“Sociological research is primarily committed to establishing systematic, reliable and valid knowledge about the social world.” – Martin Bulmer

Research Methodology

3.1 Preface:

From the previous chapter that is Review of Literature the researcher got an overview of contribution of various research scholars in the field of cell phone and human life across the globe. She could study the research methods applied by these research scholars to access the impact of cell phone as a medium on socio-cultural, economic facets of the society. This study gave her an in depth understanding and a direction to conduct her research.

It was interesting to know the new terminology like Personal Communication Technology by Campbell and Park (Campbell & Park, 2008) as often worn on the body, highly individualized, and regarded as extensions of the self. It has been said that they make us individually addressable regardless of where we are. This description proved to be the key stone of the design this study.

Study by Kate Fox on mobile phone gossips gave an insight towards how in this fast-paced modern world, people had become severely restricted in both the quantity and quality of communication with their social network. She observed that mobile gossip restores their sense of connection and community, and provides an antidote to the pressures and alienation of modern life (Fox, 2001).
Mobile phones are very handy when people want to gossip around. It allows the users to gossip ‘anytime, anyplace and anywhere’ either by talking or texting. Mobile gossip is an effective and important new stress-buster and ‘social lifeline’ in a fragmented and isolating world (Fox, 2001). She also referred cell phone as new garden fence or a ‘body guard’ for women when they feel vulnerable in public places, apart from just using it as communication tool.

James Katz observed that the cell phone as a cultural artefact has some unique qualities. Thus human civilisation is experiencing a new type of culture and Katz named it as ‘Cell phone Culture’. Cell phone culture has an entirely different and new set of shared practices, norms, values and symbols and the cell phone as a technological device is already generating a decorative and aesthetic afterlife.’ (Theater, 2005) This study gave the research scholar an idea to investigate the impact of cell phone on present Indian culture especially regarding generation gap and young generation.

Geser commented on how multi-media technology impacted the human communication (Geser, 2007) and Turkle pointed out that with the advent of PCT and its frequent use, an individual is available for communication anytime anywhere which gives rise to a new type of parlance – ‘On line existence’ and the young generation is living on-screen and off-screen lives or living in plugged and unplugged worlds. All those who are using PCT are tethered to their communication devices, people and things they reach through them. Hence the concept of ‘tethered self’ is introduced (Turkle, 2008, pp. 121 - 122).

Lenhart observed that in United States of America 91% cell phone owners appreciate that their cell phones make them feel safer. Cell phones are such a vital part of American’s lives that many users will not be parted from their device, even as they sleep (Lenhart, 2010, p. 2).
In Japan, Ito observed that youth actively use mobile phones to overcome limitations inherent in their weak social status, their usage is highly courteous to institutions of home and school and the integrity of existing places (Ito, 2004).

There was a comparative study conducted on cell phone usage by the Jewish young people brought up in Western type of nuclear family and Arab adolescents by Mesch and Talmud in 2008 wherein the Jewish adolescents agreed that virtually created ties were weak and they needed face-to-face communication to make them strong. On the other hand, the Arab young people brought up in conventional society found cell phone as an effective means to overcome the socio-cultural restrictions imposed by the society (Mesch & Talmud, 2008, p. 323).

Lenhart assessed how young people in USA use mobile phone for sending and receiving text messages (Lenhart, 2010, p. 2). Similarly Katz and Sugiyama conducted a study revealing that American young population’s perception about their cell phone revealing that they consider it as a part of their personality (Katz & Sugiyama, 2005, p. 73).

In Mumbai – India, Rao and Desai observed that mobile phones were primarily used for being connected, their second option is security and third option is job requirement. Several measures indicated that a high level of social and psychological dependency on the mobile has developed in Indian mobile phone users (Rao & Desai, 2008, p. 401). Desai in another study marked that parents in India, although burdened economically due to the mobile phone usage of their young children, feel emotionally secured and hence are ready to spend for it. The cell phone technology per se is for connectivity, but users do enjoy some extra gratifications like status and security from their mobile phones (Desai, 2006, pp. 231 - 256)
All these studies were conducted in various parts of the world including India. The researcher realised that there was need to conduct the similar type of study in the educational hub – Pune which will assess the impact of cell phone usage on the behavioural pattern of young population and its cultural as well as communication nuances. Hence the methodology is developed as follows:

3.2 Research Methodology for The Study:

Research Methodology is defined as ‘a body of methods, rules, and postulates employed by a discipline,’ ‘a particular procedure or set of procedures’, or ‘the analysis of the principles or procedures of inquiry in a particular field’ (Garg, 2010, p. i). Research is a human activity based on intellectual investigation and is aimed at discovering, interpreting, and revising human knowledge on different aspects of the world (http://www.dmu.ac.uk/research).

George Lundberg (1942) states scientific methods consist of systematic observation, classification and interpretation of data (Kumar, 2005, p. 7). Richard Grinnell (1993) explained that the word ‘research’ is composed of two syllables, re and search. The dictionary defines the former as a prefix meaning again, anew or over again and the latter as a verb meaning to examine closely or carefully, to rest and try, or to probe. Together they form a noun describing a careful, systematic, patient study and investigation in some field of knowledge, undertaken to establish facts or principles (Kumar, 2005, p. 7). The term research is also used to describe an entire collection of information about a particular subject (http://www.dmu.ac.uk/research) and also ‘a systematic investigation to find answers to a problem (Burns, 1994)’ (Kumar, 2005, p. 7).
3.2.1 Definitions of Research

The concept ‘Research’ is defined by many dictionaries and scholars in various ways. Following are some of the definitions of ‘research’:

i. A careful investigation or inquiry specially through search for new facts in any branch of knowledge (Hornby, 2000)

ii. Systematized effort to gain new knowledge (Redman & Mory, 1933, p. 10).

iii. The manipulation of things, concepts or symbols for the purpose of generalizing to extend, correct or verify knowledge, whether that knowledge aids in construction of theory or in the practice of an art. – D. Sleginger and M. Stephenson in The Encyclopaedia of Social Sciences, Vol. IX, 1930 (Kothari, 2004, p. 1).

iv. Research maybe defined as the systematic and objective analysis and recording of controlled observations that may lead to the developments of generalization, principles, or theories, resulting in predications and possibly ultimate control of events– John W. Best (Saravanavel, 1992, p. 1).

3.2.2 Area of Research Study

The present study has the following broad areas:

3.2.2.1 Thematic Area:

The topic deals with media studies, humanities, mental moral and social sciences.

3.2.2.2 Subject Area:

Cell phone as Personal Communication Technology and its impact on the behavioural pattern of undergraduate students.
3.2.3 Geographical Area:
Municipal Corporation limit within Pune city.

3.2.3 Locale of Study

The present study was carried out in Pune city. It is the headquarters of Pune district and is located in the Western part of the Maharashtra State, forming a part of Pune Revenue Division. Pune City has a legacy of the Maratha dynasty of Medieval Indian History as its Capital. In addition, the city has industrialization and Information Technology as its hub. It is famous as the ‘Oxford of the East’ and popularly known as the ‘Seat of Education’ or the ‘Maternal home of the Goddess of Knowledge’. Situated in the vicinity of the Sahyadri mountain ranges, it is blessed with pleasant climate and flora and fauna.

Pune is primarily known for its educational environment and has developed into one of the prominent educational centres of Western India. Students from various parts of India as well as the world aspire to educate themselves in Pune. Thus, Pune has now emerged as ‘Mini India’. Therefore it is perfect as the locale of study as it can provide the best cross section of India for sample design.

Secondly, this research scholar is working in Pune city and has come across diverse social, occupational, cultural and geographical backgrounds of undergraduate students. Hence, the locale of study is selected as Pune city. (Annexure 3)

3.2.4 Rationale of the study

This topic was selected because numerous studies have clearly indicated association between youth and cell phones. Considering the volume and vastness of such association it was deemed necessary that the research is undertaken.
The National Telecom Policy was announced in May 1994 (Singh, Soni, & Kathu). That was a decade since the telecom revolution initiated by Satyanarayan Gangaram alias Sam Pitroda in 1984 (http://www.sampitroda.com/index.php).

According to the Indian Telecom Services Performance Indicators, October - December 2011, a report issued by Telecom Regulatory Authority, of India on 13th April 2012, the cell phone has now become an essential gadget for almost 893.84 million people of this nation (Telecom Regulatory Authority of India, 2012). It is observed that the youth of India (Ref census of India) form a major chunk of the users and that mobile phone usage has become an integral part of their life.

The medium is so alluring and useful that there is hardly any escape from its use. The cell phone user is accessible more or less anywhere and everywhere at any given time. The transmission of text, audio and audio-visual messages became never so easy.

It is observed that the cell phone dependency of the youth is turning out to be an addiction. Mobile-addicts can be seriously affected at the psychological level but, as they don't show any physical symptoms, their disorder goes unnoticed to others. Teenagers who use mobile phones for many hours a day - talking and sending messages or missed calls - may develop psychological disorders. Switching off their phones causes them anxiety, irritability; sleep disorders or sleeplessness, and even shivering and digestive problems (Torrecillas L., 2007).

Cell phones have not only invaded the major chunk of the daily routine but also encroached upon the life styles of youngsters individually, socially and culturally. Therefore, it was an important issue which should not be pushed under the carpet. Hence, the research scholar was keen to carry out research on this topic.
3.2.5 Research Objectives

For the purpose of this study the researcher set the following general as well as specific objectives:

i. **General Objective**: to study the impact of the cell phone as a medium of communication on the behavioural patterns of undergraduate students of Pune city.

ii. **Specific Objectives**: are
   a. To study the cell phone usage pattern of undergraduate students of Pune city.
   b. To analyze the effect of the cell phone as a medium of communication on the communication pattern of the undergraduate students.
   c. To examine the nature of cell phone dependency of the undergraduate students.
   d. To find the influence of cell phone use on the behavioural pattern of the undergraduate students and its repercussions on the relationships with their family members and friends.
   e. To investigate the cell phone usage patterns of undergraduate students when they are alone and when they are in the public places.
   f. To study the consequence of various communication facilities like Short Messaging Service, video camera etc. on communication patterns like the use of language and graphic symbols as well as sound and visual clips among undergraduate students.
   g. To find whether the undergraduate students are getting more importance in the family due to their technological knowledge base and the family is experiencing a change in the decision making process.
3.2.6 Research Questions

This study is based on the following research questions

i. What are the cell phone use patterns of undergraduate students of Pune city?

ii. What impact has the cell phone, as a medium of communication, created on the communication pattern of undergraduate students?

iii. What is the intensity of cell phone addiction of undergraduate students of Pune city?

iv. What is the influence of cell phone use on the relationships with the family members and friends of undergraduate students in Pune?

v. How do the undergraduate students use the cell phone when they are alone and when they are in public places?

vi. Is the Indian society experiencing a shift in the power centre with reference to cultural values? For example, the young generation is becoming a part of the decision-making process of the family and at times their opinion is given preference over the opinion of elders.

3.2.7 Nature of Study

This study was exploratory, ex-post-facto and descriptive in nature. It was exploratory because the researcher wanted to explore the impact of cell phone on the communication patterns of undergraduate students. More specifically, it was to find out the position of the cell phone in the lives of teenagers and teenagers’ status in the family and other social groups after cell phone technology was introduced in society.
The ex-post-facto method is appropriate in circumstances when the more powerful experimental method is not possible. It is not possible to select, control, and manipulate the factors necessary to study cause and effect relationships directly (Cohen, Manion, & Morrison, 2007, p. 268).

It was ex-post-facto also, because the researcher had no direct control over the independent variables, because their manifestations had already occurred. They were inherently not manipulated. Secondly, inferences about relations among variables are made, without direct intervention. There was absolute zero possibility of controlling the changes in behavioural pattern of independent variables – undergraduate students of Pune city. Thus the researcher had examined the behaviour pattern of undergraduate students of Pune city after personal communication technology like the cell phone was introduced in the society.

It was descriptive because it essentially aimed at finding the facts related largely to the present, and abstracting generalizations by the cross sectional study of the current situation. It tried to explain the impact of cell phone use on behavioural pattern of the young generation and portrayed their characteristics without specific initial hypotheses about the nature of these characteristics.

### 3.2.8 Research Approach

Both quantitative as well as qualitative approach was employed in combination to achieve maximum accuracy while arriving at the conclusions. The quantitative method was used to measure the nature of impact of cell phone usage by undergraduate students as perceived and reported by them with greater precision. Qualitative approach was used to provide a broad philosophy as observed by the representative opinions of the people observing and reporting the impact of cell phone usage on the behavioural pattern of undergraduate students.
3.2.9 Data Collection Method

The method used for data collection was the survey method.

3.2.10 Operational Definitions / Conceptual Framework

Following are the basic concepts used in the research:

**Impact:**

Impact for the present study means tangible effects and consequences of usage of mobile phone on the life of undergraduate students as perceived by them and others observing their behaviour.

**Cell Phone:**

A hand-held mobile radiotelephone for use having varied technical features and service provider connectivity for communication through GSM or CDMA technologies and it is also called mobile telephone (www.thefreedictionary.com/cellphone).

**Usage:**

Access to and control of the cell phone by the undergraduate student at least for the period of one year at the time of data collection in private, social as well as public spaces.
Impact of Cell Phone Usage:

Nature of impact of cell phone usage by the undergraduate students as perceived and reported by them as well as observed by the researcher refers to impact of cell phone usage.

Behavioural Patterns:

Behavioural patterns refers to cell phone usage by undergraduate students, and their conduct with respect to relationships with family and friends, emotional dependency, challenging the authority, time spent on cell phone and use of cell-phone in privacy and in personal, social and public spaces / zones.

Undergraduate:

Student pursuing any course (arts/commerce/science/ management/technical/ professional, etc.) approved by any state or central or deemed university after passing the Higher Secondary Certificate Examination (XIIth) conducted by either State or Central or other equivalent Educational Board.

Students:

For the purpose of this research this term means boys and girls who are pursuing full-time undergraduate courses in any educational institution that imparts formal education approved by the State / Central Government.
Undergraduate Students:

The term refers to students of undergraduate courses in Pune city. The researcher has considered only teenage boys and girls who were pursuing full-time degree programmes in selected educational institutions affiliated to University of Pune.

Social Science Encyclopaedia defines ‘young people’ under ‘adolescence’ and defines adolescent years from about 9 to 25 year of age. The ‘young’ in psychology are referred under ‘adolescent’; sociology refers to them as ‘youth’ (Desai, 2006, pp. 231 - 256). In the present dissertation these terms have been used interchangeably.

Pune:

The term refers to the geographical area under the jurisdiction of Pune Municipal Corporation. (Annexure –3)

Undergraduate Students of Pune:

The term refers to teenage boys and girls pursuing a formal education in various educational institutions imparting formal education at undergraduate level within the municipal limits of Pune City.
3.2.11 Indicators Used in the Study

Since the nature of the present study is exploratory and ex-post facto, the researcher identified a few indicators instead of independent and dependent variables to gauge the impact of cell phone usage on undergraduate students. They are as follows:

1. Emotional dependency – cell phone as companion
2. Challenging the authority–family norms and social Relationships
3. Time spent on cell phone- amount of exposure to the technology
4. Use of cell-phone in privacy and in personal, social and public spaces / zones.

3.2.12 Sampling Method

Sampling may be defined as the selection of some part of an aggregate or totality on the basis of which a judgment or inference about the aggregate or totality is made; in other words, it is a process of obtaining information about an entire population by examining only a part of it. (Kothari, 2004, p. 152).

3.2.12.1 The Universe / Population

The Universe / Population of this study is the total number of students enrolled for undergraduate courses in various colleges affiliated to University of Pune located in Pune city. As per the University of Pune website the total number of undergraduate students studying in various colleges affiliated to University of Pune is 3,41,025 boys and girls for the academic year 2011–2012 (http://www.unipune.ac.in).
3.2.12.2 Sampling Procedure

Pune Municipal Corporation boundary is divided into 7 Legislative Assembly Constituencies (ceomaharashtra.nic.in/). The researcher used the same as the sampling frame for this research. These divisions are as follows:

a) Vadgaon Sheri, (Code - 208)
b) Shivajinagar, (Code - 209)
c) Kothrud, (Code - 210)
d) Parvati, (Code - 212)
e) Hadapsar, (Code – 213)
f) Pune Cantonment, (Code - 214)
g) Kasba Peth (Code - 215)

The colleges located in the six Legislative Assembly Constituencies within the limits of Pune Municipal Corporation which had completed at least 40 years in 2010 were selected on the following assumptions:

i. The colleges must be receiving grants from the Government
ii. They are seriously engaged in the activity of education.
iii. Although these colleges initially had only three streams, namely Arts, Commerce and Science, with the passage of time they ventured into other streams of education like Management, and Computer Science etc.

The researcher procured the list of all the colleges affiliated to University of Pune, Pune from the official website available thereto (affiliated_colleges_and_institutions/default.htm) (Annexure 4).
The list was segregated into two groups:

A) Colleges within the limits of Pune Municipal Corporation

B) Colleges outside the limits of Pune Municipal Corporation.

Group-A was further scrutinized and 11 colleges were short-listed as they were established before 1971 hence they have completed 40 years fulfilling the first characteristics of the purposive non-probable sampling.

With these conditions the researcher wanted to ensure that she should be able to get the cross-section of students from various streams and various strata.

**3.2.12.3 Sampling Method / Scheme**

Multi-stage sampling method was employed in 3 stages.

First stage: Assembly constituency for college listing

Second stage: Random selection of colleges

Third stage: Purposive selection of the students meeting sample characteristics

The undergraduate students who were using cell phones for more than one year and who were full-time students from the selected colleges affiliated to Pune University formed the final sample of the present study.
This type of sampling scheme was deliberately selected because of the characteristics of sample. These characteristics were:

1. Samples had to be undergraduate students.
2. They should have been using cell phones for more than one year.
3. They should have been students of the colleges which were at least 40 years old in 2010 and were affiliated to University of Pune.

Table No. 3.2.12.3.1

Group A: The list of colleges selected from the list of colleges to University of Pune

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Name and Address of the College</th>
<th>College Identity Number</th>
<th>Established in the year</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Deccan Education Society’s Fergusson College, (Arts, Science) Deccan, Pune – 411 004.</td>
<td>PU/PN/AS/02/1885</td>
<td>1885</td>
</tr>
<tr>
<td>2.</td>
<td>Shikshan Prasarak Mandal’s Sir Parashurambhau College (Arts, Science and Commerce), Tilak Road, Pune - 411030.</td>
<td>PU/PN/ASC/003/1916</td>
<td>1916</td>
</tr>
<tr>
<td>4.</td>
<td>Deccan Education Society’s Brihan Maharashtra College of Commerce, Deccan Gymkhana, Pune - 411 004.</td>
<td>PU/PN/C/010/1943</td>
<td>1943</td>
</tr>
<tr>
<td>Sr. No.</td>
<td>Name and Address of the College</td>
<td>College Identity Number</td>
<td>Established in the year</td>
</tr>
<tr>
<td>--------</td>
<td>-----------------------------------------------------------------------------------------------</td>
<td>-------------------------</td>
<td>-------------------------</td>
</tr>
<tr>
<td>5.</td>
<td>Maharashtra Education Society’s Abasaheb Garware College, (Arts &amp; Science) Karve Road, Pune – 411 004.</td>
<td>PU/PN/AS/011 /1945</td>
<td>1945</td>
</tr>
</tbody>
</table>

These colleges then were codified as C-1 to C-11. The table below (Table No. 3.2.12.3.2) is the final list of the selected and codified colleges affiliated to Pune University, within the limits of Pune Municipal Corporation completing 40 years.
Table No. 3.2.12.3.2

The list of Codified Colleges

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Name and Address of the College</th>
<th>College Identity Number</th>
<th>Established in the year</th>
</tr>
</thead>
<tbody>
<tr>
<td>C-1.</td>
<td>Deccan Education Society’s Fergusson College, (Arts, Science) Deccan, Pune – 411 004.</td>
<td>PU/PN/AS/02/1885</td>
<td>1885</td>
</tr>
<tr>
<td>C-2.</td>
<td>Shikshan Prasarak Mandal’s Sir Parashurambhau College (Arts, Science and Commerce), Tilak Road, Pune - 411030.</td>
<td>PU/PN/ASC/003/1916</td>
<td>1916</td>
</tr>
<tr>
<td>C-4.</td>
<td>Deccan Education Society’s Brihan Maharashtra College of Commerce, Deccan Gymkhana, Pune - 411 004.</td>
<td>PU/PN/C/010/1943</td>
<td>1943</td>
</tr>
<tr>
<td>C-5.</td>
<td>Maharashtra Education Society’s Abasaheb Garware College, (Arts &amp; Science) Karve Road, Pune – 411 004.</td>
<td>PU/PN/AS/011/1945</td>
<td>1945</td>
</tr>
</tbody>
</table>
### Table No. 3.2.2.3.2 Continued ……

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Name and Address of the College</th>
<th>College Identity Number</th>
<th>Established in the year</th>
</tr>
</thead>
</table>

Applying lottery system, 5 colleges were shortlisted as follows:
Table No. 3.2.12.3.3

Codified and Final List of Colleges

<table>
<thead>
<tr>
<th>Sr.No.</th>
<th>Name and Address of the College</th>
<th>College Identity Number</th>
<th>Established in the year</th>
</tr>
</thead>
<tbody>
<tr>
<td>C-1.</td>
<td>Deccan Education Society’s Fergusson College, (Arts, Science) Deccan, Pune – 411 004.</td>
<td>PU/PN/AS/02/1885</td>
<td>1885</td>
</tr>
<tr>
<td>C-2.</td>
<td>Shikshan Prasarak Mandal’s Sir Parashurambhau College (Arts, Science and Commerce), Tilak Road, Pune - 411030.</td>
<td>PU/PN/ASC/003/1916</td>
<td>1916</td>
</tr>
</tbody>
</table>

3.2.12.4 Sampling Size

Considering the time and other resources available to the researcher, after a detailed discussion with her Guide, she planned to take 500 undergraduate students as sampling units consisting of 250 girls and 250 boys.
3.2.12.5 Sampling Plan for quantitative data

The researcher decided to select nearly 100 undergraduate students using cell phones for more than 1 year from each college listed in Table No. 3.10.4.2 randomly as the incidental purposive sample, in 1:1 proportion that is 50 girls and 50 boys.

A total of 600 undergraduate students were contacted and asked to fill in the questionnaire, out of which 287 were girls and 313 were boys. The final sample size after data scrutiny and cleaning was 305 boys and 277 girls making the total sample number of 582.

3.2.12.6 Sampling Plan for qualitative study

The researcher conducted in-depth interviews with the following professionals:

<table>
<thead>
<tr>
<th>Profile of the persons interviewed</th>
<th>Number of Professionals</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Professors</td>
<td>2</td>
</tr>
<tr>
<td>2. Faculty members</td>
<td>3</td>
</tr>
<tr>
<td>3. Medical Officer</td>
<td>1</td>
</tr>
<tr>
<td>4. Assistant Librarian</td>
<td>1</td>
</tr>
<tr>
<td>5. IT Professional</td>
<td>1</td>
</tr>
<tr>
<td>6. Advocate</td>
<td>1</td>
</tr>
<tr>
<td>7. Journalists</td>
<td>2</td>
</tr>
<tr>
<td>8. A soft skills trainer and a mother of two teenage boys</td>
<td>1</td>
</tr>
</tbody>
</table>
Table No. 3.2.12.4  Continued……

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>A content writer turned homemaker and a mother of two teenage girls</td>
<td>1</td>
</tr>
<tr>
<td>10</td>
<td>Undergraduate media students who keep themselves away from cell phone</td>
<td>2</td>
</tr>
<tr>
<td>11</td>
<td>Film Production Executive</td>
<td>1</td>
</tr>
<tr>
<td>12</td>
<td>Police Constables</td>
<td>2</td>
</tr>
<tr>
<td>13</td>
<td>Shopkeepers + assistants</td>
<td>6</td>
</tr>
<tr>
<td>14</td>
<td>Petrol pump employee</td>
<td>1</td>
</tr>
<tr>
<td>15</td>
<td>Auto rickshaw driver</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>26</td>
</tr>
</tbody>
</table>

3.2.13 Data Collection

3.2.13.1 Initiation

With the detailed discussion and consultation of the Guide, the researcher decided to use primary sources of data collection to generate the information meeting the specific requirements of this investigation. Since both qualitative and quantitative methods were to be used, the researcher was then advised to employ in-depth interview schedules and questionnaires as tools of data collection.

With the help of behavioural scientist, a paediatrician and adolescence psychotherapist, psychologist, and the guide, the researcher designed the questionnaire for the quantitative data collection.
3.2.13.2 Data Collection Tool - Questionnaire

The questionnaire design was the most crucial stage because the total process of quantitative data collection through Survey Method was based on this tool.

Following were the considerations kept in mind while designing the questionnaire.

a. It must be simple and must be self explanatory.
b. It must procure all the required data which would be useful to meet the general as well as specific objectives of this study.
c. It must test the attitude and the behaviour of undergraduate students.
d. The language of the questionnaire must be student-friendly.
e. It must maintain brevity, accuracy, and flow to facilitate the respondent to answer quickly.
f. It must be easy for digitization of data and most importantly, it must be eco-friendly i.e. it will be using less paper as compared to the usual questionnaires.

Thus with all these, the questionnaire was divided into three parts (Annexure –5):

i. Instructions for the respondents
ii. Fifteen multiple choice close-ended questions
iii. Part I comprising of twenty statements testing the perception of the undergraduate students about their cell phone usage, using Five-point Likert scale – strongly disagree to strongly agree
iv. Part II containing twenty statements testing the perceived behavioural pattern of the undergraduate students using Five-point Likert scale – mostly to never.
v. Response sheet consisting of Demographic Details, marking options for multiple choices, marking options for Part I and Part II.
The complete questionnaire was of eight pages out of which 600 copies of page numbers 1, 6, 7 and 8 were printed and 100 copies of page numbers 2, 3, 4, and 5 were taken.

Page number 1 was given to the student as it contained the instructions and the assurance of confidentiality from the researcher. Page numbers 6, 7 and 8 were the response sheets which were meant for the respondents’ responses. Page numbers 2, 3, 4, and 5 was the actual questionnaire which was to be used and reused.

In Pre-testing and Pilot Study the same design was tested on the respondents of Pre-testing and Pilot Study.

3.2.13.3 Pre-testing

The pre-testing for the questionnaire was conducted between 12.11.2011 to 16.11.2011 on ten undergraduate girls and ten undergraduate boys. They were asked to respond to the questionnaire. After they submitted the questionnaire, the researcher had a personal interaction with the each student in order to understand their opinions and suggestions which were discussed with the guide and the psychologist. The suggestions from the students which were found important and necessary for this research were then incorporated into the questionnaire. A modified questionnaire was then ready for the Pilot Study.

3.2.13.4 Pilot Study

For Pilot Study other 10 undergraduate girls and 10 undergraduate boys, not included in pre-testing, were asked to fill the questionnaire. The researcher once again had a detailed discussion with the students about the content and the format of the questionnaire including the language, syntax, vocabulary and expressions.
The results of this study were presented as per the schedule declared by the Head of the Department on 22.12.2011, in the presence of the Head of the Department, eminent scholars of media and communication and the fellow students in the Department of Communication and Journalism, University of Pune, Ranade Institute Building Fergusson College Road, Pune.

After the presentation a detailed discussion was held and some valuable suggestions were made by the panel, which were then incorporated into the questionnaire by the researcher.

The draft of the questionnaire was new and hence the experts suggested that the researcher should conduct the validation and reliability test on the questionnaire.

3.2.13.5 Validity and Reliability test

The refined questionnaire was then put for Validation Test wherein 50 undergraduate girls and 50 undergraduate boys i.e. a total of 100 undergraduate students were asked to fill the questionnaire. As pointed out by Gliem & Gliem that ‘When using Likert-type scales it is imperative to calculate and report Cronbach’s alpha coefficient for internal consistency reliability for any scales or subscales one may be using’ (Gliem & Gliem, 2003, pp. 82 - 88).

The standard scale for Cronbach’s alpha internal consistency (Cronbach, 1951, pp. 297 - 334) as shown in Table 3.2.12.5. was followed:
The data collected for the validation test was sent to the statistician for testing the consistency reliability of Part I and Part II of the questionnaire.

Cronbach’s Alpha value for Part I of the said questionnaire is 0.78 = Acceptable and Part II is 0.85 = Good. Overall Alpha value for the Reliability test is 0.80 which is ‘Good’.

Table: 3.2.13.5 Cronbach’s alpha Internal consistency

<table>
<thead>
<tr>
<th>Cronbach’s alpha value</th>
<th>Internal consistency</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\alpha \geq 0.9$</td>
<td>Excellent</td>
</tr>
<tr>
<td>$0.9 &gt; \alpha \geq 0.8$</td>
<td>Good</td>
</tr>
<tr>
<td>$0.8 &gt; \alpha \geq 0.7$</td>
<td>Acceptable</td>
</tr>
<tr>
<td>$0.7 &gt; \alpha \geq 0.6$</td>
<td>Questionable</td>
</tr>
<tr>
<td>$0.6 &gt; \alpha \geq 0.5$</td>
<td>Poor</td>
</tr>
<tr>
<td>$\alpha &lt; 0.5$</td>
<td>Unacceptable</td>
</tr>
</tbody>
</table>
3.2.13.6 Data Collection Procedure

The researcher took the help of ten of her students as research assistants for collection and digitization of the data. The list of colleges mentioned in Table No. 3.10.4.2 was given to the research assistants. They were asked to fill the questionnaire once on their own to clarify all the doubts and difficulties they might have to face during data collection. The researcher confirmed their comfort and confidence with the questionnaire and then finally they were asked to visit the respective colleges, for purposive incidental sampling. The research assistants were given the set of 60 copies of response sheets and instruction sheets, 20 copies of questionnaires, bona-fide certificate for students’ identity and a covering letter addressed to the Principals of the colleges requesting them for help. (Annexure-6).

The data collection was done by the research assistants from 7th February 2012 to 12th February 2012.

The data collected by the research assistants during 07/02/2012 to 12/02/2012 underwent detailed scrutiny by the researcher. The undergraduate students who had completely filled the questionnaire were segregated. Finally, a total of five hundred and eighty two (582) students were taken as sample to find out the impact of cell phone on the behavioural pattern of undergraduate students out of which two hundred and seventy seven (277) were girls and three hundred and five (305) were boys.

3.2.13.7 Digitization of data

Every questionnaire was given a code consisting of the gender of the respondent, the initials of the research assistant and the serial number to make accession easy, (e.g. FAC-1 or MAZ-24 etc.) The research assistants then digitized the data using the standard format of excel sheet provided by the researcher.
The excel sheet comprised of four data-sheets: (sample of data sheet - Annexure 7)

1) Demographic details
2) Multiple choice questions
3) Part –I: Attitude
4) Part – II: Behavioural patterns

The master sheet (Annexure 8) was examined by the researcher to facilitate the data analysis process.

3.2.13.8 Data Analysis

After digitization of the data frequency distribution the percentile was calculated. Similarly, with the help of a statistician, \(t\) Test was carried out for attitude and behavioural Likert Scales using SPSS. The next chapter discusses the findings followed by the discussion and conclusion in Chapter-5.

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