

Smartphones & College Learners: Case Study

Abstract

Nowadays College Learners may forget to bring their identity card to get entry in college but not their smartphones. In our project we have attempted to find out whether the learners of C. K. Thakur A.C.S. College, Panvel, India which were selected by random sampling method are aware of menacing effect of extensive use of Smartphones, its hazardous impact on body, mind, environment, society, mobile recycling, persistence of buying smartphones phone. We found Science students are more aware of diseases caused by the mobile phone radiation, more addicted to smartphones which gives strong indications for creating mobile data traffic.

Keywords: Smartphones, Menacing, Hazardous, Recycling, Mobile Phone Radiation, Mobile Data Traffic

Introduction

Common scenario we do see everywhere in society, offices, home, college, street, garden, hotel is that holding smartphones phone in hand, paying more attention to it as soon as its screen blings, whenever any messages pops in it, watching movies, listening to songs. In old days people used to spare time to meet each other to greet, used to refer books manually in library. But now days we do communicate but by merely posting hi, hello, gm, some gestures, and many more on smartphones. We prefer to use internet to get more information in smartphones rather than going with books. In precise, Smartphones phone are catching all our attention.

For the last two decades, Laptops were used more but now its phones and tablets that are prominently being used. So question arise in mind.

What are these Smartphones?

Smartphones is portable phone that uses wireless communication using radio waves. Radio waves which are used in smartphones phones are electromagnetic waves having frequency between 900 MHz –1800 MHz¹. Smartphones phone is small enough to carry in hand or put in pocket so they are more preferred than laptops or Tablets. They are always connected to our data and services through the air through cellular coverage or a wifi connection² Smartphones serves various features like voice calling, voice mail, email, messaging, gaming, Playing music, taking photos or videos, organize personalized information, shopping, download any apps, images and many more³. Now days its cost has been affordable to low economic people also. So its massive use is seen among people.

Just as coin has two sides, Smartphones do have its own advantages and disadvantages. Advantages are getting in touch with people within moments by calls, email helps to send and receive messages over internet network, total entertainment system, like alarming clock to remind important chores to be done like bill payments, to click unique moments. Whereas on other sides we get more dependent on our smartphones for communicating, navigating streets, adds eye strain, insomnia, distraction which are its shortcomings⁴. Smartphones phones emits low level radiation, non-ionizing radiation of same frequency as microwaves. These repeatedly emitted rays gets accumulate over time and do disturb the normal process in body like reducing the activity of acetylcholine in brain which results in the memory disturbance⁵.

Each features in smartphone requires memory storage. Many apps, songs, videos, books are downloaded occupies memory space as well as server space. But now internet help us to find hassle free way to store and manage our stuffs like photos, videos by cloud storage. So we have to deal with 2G, 3G, 4G which are new technologies that allow more



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Electro magnetic surfriiders to be put onto awave. 2G brought voice and SMS, 3G gives moving pictures and interactive gaming, 4G due to increase in speed do enable more complex content and interactivity⁶. Accessing Internet for downloading, streaming music, video do utilize particular frequency space. To deal with it altogether, the smartphones broadband services has deployed unleashed multitude of multimedia services and corresponding explosion in data traffic. The growth rate of mobile data traffic will be more notable after the introduction of 4G. Network traffic or Data traffic is the amount of data moving across a network at a given point of time. And it is noted that the sharp chaos in mobile data is found due to expected increases in new smartphones usages⁷.

Now a days new smartphones are introduced in the market as result old version becomes outdated one for youngsters. This creates new issues of the explosion of electronic items. To deal with it, we have to go get aware of the Recycling process.

Recycling means processing waste into new products to prevent the waste of useful materials, consumption of declining materials⁸. Smartphones phones are made of many materials with 83% metals, fiberglass and remaining plastics. Metals can be recovered by magnetic separation, electrostatic separation It can be accomplished by treating the printed circuits boards of used smartphones phones by same techniques as used in metal extraction.

To ensure a better future, we have to adopt eco-friendly innovations and practices. Acting responsibility towards the environment, we have to pledge to recycle Smartphones that are no longer useful. This initiative is aware step towards conservation and optimum utilization of resources, So when smartphones phone reaches its end of life, we have to reuseit, recycle and reinvent it.

Aim of Study

In this paper attempts to focus on objectives to find and analyze

1. usage of smartphones,
2. which features in smartphones are dominantly used by them,
3. psychological impact on them,
4. social responsibility awareness among them,
5. Environment impact due to its massive use.

Review of Literature

Mishra, Yadav, and Bisht (2005) conducted a research study to learn the Internet utilization patterns of undergraduate students at the G B Pant University of Agriculture and Technology, Pantnagar. The findings of the study indicate that a majority of the students (85.7%) used the Internet. The findings of the study also showed that 61.5% of the males and 51.6% of the females used the Internet for preparing assignments. A majority of the respondents i.e. 83.1% male and 61.3% female respondents indicated that they faced the problem of the slow functioning of Internet connections.

Rajeev Kumar, Dr. Amritpalkaur (2006) found that 74.2 % of respondents used the internet for

educational purpose, 49% for communication purpose, 30.2 % for entertainment purpose from a survey taken for UG students in engineering college.

From Info Trends new Research report (2007), it was cited that 15% of consumers consider their camera phone as their primary picture for buying smartphones.

David Kelly (2009), from its survey for 25-44 old age group from twitter, facebook, friends, IGO revealed that 96% of participants do choose to cameras in mobile phones

Latha Rajendra Kumar, Kiu Dawn Chii, Lye Chaun Way, Yogeeta Jetly, Veena Rajendaran (2011) found in their study mobile phone usage can cause physical disease like a headache, sleep disturbances and 62% of the student population are aware of EMF health hazards produced by mobile phone usage.

Laird (2012) conducted a study and reported that 55% of students use gaming apps as a leisure activity on their smartphones.

Dr. Jesse (2013) found that most apps used in smartphones are (74.20%) utility Apps, (47.25%) social media, (3.65%) facebook, (77%) Text messaging in the survey for college learners in university, Lynchburg.

Shimon Sarraf, Jennifer Brooks, James Cole (2013) carried survey for the first year and senior student in colleges, universities across U.S found that 62 % use smartphone , 84% uses a computer

Angela Bernardo,(2014) in her blog explained possibility of explosion of fire while using mobile phones in petrol pump

P.Stalin, Sherin Abraham, K. Kanimozhy, R. Prasad, Zile Singh, Anil Purty , (2016) carried out a survey in Vilipuram district to explore the prevalence of smartphones, the association between hypertension and mobile phone usage.

Hypothesis

India has third largest smartphones subscribers in the world⁹.As per research was done by TCS in June 2016, it was found that in country College Learners hold significant share of current smart phone demand. This tempted us to carry out survey among college learners of Science, Commerce, Arts faculty, Changu Kana Thakur A.C.S College, Panvel, Maharashtra, India.We started with this survey with assumptions that participants are deeply concerned to their smartphones, are aware of data traffic, disease associated with its massive use.

Research Design

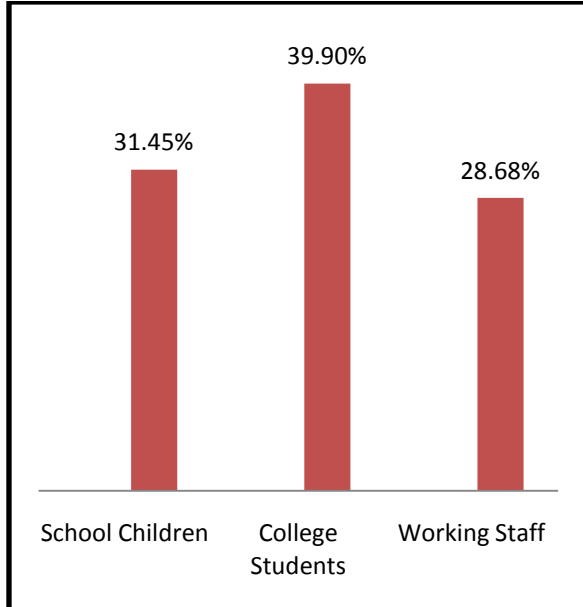
The Investigation was done by survey method by distributing questionnaires. For the present study participants were selected by random sampling.213 Learners of Science, Commerce, Arts faculty, Changu Kana Thakur A.C.S College, Panvel, Maharashtra, India were respondents to the survey. Responses were collected in form of yes and No by asking twelve questions to each of participants. On basis of their responses we will eventually able to know their aptitude.

Findings

Like Portal statistics¹⁰, here in our survey also we found that 39.9 % of smartphones phone

users in India do use a smartphone are college learners next to school learners shown in Fig 1.

Fig: 1 Use of Smartphones Phones among school, College, working people



This tempted us to get stick to College learners who are, the future citizens. It was not surprising to see that 59% of college learners do choose smartphones rather than opting basic smartphones phone the trendy one and easily hidden from eyes of teachers in college. This data is less as compared to findings of a survey done in Villupuram district in 2014¹¹.

Our next footstep was to find out which electrical gadget is dominantly use by College Learners. We found that 59% of youngsters use smartphones rather than basic smartphones handset.

Fig.2: Demand of Smartphone

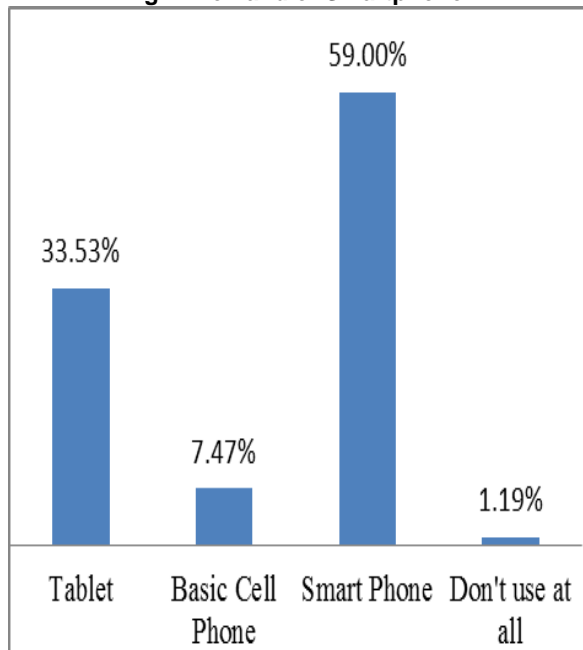
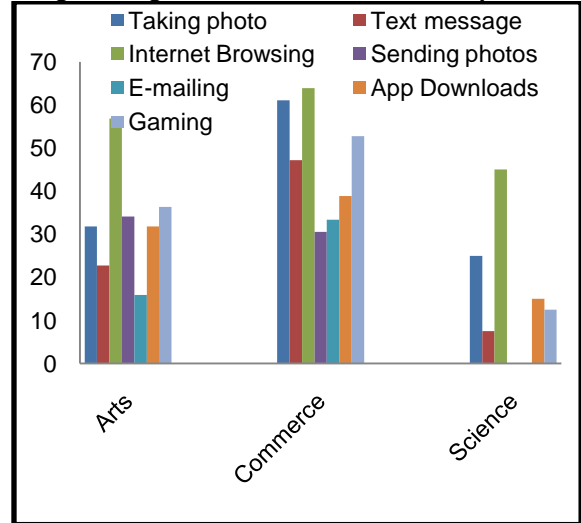


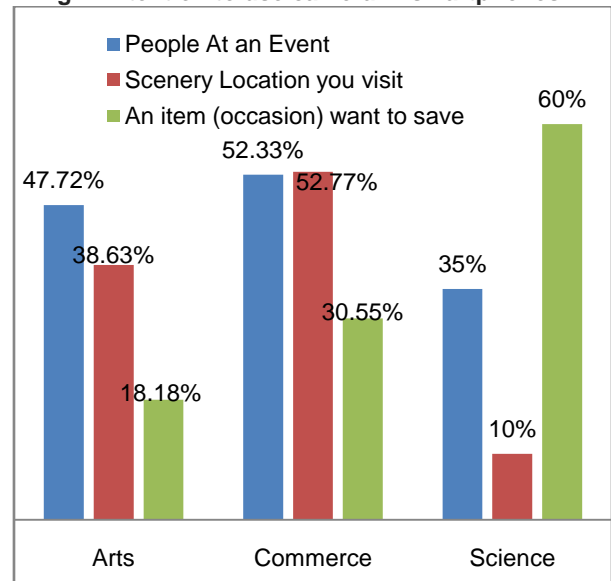
Fig 3: Usage of various features in cell phones



Generally, Parents provide them smartphones for communication purpose but 55.23 % of learners use it more for internet browsing for getting more information in short time which reflects their attitude of laziness to go through various books, papers, reports. Following to it they also like to use it for taking photos, gaming, app download, texting messages meant for leisure which reflect their approach to living life without tension. It is found that 24 % of them rarely use it for email purpose which implies that they like to communicate by texting rather than emailing as reflected in fig 3¹².

As found next to internet browsing, 53% youngsters also enjoy to using camera in their smartphones mainly to take a snapshot of people at an event specifically Arts, Commerce learners. As shown in fig 4. But 60 % science learners like to take photos to remember the occasion, event which reflects their practical approach¹³.

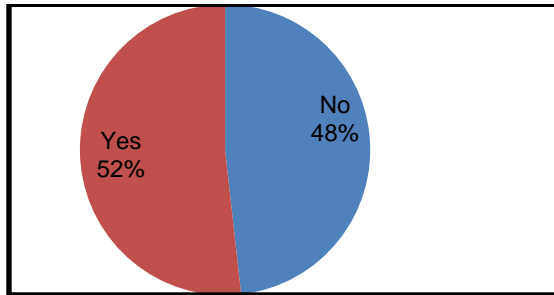
Fig 4: Intention to use camera in smartphones



Asian Resonance

A Various negative psychological effect like feeling restless, depress are observed among youngster. From fig 5, 52% of college learners feel depressed when unable to access the internet on phone. 78% of them feel the risk of educational loss by not using the internet in smartphones as seen in fig 6. This is an adverse sign of using smartphones which are rightly pointed in scientific Reporter¹⁴.

Fig: 5 impacts on mind like Feeling restless, depressed when attempting to cut down Internet use



Talking regarding the use of smartphones in the hospital, it is said in a study that 4% of devices suffered interference from cell phones at distances of 1m, with less than 0.1 % showing serious effects¹⁵. But still, it is advised to avoid its use in hospitals From Fig 7, it is seen that 65% of them are aware of diseases caused by smartphones phones which do agree with a survey done for students in Asian Institute of medical science and technology university¹⁶.

Fig: 6 impact on the mind like Risked the loss of Educational and significant relationship opportunities due to Internet cutoff.

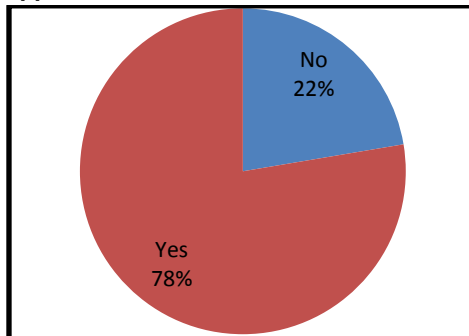
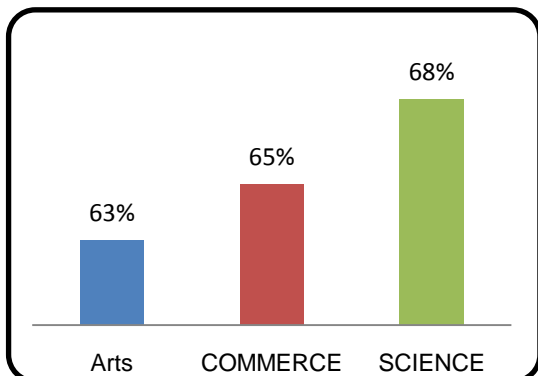
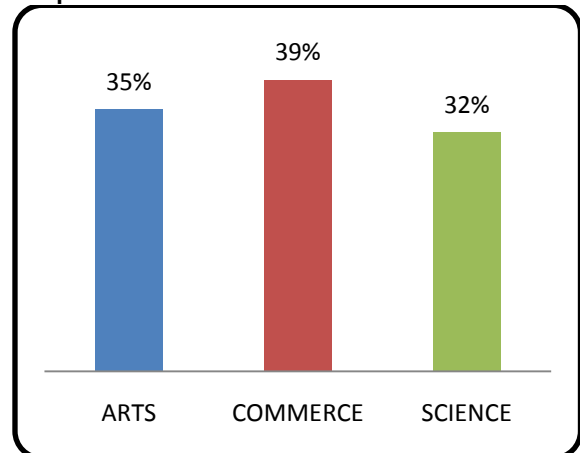


Fig.7: Response of awareness among the students about Diseases caused by smartphones.



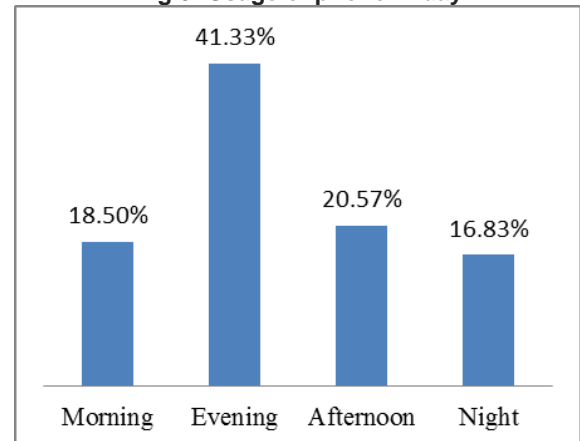
To be in fact, smartphones devices emit a very little energy less than 1W/cm², but due to the defective battery it could generate a spark at a petrol station. So the phone is turned off at petrol station¹⁷. 37% of College Learners are aware of accidents caused by usage of smartphones on petrol station and hospitals as reflect in fig 8.

Fig.8: Response about awareness of use smartphones phone on Petrol station and Hospitals



From fig 9, 19 % of college learners irrespective of their faculties do go for internet browsing, testing messages during college hours whereas in evening 41.33% of them make maximum use in the evening. It says that they like to be with smartphones in evening free time rather than playing, talking with friends, parents face to face which imposes that they enjoy being in virtual mode.

Fig 9: Usage of phone in day



So next query arises that do they are aware of data traffic. And it is found that 55% of College Learners are aware of data traffic that occurs due to extensive use of internet in smartphones.

It is not surprising to say that 60% of science learners are more attentive of recycling of smartphones phones which reflect their science aptitude which is definitely increasing as said in Nokia consumer survey,¹⁸. This figure agrees with a survey done for students in University, China¹⁹.

Fig 10: Data Traffic

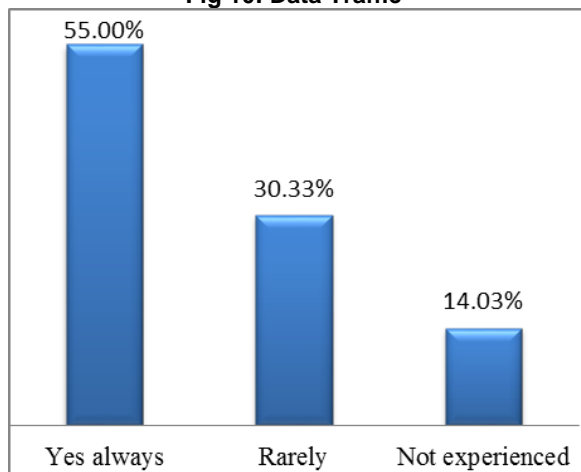
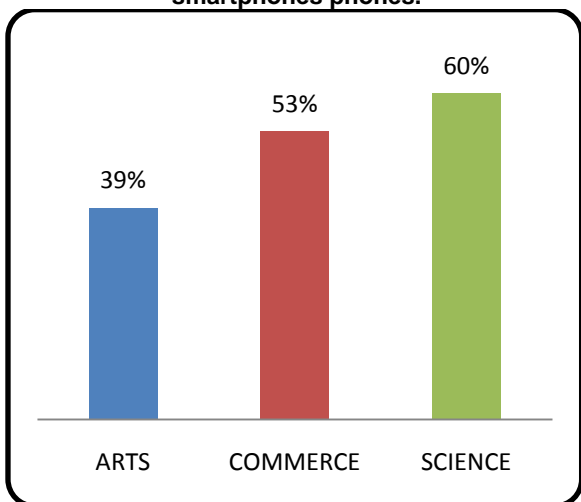


Fig.11: Response about awareness of recycling of smartphones phones.



Conclusion

From Fig 9, it entails that college learners are comfortable with smartphones rather than with people. Use of smartphones has become so prevalent that it has shifted the social expectation giving behaviour²⁰. Just as coin has two sides, same arises for smartphones. Usage of Smartphones help College Learners to get more information in less time but its extensive use does create a perilous effect on them also. From fig 5, fig 6, it is observed that though there is the wrong impact of smartphones on mind from Fig 7, 8, genuine good approach of 'precautions are better to be taken rather than suffering its adverse effects' is revealed among college learner. From this survey, it reflects that though accessing smartphones have an adverse psychological impact, they are still aware of its bad physical impact & they are attempting to overcome it. So it is our prime responsibility as parent, senior citizen to help them to overcome it by sparing time, understanding them and making them comfortable with us. No doubt they should be more aware and more approachable to new technologies but care has to be taken to avoid hazardous effects on them physical, mentally and socially.

References

1. Averil Macdonald, (2003) *ISIS- the biggest in world*, Reading into Science Physics, pp56., Nelson Thomas Ltd, UK.
2. Joe Welinske, (2014), *User Assistance in Mobile World*, Developing User Assistance for Mobile Apps- 2nd Edition, pp 6-8, Win Writers, Inc
3. Kathleen Guinee, Gregory Mertz, (2015), Vol 2, *Mobile Phone Use by Middle School students*, Encyclopedia of Mobile Phone Behavior, pp 530, Information Science Reference, USA.
4. Sana Tmar- Ben Hamida, Beena Ahmed, Dean Cvetkovic, Emil Jovanov, Gerard Kennedy, Thomas Penzel. (2015), *A New Era in sleep Monitoring: The Application of Mobile Technologies in Insomnia Diagnosis*, Mobile Health: A Technology Road Map, pp 100-102, Springer publication, Switzerland
5. Vincent Icheku, William, (2006), *Causes and preventions of Ageing Diseases*, Degenrative Diseases of Ageing: Causes and Preventions, pp 134, Jacob Publishers, London,
6. Robin Jeffrey and Assadoron (2013), *Radio Frequency and Mobile Phones*, Cell Phone Nation, pp 1958, C.Hurst & Co. Ltd, UK
7. Jesus Mena (2013), *Mobile Data, Data mining Mobile devices*, pp 143, CRC press, Londaon.
8. Viviane Morarecs, Denise Espinosa, Jorge Tennorio, (2011), *Obsolete Mobile Phones characterization aiming at recycling*, Recycling of electronic waste II Proceedings of the second Symposium, Obsolete Mobile Phones characterization aiming at recycling, pp89-90, Wiley publishers, USA.
9. Pradeep Yammiyavar and Prasanna Kate, (2009) *A Case study, Developing a Mobile Phone GUI for users in the Construction Industry*, Human Work Interaction Design: Usability in Social, Cultural and Organizational Context, pp 211-212, Scientific Publishing Services, Chennai.
10. *The statistics Portal, Number of mobile phones users in India from 2013-2019 (in Millions)* <https://www.statista.com/statistics/274658/forecast-of-mobile-phone-users-in-india>
11. P. Stalin, Sherin Abraham, K. Kanimozhy, R. Prasad, Zile Singh, Anil Purty, (2016), *Mobile Phone Usage and its Health Effects Among Adults in Semi-Urban Area of Southern India*, Journal of Clinical and Diagnostic Research, 10(1), pp 14-16.
12. Amanda Lenhart, Kristen Purcell, Aaron Smith and Kathryn Zickuh, (2010), *Social Media & Mobile Internet Use among Teens and Young Adults*, pp 2-4, Pew Research Center reports series, Washington.
13. David Kelly, (2009), *Mobile Phone Interent & Camera Usage- Survey (Part 1 of 2)*, <http://www.davidkelly.ie/2009/01/15/mobile-phone-internet-camera-usage-survey-part-1-of-2/>
14. Karmarkar, Ujwala, (2014), *Are You a Tech Addict*, pp 12-17, Scientific Reporter, Vol 51(08), CSIR publication, India.

15. G.M Saleh, (2004), *Mobile Phone Interference in ophthalmology department, Eye journal*, pp756-757.
16. LathaRajendra Kumar, Kiu Dawn Chii, Lye Chaun Way, YogeetaJetly, VeenaRajendaran (2011), *Awareness of mobile phone hazards among university students in a Malaysian medical school, Health*, Vol 3, No.7 ,pp 406-415,
17. Angela Bernardo, (2014) *Why is use of mobile phones at petrol stations prohibited*, <http://blogthinkbig.com/why-is-the-use-of-mobile-phones-at-petrol-stations-prohibited/>
18. Pia Tanskanen, (2013), *Electronics Waste: Recycling of Mobile phones* ,*Acta Materialia*, 61(3):pp 1001-1011.
19. Bo Li, Jianxin Yang, Xiaolong Song, Bin Lu(2012), *Survey on disposal behaviour and awareness of mobile phones in Chinese university students* , *Procedia Environmental Sciences*,16, pp 469-476
20. Garima Mishra (2014), *Indian Express*, *Indians addicted to smartphones says survey*