3. RESEARCH METHODOLOGY

The research methodology contains a sequence of clearly defined steps within a research study as mentioned below-

3.1 Identification of Research Problems and Research Objectives

The research problems or objectives are referred to as statements that research project will attempt to achieve during a particular time period (Hair, Bush and Ortinau, 2007). The present study has been designed to investigate three dimensions of latest rural marketing approach viz., Integrated, Innovative and Inclusive (3Is) for mobile telecom service users in rural Punjab. The objectives of the study are based on research gap found on the basis of extensive literature review and used for designing a conceptual framework of 3Is for mobile telecom services for rural Punjab. The study comprises four research objectives; the first objective is related to inclusive approach and focused on designing a framework of rural entrepreneurship with aim to enhance buying power and improving distribution; the second objective is based on innovative approach, stresses on tailoring local solutions for rural mobile telecom service users; the third objective is also a part of innovative approach that focuses on consumer innovativeness aiming to segment target market for successful diffusion of innovation for mobile telecom services in rural community and fourth objective fulfils the dimension of integrated approach and focused on designing a framework of PPP aiming to improve the access of mobile telecom services in rural markets. These objectives are explained as follows-

1. To identify problems associated with mobile telecom services in rural areas and developing inclusive framework (rural entrepreneurship) for rural mobile telecom services.
2. To evaluate rural satisfaction & preferences towards mobile telecom services for tailoring local solution.
3. To measure consumers’ innovativeness towards mobile telecom services and segment rural consumers on the basis of determinants & motives of consumer innovativeness.
4. To design a conceptual framework for integrated approach based on public-private partnership for mobile telecom service users.
3.2 Need and Scope of the Study

The selection of mobile telecom service industry is based on certain industrial attractiveness factors such as substantial growth of telecom industry (total 898.02 million telephone subscribers as on March 2013), competitive structure with existence of various mobile service operators in country; constant innovations & technical advances in features, schemes, plans of prepaid and postpaid subscriptions and continuously emergence of unique value added services vis-a-vis significant contribution (4 per cent) in GDP of the country (Tractus Asia Limited, 2012). Instead, a substantial growth noticed for mobile telecom service industry since last decade, the continuous declining of minutes of usage per subscriber per month (MOU) from 496 minutes to 359 minutes during 2008 to 2012, and average revenue per user per month from INR 396 to INR 98 during 2004 to 2012, steep fall in voice tariffs, hyper competition, and saturated urban markets contemplate service providers to identify and serve rural areas as new target market with aim to sustain profitability in business (Annual Report, TRAI- 2013; Cellular Operators Association of India, 2011). The favourable changes occurred in rural demographic and economic environment during last decade are witnessed with rising rural prosperity, increasing rural income distribution, per-household consumption growth, increasing rural acceptability & affordability and manifested with successful entry of many corporate in rural areas such as FMCG, automobile, consumer durables, banking, insurance, and retail sector. Hence, the rural markets are considered as an opportunity to expand the business in general and for mobile service providers in particular for garnishing huge untapped potential. Some of the unique peculiarities of rural markets such as distinct consumer profile based on behavioural aspects (purchase, transaction, and types of media usage), psychological aspects (lifestyle, personality, motives, and attitudes), differences in demographics, life stage, and geographic vis-a-vis inherent problems associated of rural areas like infrastructural (scarcity of water, electricity shortage, and lack of transportation), technical (low teledensity, and high operational costs) and manpower (illiteracy, lack of awareness and skilled labour), stress on development of unique marketing strategy for rural areas in order to anticipate, identifying and satisfying rural mobile service users with aim to make business more viable and relevant for rural consumers (Bainnes, et al. 2013). In this direction, the 3Is approach of rural marketing that is being used by many corporate, empowers rural people, creates buying power, builds community trust, creates an opportunity for wealth generation, and along with it, opens a pathway for partnership development with state or local government, and NGOs with aim to improve the access of mobile telecom
services in rural areas. The infrastructural and technical problems associated with rural areas create a challenge for marketers to access quality services in remote areas. The integrated approach gives emphasis on how to strengthen PPP in telecommunication sector for improving the delivery of quality services in rural areas by joining hand among public and private organisations; the innovative approach stresses on offering customized products and services to rural people as per their need, interest and budget, and also understanding about how to spread innovation in rural people for successful diffusion and adoption; and the last inclusive approach stresses on development of local people into entrepreneurs as business partners, along with wealth generation among rural people and strengthening the distribution channel of service providers. Hence, the 3Is approach plays an important role in improving availability, awareness, acceptability and affordability of mobile telecom services in rural areas.

3.3 Research Design

The research design is referred to as the blueprint of collection, measurement and analysis of data (Cooper, Schindler and Sharma, 2008). On the basis of specific descriptors, the research design is used in the study is cross-sectional in nature and represents the findings at one-point of time. The exploratory research design has been used in first part of study with aim to identify the problems faced by telecom service operators in rural Punjab. The telephonic survey technique (semi-structured) has been used as survey method to collect data from the experts of telecom service providers. The experts having remarkable position (zonal, regional, or district level) in various telecom companies in Punjab are considered as target population for exploratory part of study. A total sample size of 16 has been collected on the basis of non-probabilistic convenience sampling technique from all three regions of Punjab namely Malwa, Majha and Doaba as research area. Along with the survey technique, the most relevant literature has also been reviewed to accomplish the exploratory part of study. The second part of the study is descriptive in nature and is used to ascertain who, what, where, when or how much types of questions (Cooper, Schindler and Sharma, 2008). This part of study is more formalized and structured based on investigative questions and clearly stated with prior notions or hypothesis. The objectives included in descriptive study are used to evaluate rural satisfaction & preferences towards mobile telecom services, measuring mobile telecom service users’ innovativeness and identifying the target market on the basis of determinants and motives of consumer innovativeness.
3.4 Sampling Design Process

The objective of marketing research is to obtain information about characteristics of population or estimating population parameters on the basis of representative sample of target population. The sampling design process used in the study involves certain steps for selecting a representative sample from target population (Malhotra and Dash, 2011). The sampling design process used in descriptive part of the study contains following steps-

a. Identifying Target Population

The identification of target population is based on translating the research problem into precise statements indicating who should and should not be included in the sample and it could be defined in terms of elements, sampling units, extent and time (Malhotra and Dash, 2011; Cooper, Schindler and Sharma, 2008). The mobile telecom service users of rural Punjab are considered as target population for the study. The element refers to as the object about which or from which the information is desired. The male or female customers with active users of mobile telecom services (at least since last six months) belong to rural Punjab are considered as elements. In this case, the sampling unit and elements have been considered same for the study. The extent refers to the geographical boundaries, the Malwa, Majha and Doaba region of rural Punjab identified as a research area for study. The time factor refers to the time period under consideration for the study i.e. 2011-2015.

b. Area of Study

The present study is focused primarily on mobile telecom service users of rural Punjab. The rural population residing in three regions of Punjab viz., Malwa, Majha and Doaba has been used for collecting the sample for the study. The reasons for selecting rural Punjab as research area are based on certain facts such as the state has second highest rural teledensity (66.90, against the national average of 41.02 as on March, 2013) among all the states after Himachal Pradesh (75.27), and the existence of over saturated urban teledensity of 144.92 as on March, 2013 (TRAI, 2013). Majority of the Punjab is made up from Malwa region containing 14 districts, Ludhiana, Patiala, Bhatinda, Faridkot and Fatehgarh Shaib are the main districts of this region. Amritsar, Pathankot, Gurdaspur and Tarn Taran belong to Majha region whereas Jalandhar, Hoshiarpur, Nawanshahr and Kapurthala belong to Doaba region (Fig. 3.1)
c. **Sampling Frame**

The sampling frame is used to represent the elements of target population. It consists of a list or set of directions for identifying the target population (Malhotra and Dash, 2011). The respondents from rural Punjab are selected from certain districts, blocks and villages. The official documents of Department of Planning 2013, Punjab have been used as sampling frame for study as consisting of the list of villages related to particular block and district (Appendix D).

d. **Sampling Technique and Sample Size**

A sample of 600 respondents (200 samples from each region) has been selected from rural Punjab on the basis of survey method used in the study. The reasons for deciding the sample size of 600 are due to resource constraints and considering the reference of sample size used in similar past studies. The multi-stage sampling technique has been used for selecting the samples from target population. The selection of districts from each region is based on judgemental sampling. The districts have been selected on the basis of socio-economic and demographic indicator (International Institute for Population Sciences, 2006), and Punjab district human development indices (Department of Planning, 2004) and similar past studies. The six districts viz., Ludhiana, Patiala, Sangrur, Firozpur, Moga, and Fatehgarh Sahib are selected in Malwa region; Amritsar, Gurdaspur, and Tarn Taran in Majha region; and Jalandhar, Hoshiapur, Nawanshahr, and Kapurthala selected in Doaba region. The five blocks from each district and three villages from each block have been selected on random basis and finally 2-4 households are selected from each village on convenient basis (Table 3.1).

**Table 3.1 Details of Sample**

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Region</th>
<th>Districts</th>
<th>Selection of Households</th>
<th>Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Malwa</td>
<td>Ludhiana, Patiala, Sangrur, Firozpur, Moga, and Fatehgarh Sb.</td>
<td>(5 Blocks x 3 Villages x 2-3 Households/ Village)</td>
<td>200</td>
</tr>
<tr>
<td>2.</td>
<td>Majha</td>
<td>Amritsar, Gurdaspur, and Tarn Taran</td>
<td>(5 Blocks x 3 Villages x 4-5 Households/ Village)</td>
<td>200</td>
</tr>
<tr>
<td>3.</td>
<td>Doaba</td>
<td>Jalandhar, Hoshiapur, Nawanshahr, and Kapurthala</td>
<td>(5 Blocks x 3 Villages x 3-4 Households/ Village)</td>
<td>200</td>
</tr>
</tbody>
</table>
e. Execution of Sampling Process

The execution of sampling process is based on the various steps involved in sampling design process with respect to target population, sampling frame, sampling unit, sampling technique, and sample size. The data was collected during the period of March 2014 to February 2015 by using self administered questionnaire.
State- Punjab (Target Population- Existing Rural Mobile Telecom Subscribers)

Doaba

4 Districts (Jalandhar, Hoshiapur, Nawanshahr, and Kapurthala)

5 Blocks per District (20 Blocks)

3 Villages/ Block (60 Villages)

3-4 Households/village

n= 200

Malwa

6 Districts Ludhiana, Patiala, Sangrur, Firozpur, Moga, and Fatehgarh Sahib

5 Blocks per District (30 Blocks)

3 Villages/ Block (90 villages)

2-3 Households/village

n= 200

Majha

3 Districts Amritsar, Gurdaspur, and Tarn Taran

5 Blocks per District (15 Blocks)

3 Villages/ Block (45 Villages)

4-5 Households/village

n= 200

Three Regions

13 Districts are selected on the basis of Judgemental sampling

65 Blocks are selected on the random basis

Villages are selected on the basis of random sampling

Households selected on the basis of convenience sampling

Total sample size 600

Fig. 3.1 Sampling Design Process
3.5 **Sources of Data**

The present study is empirical in nature i.e. a research instrument (self administered questionnaire) has been used for collection of data and then subjecting that data to rigorous analysis for rejection or support to the hypothesis. Both primary and secondary data have been collected through a formalized research process to solve the research problems as mentioned in the study. The primary data used in the research represent the firsthand facts or estimates that are originated by adopting sampling process from target population, whereas the secondary data has been collected from relevant articles, journals, books and web-published materials and further used in qualitative analysis.

3.6 **Measurement and Scale**

The present study is primarily based on primary data and survey method through non-disguised structured schedule consisting questions of dichotomous, multiple choice, ordinal, multiple-item with ascending five points Likert scale have been used as a research instrument. The questions included in the instruments are framed on seeking the information from rural people towards their need and interest of using mobile phone, satisfaction regarding service quality, value added services, after sales service support, customer care and identifying the major barriers for affecting mobile telecom services. The items to measure mobile telecom service innovativeness and motives for consumer innovativeness have been borrowed from existing established constructs and their wordings have been adapted from the most relevant literature. The below mentioned are the sources from where the items were adapted and used in the questionnaire-

The items mentioned in innovativeness scale to measure consumer innovativeness for mobile telecom services have been adapted from the domain-specific innovativeness scale developed and validated by Goldsmith and Hofacker (1991). A set of four items (such as In general, I’m first one in my social circle to buy new offer or scheme when it appears; I’m always eager to buy new plans or offers even I haven’t heard) included in domain-specific innovativeness scale. The wordings of items for determinants of innovativeness such as opinion leadership, price sensitivity, product involvement, need for uniqueness and venturesomeness have also been adapted from established existing constructs. The five multiple items (such as I often persuade others in my social circle for buying latest offers, schemes and plans; People rarely come to me for advice about choosing what to buy) have been taken from the scale of Childers (1986) to measure opinion leadership towards mobile
telecom services. Three multiple item scale used to measure the attitude towards product involvement has been taken from the scales developed and validated by Jordaan and Simpson (2006), Feldman and Armstrong (1975). A set of three items (such as It is important for me about usage and rental charges of telecom services; I’m cautious about accepting new services and offers) based on Hirschman (1980), Darden and Reynolds (1972), and Summers (1970) have been used to measure price sensitivity and venturesomeness. The items for measuring the construct namely need of uniqueness are based on two scales i.e. hedonic innovativeness and social innovativeness and their wording have been adapted from the scale developed and validated by Roehrich (2004). The four distinct constructs viz. social, functional, hedonic and cognitive have been identified as motives of consumer innovativeness for mobile telecom services. The wordings of multiple- items for each construct to measure motivated innovativeness have been adapted from the ‘motivated consumer innovativeness scale’ as developed by Vandecasteele and Geuens, 2008. The entire questionnaire is divided into following parts-

**Part A-** The first part of the questionnaire is designed to measure preferences and satisfaction towards mobile telecom services and consists of 11 questions based on dichotomous, multiple choice, rank order and multiple item with ascending five point Likert scale. The questions included in this part of questionnaire are framed to assess major barriers affecting adoption and continuity of mobile telecom services, preferences for selecting a particular service provider, satisfaction towards service quality, value added services, customer care and measures to customer loyalty. The findings of this part have been used for identifying the problems and challenges towards access of mobile telecom services for rural people and also used in tailoring local solutions for rural mobile telecom service users.

**Part B-** This second part of the questionnaire consists of two questions with aim to understanding how the innovative mobile telecom services spread within a social system. The first question of this part consists of 20 statements based on ascending five point Likert scale (from strongly disagree to strongly agree) to measure mobile telecom services innovativeness and five determinants of consumer innovativeness namely opinion leadership, price sensitivity, product involvement, need of uniqueness, and venturesomeness. The second question
includes 25 statements (on ascending five point Likert scale) for measuring social, functional, hedonic and cognitive motives of innovativeness to assess ‘motivated consumer innovativeness’ for mobile telecom services.

**Part C-** The third part of questionnaire consists of six questions related to demographic profile of rural consumers with dichotomous and multiple choice in nature (Appendix C).

### 3.7 Hypothesis Formulation

Hypothesis refers to an unproven proposition to a decision problem that can be empirically tested on the basis of data collection during the research process; it is also developed in order to give justification of phenomena or a relationship between two or more variables (Hair, Bush and Ortinau, 2007). The formulation of null hypothesis is based on the statements of status quo; one of no difference or no effects (Malhotra and Dash, 2011). The hypotheses framed in the study in order to make inferences about target population are mentioned as follows-

I. The 1\textsuperscript{st} hypothesis is framed for ‘need and interest’ of using mobile phone and expressed as-

Null \( H_{01}: \mu \leq 2.5 \) [The emergency function, keeping touch with family members, business function, information (agricultural, health, and educational) availing function, style and status function, entertainment function, cheapest source of communication and financial transaction functions are not carrying any importance for rural consumers]

Alternative \( H_{A1}: \mu > 2.5 \) [The emergency function, keeping touch with family members, business function, information (agricultural, health, and educational) availing function, style and status function, entertainment function, cheapest source of communication and financial transaction functions are carrying importance for rural consumers]

II. The 2\textsuperscript{nd} hypothesis is framed to assess the ‘importance of mobile telecom value added services (m-VAS)’ and expressed as-

Null \( H_{02}: \mu \leq 2.5 \) [The value added services like SMS, MMS, financial transactions, educational information, diagnostic and treatment support, availing local and regional news, availing agricultural information, ringtones and internet are not carrying any importance for rural consumers].
Alternative \( H_{A2}: \mu > 2.5 \) [The value added services like SMS, MMS, financial transactions, educational information, diagnostic and treatment support, availing local and regional news, availing agricultural information, ringtones and internet are carrying importance for rural consumers]

III. The 3\textsuperscript{rd} hypothesis is framed to examine ‘frequency of using mobile VAS’ and expressed as-

Null \( H_{03}: \mu \leq 1.5 \) [The value added services such as SMS, MMS, financial transactions, educational information, diagnostic and treatment support, availing local and regional news, availing agricultural information, ringtones and internet are not used by rural consumers]

Alternative \( H_{A3}: \mu > 1.5 \) [The SMS, MMS, financial transactions, educational information, diagnostic and treatment support, availing local and regional news, availing agricultural information, ringtones and internet are used by rural consumers]

IV. The 4\textsuperscript{th} hypothesis is framed to examine ‘major barriers’ affecting adoption and continuity of mobile telecom services and expressed as-

Null \( H_{04}: \mu \leq 2.5 \) [The major barriers such as lack of connection facility, weak network coverage, high call rate, unfit tariff plans, lack of information for latest offers, inability to understand plans, lack of recharge facility, unfit talk time validity, and lack of after sales services do not affect adoption and continuity of mobile telecom services]

Alternative \( H_{A4}: \mu > 2.5 \) [The lack of connection facility, weak network coverage, high call rate, unfit tariff plans, lack of information for latest offers, inability to understand plans, lack of recharge facility, unfit talk time validity, and lack of after sales services significantly affect adoption and continuity of mobile telecom services]

V. The 5\textsuperscript{th} hypothesis is framed to examine the ‘customers’ satisfaction’ towards mobile telecom services and expressed as-

Null \( H_{05}: \mu \leq 2.5 \) [The rural consumers are not satisfied with network coverage, signal strength, establishment connection time, no. of completed calls, call set up time, connectivity at peak hours, clarity of communication, accessibility of calls, talk time denomination and validity]
Alternative $H_{A5}: \mu > 2.5$ [The rural consumers are satisfied with network coverage, signal strength, establishment connection time, no. of completed calls, call set up time, connectivity at peak hours, clarity of communication, accessibility of calls, talk time denomination and validity]

VI. The 6th hypothesis is framed to measure ‘after sales services’ for mobile telecom services and expressed as-

Null $H_{06}: \mu \leq 2.5$ [The rural consumers are not satisfied with availability of different combination of plans, availability of various modes of payment, availability of recharge coupons, regular information, and facility of safe custody]

Alternative $H_{A6}: \mu > 2.5$ [The rural consumers are satisfied availability of different combination of plans, availability of various modes of payment, availability of recharge coupons, regular information, and facility of safe custody]

VII. The 7th hypothesis is framed to measure ‘customer care services’ in mobile telecom services and expressed as-

Null $H_{07}: \mu \leq 2.5$ [The rural consumers are not satisfied with counter service, prompt assistance, response during complaint handling, time spend for resolving the complaint, and satisfaction towards decision in customer care services]

Alternative $H_{A7}: \mu > 2.5$ [The rural consumers are satisfied with counter service, prompt assistance, response during complaint handling, time spend for resolving the complaint, and satisfaction towards decision in customer care services]

VIII. The 8th hypothesis is framed to measure ‘customer loyalty’ in mobile telecom services and expressed as-

Null $H_{08}: \mu \leq 2.5$ [The rural consumers do not like to choose same telecom service again and recommend to others, do not sharing the experiences and are rarely to switch for other telecom services]

Alternative $H_{A8}: \mu > 2.5$ [The rural consumers like to choose same telecom service again and recommend to others, sharing the experiences and more likely to switch for other telecom services]
IX. The 9th hypothesis is framed to measure ‘consumer innovativeness and determinants’ for mobile telecom services and expressed as-

Null \( H_{09}: \mu \leq 2.5 \) [The rural consumers’ innovativeness, opinion leadership, price sensitivity, product involvement, need for uniqueness, and venturesomeness towards mobile telecom services are insignificant]

Alternative \( H_{A9}: \mu > 2.5 \) [The rural consumers’ innovativeness, opinion leadership, price sensitivity, product involvement, need for uniqueness, and venturesomeness towards mobile telecom services are significant]

X. The 10th hypothesis is framed to measure ‘motives of consumer innovativeness’ for mobile telecom services and expressed as-

Null \( H_{10}: \mu \leq 2.5 \) [The social, functional, hedonic and cognitive motives towards mobile telecom services are insignificant]

Alternative \( H_{A10}: \mu > 2.5 \) [The social, functional, hedonic and cognitive motives towards mobile telecom services are significant]

XI. The 11th hypothesis is framed to examine the association between consumer innovativeness and determinants of innovativeness and expressed as-

Null \( H_{11}: r = 0 \) [No association exists between consumer innovativeness and opinion leadership, price sensitivity, product involvement, need for uniqueness, and venturesomeness for mobile telecom services]

Alternative \( H_{A11}: r \neq 0 \) [Association exists between consumer innovativeness and opinion leadership, price sensitivity, product involvement, need for uniqueness, and venturesomeness for mobile telecom services]

XII. The 12th hypothesis is framed to examine the association between consumer innovativeness & motives and expressed as-

Null \( H_{12}: r = 0 \) [No association exists between consumer innovativeness and social, functional, hedonic and cognitive motives towards mobile telecom services]

Alternative \( H_{A12}: r \neq 0 \) [Association exists between consumer innovativeness and social, functional, hedonic and cognitive motives towards mobile telecom services]
3.8 Validity and Reliability Testing of the Constructs

The evaluation of multi-item scale used in research is pre-requisite to ensure accuracy and applicability with aim to reduce measurement error i.e. the variation in information sought by researcher and the information generated by the measurement process (Malhotra and Dash, 2011). Hence, validity and reliability of constructs have been tested to ensure the measurement accuracy of the instrument. The content or face validity of the instrument has been tested from eminent academicians to examine whether the scale items adequately cover the entire domain of construct being measured or not, whereas reliability testing has been done to find out the extent to which a scale produces consistent results in repeated measurements. The internal consistency reliability has been computed by measuring coefficient alpha or Cronbach’s alpha (\( \alpha \)) based on averaging of all possible split-half coefficients resulting from different splitting of scale items through statistical software. The rule of thumb that applies to most situation is that \( \alpha > 0.9 \) (excellent), \( \alpha > 0.8 \) (good), \( \alpha > 0.7 \) (acceptable), \( \alpha > 0.6 \) (questionable), \( \alpha > 0.5 \) (poor) and \( \alpha < 0.5 \) is unacceptable for testing the reliability of instrument (George and Mallery, 2011). The statistical software SPSS has been used to find out Cronbach’s alpha (\( \alpha \)) as a measure of internal consistency for various constructs used in the instrument (Table 3.2). As Cronbach’s alpha (\( \alpha \)) values appears in range from 0.9 to 0.6 for all the constructs hence, the reliability of constructs used in the questionnaire has been tested and can be used for further analysis. Hence, all kinds of validity and reliability have been duly compiled to ensure the correctness of measurement scales.
### Table 3.2 Reliability Analysis of Instrument

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Constructs</th>
<th>No. of Items</th>
<th>Cronbach’s Alpha</th>
<th>S.No.</th>
<th>Constructs</th>
<th>No. of Items</th>
<th>Cronbach’s Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Need and interest</td>
<td>8</td>
<td>0.80</td>
<td>10</td>
<td>Opinion Leadership</td>
<td>5</td>
<td>0.81</td>
</tr>
<tr>
<td>2</td>
<td>Importance of VAS</td>
<td>9</td>
<td>0.73</td>
<td>11</td>
<td>Price Sensitivity</td>
<td>3</td>
<td>0.72</td>
</tr>
<tr>
<td>3</td>
<td>Frequency of VAS</td>
<td>9</td>
<td>0.75</td>
<td>12</td>
<td>Product Involvement</td>
<td>3</td>
<td>0.76</td>
</tr>
<tr>
<td>4</td>
<td>Perceived Barriers</td>
<td>9</td>
<td>0.82</td>
<td>13</td>
<td>Need for Uniqueness</td>
<td>3</td>
<td>0.85</td>
</tr>
<tr>
<td>5</td>
<td>Service Quality</td>
<td>11</td>
<td>0.70</td>
<td>14</td>
<td>Venturesomeness</td>
<td>3</td>
<td>0.74</td>
</tr>
<tr>
<td>6</td>
<td>After Sales Service</td>
<td>5</td>
<td>0.72</td>
<td>15</td>
<td>Social Factors</td>
<td>4</td>
<td>0.87</td>
</tr>
<tr>
<td>7</td>
<td>Customer Care</td>
<td>5</td>
<td>0.88</td>
<td>16</td>
<td>Functional Factors</td>
<td>11</td>
<td>0.82</td>
</tr>
<tr>
<td>8</td>
<td>Customer Loyalty</td>
<td>4</td>
<td>0.72</td>
<td>17</td>
<td>Hedonic Factors</td>
<td>5</td>
<td>0.73</td>
</tr>
<tr>
<td>9</td>
<td>Innovativeness</td>
<td>4</td>
<td>0.89</td>
<td>18</td>
<td>Cognitive Factors</td>
<td>5</td>
<td>0.78</td>
</tr>
</tbody>
</table>

### 3.9 Analysis Techniques and Statistical Tools

Both qualitative and quantitative analysis techniques have been employed in study for understanding of problem setting vis-a-vis quantify the data for applying statistical applications. An unstructured, exploratory qualitative research design has been used initially based on small sample with aim to provide insights and understanding of problems whereas, quantitative research design has been used in later part of study with aim to quantify the data and for generalization of results for target population of interest.

#### 3.9.1 Qualitative Data Analysis

The first part of the study is exploratory in nature with aim to identify the problems associated with mobile telecom services in rural Punjab faced by telecom service providers. The purpose of qualitative data analysis is to expand the understanding of topic and to discover future research tasks in the study. An in-depth interview technique based on telephonic method with direct approach (purpose of the study is disclosed to the respondents) has been used in exploratory part of study. The officials (zonal/ regional/ or district level) of telecom companies from three regions (Doaba, Majha and Malwa) of Punjab are considered
as target population for the study. The 16 officials from various telecom service providers represent as sample for the study and selected on the basis of non-probabilistic convenient sampling technique (Table 3.3). The semi-structured questionnaire by using ‘open-ended response’ strategy has been used for telephonic interview (Appendix-B). The interviews conducted in study are based on few specific questions then followed the respondents’ tangents of the thoughts with researchers’ probes (Cooper, Schindler, and Sharma, 2013).

Table 3.3 Sample Details for Qualitative Research

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Region</th>
<th>No. of Official Interviewed*</th>
<th>Telecom Companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Doaba</td>
<td>5 (One BH, One ZSM, Two ZBM, and One ZBH)</td>
<td>Airtel, Aircel, Idea Cellular, Tata and Videocon</td>
</tr>
<tr>
<td>2.</td>
<td>Majha</td>
<td>4 (Two ZM, One ZBH and One TSM)</td>
<td>Aircel, Airtel, Idea Cellular and Vodafone</td>
</tr>
<tr>
<td>3.</td>
<td>Malwa</td>
<td>7 (One GM, One RM, One ZGM, Two ZH, Two ZSM)</td>
<td>Airtel, Idea, Videocon and Vodafone</td>
</tr>
</tbody>
</table>

*BH- Business Head, ZSM- Zonal Sales Manager, ZM- Zonal Manager, RM- Regional Manager, ZGM- Zonal General Manager, ZH- Zonal Head

- Coding and Categorization Process

The qualitative data derived from the telephonic interviews has been transformed into quantitative data by using coding and categorization of words or verbal transcript. The interpretation of qualitative data is based on ‘Open Coding Approach’ as suggested by Strauss and Corbin (1990). The open coding approach is an analytical process by which concepts are identified and developed in terms of their properties and dimensions. By using this approach, the text can be coded line by line, sentence by sentence, or paragraph by paragraph or a code can be linked to the whole text (Flick, 2010). The qualitative data analysis has been done by understanding and breaking down each telephonic script into various sentences with aim to develop sub-categories and further compilation of these sub-categories into main categories. At the end, the open coding aims at developing substantial letter codes (A, B, C, and D) in order to describe, naming and classifying the phenomenon under study. The results of open coding reveal as a list of codes and categories and further used in quantitative analysis (Appendix-A). The code and categorization process ends with resulting into sub-categories and main categories of problems related to mobile telecom
services in rural areas. The descriptive analysis followed by categorization process has been used to depict the proportion of sub-categories for all main-categories by using following formulae-

\[
\text{Calculation of } \% = \frac{\text{Total Instances of Sub-Category Found in Survey}}{\text{Total Sample Size}} \times 100
\]

Fig 3.2 Coding and Categorization Process

3.9.2 Quantitative Analysis

The quantitative analysis is based on collection, analysis, and interpretation of data that includes representative samples and numerical calculation of results (Parasuraman, Grewal and Krishnan, 2009). The quantitative analysis used in study is divided into descriptive and inferential analysis as follows-

a) Descriptive Analysis- The descriptive analysis has been used to summarize the data by using certain descriptors such as central tendency (mean, mode and median), dispersion (standard deviation and variance) and portrayed in tabular forms. The usage pattern of mobile telecom services (Part-A of the questionnaire) and demographic profile of consumers (Part-C of the questionnaire) are presented in ‘frequency tables’ whereas, the central tendency and dispersion have been calculated for other constructs such as need and interest of using mobile phones, importance and
frequency of using VAS, perceived barriers, service quality, after sales services, customer care, customer loyalty and innovativeness for mobile telecom services.

b) **Inferential Analysis** – The purpose of inferential analysis used in study to test specific hypothesis for generalizing the results for target population by applying parametric and non-parametric test procedures. The first part of the questionnaire regarding satisfaction and preferences towards mobile telecom services has been examined through inferential analysis. The various constructs of first part of questionnaire such as need and interest, importance of value added service (VAS), frequency of using VAS, barriers affecting adoption and continuity of mobile telecom services, service quality satisfaction, after sales services support, customer care and customer loyalty have been analyzed by using one-sample T-test (single population hypothesis testing procedure). In second part of the questionnaire, univariate analysis has been done for comparing the sample mean with the hypothesized test value of the constructs related to consumer innovativeness and determinants. Whereas, multiple linear regression technique has been used to measure the consumer innovativeness and assess the motives for consumer innovativeness in mobile telecom services. Along with these analyses, the multivariate analysis namely hierarchical and non-hierarchical clustering techniques have been used to segment the target market on the basis of consumer innovativeness. The statistical software SPSS 18.0 has been used for data analysis.

3.10 Limitations of Study

The present study is confined to rural areas of Punjab with coverage of 13 districts of Doaba, Malwa and Majha regions, hence care should be taken to generalize the findings of study for other areas. Due to time, money and manpower constraints, the sample size has been restricted to 600 respondents for making inferences.

3.11 Scope for Further Research

Although the present study highlights the significance of ‘rural entrepreneur’ in inclusive framework as change agent, business partner and in building community trust, nevertheless, the future research work can be adopted to assess the different dimensions of this construct, such as measurement of entrepreneurial skill, social constraints and socio-economic profile of rural entrepreneurs. The consumer innovativeness and various determinants such as opinion
leadership, product involvement, price sensitivity, need of uniqueness, and venturesomeness have been measured for rural consumers towards mobile telecom services, but the future researchers may include the other criteria such as profile of customers (demographic, life-stage, geographic, and geo-demographic), behavioural aspects (purchase patterns, product and media usage), and psychological aspects (life styles and status) in order to make their study more purposeful.