54% said they use a cell phone while driving. A 2006 study, at the University of Utah revealed that the level of impairment caused by using a cell phone while driving was just as high as drunk driving. I agree with my findings because I think that this will help people understand that cell phones are a bad habit in society and socially disconnect us from the real world. Things need to change before these devices get way out of hand. This will give teachers

The motivation to figure out new ways to help students learn better in the classroom. I will continue to do research on cell phones that may involve cancer because I thought that was really interesting and something that grabbed my attention.

Conclusion & Future Direction

In this survey impact of smartphone on society positive and negative effects on Smartphone, Mobile Applications, Social Impact, Addiction, Health. so many In order to understand the positive and negative impact of Smartphone it is very important to educate the users on how to use Smartphone's smartly. The education should emphasis to enhance the positive impacts and highlight the negative impacts clearly so that the users can take advantages of this exciting technology. Security and Access Control There are several initiatives from different vendors to combat the misuse of Smartphone at workplace and at Universities. SAP, Airwatch, MacAfee and many other vendors provide solutions to control the access of Smartphone within the workplace and Universities. Smartphone can certainly be smart if the vendors, society and technologists understand their responsibility towards usage of these devices smartly in order to get more benefit in business, education, health and social life. It is apparent from above facts that the benefits of Smartphone are tremendous and negative impacts are minor. So it is important to concentrate on how to stop and avoid smartly the misuse of Smartphone rather trying to stop or avoid use to Smartphone.

References

[1] Pei Zheng, Lionel M. Ni, 2006, —Smart Phone and Next Generation Mobile Computing,
 [2] Nurfit, 2012, Smartphone Addiction and Impact on Society,
 [3] Brad Reed, 2010, —A brief history of Smartphone's
 [4] Manoj Kumar, 2011, —Impact of the Evolution of Smart Phones in Education Technology and its Application in Technical and Professional Studies: Indian Perspective, International Journal of Managing Information Technology (IJMIT), Vol.3, No.3,

[5] Nurfit, 2012, Smartphone Addiction and Impact on Society, <http://nurfitriah.wordpress.comsmartphone-addiction>
 [6] Kantar Media, 2012, Healthcare Insights, <http://kantarmediahealthsurvey.com>
 [7] CollegeDrees.com, 2011, —Negative Effects of Smartphones in the Classroom. <http://www.collegedegrees.com>.
 [8] Mark Prigg, 2012, Microsoft launches Windows 8 Phone software - and hopes apps and Jessica Alba will help it take on Apple and Google,
 [9] <http://www.dailymail.co.uk/sciencetech/article-Windows-8-phone-software-launch-Microsoft-hopes-Jessica-Alba-help-Apple-Google.html>
 [10] Strategy Analytics, 2012, Global Mobile Media Revenues To Touch \$150 Billion In 2012, <http://www.strategyanalytics.com/default.aspx?mod=pressreleaseviewer&a0=5206>
 [11] Md. Rashedul Islam, Md. Rofiqul Islam, Tahidul Arafhin Mazumder, 2010, —Mobile Application and Its Global Impact, International Journal of Engineering & Technology, IJETIENS, Vol: 10, No:06, <http://www.ijens.org>, <http://www.economist.com>
 [12] Trevor Mogg, 2012, —Smartphone sales exceed those of PCs for first time, Apple smashes record, <http://www.digitaltrends.com/mobile/smartphone-sales-exceed-those-of-pcs-for-firsttime-apple-smashes-record>
 [13] Sameer Singh, 2012, —Impact of iOS & Android on the PC Replacement Cycle, <http://www.tech-thoughts.net>.
 [14] eWeek, September 5, 2012, Intel Microsoft Influence Declining as Smartphones Tablets Rise Analysts, <http://business.highbeam.com>
 [15] <http://digitalcommons.unl.edu/ncpacapstone>.
 [16] <http://digitalcommons.unl.edu>.
 [17] <http://www.tandfonline.com>
 [18] <http://www.slideshare.net/Ericsson/ericsson-mobilityreportinterim>
 [19] <http://www.techspartan.co.uk/features/psychological-effects-of-smartphones/>
 [20] Susan Krauss Whitbourne, 2011, —Your Smartphone May Be Making You... Not Smart, <http://www.psychologytoday.com>