A STUDY ON INTEGRATED, INNOVATIVE AND INCLUSIVE FRAMEWORK FOR MOBILE TELECOM SERVICE USERS IN RURAL PUNJAB

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ABSTRACT

A substantial growth has been noticed in India's rural market since last one decade due to influence of increasing purchasing power, improvement in literacy level, disposable income, growth in digital infrastructure, and increasing media exposure. The rural household consumption in India is expected to attain INR 26,383 billion by 2025 from the present INR 16,701 billion with compound annual growth rate of 5.1 per cent and per household rural consumption is estimated to count on INR 104,000 and INR 158,000 per annum by 2015 and 2025 respectively. The presence of many national and foreign national companies related to fast moving consumers goods (FMCG) category such as Hindustan Unilever Limited, ITC, Godrej, Procter & Gamble, Colgate-Palmolive, Marico, and PepsiCo; consumer durables makers like LG, Maharaja, and Samsung; automobile companies like TVS, Hero MotoCorp, and Maruti Suzuki; retail companies such as ITC's Chopal Sagar, Tata's Kisaan Kendra and DSCL's Hariyali Kisaan Bazaar; and banking & insurance companies such as ICICI Prudential in rural corner of the country manifest a huge opportunity to capture the untapped potential of rural market. Over the last few years, the companies recognized the fact that it is imperative to penetrate rural markets to secure long term profit sustainability in hyper competitive saturated urban markets in general and for mobile telecom sector in particular. It is also important to note that doing business in rural areas seems to be challenging due to lack of infrastructure facilities, unstable demand, improper supply chain, high distribution cost and distinct rural consumer psychology as compared to urban counterparts.

The present study is based on distinct marketing strategies of various national and multinational companies with aim to capture untapped potential of rural markets for mobile telecom services. The study critically examines the latest rural marketing approach and offers an integrated, innovative and inclusive (3Is) framework for rural mobile telecom services. The reasons to select mobile telecommunication industry is based on disparity between urban (140 per cent) and rural teledensity (39 per cent) coupled with over saturated urban teledensity, declining average revenue per user per month (ARPU), minutes of use per connection per month (MOU), and hyper competition with existence of various service providers. These all factors compel telecom service providers to enter in rural markets for sustainable business growth and profitability. The dimensions used in the present study have been borrowed from latest rural marketing approach i.e. integrated, innovative and inclusive based on the "Theory of Bottom of the Pyramid" as proposed by C.K. Prahalad. The integrated approach stresses on improving the access of products and services in rural areas

through developing public-private partnership (PPP); the innovative approach stresses on leveraging local solutions and successful diffusion of innovation by developing firm, products, market or consumer oriented innovation; and inclusive approach stresses on empowering rural people by promoting entrepreneurship.

The research objectives as mentioned in the study are based on exploratory as well as descriptive research designs. The first part of the study is exploratory in nature aiming to identify the problems associated with mobile telecom services in rural areas and development of inclusive framework (rural entrepreneurship) for rural mobile telecom services. The rests of the objectives such as examining rural preferences & satisfaction towards mobile telecom services; measuring rural consumer's innovativeness & motives and rural consumers' segmentation based on consumer innovativeness are related to innovative approach and development of conceptual framework of public-private partnership for mobile telecom services indicates integrated approach in the study. The findings of exploratory research design are based on qualitative data analysis and in-depth interview technique based on telephonic survey has been used for this part of study. The officials of the select telecom companies from three regions of Punjab are considered as target population for qualitative research design. The 16 officials from various telecom service providers of Punjab considered as a sample and non-probabilistic convenient sampling technique has been used for selecting the sample. The interpretation of qualitative data is based on 'Open Coding Approach' as suggested by Strauss and Corbin (1990). 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 whole text (Flick, 2010). A sample of 600 respondents (200 respondents each from Doaba, Malwa and Majha) has been selected from the rural Punjab by using multi-stage sampling technique and self-administered questionnaire has been used as an instrument for data collection. The descriptive as well as inferential analyses have been used in quantitative data analysis. The results of descriptive statistics are portrayed in tabular forms by displaying central tendency (mean, mode and median) and dispersion (standard deviation and variance), whereas one sample t-test, multiple regression and cluster analysis have been used for generalization of results for target population.

The results of qualitative data analysis identified 33 sub-categories and 4 main categories of problems related to rural mobile telecom services. The entire analysis is resulted into identification of seven sub-categories for technical problems; ten sub-categories for infrastructural problems; seven sub-categories for manpower related problems; and finally

nine sub-categories for customers' perspective related problems. The lack of network quality and reliability, high operational costs to maintain Base Transceiver System (BTS), site off due to frequent power cuts, high distribution cost, lack of after sales services & latest information and communication flow, difficulty to complete documentation process for acquiring new customers and lack of technical skills and knowledge are the main problems identified in this part of analysis. The various dimensions have been borrowed from global telecom players such as Grameen Telecom-Bangladesh, Village Phone- Uganda, Smart Incorporation- Philippines, and Celtel- Nigeria for designing a conceptual framework of inclusive approach for rural mobile telecom services. The mobile telecom operators, rural entrepreneurs, micro-finance agencies, regulating bodies and customers have been identified as four main stakeholders in the framework and their role in leveraging the inclusive growth by facilitating rural marketing mix (4As) for mobile telecom services have also been discussed.

The findings related to innovative approach stress on leveraging local solution, diffusion of innovation and identifying rural consumers' segment based on innovativeness towards mobile telecom services. The one sample t-test has been used to examine the satisfaction and preferences towards mobile telecom service. The results highlight that information (agricultural, health, and educational) availing function, style & status functions and financial transaction facility through mobile phone are considered insignificant for rural consumers; the talk time validity and lack of after sales services identified as major barriers; the findings reveal that rural customers' are not satisfied with network coverage quality, reliability, signal strength, clarity of communication, and availability of different combinations of plans and recharge coupons. The results indicate that rural consumers' innovativeness towards mobile services is significant along with the various determinants such as opinion leadership, price sensitivity, product involvement, need for uniqueness & venturesomness and the results of multiple regression reveal that higher the opinion leadership, product involvement and venturesomness, higher will be the innovativeness where as higher the price sensitivity, lower will be the innovativeness for mobile telecom services among rural consumers. The findings also indicate that rural consumers are highly motivated by social motive followed by functional, cognitive and hedonic motives. The results of hierarchical and non- hierarchical clustering techniques identified three distinct rural consumers' segments namely 'open minded', 'opinion seekers' and 'innovators' on the basis of determinants of consumer

innovativeness and another three segments namely 'stimulators', 'passive innovators' and 'value seekers' identified on the basis of motives of consumer innovativeness.

The findings related to integrated approach stress on designing a conceptual framework on Public-Private Partnership (PPP) aiming to improve the access of mobile telecom services in rural areas. The various dimensions of the framework have been borrowed from existing global mobile telecom players such as Bangladesh's Village Phone Programme, Peru's PPP Telecommunication Project, India's Rural Service Centre by Viom Network and PPP led enabled services of Nepal. Over the last few years, many companies realized that the partnership between public and private sector can be used to improve the access of quality services in rural markets. The proposed framework in the study consists of public organization as a government agency responsible for managerial and monitoring support, formulation of policies for smooth functioning; the private body could be domestic or foreign telecom service providers or technology provider firms responsible for developing telecom infrastructure, uninterrupted telecom services, with assurance of wide access and improvement in rural teledensity. The selection of telecom operator in partnership is executed on the basis of Least Subsidy Auction method initiated by the Government and grants of subsidies are periodically distributed as per the performance of project. The important roles of stakeholders involved in the framework have also been discussed, followed by the revenue flows and benefits sought by each stakeholder in the partnership.

The recommendations in the study are presented separately for each dimension of 3Is approach. The recommendations related to integrated approach emphasising on recognition and encouraging synergistic alliance among private sector, private sector, NGOs, financial institutions and other organizations aiming to strengthen rural telecom infrastructure. The recommendations related to innovative approach concentrate on developing distinct business model, emphasizing the need of innovative and customized telecom products, and the role of various determinants of consumer innovativeness in successful diffusion and adoption of innovative services within a rural social system. The recommendations related to the inclusive approach stress on promoting rural entrepreneurship with intent to enhance the access of telecom services in rural areas and creating buying power among rural people.

DECLARATION

I, **Lokesh Jasrai**, hereby declare that the work presented herein is a genuine work done originally carried out by me and has not been published or submitted elsewhere for the requirement of Degree Programme. Any literature, data or work done by others and cited within this dissertation has been given due acknowledgement and listed in the reference section.

Lokesh Jasrai

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CERTIFICATE

This is certified that the project report entitled "**A Study on Integrated, Innovative and Inclusive Framework for Mobile Telecom Service Users in Rural Punjab**" carried out by **Mr. Lokesh Jasrai** S/O **Mr. Naresh Kumar Jasrai** has been accomplished under my guidance and supervision as registered Ph D student of School of Business, Lovely Professional University, Phagwara. This report is being submitted by him in the partial fulfilment of the requirement for the award of Ph D in Management from Lovely Professional University.

His Dissertation represents his original work and is worthy of consideration for the award of the Degree of Ph D (Management).

Dr. Anand Thakur

Title: A Study on Integrated, Innovative and Inclusive Framework for Mobile Telecom Service Users in Rural Punjab

Date: -----------------

1. INTRODUCTION

The expansion of Indian corporate from national to global at one side and from urban to rural from another side is manifested by successful entry of many national and international companies into rural markets aiming to identify potential consumers and satisfy their demands for various products and services. The companies related to Fast Moving Consumers Goods (FMCG) category such as Hindustan Unilever Limited, ITC, Godrej, Procter & Gamble, Colgate-Palmolive, Marico, SmithKline Beecham, and PepsiCo; consumer durables makers like LG, Maharaja, and Samsung; automobile companies like TVS, Hero MotoCorp, Maruti Suzuki, and Mahindra & Mahindra; retail companies such as Mahindra's Shubh Labh, ITC's Chopal Sagar, Tata's Kisaan Kendra and DSCL's Hariyali Kisaan Bazaar; and banking & insurance companies such as ICICI Prudential have successfully entered in rural corner of the country with innovative products and business models and grasped the opportunity by capturing huge untapped potential of rural India (Ramaswamy and Namakumari, 2014). The rising potential of rural India is witnessed with continuously increasing rural household annual income, changing consumption pattern, improving accessibility due to digital and infrastructure development, improving acceptability due to increasing literacy and media exposure, behavioural, psychological & lifestyle changes, and brand consciousness (Kotler et al., 2010). The marketing process involved understanding market place, customers' needs, designing an appropriate marketing strategy followed by integrated communication programs and establishing profitable relationship with aim to customer delight. The same marketing process is also being replicated for rural markets to deliver valuable products and services as per need of rural consumers with value addition in marketing mix aiming to improve availability, affordability, acceptability and awareness for rural markets. The distinct characteristics of rural markets and consumer psychology such as uneven development, fragmented nature, low purchasing power, price and value consciousness, heterogeneous lifestyle, reference purchasing, adaptive nature and low awareness due to lack of literacy create significant difference from urban markets, hence it is imperative to implement distinct marketing strategy for rural markets resulting into targeted product development, innovative business model, inculcating superior value, effective distribution and promotion with aim to garner maximum share from the rural areas (Kotler, et al., 2010). The developments of various approaches in rural marketing are based on the outcome of distinct philosophies adopted by contemporary marketers. These approaches are revealed in the form of either Corporate Social Responsibility (CSR) or

Bottom-of-the-Pyramid Marketing and result into emergence of trickle down, undifferentiated, differentiated and integrated-innovative-inclusive (3Is) approaches of rural marketing (Krishnamacharyulu and Ramakrishnan, 2012). The choice to implement a particular approach by rural masters is based on perception about rural markets, scope of marketing functions in rural areas and desired outcome from the rural markets. The present study is focused mainly on developing a conceptual framework of Integrated-Innovative-Inclusive (3Is) approach for rural mobile telecom services in Punjab (India). India's telecommunication network is considered as second largest in the world after China with 996 million subscribers in March, 2015. Both urban and rural subscribers significantly contribute in the growth of telecommunication network in country. The urban wireless subscribers constitute 58.5 per cent in total telephone subscribers followed by rural wireless (38.14 per cent), urban wireline (2.62 per cent), and rural wireline (0.75 per cent) subscribers (Telecom Regulatory Authority of India, 2013). The mobile telecom service industry in India relished a high growth since last decade in terms of number of subscribers and teledensity but now struggling to maintain a sustainable growth due to high operating costs, intense competition, continuous declining in minutes of usage per subscriber per month (MOU), average revenue per user per month (ARPU), steep fall in voice tariffs, and saturated urban markets (Cellular Operators Association of India, 2013). These all factors compel telecom service providers to identify and serve rural markets as a new target market with aim to maintain current subscription market share. The maximum market share of wireless subscribers belongs to Bharti Airtel (21.7 per cent), followed by Vodafone Essar (17.6 per cent), Reliance Communication (14.2 per cent), Idea Cellular (14.0 per cent), BSNL (11.7 per cent), Tata Teleservices (7.7 per cent), Aircel (6.9 per cent), Uninor and others (3.7 per cent). The practices involved in urban mobile telecom service marketing are required to alter while applying in rural markets due to distinct psychological, behavioural and profile characteristics of rural consumers vis-a-vis existence of various problems in rural areas that affect adoption and continuity of mobile telecom services. The lack of infrastructure facilities such as road, water, electricity coupled with disperse population, low per capita income are the main causes for low teledensity in rural areas. Other persisting problems such as high operating cost of base transceiver station (BTS), huge requirements of towers with dependency on battery backups for continuous tower operation, maintaining a reliable and consistent network, scarcity of technical and skilled man power create a great challenge for service providers to maintain sustainable growth in rural areas. A distinct distribution channel, innovative products and services, new business model, partnerships with governments or with

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other firms or NGOs, and promoting rural entrepreneurship are some unique contemporary practices that are being followed by majority of rural marketers in general and for mobile telecom services in particular aiming to get profitability in business. The dominant players of mobile telecommunication in rural markets are Bharti Airtel (23.53 per cent), followed by Vodafone Essar (23.56 per cent), Idea Cellular (18.84 per cent), and BSNL with 11.88 per cent market share (Cellular Operators Association of India, 2013; Telecom Regulatory Authority of India, 2013). The present study is an attempt to design a conceptual framework for mobile telecom services marketing based on the latest rural marketing approach. The nature of study is cross sectional and empirical, starts with exploration the problems related to mobile telecom services in rural Punjab. The study stresses on strengthening and developing Public-Private Partnership (PPP) model to improve the access of telecom services in rural areas under integrated approach; designing rural entrepreneurship framework on the basis of contemporary global telecom players to strengthen distribution network, promoting business opportunities and wealth creation under inclusive approach; and innovative approach emphasising on leveraging local solution by assessing preferences and satisfaction, and understanding about successful diffusion of innovation for mobile telecom services in rural markets by assessing mobile telecom services innovativeness, identifying characteristics of rural innovators, and analysing motivated consumer innovativeness among rural consumers (Schiffman, Kanuk and Kumar, 2011; Prahalad and Stuart, 2002).

1.1 India's Rural Potential

The rural areas differ from urban counterparts as they exist outside the municipality or corporation, or notified town area committee, having population less than 5000 with at least 75 per cent of male workforce engaged in agricultural activities and a population density upto 400 per sq. Km. (Census of India, 2011). The rural India contributes significantly in domestic consumption due to huge population base (826 million) and opens a pathway to capture huge untapped potential for various businesses. The India's rural potential has been rising continuously since last one decade and witnessed with improving affordability and increasing accessibility of products and services due to infrastructure development, growing acceptance due to improved literacy and media exposure, increasing rural household disposable income, and life style changes. Many national and foreign national companies of various categories such as fast moving consumer goods (FMCG), automobile, consumer durables, banking, insurance, and retail sector recognized this enormous opportunity of rural areas and entered successfully with their innovative products and business models. It is also estimated that rural

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markets will become dominant to urban counterparts in-terms of demand, potential, consumption pattern, and expenditure (percentage of income) for various items such as foods, FMCG, clothing, footwear, and durables (Kotler et al, 2010). The market analysts point out greater business confidence in rural India due to change in rural earning sources from farm income to non-farm income, growing income remittances from migrant rural population, increase in Minimum Support Prices (MSP), continuous rise in government budget expenditure (from US$ 9 billion to US$ 16 billion during March, 2007 to March, 2010) on various schemes of rural development such as employment, connectivity, drinking water supply, housing & land resources, and greater cash inflows due to improved access of finance and institutional credit (Accenture, 2010). The factors that attract marketers towards rural areas known as 'rural pull factors' and are described as follows-

1.1.1   *Rural Demographic Environment*

The large rural population base with increasing size and continuous growth of households outstandingly affect consumption volume in rural areas. About 70 per cent (1.1 billion) population lives in rural corner of country and is expected to reach 866 million by the end of 2015 from its 826 million in 2010. The numbers of rural households have increased from 138 million in 2001 to 165 million in 2010 due to emerging culture of 'individualized joint family structure' (Census of India, 2011; Kashyap, 2012). The rural economy has also transferred from old agrarian based economy to non-traditional occupation based economy due to preponderance of skilled and salaried jobs, shops and trades. It is important to note that almost 50 million people are engaged in non-agricultural occupations and merely 4 per cent of rural households belong to 'large farmer' category with landholdings more than 10 acres, 30 per cent of households belong to 'marginal farmer' with less than 2 acres of land and 15 per cent households are having land between 2 to 4 acres. The agricultural labourers have been reduced from 27 per cent in 2000 to 12 per cent in 2010, whereas non-agricultural labourers have been increased from 9 per cent to 31 per cent during the same period (Kashyap, 2012).

1.1.2 Increasing Rural Income Distribution

The state & central governments' policy measures and developments under five year plans coupled with land reforms programs, infrastructure development, rural electrifications, communication and credit facilities increased rural prosperity and result into lower down of lowest rural income class (Rs. 25,000 per annum) from 61 per cent in 1994-95 to 20 per cent in 2006-07 vis a vis rising of highest income class (more than Rs. 100,000 per annum) from 1.6 per cent to 5.6 per cent during the same period (Fig.1.1). The rural annual household income is estimated Rs. 51,922 against Rs. 95,827 of urban household income. The per capita income among semi-urban is around Rs. 14,000 to 15,000 per annum while among rural is less than Rs.7000 per annum and it is also estimated that by rising 1 per cent of rural income, the buying power would be increased by Rs. 100,000 million (Kotler, et al., 2010). The rural markets are considered globally viable and estimated the proportion of the poor earning less than US$ 1 per day is going to reduce very fast and over the next decade it would become half and the proportion with income of more than US$ 5 per day will increase three-fold (Kashyap, 2012).

Fig.1.1 Rural Income Groups (Rs. per annum)
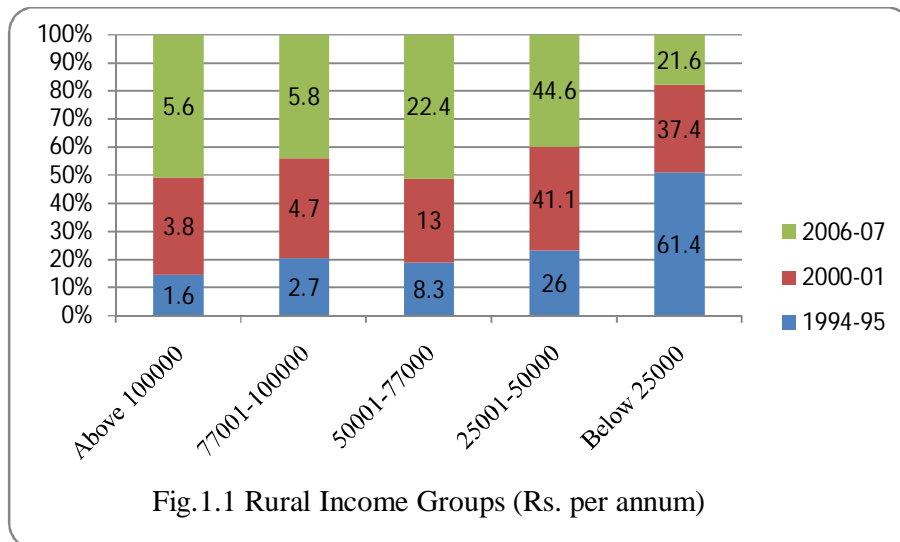
Source- Krishnamacharyulu and Ramakrishnan, 2012

1.1.3 Rural Consumption Growth

The rural markets are going to dominate urban markets very soon in terms of demand and potential for various categories such as foods, FMCG, automobile, clothing, footwear, and

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durables. The rural expenditure as a percentage of income is 78 per cent against 72 per cent in urban counterparts (Figure 1.2). The study conducted by Mckinsey & Company (2007) reveals a significant growth of rural consumption since last two decades. A substantive growth in rural consumption has measured from Rs. 4,498 billion to Rs. 6,093 billion during the period of 1985 to 1995 with 3.9 per cent compound annual growth rate and expected to reach Rs. 16,701 billion by 2015 and Rs. 26,383 billion by 2025 with compound annual growth rate of 5.1 per cent. It is also estimated that by the end of 2025, the rural consumption will create a large potential market worth over Rs. 6 trillion (Krishnamacharyulu and Ramakrishnan, 2012).

Fig. 1.2 Rural Expenditure as a Percentage of Income
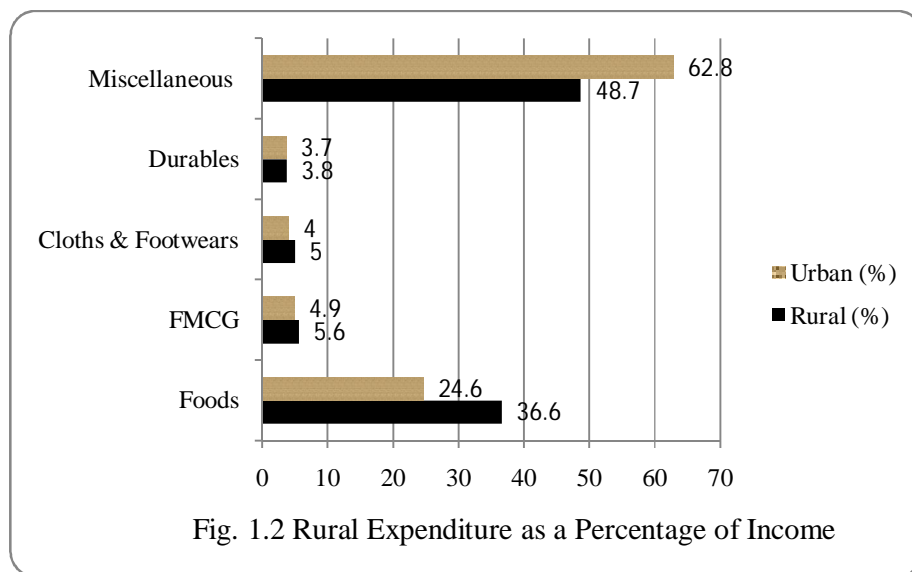
Source: Kotler, et al., 2010

1.1.4 Per-Household Rural Consumption Growth

A steep growth has also been noticed in per-household rural consumption due to increase in purchasing power of rural consumers. The rural markets contribute almost 40 per cent of India's total consumption of goods and services with 7 per cent of rural income growth over the past few years. The expenditure on non-food items has been growing with 8.2 per cent annual compound rate vis-a-vis the rural markets act as source of substantial revenue for many industrial sectors. The FMCG sector generates 50 per cent of revenue from rural areas and 98 per cent growth of telecom subscribers has noticed in rural and semi-urban areas over the last five years (Accenture Research Report, 2010). The study conducted by Mckinsey & Company (2007) reveals that per-household consumption in rural India has been increased from Rs. 45,000 per annum to Rs. 50,000 from 1985 to 1995 and reached to Rs. 67,000 per

annum in 2005. The study also estimated that per-household consumption is expected to reach Rs. 104,000 and Rs. 158,000 per annum by 2015 and 2025 respectively (Fig. 1.3).

Fig. 1.3 Per-household Rural Consumption (Rs. per annum)
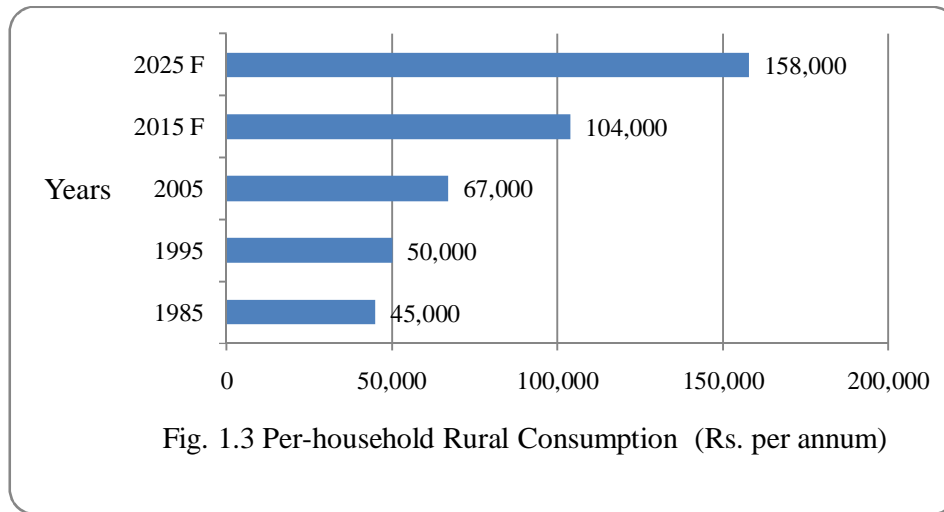
Source: Mckinsey & Company, 2007

1.1.5   Rising Rural Prosperity

A prominent shifting from slow-growth, agricultural based barter economy to fast-growing and cash rich economy significantly affects the rural eco-system. The rural economy has benefitted due to changes in cropping pattern from food grain crops to non-food grain & cash crops, shifting from on-land activities to off-land activities such as livestock, fisheries and from farm activities to non-farm activities such as services, and growth in manufacturing sector during last two decades. The farm sector contributes only 40 per cent while non-farm sector contributes 60 per cent of total rural income (Kashyap, 2012). Out of 35.8 million non-farms established in country, 19.8 million situated in rural areas and are categorized in various sector as retail (39 per cent) followed by manufacturing (26 per cent), social and personal services (8 per cent). The rural enterprises related to agricultural and non-agricultural production and/or distribution account 61 per cent (25.5 million) of total enterprises in country and act as a driving force for rising prosperity and employment opportunities. The outcome of all these changes is clearly manifested by declining of poverty ratio. According to Planning Commission of India (2010-2011), the poverty ratio at national level has decreased from 37.3 per cent to 28.3 per cent (based on uniform recall period) from 1993-94 to 2004-05 and decreased from 27.1 per cent to 21.8 per cent (based on mixed recall period) from 1999-2000 to 2004-05 in rural India (Fig. 1.4).

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Fig. 1.4 Poverty Ratio
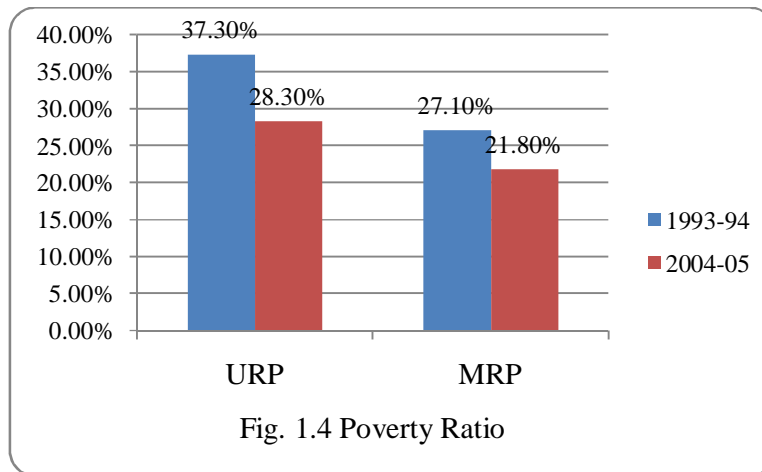
Source- Planning Commission of India, 2010-11

1.1.6 Increasing Rural Acceptability and Accessibility

The rural society witnessed fast urbanization since the last decade due to increasing literacy rates, more exposure due to globalization, lifestyle changes, e-learning opportunities, development of digital infrastructure and social & cultural changes. The literacy rate increased from 53 per cent to 63 per cent during 2000 to 2010 and nearly 20 percent of rural population is qualified with secondary and higher secondary education (Kashyap, 2012). The improvement in literacy coupled with media exposure from informal and formal sources amend the life style of rural people and are manifested in brand consciousness, growing usage and demand of discretionary and lifestyle products such as FMCG, cosmetics, mobile phones, televisions, Direct to Home (DTH) services, and two wheelers. The overall spending on these products has valued as $69 billion during 2001 to 2009 as compare to $55 billion in urban counterparts (Fig. 1.5). The corporate belongs to FMCG such as Hindustan Unilever, Colgate, and others such as Godrej, RCI, Marico, SmithKline Beecham reap 25- 30 per cent of their total sales from rural markets only (Ramaswamy and Namakumari, 2014). The FMCG market growth rate in rural areas noticed at 18 per cent per annum as compare to 12 per cent in urban markets. The rural market share is expected to increase 45-50 per cent of total FMCG market by 2020 with its current 34 per cent of market share (Confederation of Indian Industry, 2010). The low financing penetration and prevalence of cash flow cycle of farming linked with harvesting season enhance cash purchases in rural areas and thus make a favourable arena for sale of consumer durables and automobiles (Credit Suisse, 2011). The rural markets are having huge untapped potential for service and insurance sectors also and

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expected to provide business opportunities worth 23$ billion. Out of 20 million DTH connections, 14 million exist in rural India only. It is also important to note that 41 million Kissan Credit Cards (KCC) worth of cumulative credit of Rs. 977 billion have been distributed among the farmers and 42 million households are availing banking services against 27 million of urban households. The emergence of Self Help Groups (SHGs) leads woman empowerment resulting into active participation of rural women in business activities such as in project 'Shakti' of Hindustan Unilever and in 'Shri Mahila Griha Udyog Lijjat Papad'. The rural infrastructural developments, long term policies and programs have improved rural housing, road connectivity, electrification, telecommunication, irrigation and drinking water facilities and result in improving the access of various products and services. The governments' flagship program 'Bharat Nirman' spent Rs. 1.76 trillion under all round infrastructure developments ensuing the electrification of 100,000 villages, spread irrigation to 10 million hectares and build 6 million houses.

Fig. 1.5 Sales from Rural Markets
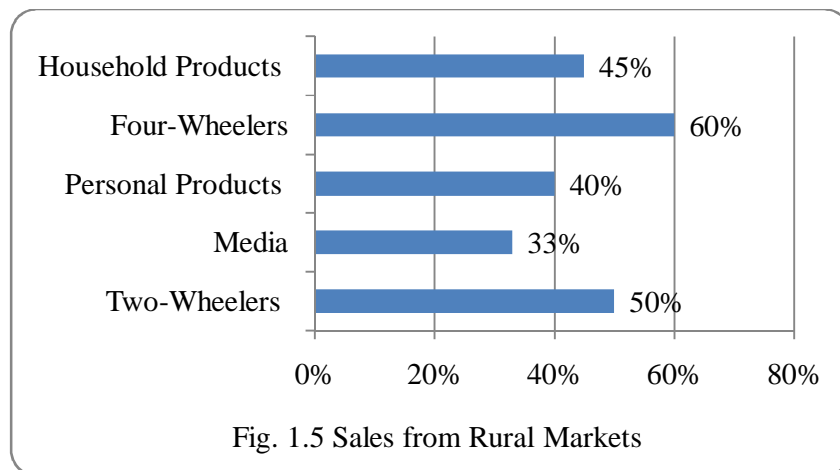
Source: Ramaswamy and Namakumari, 2014

1.2   Rural Marketing- The Concept of Rural Areas

The rural marketing refers to selling of products and services in rural areas through distinguished marketing activities. The term 'rural' is defined by various public and private organizations on the basis of various parameters such as population density, population characteristics, working pattern, economic conditions and distinct business requirements that vary among organizations. The Census of India, 2011 defined rural areas as any habitation with population density less than 400 sq. km, at least 75 per cent of male population is engaged in agricultural activities and outside the regime of municipality or corporation,

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cantonment board, or notified town area committee. The Reserve Bank of India (RBI) considers all towns or villages under 'rural' having a population up to 10,000 and 'semi-urban' with population between 10,000 to 100,000. The Planning Commission of India defined rural as towns with a population up to 15,000. The FMCG companies such as Hindustan Unilever, ITC reckoned the rural areas up to 20,000 population whereas consumer durables companies such as LG Electronic considers all areas as rural or semi-urban except few metros.

1.2.1 Definition and Scope of Rural Marketing

The activities involved in rural marketing are different from the agricultural marketing. The agricultural marketing refers to marketing of agricultural products to industrial consumers outside the villages or delivering agri-inputs (seeds, fertilizers, pesticides, farm equipments) to farmers in rural areas whereas the rural marketing deals in finding ways and means to sell industrial and consumer goods in rural markets. Kotler et al. (2010) and Krishnamacharyulu & Ramakrishnan (2012) defined rural marketing as developmental marketing by promoting entrepreneurship, generating partnership with developments agencies, creating buying power among rural people and it also refers as business function that involved assessing, stimulating and satisfying demand for products and services through innovative business models aiming to satisfy rural consumers and business profitability. The rural markets in India have been ignored for the last many years due to various reasons such as low population density, lack of infrastructure facilities, improper supply chain, illiteracy, and plethora of unbranded local competitors with fragmented nature of competition that make rural markets least attractive for foreign as well as domestic companies. Legacy to consume self produced products and services rather than dependency on commercial buying make rural consumers self dependent and inhibits the shopping activities. The accessibility of rural markets is expensive and difficult due to lack of infrastructure facilities such as electricity, water, road, telecommunication, banks and media. But it is important to note that since last one decade the rural markets are no more ignored by marketers rather recognized as an important destination for consumption of many products and services due to realization of huge untapped potential. The marketers are compelled to consider rural markets as opportunity or compulsion due to certain factors. These factors are classified in two broad categories namely 'urban push' and 'rural pull' factors. The 'urban push' factors reflect various facts of urban markets such as over saturation, hyper competition, and requirement of constant innovation to serve ever changing life style of consumers. The 'rural pull' factors indicate rural market as promising

market place due to more affordability & acceptability of valuable & branded products and improved access due to infrastructure development. The rural markets are growing faster because of huge untapped potential and less competition as compared to urban counterparts. Affordability for branded products and services has increased drastically in rural areas due to change in occupation pattern, increased consumption, and rising disposable income. The rapid urbanization of rural areas since last decade has resulted into greater acceptance of branded products. The continuous improvement in literacy, lifestyle, telecommunication, e-learning facilities, media exposure and women empowerment induced urbanization in rural areas. The infrastructure development led by government programs and policies is manifested in road connectivity, electrification, wide telecommunication network in rural areas and resulting into access of various products and services. The profiles of rural consumers as well as their buying behaviour are also changing. The up gradation of products in rural households along with shifting of consumption pattern from local to national brands and from low priced to premium priced products indicate greater scope for marketers to deliver wide range of products and services to rural consumers. The usage and increasing demand for various items in rural households such as FMCG products (toothpaste, shampoos & conditioners, cosmetics, shaving cream, mosquito repellent, washing cakes & detergents, bath soaps, antiseptic, and branded salt), mobile phones, LCD and LED televisions, DTH services, automobile (two and four wheeler), and inverters reflect greater affordability and acceptability of popular products, openness to try innovative products, brand awareness, and receptivity to change the traditional consumption pattern by rural consumers (Business Standard, 2015; Velayudhan, 2007).

1.2.2 The Evolution of Rural Marketing

The rural marketing in India witnessed a sea change since independence and now reckoned as an important market place for many corporate and manifests the commercial efforts to gain profitability. The significance of rural marketing is clearly revealed by successful entry of various companies with innovative business models and customised products & services. The evolution of rural marketing can be studied by analyzing marketing function, nature of products and services sold, types of source and targeted market (Table 1.1). The entire revolution process is classified into following four phases-

Phase-1st (Before 1960s) - Prior to1960s, the agricultural marketing was the synonym of rural marketing. Under this phase, the agricultural produces and agri-inputs were considered

the main products for transactions. The agricultural produces considered as primary products for selling and further categorized into food grains and industrial raw materials (cotton, oilseeds, sugarcane etc.) products whereas the agri-inputs (fertilizers, pesticides, seeds, farm equipments and rural artisans) considered as secondary products for marketing. Both rural and urban areas were considered main target markets for agricultural produces whereas the rural areas were targeted mainly for agri-inputs products. Other products such as earthen and metallic utensils, agricultural equipments (plough, bamboo, and baskets) along with skilled labours (carpenter, blacksmith, cobblers, and pot makers) were also the part of this unorganized market.

Phase- 2nd (1960s -1990) – This phase is also known as developmental phase of rural marketing due to emergence of green revolution (during 1967- 1978) and white revolution, the later was initiated by National Dairy Development Board (NDDB). The various developments in this phase were reflected in three distinct phases of operational flood program during 1970 to mid 1990s (Cunningham, 2009). The green revolution has changed the farming practices from traditional to more scientific with use of improved agricultural inputs such as high yielding seed varieties, fertilizers, pesticides, and incorporating mechanistic practices through various farm machineries such as tractors, pump-sets, tillers, and harvesters. During this phase, the agriculture inputs considered as primary products to sell in rural markets through proper marketing channels. The emergence of various agri-inputs companies such as IFFCO, Eicher, Escorts, DSCL, and Mahindra & Mahindra came up with their marketing practices to serve rural areas. The white revolution embarked commercialization and processing of milk production through establishing cooperative societies in the villages and resulted into improvement in buying power among farmers.

Phase- 3rd (1990s -2000) – Under this phase, the household consumables and durables were considered as primary products to sell due to immense potential and huge untapped market as recognized by marketers. The socio-economic developments coupled with economic reforms in 1991-92 created favourable environments for companies to enter in rural areas as urban markets were going to saturate due to high competition. In 1990s the growth of industrial sector in India transformed agricultural based economy to industrial based economy and contributed significantly in gross national product (GNP) of country.

Phase- 4th (After 2000) - This phase is considered as the most advanced phase of rural marketing due to emergence of innovative products & services for customized solutions,

distinct distribution channels to ensure availability, introduction of new business models to improve access, emergence of Self Help Groups (SHGs) & microfinance to facilitate micro-credit, women empowerment, partnerships with various organizations (government, financial institutions or NGOs) and involvement of rural people in business activities. The contemporary rural marketing business models such as HUL's project Shakti, Hindustan Petroleum's Rasoi Ghar, ITC's e-choupal; establishment of rural hyper markets from ITC's Choupal Sagar, Godrej Agrovet's Aadhar, TATA's Kissan Kendra, and DCM Sriram Consolidated's (DSCL) Hariyaali Kissan Bazar reveal successful entry into rural markets with distinct distribution channel, and emphasis the role of rural people as change agents or business partners aiming to promote entrepreneurship and create buying power among rural people. Appropriate product, pricing and promotional strategies adopted by many national and multinational companies by introducing low unit packs (LUPs) such as from HUL, Dabur, Marico, ITC, and Britannia (e.g. pouch packets of toothpaste, five-gram Vicks Vaporub, and small size Lifebuoy soap); affordable price range products from consumer durables such as LG, Samsung, Godrej and from automobile companies such as Maruti, Honda MotoCorp, TVS and Bajaj indicate rural marketing mix strategies to capture this promising market place (CII, 2010 and CII and Yes Bank, 2007).

Table 1.1 Phases of Rural Marketing Evolution

Phase	Features				
	Period	**Major Tasks**	**Targeted Products**	**Origin**	**Target Market**
1st	Before 1960s	Agricultural marketing	Agricultural produce	Rural	Urban
2nd	1960s -1990	Agricultural inputs marketing	Agriculture inputs & farm equipments	Rural and Urban	Rural
3rd	1990s -2000	Expansion of urban marketing	Household consumables and durables	Urban	Rural
4th	After 2000	Rural marketing	FMCG, automobiles, consumer durables, and retail	Urban	Rural

Source: Literature Review

1.2.3 Development of Rural Marketing Approaches

The phases of rural marketing evolution process are differentiated among each other on the basis of scope of marketing in rural areas, functions involved in marketing and identifying targeted products and markets. The rural marketing evolution process was significantly affected by various rural marketing environmental factors such as demographic, physical,

social, cultural, political and technological. The changes in rural economic environment such as economic structure, income spending pattern, per capita consumption expenditure has grown in last two decades due to improved infrastructure, governments' support and rising employment opportunities. Apart from economic well being of rural areas, the evolution of rural marketing also yielded different perspectives to serve rural markets namely public administration, action and marketing based perspectives (Krishnamacharyulu and Ramakrishnan, 2012). The perspective of public administration indicates that urban areas are the locations exist within municipality or corporation with minimum population of 5000, at least 75 per cent of male workforce engaged in non-agricultural activities and having population density over 400 per sq. Km. (Census of India, 2011). Action based perspective stresses on identification of target market suitable for particular products and services and marketing oriented perspective focuses on population density, occupation criteria, and type of administration. These different perspectives develop distinct philosophies to serve rural markets either as Corporate Social Responsibility (CSR) or Bottom-of-the-Pyramid Marketing (Table 1.2). These different philosophies are clearly revealed in various approaches of rural marketing namely trickle down, undifferentiated, differentiated and integrated-innovative-inclusive (3Is) (Ganesh, 2014; Krishnamacharyulu and Ramakrishnan, 2012) and are presented as follows-

1. **Trickle Down Approach-** This approach primarily focuses on urban areas only by considering as main target market. According to this approach, the maximum sale is generated from urban areas as compared to rural areas. This approach stresses on serving rural areas aiming to increase brand awareness through CSR activities, thus the rural markets are excluded from any core business activities.

2. **Undifferentiated Approach-** The emergence of this approach is based on the desirable changes occurred in rural economic structure, disposable income, spending pattern and improvement in other rural economic indicators such as growing household consumption and infrastructure development. Due to all these factors, the marketers got attention in rural areas and resulting into plethora of corporate entries into rural markets. This approach is based on the philosophy that rural markets are adaptive in nature and adjunct to the urban markets, hence no differentiation with regards to products, services, and business models are required to incorporate. As a result, marketers using this approach implement minor modifications in urban strategies for rural markets and give emphasis only to distribution or placement of

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products rather make any value addition to rest of the 3 Ps viz. Product, Price and Promotion.

3. **Differentiated Approach-** The differentiation approach came into existence in late 1990s due to occurrence of economic reforms in country; growth of industrial sector coupled with increasing rural purchasing power by emergence of Self Help Groups (SHGs), microfinance institutions & micro enterprises and manifested by increasing affordability of products and services among rural consumers. The approach lays emphasis on developing unique products, distinct distribution channels with value addition in marketing mix as per the need of rural consumers. The development of differentiated products is the main characteristic of this approach based on distinct features of rural markets such as value consciousness, price sensitivity, brand awareness, adaptive in nature, heterogeneity in lifestyle, reference purchasing and slow processing information due to lack of literacy.

Table 1.2 Features of Rural Marketing Approaches

Base	Rural Marketing Approaches			
	Trickle Down	**Undifferentiated**	**Differentiated**	**3Is**
Perception about rural markets	Excluded from application of specialized programs as considered smaller in size and lack of potential	Valuable target market due to improved rural economic indicators	Separate market due to increasing demand for unique products as distinct behavioral, psychological and consumers' profile	Immense scope for business potential as latent market of bottom of pyramid
Scope of marketing functions	Marketing practices are merely focused on strengthening public relation and corporate image	Concentrates only placing the products without any value addition in product, price and promotion	Developing unique products, distinct distribution channel with value addition in marketing mix	Promoting rural entrepreneurs & PPP**and constant innovation in technology, products and business model
Preferable outcome (s)	Creating awareness through CSR*	Access of products through	Good image and public relations	Profitability and Business growth

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		better distribution and placement	and intend to business growth in rural areas	by core business activities rather than CSR only

4. **Integrated-Innovative-Inclusive (3Is) Approach-** This approach is considered as the latest approach of rural marketing based on the theory of Bottom-of-the-Pyramid (BOP) marketing (Prahalad and Stuart, 2002). This approach is a combination of three distinct approaches viz. integrated, innovative and inclusive and inter-related to each other (Fig. 1.6). The integrated approach emphasises on improving the access of products and services in rural areas through developing public-private partnership (PPP), establishing better distribution, maintaining communication links and relationship marketing. The key stakeholders involved in PPP are the companies, offering rural centric products, grass root level organizations, NGOs, government, technology providers and public. These all stakeholders would have to come together and create an integrated approach aiming to expand rural economy (Ganesh, 2014). This approach performs the tasks of transactional marketing also by delivering valuable products and services (Kotler et al., 2010). The innovative approach, stresses on developing constant innovation in products and services by combination of global and local knowledge with aim to leverage local solutions. The approach further emphasises on successful adoption and diffusion of innovation in a particular community on the basis of consumers' innovativeness and identification of innovators for targeted product development. The inclusive approach is based on philosophy that rural people should be considered as business partners or change agents rather than a poor person of a deprived society (Kashyap, 2012; Krishnamacharyulu and Ramakrishnan 2012; Paninchukunnath, 2010; CKS, 2008; Prahalad and Stuart, 2002). This approach lays importance to developing and promoting local entrepreneurship in rural markets with aim to create buying power among rural people (Thakur and Jasrai, 2014; Dash, Patwardhan and Verma, 2011; Xavier, Raja and Nandhini, 2008). The inclusive approach is based on the theme of linking local communities with big businesses. This approach facilitates sustainable business solutions beyond philanthropy aiming to expand the access of goods and services by generating employment opportunities for rural people either directly or through firm's value

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chains as suppliers, distributors, retailers or service providers. The inclusive business model delivers socio-economic values through providing affordable products and services and generating wealth through entrepreneurship among rural communities (World Business Council for Sustainable Development, 2014).

Improved Access of Products and Services

Leverage Local Solutions and Successful Diffusion of Innovation

Rural Entrepreneurship and Wealth Creation

Outcomes

Outcomes

Outcomes

Public- Private Partnership

Communication Links

New Business Model

Innovative Products and Services

Diffusion of Innovation in Social Community

Spur Entrepreneurship

Developing Employment

Wealth Creation

Major Activities Involved

Integrated

Innovative

Inclusive

Distinct Rural Marketing Approaches
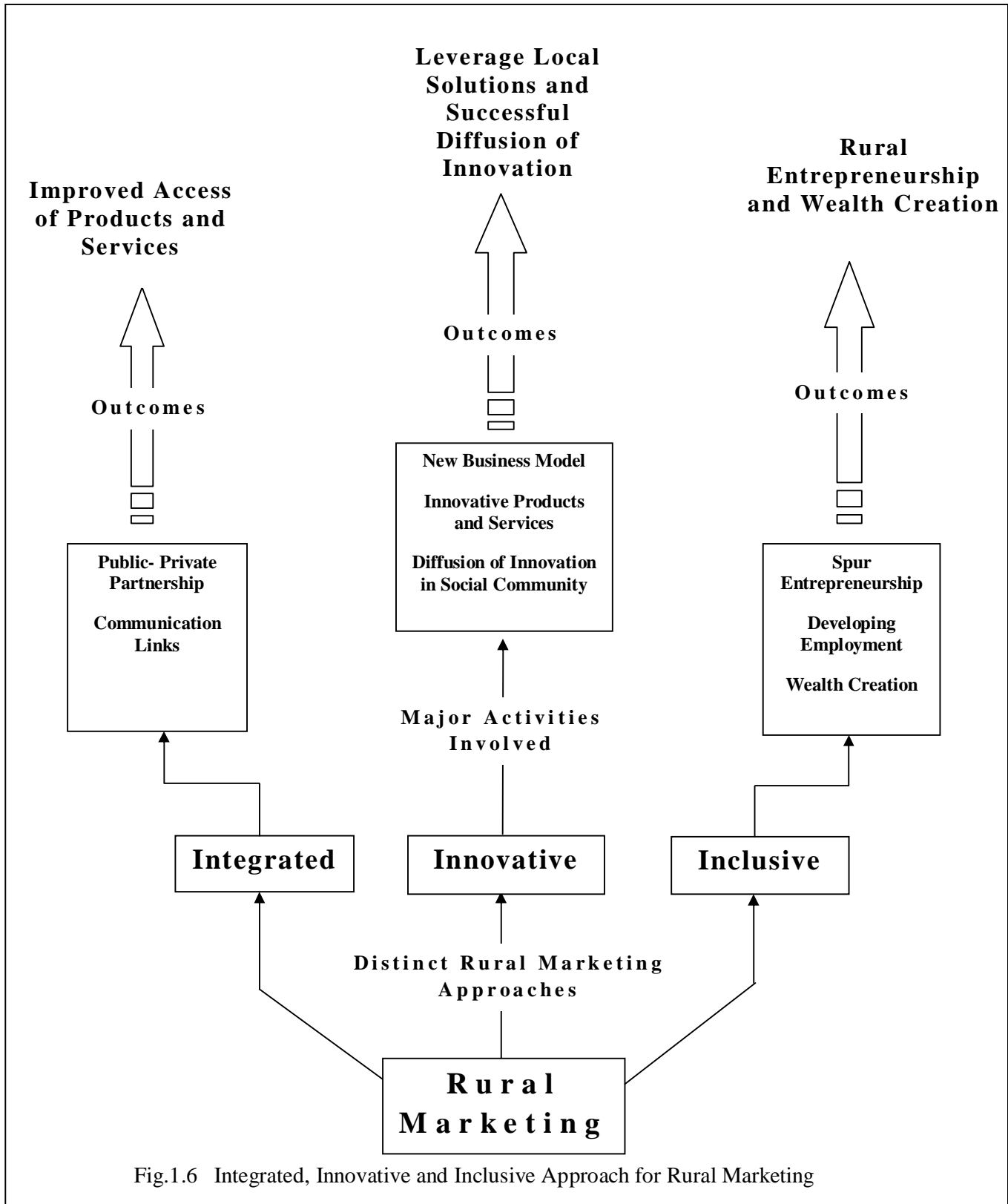
Rural Marketing

Fig.1.6   Integrated, Innovative and Inclusive Approach for Rural Marketing

Source: Krishnamacharyulu and Ramakrishnan, 2012; Prahalad and Stuart, 2002

1.3 Indian Telecommunication Industry

The telecommunication industry in India plays an important role in Information and Communication Technology (ICT) with contribution of 4 per cent in Gross Domestic Products of country. India's telecommunication sector accounts for almost 12 per cent of the world's total telephone subscribers and has been achieving a strong position in the global mobile telephony market since last decade (COAI, 2013; Tractus Asia Ltd., 2012). The three major segments of telecom sector namely mobile (wireless), fixed line and broadband (internet services) are expected to grow more rapidly due to continuous rising commercial and social needs of people aiming to connect with rest of the world. The mobile telephony segment is expected to reach revenue of US$ 11.6 billion by the end of 2014 with compound average growth rate of 7.2 per cent during 2009 to 2014, whereas the broadband segment is expected to reach revenue of US$ 117 billion by the end of 2015 with compound average growth rate of 61 per cent during the same period (Tractus Asia Ltd., 2012). The emergence of smart phones, various mobile apps & technologies coupled with affordable handsets, telecom equipments, customized mobile value added services, increasing access of broadband services with 3G technology will spur the growth of telecom sector. Instead a substantial subscribers base in country, India still contributes only 2.3% (US$ 27 billion) of the world total revenue (US$ 1160 billion) and also known as the world' lowest voice tariffs due to hyper competition in industry (COAI, 2013). The overview of various segments of telecommunication industry is presented as follows-

1.3.1 *Major Segments of Indian Telecommunication Industry*

The telephone subscribers in India have increased from 895.51 million in December 2012 to 996 million at the end of March 2015 with a growth rate of 0.28 per cent and total telephone density has been declined from 78.66 to 77.27 during the same period (Fig. 1.7). The total urban subscribers' base has decreased from 596.96 million to 548.80 million and teledensity from 149.90 to 146.96 during the same period. Whereas, the rural subscribers' base has increased from 338.54 million to 349.22 million and rural teledensity has also increased from 39.85 to 48.27 in this period. The share of rural subscribers in total subscription has increased from 37.80 per cent in December 2012 to 38.89 per cent at end of March 2013 (TRAI, 2013). The urban wireless subscribers contribute maximum (58.50 per cent) proportion in total telephone subscribers followed by rural wireless (38.14 per cent), urban wireline (2.62 per cent), and rural wireline (0.75 per cent) subscribers. The Bharti Airtel is the leading service

provider in country with 191.48 million subscribers followed by Vodafone (152.39 million), Reliance (124.22 million), BSNL (121.65 million), Idea (121.61 million), Tata (67.92) and Aircel (60.07 million). In the case of rural subscription market share, Vodafone is the market leader with 82.29 million subscribers followed by Bharti Airtel (82.16 million), Idea (65.78 million), BSNL (41.49) and Reliance (29.34million).

Fig.1.7 Telephone Subscribers Base
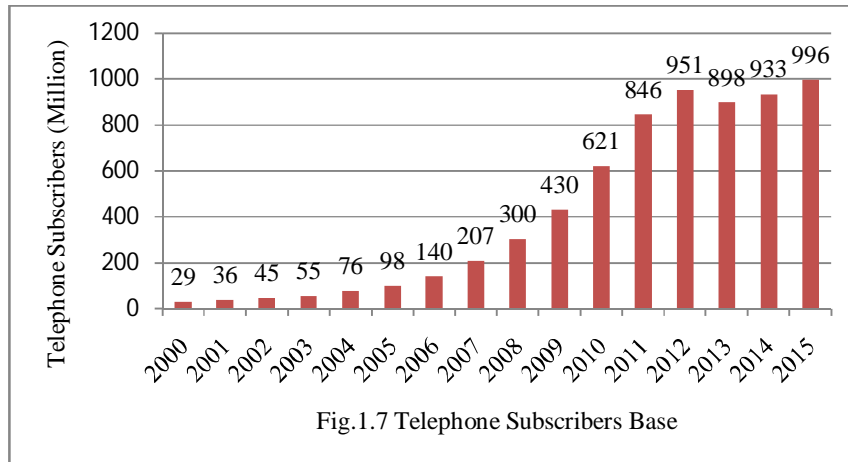
Source: TRAI, 2012-13

a. *Wireless Telecom Service*

Both GSM and CDMA mobile telecom service providers are included in wireless service industry. The wireless subscribers have been increased from 864.72 million in December 2012 to 969.9 million at the end of March 2015 with a growth rate of 0.36 per cent and total wireless density has slightly increased from 70.82 to 70.85 during the same period (Fig. 1.8). The rural subscribers' base has been increased from 331.60 million to 414.18 million whereas the urban subscribers showed decline from 533.12 million to 525.30 million. The rural teledensity has increased from 39.04 per cent to 40.23 per cent whereas the urban teledensity declined from 143.48 to 140.67. The Bharti Airtel remains the market leader in wireless service industry with its 188.20 million subscribers followed by Vodafone (152.35 million) and Reliance (122.97). Out of total cellular mobile service providers, GSM subscribers were recorded 794.03 million whereas, CDMA subscribers' declined from 77.74 million in December 2012 to 73.78 million at the end of March 2013 (TRAI, 2012-13).

Fig. 1.8 Wireless Subscribers (million)
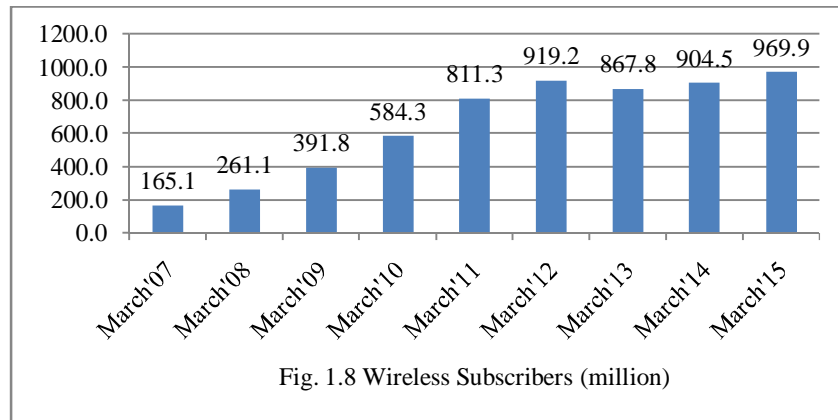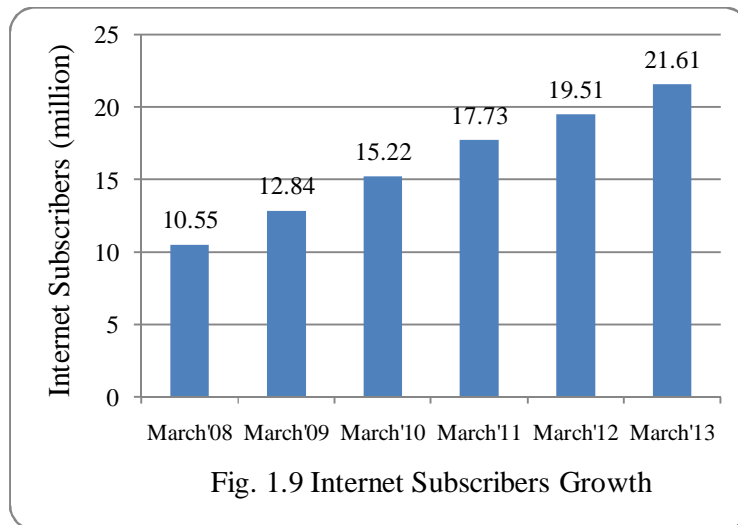
Source: TRAI, 2012-13

b. Wireline Telecom Service

The continuous decline of wireline subscribers' base and wireline teledensity has been noticed since last five years in both urban and rural areas. Total wireline subscribers base has declined from 30.79 million in December 2012 to 30.21 million at the end of March 2013. The urban subscribers' base noticed a negative growth of 1.42 per cent from 23.84 million to 23.50 million during the same period whereas rural subscribers declined 3.39 per cent from 6.95 million to 6.71 million. The rural teledensity has decreased from 0.82 to 0.79 whereas urban teledensity declined from 6.42 to 6.29. The Public Call Offices (PCOs) and Village Public Telephones (VPTs) are the main constituents of wireline service industry and both showed a decline growth since last one year. The PCOs in the country declined from 1.41 million to 1.26 million during last one year (TRAI, 2012-13).

c. Internet Services

The internet service industry is classified in two categories viz., internet access other than the wireless phone subscribers and internet access through wireless phone subscribers. Total 164.81 million internet users access through wireless phone w here as 21.61 million subscribers use internet through other sources rather than wireless phone (Fig 1.9). The share of internet subscribers (excluding internet access through wireless phone), through broadband is 69.65 per cent where as narrowband constitutes 30.35 per cent. The number of broadband subscribers has increased from 14.98 million in December 2012 to 15.05 million at the end of March 2013, whereas narrowband subscribers decreased from 6.59 million to 6.56 million during the same period. The share of internet subscribers related to PSUs (public-sector units) has declined from 79.54 per cent to 69.82 per cent, whereas private internet subscriber's

share increased from 20.46 per cent to 30.18 per cent during the period from December 2012 to March 2013. The internet leased line registered a growth of 3.15 per cent with 41041 consumers in March 2013, against 39788 consumers in December 2012. The Bharat Sanchar Nigam Ltd (BSNL) is having maximum market share of 60.47 per cent with 13.12 million internet subscribers followed by 11.53 per cent of Reliance communication (2.49 million) and 9.06 per cent of Mahanagar Telephone Nigam Ltd (MTNL) with 1.96 million internet subscribers. Internet access through wireless phone is mainly provided by 13 service providers in country. Total 143.20 million subscribers accessed internet through wireless phone (TRAI, 2012-13). The Bharti Airtel is having maximum market share of 27.58 per cent with 39.48 million internet subscribers followed by 24.03 per cent of Vodafone (34.40 million), 17.80 per cent of Idea Cellular (25.49 million), 14.56 per cent of Reliance Communication (20.85 million) and 8.47 per cent of Aircel Ltd. (12.12 million).

Fig. 1.9 Internet Subscribers Growth

Source: TRAI, 2012-13

1.3.2 Rural Telecom Services

The access of affordable and quality telecommunication services in rural areas identified as one of the thrust areas in National Telecom Policy-2012. The main tasks involved in rural telecom services are to increase teledensity, enhance affordability by modifying tariff structure, and access of telecom coverage in all the villages along with delivering quality services. As on March 2013, the rural subscribers' base measured as 349.22 million out of total 898.02 million subscribers in country with 41.02 rural teledensity. The overview of various segments of rural telecommunication are presented as follows-

a. ***Rural Wireless Telecom Services-*** The rural wireless subscribers constitute 342.50 million out of total 867.80 million wireless subscribers in country and represent 40.23 teledensity out of total 70.85 wireless teledensity. A continuous growth in rural telecom subscribers has been noticed during last one decade; it increased from 33.14 million to 424.18 million from 2007 to 2015 (Fig. 1.10). The total market share of private operators in wireless subscribers is 87.76 per cent; whereas public sector operators represent 12.24 per cent of market share. Vodafone is having maximum rural market share of 24.02 per cent followed by Bharti (23.99 per cent), Idea (19.21 per cent), BSNL (10.17) and Aircel (6.52 per cent).

Fig. 1.10 Rural Wireless Subscribers (million)

Month	Value
March'15	414.18
March'14	377.78
March'13	342.5
March'12	323.27
March'11	273.54
March'10	190.88
March'09	111.63
March'08	62.28
March'07	33.14
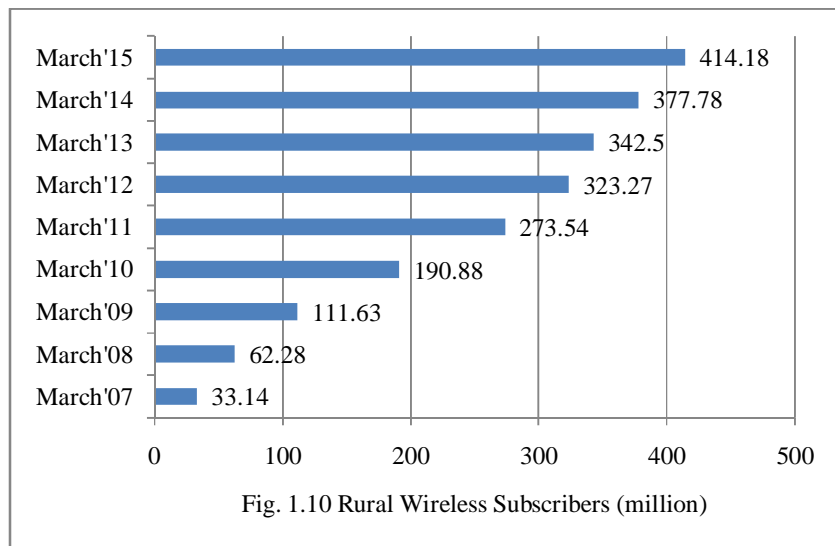
Source: TRAI, 2012-13

b. ***Rural Wireline Services-*** The rural wireline subscribers constitutes 6.71 million out of total 30.21 million wireline subscribers in country and represents 0.79 rural wireline teledensity out of total 2.47 wireline teledensity. The total market share of private operators in wireline subscribers is 20.88 per cent; whereas the public sector operators represent 79.12 per cent of market share. As on March 2013, there are 0.59 million village public telephones and 1.26 million public call offices exist in the country.

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1.3.3   Salient Features of Indian Telecommunication Industry

The Indian telecommunication industry has been providing affordable and quality telecom services since last five decades and resulting into not only empowering the common man but also contributing to government finances. Instead of achieving a substantial growth since last one decade, the industry now is facing some challenges such as high operating cost, declining profitability, stagnation in revenue, declining minutes of usage per subscriber per month (MOU), average revenue per user per month, voice rates, and hyper competition in country (COAI, 2013). The trends of mobile communication indicators and key operating features of telecommunication industry are shown as follows-

a. Minutes of Usage Per Subscriber Per Month (MOU)-

Minutes of Use (MOU) are applicable to measure how much an individual consumes certain products or services (monthly on an average basis) in minutes' time units. The industries related to time based pricing such as power, electricity, and telecommunication often used this type of measurement. This measurement is used not only to analyze the consumption pattern but also used as an indicator of business performance and forecasting revenue for a specific time period. The MOU for telecommunication industry continuously declined by around 17.6 per cent from 462 to 369 during 2007 to 2010 and 4.4 per cent from 612 to 585 from 2011 to 2012 (Fig. 1.11).

Fig. 1.11 Minutes of Usage Per Subscriber Per Month
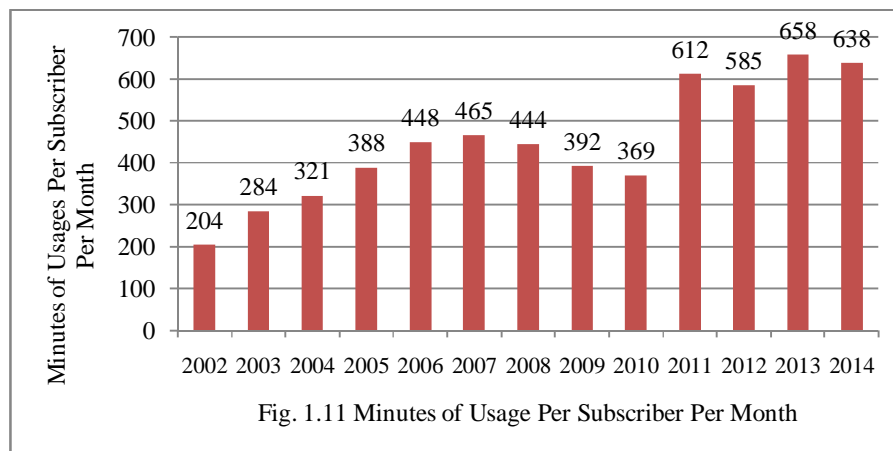
Source: COAI, 2013

b. *Average Revenue Per User Per Month (ARUP)*

The 'Average Revenue Per User' refers to the money spent by each user to consume one or more products and services in a particular time period. This measurement is used in currency units and also indicates the performance of the business. This mobile communication indicator also declined continuously for both GSM and CDMA telecom services during last one decade (Fig.1.12). The ARUP in GSM services continuously dropped by around 70% from INR 462 per subscriber per month to INR 369 per subscriber per month during 2005 to 2013, whereas for CDMA services dropped by around 62% from INR 256 per subscriber per month to INR 95 per subscriber per month during the same period (COAI, 2013). It is also important to note that India's ARUP is the lowest in the world and the mobile telecom subscribers generate merely one third of the revenues per month comparing with other emerging markets (BRIC nations) of Asia (COAI, 2013).

Fig. 1.12 Average Revenue Per User
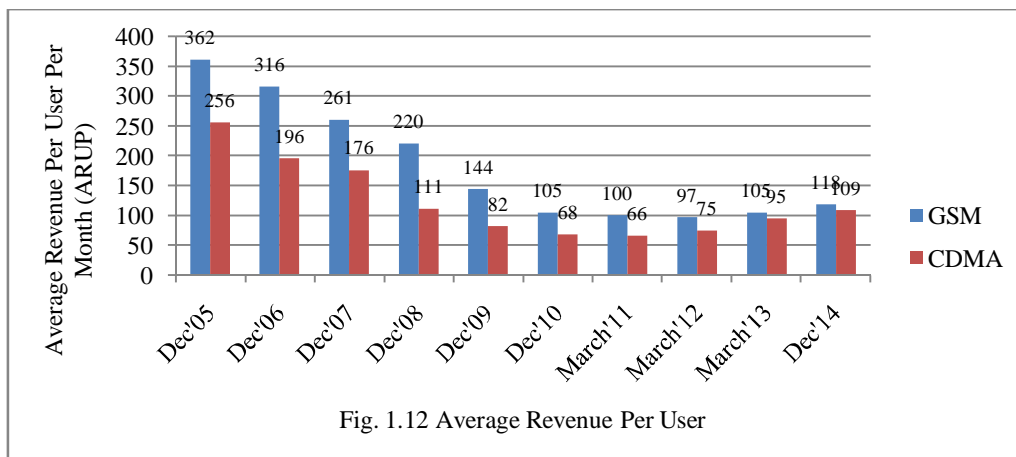
Source: Annual Report- COAI, 2013

c. *Teledensity*

The teledensity refers to the number of telephone (either wireless or wireline or both) connections per hundred populations. The overall teledensity (both wireless and wireline) increased by 40 per cent from 52 to 77 during 2010 to 2015, whereas urban teledensity showed a drop of 13 per cent from 169 to 148 during last two years. In the case of rural teledensity, a significant growth by 70 per cent from 24 to 48 measured during last half decade (Fig. 1.13).
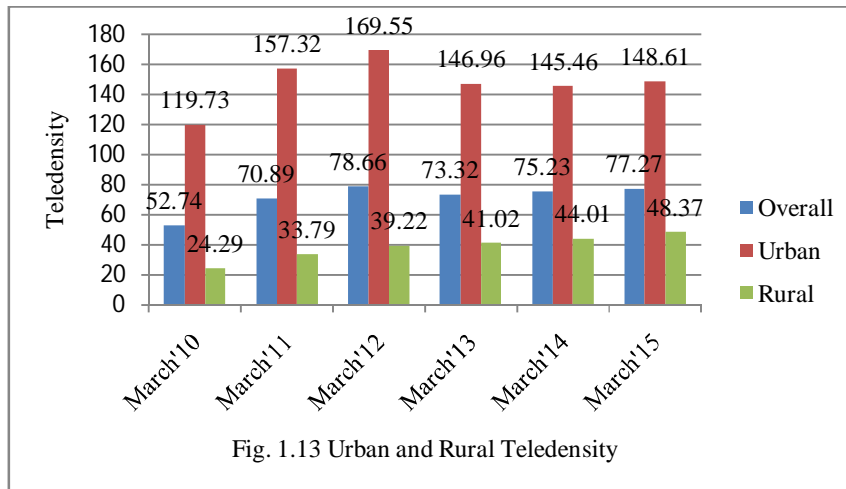
Fig. 1.13 Urban and Rural Teledensity

Source: TRAI, 2014-15

1.4 Public-Private Partnership (PPP)

Public-Private Partnership refers to the contractual agreement between public sector and private sector with aim to deliver effective and efficient public sector services for attaining socio-economic development of country. The partnership between public and private sectors acts as an instrument to improve access of quality services for public in general and for rural population in particular. In this partnership, the central, state or local government represent public organization whereas the domestic company, foreign national company, or NGO represent private organization seeking to provide better quality services comparing from traditional practices. The Planning Commission of India identified huge requirement of infrastructure development in 11th five year plan (2007-2012) and invested $500 billion for developing quality infrastructure in the country. In this direction, certain sectors such as rail, road, highways, power, transport, air and telecommunication have identified utmost important sectors for initiating substantial participation of private players from both domestic and foreign to fulfil the requirement of finance and developing public-private partnership to improve the access of quality services for public. The members involved in this partnership are responsible for success of this model by fulfilling their respective roles and responsibilities. The private sector facilitates capital inflows; provides technological and managerial support whereas the public sector provides affordable and quality services at door step of public and also performs supervisory role for successful implementation of the model (Fig. 1.14).

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Improve the access of quality services
- Improve the access of quality services
- Improve availability, and awareness of public services
- Socio-economic development
- Improve infrastructure

Public Interest

Public Organization

(Central, State or Local Government)

- Planning & implementation
- Policy framework for partnership
- Monitoring and Supervising
- Performance appraisal

Partnership

Private Organization

(Domestic, Foreign or NGO)

- Capital inflows
- Technological & Managerial support
- Optimising resources
- Deliver quality services
- Satisfy public needs and interest through marketing expertise

Partnership Deed

- Clearly define allocation of resources, risks and reward
- Partnership model
- Terms and conditions
- Standardisation of services
- Time framework
- Penalty criteria

Fig.1.14 Public- Private Partnership Model

Source: Literature Review

1.4.1 Definition and Objectives of PPP

The public-private partnership is defined as the contract or concession agreement based project between a government body or statutory entity on one side and a private body on the other side for delivering an infrastructure based services on payment of user charges (Asian Development Bank, 2006). The Canadian council for PPP, defines public-private partnership as a cooperative venture between public and private sectors based on the expertise of each

partner with aim to satisfy the clearly defined public needs through appropriate allocation of resources, risks and rewards (Ugboaja, 2010). This partnership facilitates capital inflows, technical and skilled manpower support along with the effective and efficient management from the private organization and monitoring & supervision from the government body aiming to socio-economic development for the community (Chapagain, 2006). The activities involved in the partnership such as operational issues, finance management, and standardization of service quality are decided by partners (Asian Development Bank, 2006). One or more private players (domestic or foreign national) can join hand together with government body to improve the quality of public services, furnishing at affordable prices and improving the access to population (Andrianova, 2011; Thomsen, 2005). The PPP is known as an innovative tool for remedying the traditional public services and creates a win-win situation for both government and private players by sharing the risks and awards over a definite period of time (Jamali, 2004). The PPP is also referred to as new public management tool, implemented under public sector reform movement that promotes decentralization of government, measures the output or performance of public services by inviting private players in the form of partnership with aim to encourage privatization in public services (Thurani and Shqau, 2011; Beh, 2010). The success of partnership depends on the coordination among partners involved, and the coordination depends on degree of trust and reliance among the members. Higher the trust among the partners, higher will be the coordination and success of the model (Singh and Prakash, 2010).

- *Objectives of PPP*

The continuity and success of PPP model depends on fulfilment of mutual objectives for all the partners involved in the partnership. The PPP is conceptualized as inter- organizational relationship between public and private actors, undergone a contractual agreement voluntarily between public and private entity for a particular period of time. A formal mechanism such as Memorandum of Association (MOU) should be developed to enhance the coordination and achieving the objectives of PPP (Singh and Prakash, 2010). The objectives of the PPP can be classified into two categories viz. government perspectives and private organization perspective as mentioned in Table 1.3.

Table 1.3 Mutual Objectives of Public-Private Partnership [PPP]

S. No.	Objectives	
	Government Perspective	**Private Sector Perspective**
1	The constructive partnership of PPP meets the challenges of infrastructure gap and limitation of government resources to provide public services in general and for rural areas particular.	The PPP facilitates a long term business opportunity for private players due to least performance of public owned enterprises coupled with traditional sources of funds and inefficient government budget (Ugboaja, 2010).
2	To expand the access of public services, the government can utilize private players either domestic or foreign national as a source of finance, and for better technology and project design.	The PPP creates an opportunity of growth for private players by investing in high potential sectors such as telecommunication, health, education, public transport, and water sanitation.
3	The government can satisfy strong demand and improve the access of some basic services such as communication infrastructure, health, education, public transport, and water sanitation at affordable price in all parts of country by use of modern technologies, innovative business models, and by sharing the risk through responsive participation of private players.	The private sector can identify new and innovative approaches in their business model to improve the access of public facilities and enhance the efficiency by identification, assessment and allocation of risk through rigorous risk analysis.
4	The government can achieve intended social benefits by satisfying public needs and interests through incorporating good governance principles in PPP model.	The private players may get a chance to show their business potential, technical know-how by using innovative business model, delivering customized products and services to public with aim to adhere time, and cost frame work as well as meet out the standards and specifications of services as per decided by the government.

| 5 | The government can ensure budget certainty, optimum investment in public infrastructure, reduce public sector risks, and can accomplish faster delivery of capital projects in high potential sectors. | The private players seeks a smooth functioning of PPP model with continuous running through substantial inducements such as least government regulations, explicit government deed, well defined roles, shared investment and revenues, proper legal policy and time frame. |

1.4.2   Models of Public-Private Partnership (PPP)

The proper planning, initiation, and implementation of PPP are the prerequisites to ensure the delivering of government services to public in a most economic and efficient way. A successful PPP model creates business growth for private players and also stimulates competitiveness among private players to become a part of PPP. The public, business partner and community are the major stakeholders involved in this partnership and to ensure the best interests of all stakeholders, a responsive, successful and achievable partnership are required to generate. In today context, various models of PPP are being used between public and private sectors to ensure the benefits of this partnership. The various models are based on number of guidelines such as time framework, shared investment & revenue, and operational & functional responsibilities between parties involved in partnership. The most common and contemporary forms of PPP are as follows-

a. ***Build, Operate and Transfer (BOT) -*** Under this model, the private entity is responsible to build and design infrastructure and to operate all the functions for delivering standardized quality services or products to general public for a prefixed period of time. After certain time period, the government takes over the entire project. The government bears all the financial and operating revenue risks under this model. Majority of e-governance and infrastructural projects are related to this category (Boccacin, Giovanna, and Bramanti, 2011).

b. ***Build, Own, Operate and Transfer (BOOT)*** – It is an extended form of *BOT* model that is based on franchise pattern. The private entity is accountable for design, build, operate, and develops infrastructure with own technology and expertise without any

direct involvement of government body. The financial and operating risks are borne by private players. The entire project will be handed over after certain period of time (usually 10-30 years) to the government. The private players charge user fee till the period of project (Lule et al., 2010).

c. ***Build, Own, Operate (BOO)*** - Under this model, the private body is responsible for entire project along with all the investment of the project and bears all the responsibility. The government monitors the performance of the entire project. The continuous supervision by government makes this model different from the normal private investment (Brinkerhoff and Brinkerhoff, 2011).

d. ***Build, and Transfer (BT)*** - The public and private sectors make a contractual agreement through an explicit deed, in which the private entity is responsible to build and design infrastructure and to operate all the functions for delivering standardized quality services or products to general public. Ultimately, the entire project is transferred to the government after its realization of success (Ernst & Young, 2012).

e. ***Buy, Build, and Operate (BOO)*** – Under this model, the entire project is sold off or transferred by government to the private sector for improving or expansion the facilities of public services. In this contract, the private sector upgrades and improves the public assets for a specific period of time.

1.5 Diffusion and Adoption of Innovation

The diffusion and adoption are two closely related processes of consumer behaviour that affect spread and acceptance of innovative products and services within a particular society or community. The diffusion of innovation refers to spread of consumers' acceptance of new products throughout the social system, whereas adoption refers to individual consumer's decision to try new product for continuous use (Schiffman, Kanuk & Kumar, 2011). The continuing advances and developments in technologies, increasing consumers' awareness day by day coupled with constant changes in preferences and satisfaction not only lead to shorten life cycle of products but also generate high demand of innovative products to satisfy ever changing customers' needs and interests, hence constant innovation is imperative to gain competitive advantages in industry. The past studies revealed that innovations in business

can be classified into four distinct categories on the basis of firm, product, market and consumers' orientation and play an important role in diffusion and adoption within the society (Schiffman, Kanuk & Kumar, 2011; Roerich, 2004). The firm oriented innovation lead to emergence of innovative or new products in market place from the company perspective, irrespective whether the product is new or not for the target market. The product oriented innovation stresses on development of new features in the existing products that affect established usage patterns or disruption of consumers' behaviour. The market oriented innovation defined as newness of products based on the degree of exposure that consumers having about new products or services in market place. The consumer oriented innovation based on the consumers perspective and defined as newness of products and services are judged by acceptance of potential consumers and identified on the basis of consumers' perception rather than physical features or market conditions. The past studies related to diffusion and adoption indicate that new or recently (previous five years) introduced products contribute 50% of sales and profits in the corporate (Schmidt and Calantone, 2002). A sustainable growth in market share and profitability are imperative for companies to become competitive and constantly development of new products and services are important to gratify consumers demand. The new product development influences customer adoption and innovative behaviour, hence it is also worth noticing that developing new products entails possibility of failure also. The past studies also reveal that failure rate of innovation may reach up to 80% in some companies (Ho and Wu, 2011; Amue and Adiele, 2012). Development of new products in organization requires constant innovation, identifying proper demand, considerable time and substantial investment. Failure of new products or services not only causes financial loss but also affects the company's image (Ho and Wu, 2011). Hence, successful diffusion and adoption of innovation affect the degree of acceptance for innovative products and services in a particular society. The success of diffusion and adoption depends on identification of need and preferences of consumers' so as to maximise profits within a short life cycle of new products soon after introductory stage of PLC, hence it is also important to identify the consumers' profiles those are earliest purchasers of new products and services in a society. The previous studies also revealed that marketers' ability to identify innovators directly influences success or failure of introduction of new products in a particular society. Identification of 'innovators' are based on various concepts such as earliest 2.5 per cent of consumers in a social system those adopt innovation could be categorized as innovators, on the basis of status of new products under investigation and on the basis of consumer innovativeness i.e. purchasing of new products due to innovative

buying behaviour of consumers (Schiffman, Kanuk and Kumar, 2011). The consumer innovativeness also provides more valid and meaningful approach for customer segmentation aiming to achieve successful diffusion and innovation and this concept is being used by contemporary marketers (Jordaan and Simpson, 2006).

1.5.1 Consumer Innovativeness

The consumer innovativeness plays an important role in diffusion of innovation and induces innovative behaviour in consumers (Roerich, 2004). The concept of consumer innovativeness was first introduced by Rogers and Shoemakers (1971), who expressed innovativeness as "the degree to which as individual is earlier in adopting new ideas than the average number of his or her social system." Midgley and Dowling (1978), suggested consumer innovativeness as "the degree to which an individual is receptive to new ideas and makes innovative decisions independently of the communicated experience of others". The consumer behaviour researchers classified consumer innovativeness into two categories viz., open processing innovativeness and domain specific innovativeness (Kaushik and Rahman, 2014; Donnell and Sauer, 2005; Hui and Wan, 2004; Goldsmith and Hofacker 1991). In open processing innovativeness, consumers' intellectual, perceptual and attitudinal characteristics affect the behaviour towards new products, whereas domain specific innovativeness depends on the individuals' own interest and experience towards a particular product category such as automotives, consumer durables, telecom services, tourism, fashion, education and IT products (Roehrich, 2004). Higher the consumer innovativeness, higher will be the consumers' willingness to accept the changes in ideas, concepts, things and influences more to others for adopting innovative features and ideas. The consumer innovativeness also induces quick decision power, comparatively faster rate and time of adoption for new products and services in a social group (Ho and Wu, 2011; Dobre, Dragomir and Preda, 2009). The consumer innovativeness also affects the rate of adoption i.e. how much time is required for new products and services to be adopted by members in a social group. Higher the adoption rate of innovation, higher will be the possibility of diffusion of innovation in a social system (Hawkins, Motherbaugh and Mookerjee, 2011).

1.5.2   Characteristics of Consumer Innovators

The consumer innovativeness affects behavioural pattern of consumers and attracts consumers towards new products. The innovativeness can be better explained by 'inherent

novelty seeking behaviour' that induces independence in innovative decisions (Roehrich, 2004). Some unique characteristics of innovators such as opinion leadership (OL), product involvement (PI), price sensitivity (PS), need for uniqueness (NQ), and venturesomeness (VSN) are related to consumer innovativeness and accelerates innovative buying behaviour. The distinguished characteristics of innovators are explained as follows-

a. **Opinion Leadership (OL) -** It refers to a process by which a person (known as opinion leader) influences adoption process or consumption action and attitude of others (known as opinion seekers) in an informal manner within a social group. The role of opinion leaders is to provide information and advise to others about usage, benefits and experiences of new products, thus often influence the acceptance and rejection of innovation in social system (Hoyer, MacInnis and Dasgupta, 2008). The marketers are often interested to identify opinion leaders as they influence others within a product category. Identification of opinion leaders can be done on the basis of certain demographic and lifestyle characteristics such as high involvement in a particular category, more socially active, high awareness & product interest, and active in receiving communication about product from personal sources (Rose and Kim, 2011).

b. **Product Involvement (PI)** – Product involvement is defined as consumers' perception about importance of a particular product category based on realization of inherent needs, interest and values (Bian and Moutinho, 2008). It also refers to individuals' interest in a particular product category resulting in first one to purchase as compared to others. The consumers' product involvement is directly related with the product knowledge and impulsive buying behaviour. Higher the product involvements higher will be knowledge and impulsive buying behaviour (Liang, 2012). The innovators possess a unique personality trait of opinion leadership and are more likely to seek information about specific product category from various formal and informal media sources.

c. **Price Sensitivity (PS)** - It refers to individuals' reaction for different level of prices. The price sensitivity is known as an awareness of consumers about perception for the cost regarding the products or services they buy. On the basis of the price sensitivity, every customer is having certain price acceptability range that varies from customer to

customer (Mamun, Rahman and Robel, 2014). The innovative consumers are insensitive about price increases as compared to others in their social group.

d. **Need for uniqueness (NQ) –** It is a unique personality trait of individuals characterised by purchasing a rare item (which is socially acceptable behaviour) with an aim to distinguish himself or herself in a social group. Synder and Fromkin (1980) defined 'need for uniqueness' as "the trait of pursuing differences relative to others through the acquisition, utilization and disposition on consumers goods for the purpose of developing and enhancing one's self image and social image". The marketers are keen to identify consumers' uniqueness to gain more rapid acceptance of new products in the market.

e. **Venturesomeness (VSN) –** It refers to consumers' willingness to accept the risk of purchasing new products. The measurement of this characteristic helps in evaluating the general values and attitude towards trying new products. The venturesomeness is related to the perceived risk and characterised by degree of uncertainty and fear about the consequences of using new products (Schiffman, Kanuk, and Kumar, 2011).

1.5.3 Motivated Consumer Innovativeness (MCI)

It is also important to note that various past studies emphasize on importance to certain motives that induce innovativeness in consumers and create innovative buying behaviour. The Motivated Consumer Innovativeness (MCI) is a new paradigm in consumer buying behaviour that motivates consumers to become innovative. The previous studies also revealed that role of the inherent innovativeness is limited to certain extent of consumers, hence Motivated Consumer Innovativeness give valuable insights about identification of target market, new product development and effective marketing communication. On the basis of most relevant literature various motives related to MCI are explained as follows-

a. **Socially Motivated Consumer Innovativeness (s-MCI) –** The socially motivated consumer innovativeness stresses on the social need of differentiation and hence, the consumers possess the characteristic of s-MCI, adopt innovative products and services relatively earlier in the social group with an aim to develop distinct social identity. The marketers can use this concept in designing effective promotion strategies by tempting consumers for distinct social identity in a particular group by delivering innovative customized products and services (Roehrich, 1994; Maden and Koker, 2013).

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b. **Cognitively Motivated Consumer Innovativeness (c-MCI) -** The cognitively motivated consumer innovativeness stresses on stimulation of mind or consumers' intellectual, perceptual, and attitudinal characteristics that stimulate innovative buying behaviour. The consumers influenced with c-MCI undergone some mental processes such as information acquisition & processing, thinking, reasoning, and rationale decision-making and motivate towards innovative products as compare to others in society (Grutzmann, Macedo and Zanbalde, 2013).

c. **Hedonically Motivated Consumer Innovativeness (h-MCI) –** The consumers' innovativeness due to hedonic motive is resulted because of affective or sensory stimulation of products. It also refers to accelerate innovative buying behaviour due to influence of hedonic values associated with products or enjoy of newness of the products. The h-MCI drives individuals to adopt innovation for purpose of excitement in life or for entertainment (Negm, Sahn and Tantawai, 2012).

d. **Functionally Motivated Consumer Innovativeness (f-MCI) -** The functionally motivated consumer innovativeness stresses on functional or utilitarian value of products such as usefulness, handiness, compatibility, efficiency, comfort, ease, quality, and reliability as compared to old ones. This concept can be used to design and introduce novel set of benefits of products to consumers for successful diffusion and adoption of innovation (Vandecasteele and Geuens, 2008).

2. REVIEW OF LITERATURE

The literature presented in study regarding integrated, innovative and inclusive (3Is) framework for rural mobile telecom services is based on the most relevant articles, journals, governments' reports, books and web published materials and divided into six different parts on the basis of distinct dimensions of 3Is approach of rural marketing for mobile telecom services. The first part of literature depicts the problems related to expansion of mobile telecom services in rural areas; the second part reveals the measures of satisfaction and preferences and further used to develop the constructs for assessing rural mobile telecom services; the third part depicts the concept of 'rural entrepreneurship' and its role in community based economic development for rural mobile telecom services; the fourth part reveals the concept and role of Public-Private Partnership (PPP) in improving the access of mobile telecom services in rural areas; fifth part reveals the measures of consumer innovativeness along with its role in affecting innovative buying behaviour; and sixth part represents the dimensions of motivated consumer innovativeness and along with its effects on consumer innovativeness.

2.1 Problems Related to Rural Mobile Telecom Expansion

The Indian telecom service industry provides affordable and quality telecommunication facilities in general and for remote areas of the country in particular and facilitating to empower common man, economy development and contributing in government finances. The cellular mobile service providers both GSM and CDMA are main parts of wireless service industry that contribute significantly (approx. 96 per cent of total telecom subscribers) in telecom industry (TRAI, 2012-13). Instead, exhibiting high growth since last one decade, the industry now facing challenges to sustain business growth due to high operating cost, continuous declining of average revenue per user per month (from Rs. 394 in 2004 to Rs.98 in 2012), declining minutes of usage per subscriber per month (from Rs. 612 to 585 from 2011 to 2012), hyper competition and huge disparity between urban and rural teledensity (COAI, 2013). The rural teledensity still one-fifth of the urban teledensity, hence rural markets are considered both as an opportunity or compulsion for telecom service providers. Distinct demographic, physical, social, cultural, technological, infrastructural and economic environment make rural markets differ from urban counterparts and hence, create a challenge for telecom companies to get profitability in rural areas (CII-Yes Bank, 2007). The lack of

infrastructure facilities to establish telecommunication network along with low per capita income   are the main causes of low teledensity in rural areas. Doing business in rural areas and maintaining consistent network are big challenges for telecom service providers due to high operating cost involved in business, and massive need of towers to maintain the network quality in low and spread out population (COAI, 2013). The efficiency of Base Transceiver Station (BTS) depends on uninterrupted electricity supply in rural areas. Due to shortage of water and electricity supply in rural areas, a substantial battery backup is required to maintain the consistent network, hence maintaining operational costs with quality services in rural areas are big challenges in front of service providers. These all factors cause a high operating cost per user in rural areas as compared to urban once (Department of Telecommunication, 2012). The land acquisition process is a complex and time consuming exercise in rural areas to develop telecom infrastructure (fibres cables and related activities) as possession of land comes under gram panchayat, local or state government. The high operating costs, insufficient telecom infrastructure and energy problems are the main causes of stagnating revenues and decreasing profits margins in rural areas even the rising of rural subscribers' base in country. The annual financial results of various telecom service providers such as, Idea cellular indicates rising in networking operating costs three times more than the total revenue during 2007 to 2011. The company's operating cost (as a percentage of revenue) has become more than double during the span of four years from 12 per cent to almost 30 per cent (Greenpeace India, 2012). Instead of technical and infrastructural problems, the low literacy & education level of rural people create a challenge to spread awareness towards upcoming products and services. Therefore, it is highly required to develop contents in vernacular language for ease of understanding and to design user-friendly and menu driven software with innovative graphics aiming to solve out the problems of low illiteracy and lack of understanding (Accenture, 2014; Department of Telecommunication, 2010). Some other factors such as diverse culture, low technical knowledge, power shortages, rugged environmental conditions, serving rural preferences and satisfaction in customized manner, maintaining substantial subscribers base to drive future growth and providing uninterrupted quality services are identified as main problems exist in rural corner of the country (Accenture, 2009). The mobile telecom service providers' expansion is severely affected due to high investment required in setting and maintaining base transceiver station (BTS) to deliver consistent network quality in sparsely populated rural areas. On an average, the cost of setting up one BTS requires Rs.5 million; hence expansion of network beyond urban and sub-urban areas is a great challenge to meet out the operational costs. Apart from various

technical problems, the lack of organized retail and improper supply chain also affect the expansion and after sales services in rural areas. There is need to develop distinct and unique distribution channel from telecom service providers to reach rural consumers and also involvement of local people in marketing & sales activities (Ernst & Young Global Ltd., 2014). The uneven population density of rural areas varied from 100 people per square km. to more than 650 people coupled with differences in socio-economic environment create a challenge to choose an optimal location for business in rural areas. The low per capita income of rural households coupled with low affordability, availability and lack of infrastructural facilities affect universal access of telecommunication in rural areas (Capgemini, 2008). The study conducted by Accenture (2010) identified external and internal barriers affecting business in rural areas on the basis of quantitative survey from 109 large and mid-sized multinational and domestic companies having revenue ranging from US$200 million to more than US$ 10 billion. The study identified inadequate infrastructure, low literacy, low purchasing power, unavailability of skilled local talent, limited distribution channels, inadequate access to finance and seasonal income fluctuation of rural population as external barriers and developing customized products to suit local needs, unwillingness of staff to work in rural areas, need for a specific business model, distinct sales and distribution channel as internal barriers. The results of these studies are summarized as follows (Table 2.1).

Table 2.1 Problems of Rural Mobile Telecom Expansion

Problems	Causes
Rural Demographics	- Disperse and sparsely population - Significant variation in population density - Socio-economic variation among regions - Low per capita income and purchasing power - Inadequate and fragmented demand - Seasonal income
Infrastructural	- Insufficient supply of electricity and scarcity of water - Inefficient telecom infrastructure - Time consuming and complex land acquisition process - Disparity between urban and rural teledensity

Technical	- Huge requirements of towers in sparsely population
	- Huge investment for setting up and maintaining BTS
	- Dependency on battery backups for continuous tower operation
	- Inconsistent network quality
	- High operating costs due to low teledensity and low customer base
	- Requirements of user friendly designs and menu
Manpower	- Lack of skilled man power
	- Lack of technical knowledge
	- Low literacy level and awareness
Sales and Distribution	- Lack of organized retail
	- Irregular availability due to lack of distribution network
	- Improper supply chain
	- Difficult to ensure after sales service support

Source: Literature Review

2.2 Measures of Satisfaction and Preferences towards Mobile Telecom Services

The mobile telecom services are getting advanced, purposeful, more innovative and customized day by day and diffusing into every aspect of life irrespective to consumers' profile and occupation. The ubiquitous appearance of mobile phones significantly affects daily usage and used as an important devise for multiple functions (Mokhlis and Yaakop, 2012). The steep fall in minutes of usage per subscriber per month (MOU), Average Revenue Per User Per Month (ARPU), continuous declining of voice tariffs, saturated urban markets, high switching rate, and intense competition create a great challenge to sustain consumers base for telecom companies (Department of Telecommunication, 2013). Emergence of new technologies, coupled with constant innovation and high awareness of consumers through formal and informal media sources affect the measures of satisfaction & preferences of consumers for mobile telecom services. Hence, it is imperative to assess satisfaction and preferences of existing mobile users for betterment of telecom services and in delivering more customized services in general and for rural consumers' particular. The various studies of the past identified various determinants of customer satisfaction and dimensions of quality services for mobile telecommunication operators and indicated that coverage areas, tailor made products, pricing strategies and courtesy are the important factors to maximise customer satisfaction and help to retain existing market share (Emerah, Oyedele and David, 2013; Ratnesh and Kansal, 2013). The network coverage, tariff plans as per need & budget

and customer services are the prime attributes for youth while selecting a telecom service provider. Along with these factors, the advertisements and friend's opinion are also important factors affecting a selection of a particular service provider (Bhukya and Singh, 2013; Agyapong, 2011; Kothari, Sharma and Rathore, 2011; Alom, Khan and Uddin, 2010; Khan, 2010; Tripathi and Siddiqui, 2009). In today's scenario, it is imperative to win customer satisfaction, loyalty and understanding target market for effective marketing mix selection. The service fairness, service quality and price fairness are important measures to enhance satisfaction and build customer relationship in mobile telecom services (Javed, et al. 2013; Hassan, et al., 2013; Sabir, et al., 2013; Haque, Rahman and Rahman, 2010; Hanif, Hafeez, and Riaz, 2010). The customer retention is an important marketing task in highly competitive telecom industry and quality services play crucial role to enhance customer retention in mobile telephony industry. The quality services and customer satisfaction in mobile telecommunication are correlated to each other, higher the quality services, higher will be customer satisfaction and results in high customer retention (Ocloo and Tsetse, 2013; Yadav and Dadhade, 2013). Hence, it is imperative for mobile telecom service providers to satisfy customers' needs and demand in high competitive telecom industry. The various dimensions of service quality in mobile telecommunication have identified in many studies such as regular flow of information for products and services, consistent network, prompt response and time to solve grievances, clarity in communication, company trust, expertise of employees, time spent in providing services, offers, charges and rents (Chaudhary and Uprety, 2013; Almossawi, 2012: Chadha and Kapoor, 2009; Tripathi and Siddiqui, 2009). Some others features of service quality that affect customer satisfaction in GMS cellular providers are indentified as customized offers, free roaming, validity, bonus service, online recharge facility, network converge, customer care, SMS packs, free talk time, connection charges, and regular availability of recharge coupons at retailers (Pandiya, Kumar and Choudhury, 2014). The price and service bundling in order to provide more value of offered packages also affect the selection of service provider and customers' satisfaction in telecommunication market. The past studies also indicate that customers' satisfaction doesn't not merely increase due to low price rather it depends on customers' expectation towards value of offers enable to justify the price (Bondos, 2014; Miao and Jayakar, 2013; Shahrokh, et al., 2011). Paulrajan and Rajkumar (2011) identified six factors viz., communication, call service, facilities (MVAS), price, customer care and services provider features (customer relations, responsiveness, reliability, and innovativeness) that affect customers' satisfaction and selection of a particular telecom operator. The past studies related to mobile value added

services (MVAS) depict the role of MVAS in customer satisfaction. Kargin, Basoglu and Daim (2009) examined the role of MVAS in customers' satisfaction and suggested that users prefer low cost, different mode of payments (credit cards or partial payment), and inexpensive SMSs packs as mobile value added services. On the basis of relevant literature, m-commerce, m-education, m- health and m-entertainment are the important dimensions of MVAS that affect customer satisfaction (ASSOCHAM, 2011; Price Waterhouse Coopers 2011). The previous studies indicate that transactional facilities along with customized offers in m-commerce, facilitation of e-commerce activities, and personal digital assistance are most useful and frequently used MVAS that significantly affect customer satisfaction (Hung et al., 2012; Choi et al., 2008; Hung, 2007; Hsu and Kulivwat, 2006). The studies related to m-education reveal a favourable change in learning attitude through m-learning. The m-learning also creates an adaptive learning environment and provides individualized tailored material and enhances customer satisfaction (Ansari and Sanayei, 2012; Attewell and Smith, 2004; Bull and Reid, 2004). Instead of technical features, the choice of selecting particular service provider depends on the individual characteristics such as age of the customer (Munoz, et al., 2013). The value added service viz., m-health affects customer satisfaction significantly due to realization of expected health benefits from such services (Akter, Ray and D'ambra, 2012; Mckinsey, 2010). The m-entertainment is one of the important dimensions of MVAS and creates a positive impact on customer satisfaction. It enhances customer satisfaction due to salient external beliefs such as images and enjoyments (Shih, 2011; Wei, 2008). The selection of particular service provider and customer satisfaction also depend on five factors viz., brand image, perceived call rate, network coverage, perceived value-added services, and perceived customer services. Three another factors such as price, service quality and brand image are also identified as important factors (Rahman, Haque and Ahmad, 2011). Some other factors such as promotions, availability of products & services, product quality along with price, and network quality determine customer satisfaction (Islam and Rima, 2013; Dadzie and Mensah, 2011). The previous studies also validated the relationship between customer satisfaction and customer loyalty in mobile telecommunication. The wide geographical coverage, network quality, call at peak hours, optimal calling rate, ease for switching number, low server problem, value added services, customer care support, and resolving complaints are considered as an important customer loyalty variables that affect satisfaction and preferences (John, 2011; Santouridis and Trivellas, 2010). Apart from technical features, after-sales service support is also considered one of the important factors to improve service quality. Timely information, service delivery, maintenance & repair,

proper billing service, and complaint handling procedure are considered major components related to after-sales support in telecom services. Lack of understanding about bills coupled with delays in resolving the complaints are identified main reasons for customers' dissatisfactions in telecom sector (Potluri and Hawariat, 2010; Santouridis and Trivellas, 2010). Certain demographic characteristics of mobile users not only affect the choice of mobile service provider but also affect the selection of mode of connection either pre-paid or post-paid. The demographic variables such as gender, age, occupation, income, educational qualification, marital status play an important role in mobile telecom service industry. The gender was found significant influencing factor in users' choice for mode of connection (Shrivastava and Israel, 2010). The perceived value of mobile services depends on perceived expectations and perceived quality of mobile services. It is evident from past studies that perceived expectation directly affects perceived quality; therefore as the level of perceived expectations increases, the level of perceived quality also increases. Perceived quality and value creates positive impact on customer satisfaction (Tung, 2013). Hu and Liu (2011) empirically examined the mobile service adoption among rural population. They suggested that rural people are more likely to use mobile services, if they consider it more useful, rationale and visible, hence the practitioners are required to design most purposeful value-added services in order to enhance adoption and satisfaction. The mobile phones are considered as dominating cellular technology in urban as well as in rural areas and adoption of mobile phones in rural areas results in economic development and value addition in life style. The findings of this part of literature have been used to identify four distinguished constructs namely service quality, after-sales service support, customer care support, and mobile value added services to measure satisfaction and preferences in mobile telecom services and are presented as follows (Table 2.2).

Table 2.2 Measures (Constructs and Variables) of Mobile Telecom Services

Constructs	Identified Variables	Sources
Service Quality	-Reliability and network coverage -Signal strength and establishment of connection -No. of completed call out of total attempted calls -Call set up time and call at peak hours -Clarity of communication -Accessibility of mobile to mobile and mobile to fixed phone calls -Ease of connection	Kumar, Kumar and Haque, 2014; Emerah, Oyedele and David, 2013; Islam and Rima, 2013; Javed, Azam, Fazal, and Butt, 2013; Ratnesh and Kansal, 2013; Agyapong, 2011; Dadzie and Mensah, 2011; Kothari, Sharma and Rathore, 2011; Alom, Khan and Uddin, Khan, 2010; Chadha and Kapoor, 2009; Tripathi and Siddiqui, 2009
After Sales Service Support	-Regular flow of information -Access to different mode of payment -Regular availability of recharge/ e-recharge facility -Proper billing service -Different mode of payments -Tariff plans as per need and budget	Javed, Azam, Fazal, and Butt, 2013; Ratnesh and Kansal, 2013; Chadha and Kapoor, 2009; John 2010; Potluri and Hawariat, 2010
Customer Care Support	-Over the counter services -Prompt assistance -Response and time to solve complaints -Satisfaction for delivering the complaints	Javed, Azam, Fazal, and Butt, 2013; Ratnesh and Kansal, 2013; John, 2010; Potluri and Hawariat, 2010; Santouridis and Trivellas, 2010
Value Added Services	-SMS packs -Financial Transaction -Educational and agri-based information -News and entertainment -Internet browsing	Akter, 2012; Ansari and Sanayei, 2012; Li et al., 2012; Hung et al., 2012; Ratnesh and Kansal, 2013; ASSOCHAM, 2011; PwC report, 2011; Shih, 2011; Kargin, Basoglu and Daim , 2009; Mckinsey, 2010; Choi et al., 2008; Wei, 2008; Hung, 2007; Hsu and Kulivwat, 2006; Attewell and Smith, 2004; Bull and Reid, 2004

Source: Literature Review

2.3 Rural Entrepreneurship- The Definition and Concept

The rural entrepreneurship refers to unique endowments to generate new ventures in rural regions by utilizing networking, resources to overcome physical isolation and limited access to markets through developing linkages aiming to encourage rural sustainable development (Lee and Phan, 2008). The rural entrepreneurship also defined as innovative marketing approach that not only provides success in business but also facilitates social empowerment for bottom of the pyramid (Kashyap and Raut, 2010; Velayudhan, 2007; and Wankel, 2008). The rural entrepreneurship facilities economic growth in rural areas, it enhances the capacity of rural entrepreneurs to innovate and identifying new business opportunities that enhance buying power among rural community through creating jobs opportunities and income (Aggarwal, 2013; EU- Rural Review, 2012). It also makes significant contribution in reduction of poverty through promoting entrepreneurship in rural areas with main focus on community based economic development and gender equality (Kumbhar, 2013 and United Nations Industrial Development Organization, 2003). The comprehensive development can never be achieved without rural development, and rural entrepreneurship can be considered best solution to eliminate poverty, migration and develop employment opportunities in rural ecosystem. Some of the challenges act as barriers for developing entrepreneurship in rural areas such as lack of access to capital and facilities, lack of skilled local talent, lack of infrastructure facilities and support from the organizations (Ansari, et al., 2013). The training and educational programs, capacitating & government support, funding programs and microfinance schemes can be used to remove the impediments and accelerate the growth of entrepreneurs' in rural areas (Ngorora and Mago, 2013; Pato and Teixeira, 2013; Wang, 2013). It has also validated a positive correlation between the role of governance, rural entrepreneurship & rural development coupled with goal oriented policy, transparent supports and efficient law framework. The success of rural entrepreneurship depends on two factors viz., internal and external. The internal factors include characteristics of rural entrepreneur, and business, whereas the external factors include, potential of business, availability of resources, quality of supply chain, characteristics of markets, government support and sufficient capital (Oruc et al., 2013). The community trust and community buy-in are the two prerequisite processes for success of developing entrepreneurship in rural community. The community buy-in process involves two specific activities- promoting local entrepreneurship i.e. developing local individuals as entrepreneurs in the long run; and initiating corporate social responsibility (CSR) for developing good image (Anderson, Markides and Kupp,

2010). The rural entrepreneurship develops micro and social enterprises in rural areas that help in economic development, income generation, human capability, and community development in bottom of pyramid market. The social enterprise development model given by Nielsen and Samia (2008), and Ozgen and Minsky (2007) gives importance on entrepreneurial spirit of the initiator coupled with a motivation to improve one's life and of one's group (family and/or cooperative) through participation in economic activities. It is important for marketers to follow the principles of consumer marketing, deep understanding of subsistence consumer psychology, social embeddedness, and entrepreneurial empowerment to promote the business in rural areas (Sridharan and Viswanathan, 2008). The success of rural entrepreneurship also depends on recognition and creation of entrepreneurial opportunities in rural areas (Ozgen and Minsky, 2007, Guclu et. al., 2002). Recognition of opportunities for rural entrepreneurship is based on certain resources such as intellectual & human resources consisting of education, knowledge and training; environmental resources consisting of development of partnerships and cooperatives; and socio-cultural resources such as socio-cultural infrastructure (Ozgen and Minsky, 2007). The opportunity creation process consists of two factors viz., generating promising idea and developing promising idea into attractive opportunity. Innovative ideas can be generated by assessing social needs and social assets of rural areas (Guclu et. al., 2002).

2.3.1 *Emerging Trends of Rural Entrepreneurship- Indian Perspective*

The concept of 'rural entrepreneurship' is being used by many corporate players to initiate rural marketing in general and for mobile telecom services in particular. The various companies related to FMCG, automobile, telecom, insurance and banking sector implemented innovative business models in rural marketing with involvement of local skilled people as change agents or business partners aiming to generate wealth among rural people. The initiatives taken by ITC in form of e-Choupal business model represents an internet kiosk, village gathering place and e-commerce hub for all villagers and used to fulfil information requirements related to agriculture (price updating, weather forecasting, crop insurance, pest management and agri-inputs) health, insurance & education and also facilitates procurement of agri-commodities. This web based information model not only empowers rural people but also improves productivity, income and life style of rural people through agri- procurements and distribution of quality products at door (Jain, 2013; kamal and Kumar, 2013; Lyer, 2010; Anupindi and Sivakumar, 2005; Annamalai and Rao, 2003). The success of ITC's model depends on involvement of local people in business model as

change agents or business partners known as 'sanchalak'. These local entrepreneurs are used in distribution of quality products whereas the maintenance of rural IT network is done by corporate it-self. The Hindustan Unilever's project 'Shakti' also represents an innovative business model for distribution of health and hygiene products in rural areas by appointing rural women (known as Shakti Amma) as sales force. These women run their own business as entrepreneurs in local communities and perform an agency role on the behalf of company in remote areas. To make business model viable and socially embedded, the recruitment of Shakti Amma is done from local communities only. This rural entrepreneurship is an example of how to work with local communities, use of local human capital, building relationship with government and non-government stakeholders (Rohatynskyj, 2011; Lyer, 2010; Xavier, Raja and Nandhini, 2008). The 'Shakti' project that was initiated in 2001 touched the lives of 600 million rural people by the year 2010 with creation of a million 'Shakti Entrepreneurs' (Thekkudan and Tandon, 2009). In 2002, DSCL (an agri-business company) initiated 'Hariyali Kisan Bazar' known as 'The malls of rural entrepreneurs' in India (Dash, Patwardhan, and Verma, 2011). This innovative business model improves the access of quality agri-input items to farmers by establishing a chain of retail stores in rural India. This business model creates a relationship with farmers through providing agricultural services and buys back the agricultural produces during harvesting season, and thus facilitates inclusive growth through developing rural entrepreneurship (Bell, Sanghavi, Fuller and Shelman, 2008). Each 'Hariyali Kisaan Bazar' centre operates in the catchment of about 20 kms and impacts the life of approximately 1500 farmers by catering 50000- 70000 acres of agricultural land (Desai, 2013). The PepsiCo in India started the concept of 'Contract farming' by establishing both backward and forward linkages for agricultural products. The company initiated a project namely 'Partners in Progress' through innovative partnership with seed companies, cooperative banks, insurance agencies, government departments, agri-input companies and farmers organizations aiming to facilitate small-scale entrepreneurships at village level. The 'Tata Kissan Kendra (TKK)' is an another project initiated by Tata Chemicals in 2002 with aim to provide the services to farmers by delivering quality agri-input for better nutrients, plant protection chemicals for efficient pest-management, spread awareness about water-harvesting techniques, availing quality seeds for high yield and facilitating post harvest services by establishing a partnership with aim to improve the life of farmers' communities (Mukherjee et al., 2012). The business model of TKK is an example of collaborative partnership through vertical coordination between corporate and rural India (Singh and Bhagat, 2013).

2.4 **Public-Private Partnership**

The Public-Private Partnership (PPP) refers to an agreement between government and private sector for developing infrastructure aiming to improve the access of public services in affordable price (FICCI- Ernst & Young, 2012; Bhagal, 2008; Sharma and Seth, 2004; Asian Development Bank, 2006). It is considered as an important mechanism to build world-class infrastructure with aim to improve the quality of public services. The literature shows a significant relationship between infrastructure development and economy growth of a country. Over the past decade, the central or state government focused on infrastructure investment so as to boost up economy growth in states (India Brand Equity Foundation, 2013; KPMG Report, 2013; Swain, 2009). The Planning Commission of India expected a substantial investment (approx.US$1.0 trillion) in infrastructure development by private entities during 12th Five- Year Plan (2007-2012). Due to resource constraints, the government rely heavily on private sector participation for capital requirement and expertise (Ernst & Young, 2014). The government recognized road and highways as high thrust areas for PPP, whereas telecommunication and electricity are highly invested by private players. Now, certain other services such as education, health, railways, water and sewerage have also been recognized to be provided by PPP. To enhance the share of private participation in PPP, various initiatives such as 100 per cent FDI, 100 per cent exemption from income tax up to 10 years, and availability of loan in low interest rate imparted by government (India Brand Equity Foundation , 2013). The Government of India (GOI) initiated number of PPP projects in various sectors to improve the service quality and access to all parts of the country. The Ministry of Road and Highways, imparted 68 projects as PPP on Build, Operate and Transfer (BOT) basis by investing US$3.7 billion annually. In the case of power sector, to meet additional generating capacity of 75,785 Megawatts in 12th Five Year Plan (2012-2017), the private players account for a major share of the additional capacity (55.6 per cent) and investments (50.8 per cent) with 18 per cent value of total PPPs projects across the sectors. The GOI is also planning to earmark PPP in railways by identification of projects related to locomotives, coach manufacturing units, and the construction of a corridor for high-speed rail. Other potential projects to enhance the share of private participation include redevelopment of railway stations, logistics parks, private freight terminals, port connectivity, and energy conservation (India Brand Equity Foundation, 2013; FICCI- Ernst & Young, 2012). The implementation of PPP contains four different phases viz., identification phase

consists of strategic planning, assess project feasibility & value for money, suitability of PPP, and completion of internal tasks; developmental stage focuses on preparation of contract, project clearance & approval; procurement stage includes awards for project and monitoring stage consists of implementation of work, continuous monitoring and work appraisal (Ernst & Young, 2014). The PPP is considered as a strategy for inclusive growth in rural India through infrastructure development particularly in rural connectivity, rural electrification, education, irrigation and water shed management (Viswanathan, Purushothaman, and Navaneethakumar, 2012). The ICICI Prudential has used PPP as a new delivery mechanism for marketing of insurance products in rural markets. The company made tie ups with governments' project such as e- Mitra, a computer based network kiosks created for online governance. This PPP facilitates consumers to pay premium and get receipts across the counters. Instead of providing delivery mechanism, the ICICI also employed special rural sales force to targeted areas for generating personal trust among rural consumers (Ramaswamy and Namakumari, 2014). The HUL used global PPP for levering health messages for spreading awareness towards hand washing with soap. This HUL's PPP envisioned reaching 29 million people of entire state of Kerela in three years with aim to improve the nations' health (Prahalad, 2005). The PPP is considered a significant tool worldwide that can be used to develop infrastructure and delivery of public services, and success of PPP depends on to assess the challenges and opportunities for the project. The PPP model developed by Sciulli (2010) stresses on key areas of investigation and indicates three different phases' viz., business case, accountability and contract management phase. The business case ensures the project as per government policies & objectives, assesses the financial impact of project and measures expected benefits outweigh the costs involved; the second phase, accountability ensures justification from government towards private sectors' participation in providing ancillary services, maintaining assets and direct delivery of services; and the third phase, contract management refers to a operational phase that transforms project inception to project delivery aiming to adhere the contract specifications for both government and private bodies. The non-compliance of contract from private sector, will resulting into reduction of payment and penalties as per the contract norms. In order to identify difficulties and scope for PPP, a meaningful interrogation is required to implement periodically. Mazous, Facal and Viola (2008) suggested a typology of PPP on the basis of two factors i.e. the proximity of target that indicates the distance between a public service provider and the consumers to serve; and the capacity to generate means the greater or lesser ability of supplier to transform a social demand into products and services. On the basis on

these factors, four different PPP projects are identified as situational, elementary, symbiotic and forward-looking. Instead of considering the needs, objectives, and fundamental processes of PPP, the managers are also required to understand the challenges for implementing the PPP. The Ernst & Young (2014) identified these challenges as absence of independent regulator assessing domestic and international private funding for investment; lack of information regarding feasibility of projects, concession of agreements, and land acquisition; project development plans & procedure; and lack of institutional capacity to earmarked big projects.

2.4.1 *Public-Private Partnership in Telecommunication Sector*

The National Telecom Policy (2012) encourages domestic and foreign investment in telecom sector by permitting 74 per cent to 100 per cent FDI in various telecom services and by allowing 100 per- cent FDI in telecom equipment manufacturing. The government started revenue-share model for issuing the licence for providing telecom services. India's favourable demographics and social-economic factors such as growing disposable income coupled with changes in lifestyle, increasing affordability due to low tariffs, easy payment plans & handsets financing, increased network coverage enhanced the availability of mobile services leading over 150 per cent growth in telecom sector (TRAI, 2014). Though the private sector participation substantially increased due to liberalisation and the development lead by New Telecom Policy (1999), but still there is need to strengthen private participation in telecom sector by assessing revenue potential, smooth procedure of investment, strengthen the regulator's role and convergence of technology in general and for remote areas in particular (Chawla, 2004). The Viom Network (telecom equipment manufacturing firm) initiated 'Rural Service Centre (RSC)' project with aim to leverage existing infrastructure through PPP for providing telecom services to rural people in Gurgoan. The company's innovative concept 'Power of Tower' creates a win-win situation for both public as well as government. The partnership facilitates government to achieve their vision of bridging the digital divide by providing affordable telecom services, financial inclusion, and healthcare facilities. The project also helpful in e-Governance programs and offers various other services aiming to fulfil government's vision of Bharat Nirman. The PPP of Peru's telecommunication is made up from partnership between the public sector acting as a monitoring authority, facilitating funds to encourage participation of private players for investing in rural part of the country; and domestic or foreign operators responsible to

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provide telecommunication facilities in rural areas. The government selects private players through least cost subsidy auction method. A concession contract is enclosed with all term and conditions for success of partnership. The periodic subsidy given by public sector is based on assessment of the performance indicators of selected telecom company. There are some other global initiatives which depict successful PPP in telecom sector. The Bangladesh's Village Phone Program made up from Grameen Telecom- a non-profit mobile telecom operator; village phone operators- local skilled talent acting as rural entrepreneurs; and Grameen bank – plays a role of micro-finance institution. The whole project is monitored and supervised by the government and associated bodies (Islam, 2005; Keogh and Wood, 2005; Chowdhury, 2001; Lawson and Meyenn 2000). The public-private partnership drives the growth of gross domestic product by attracting foreign direct investment, enhancing private sector participation in telecommunication, and lead to economy growth. The role of private sector is crucial to building competitive working environment in public sector through work-related incentives (Credit Libanais Economic Research Unit, 2011). The government's Universal Service Obligation Agreements (USOA) and Common Service Centre Program (CSCP) are some initiatives to encourage private sectors to venture into rural telecommunication market (Gulati, 2007). The universal obligation service is defined as access to telegraph services to people in rural and remote areas at affordable and reasonable prices. Due to commercial non-viability in rural areas, the USOF administration provides subsidy support by incentivizing telecom service providers aiming to deliver the telecom services. A total subsidy disbursement has increased from Rs. 300 crore in 2002 to Rs. 2400 crore in 2010. It is also important to enhance the participation of private telecom players in USOF scheme as more than 80 per cent of total USO disbursement has been given to BSNL followed by Reliance Communication and Tata Teleservices (each 7 per cent) during last one decade (Department of Telecommunication, 2014). The PPP enhances the quality of services with optimum use of resources, and not only improves cost efficiencies for private sectors but also generates a new additional source of revenue. It is a prerequisite to identify both problems and opportunities before implementing PPP in telecom sector for better results (Oregon Telecommunication, 2003).

2.5 Innovation in Mobile Telecommunication

The mobile telecommunication market increased tremendously in country by achieving 150 per cent growth during last decade and mobile communication services made a significant contribution in changing the lifestyle of people by transforming and revolutionizing their

work and patterns of interaction through innovative ways of communication and other uses (Khayyat and Heshmati, 2013). Apart from hedonic and utilitarian values of telecommunication services, the innovations can also be helpful to foster inclusive growth of country by digitally empowering citizens across all sections of society in both urban and rural areas (Sudha, 2011). The constantly increasing competitive market coupled with gradual sophistication and ever changing of life style of consumers make telecom industry more dynamic and mobile telecom operators are being used all sense and logic to create and sustain competitive edge in market (Popescu, 2005). As all basic services in telecom sector that are being provided by service operators are often similar, hence the requirement of constant innovation to generate differentiated services are vital to growth of profitable subscription market share in the industry (Marumbwa and Mutsikiwa, 2013). In this regard, the telecom innovations must be assessed by marketers for successful diffusion and adoption in a social system over a period of time. The successful diffusion and adoption of innovation in mobile telecommunication are determined by various factors that affect usage and acceptance of innovative features. Higher the usage and acceptability of innovative features, higher will satisfaction and adoption of telecom services. The innovation in mobile telecom services is evaluated on the basis of perceived ease of use i.e. the degree to which a person believes that using a particular service will be free of efforts; perceived usefulness i.e. believes of a person to enhance the job performance after using the services (Gazbar, 2013). In mobile telephony market, either technical features or service characteristics are considered as base to create innovations in business. The technical features are related to internal technology, whereas the service characteristics refer to features of telecom products or services as seen and experienced by end users. It is also important to note that mobile communications services are divided in two categories namely technical features (tangible and intangible) based services and communication & value added based services. Communication & value added based services include voice calls, short message services & multimedia services, data usage; financial applications, whereas the technical features based services include quality voice, data transmission, and variety of software to write short text messages. Corrocher and Zirulia, (2009) proposed a classification of innovation in mobile telecom service industry. They introduced three different types of innovations viz., incremental innovation refers to substitution of existing characteristics or introduction of new ones (e.g. a new tariff plan with new features for different geographic consumers); recombinative innovation refers to innovation based on combinations of different existing products (e.g. a new tariff plan combining the features of two or more existing tariff plans); and improvement innovation

refers to improve the selected features rather change in whole architecture (e.g. a new tariff plan with a new category of existing characteristic such as a new time zone). In this way, it is prerequisite to incorporate innovative features in telecom services as per customers' needs and interest related to voice, data and value added services. The various innovative mobile telecommunication services are shown in the table below-

Table 2.3 Innovative Mobile Telecom Services

S. No.	Products	Innovative Features*	Benefits
1	**Prepaid Plans**	a. Flexible Tariff Plans: Purpose – Consumers decide their own talk time and SMS rate as per the budget (E.g. Tariff Plan* Re.1- Features- call rate- 1.2p/sec, SMS (local- Rs.1, National- Rs. 1.5 and International- Rs. 5) b. Bonus Plans: Purpose- Customers can make their talk time last longer with lower rates on call and SMS (E.g. BC2-Features- call rate-1p/sec, STD- 40p/min, Val. 30 days with 50MB data for7 days c. Talk Time plans: Purpose- Combo talk time recharge facility (E.g. Recharge 105- Features- recharge 105, talk time Rs. 90.56)	Consumers feel easy to stay by spending with prepaid plans
2	**Postpaid Plans**	a. Offers: Purpose- Helps in stretch the rupees (E.g. All STD call at Rs.1/min , Talk@ 20p/min with friends circle, SMS@10p (all local SMS), Timing the ISD calls- call US/Canada @ Rs. 4.99/min, UK-@ Rs. 5.99/min, Someone special rate, SMS on sale- 1000 SMS @50/month) b. Flexible Talk Plans: Purpose- Call rate and SMS as per customers' own need and budget (E.g. ENT 799- Monthly charge- 799, Call rate- 1.2p/sec, SMS- local- Rs.1, National- Rs. 1.5 and International- Rs. 5, Free data -1GB)	Consumers can get more out of the phone by facilitating more talks and SMS without expensive bills
3	**Value added services**	Purpose- Enhance utility and entertainment (E.g. News and Updates, Call Management (conference, filter, voicemail, call waiting, barring), - Astrology and –	Enhance the task performance and accomplishment through mobile services

		Entertainment, Financial Transactions, Travels (schedule and bookings), Health and diagnostic, E-bills facility and Devotional	
4	**Money Transfer Services**	Purpose- Safe and prompt money transfer	Quick and safe money transfer facility among account holders
5	**Help and Support**	Purpose- Customer care support Provide help and support (24X7) for solving query, compliant, activate or deactivate VAS, tariff charge request	
6	**Internet Packs**	Purpose- Internet browsing facility with customized way	
a.	**Prepaid**	E.g. -Unlimited pack, Monthly pack, Small pack, Medium pack, Long validity pack	
b.	**Postpaid**	Monthly plan 155 (1GB, 1 month), -Monthly plan 199 (2GB, unlimited usage)	

Source: - Retrieved from web published material of mobile service providers (Bharti Airtel, Idea Cellular and Vodafone India)

2.6 Measures of Consumer Innovativeness in Telecommunication Services

The concept of consumer innovativeness is universally acceptable and plays an important role in diffusion and adoption of innovation in mobile telecom services. The consumer researchers are always interested in measuring consumer innovativeness in order to identify a particular category of consumers' viz., innovator, early adopter, early majority, late majority and laggards so as to make successful diffusion of innovation (Ganiyu, Adeosun, 2013; Goldsmith and Hofacker, 1991). Measuring innovativeness gives deeper insights about new product development and identifying the key segment market in general and for mobile telecom services in particular (Pirayesh, Mansori and Ismail, 2013; Dobre, Dragomir and Preda, 2009). The consumer researchers are also interested in exploring the factors that distinguish innovators to non-innovators. It is evident from past studies that certain personality traits such as dogmatism, risk tolerance, autonomy, cognitive style, inclination to seek novelty or variety are caused to innovation behaviour in consumers (Park, Yu and Zhou, 2010; Dobre, Dragomir and Preda, 2009). The consumer innovators are eager buyers to new products or innovations and possessed some unique characteristics such opinion leadership,

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price sensitivity, product involvement that make them differ from non-innovators (Chaudtry and Irshad, 2013; Goldsmith, Flynn and Goldsmith, 2003). The past studies also indicate that individuals' innovative buying behaviour is varied among various domains such as automotives, consumer durables, telecom services, tourism, fashion, education and IT products (Roehrich, 2004). The mobile telecom services can also be considered as specific domain to measure consumers' innovativeness due to prevalence of various innovations in value added services (m-entertainment, m-commerce, m-health and m-education), price plans (time based, day based, location based, and bundling), and schemes & packages (SMS, internet packs, talk time and validity) over the last few years (Donald and Recardo, 2014; Srinuan, Srinuan and Bohlin, 2013). The previous studies also confirmed that consumer innovativeness affects perceived usefulness of value added services in mobile telecom (Ng, 2014). The success of diffusion and adoption of innovation is highly necessitated for mobile telecommunication market in order to develop competitive advantages and to attract & retain customers. On the basis of previous studies, certain constructs have been identified as determinants of consumer innovativeness in mobile telecom services and can be used to measure rural consumer innovativeness towards mobile telecom services. The details of constructs are described as follows-

a. Opinion leadership

The innovative consumers are characterized as opinion leaders that spread information about new products in an informal way and help to acceptance and diffusion of innovation in a particular social community. The information and experience about new products' usage and applications are transmitted in the community through interpersonal way by the opinion leaders (Darden and Reynolds, 1972). The opinion leaders are having some unique attributes such as high involvement and interest in specific products, media watching habits, and participation in the social activities. Chan and Misra (1990) suggested 'public individuation' as a unique characteristic of opinion leaders. The individuation refers to the act of opinion leaders that make them differ from rest of the society. The opinion leaders are self confident, self esteemed as possessed high degree of individuation and tolerance to bear social inhibitors such as rejection and criticism. The past studies also evidence the effect of opinion leaders on consumer innovativeness in terms of acceptance and spread of innovation in the society (Chaudhry and Irshad, 2013; Schiffman, Kanuk, Kumar 2011; Dobre, Dragomir and Preda, 2009; Jordaan and Simpson, 2006; Chan and Misra 1990; Feldman and Armstrong, 1975). The studies also reveal that unlike the later adopter or followers, the opinion leaders are different with regard to search and use the sources to avail information, cosmopolitanism,

high social participation, awareness social status and high innovativeness (Rogers and Cartano, 1962; Myers and Robertson, 1972). As constant innovations in value added services, voice and data plan are prerequisite in mobile telecom services, hence the role of opinion leaders are important in communicating the experience to others in society.

b. Product Involvement

The product involvement refers to preferences and interest of consumers in a particular product category (such as mobile phones, telecom services, fashion, IT products, home computers, and automobile) as compared to others in a social group. Goldsmith and Emmert (1991) defined product involvement as "a state of motivation, arousal or interest, evoked by a particular stimulus or situation, displaying drive properties". This construct is used to distinguish from innovators to laggards on a continuum of consumer innovativeness scale. The innovative consumers are highly concerned with a particular product or service category as compared to later adopters or non-adopters and among the first one to purchase the same (Schiffman, Kanuk, and Kumar, 2011; Jordaan and Simpson, 2006; Goldsmith, Flynn, and Goldsmith, 2003). Higher the product involvement, higher will be the tendency to avail information through media or other informal sources about new products or services. In the present study, the mobile telecom services are considered high involvement products as customers establish a set criterion for evaluation, spend sufficient time in decision making process, avail necessary information during pre-purchase search for identifying relevant features according as per need and budget aiming to satisfy hedonic and functional utilities. The study conducted by Nagabhushanam and Nargundkar (2009) reveals a significant association between consumer innovativeness and product involvement in mobile telephony market. Mort and Drennan (2007) further suggested that consumers with high product involvement are more interested in mobile phones' features; consider the mobile phones as an important part of their lives and more likely to use innovative mobile communication services to make life more easy and excited as compared to others in society.

c. Price Sensitivity and Venturesomeness

It is imperative for marketers to understand consumers' tendency towards new products for successful diffusion and adoption of innovation. The diffusion is a process by which the acceptance of an innovation is spread by communication to members of social system over a period of time, whereas the adoption consists of stages through which an individual consumer

passes in arriving at a decision to try or to continue using a new product. The innovative consumers are sensitive in relating price to prestige for buying new products (Aroean and Michaelidou, 2014). The innovative consumers are also price insensitive as compared to non-innovators. The past studies also found an association between innovativeness and the price insensitivity. Higher the consumers' innovativeness, lesser will be the price sensitivity in a particular category. The venturesomeness refers to consumers' willingness to take risk for purchasing new products or services (Schiffman, Kanuk, and Kumar, 2011; Vandecasteele and Geuens, 2008). The measurement of this construct is used to assess the risk bearing attitude towards trying a new product by consumers. The results of previous studies indicate that higher the willingness for trying new products & services, higher will be the innovativeness. The consumers with this attitude are among the first in social group to purchase innovative products related to mobile telecom services, mobile phone features, home appliances, electronic gadgets, fashions apparels due to characteristic of venturesomeness (Goldsmith, 1983).

d. Need for Uniqueness

The innovative buying behaviour is highly affected by individual characteristic of 'need for uniqueness' that refers to individual willingness to distinguish him or herself in a group by purchasing a new or rare item in social acceptable behaviour (Schiffman, Kanuk, and Kumar, 2011, Simonson and Nowlis, 2000). This particular construct of innovativeness reflects a social comparison process of an individual that depicts a self perceived degree of uniqueness. It is unique personality trait of individuals' comparing the present state with some ideal state aiming to make real difference among the group members (Jordaan and Simpson, 2006). Burns and Krampf (1991) empirically resulted a positive association between innovative behaviour and need for uniqueness. In mobile telecom services the customized offers, bonuses, flexible plans, value added services, functional and hedonic features can be used as need for uniqueness among mobile users in order to mark one-self in society.

2.7 Motivated Consumer Innovativeness and Buying Behaviour

The various past studies of consumer research reveal a fact that the role of 'inherent innovativeness' in consumer innovative behaviour is limited to an extent. Hence, the consumer behaviour researchers are interested in studying the effect of motivated consumer

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innovativeness in innovative buying behaviour. This new dimension of innovativeness can be used to assess novelty seeking behaviour in general and for mobile telecom services in particular (Vandecasteele and Geuens, 2008). The studies related to consumer research also give importance on understanding the role of motivation in adoption of innovation. The advances occurred in technical and service innovations in mobile communication evolved new functionalities and applications over the last decade (Faullant, Fuller and Matzler, 2012). The consumer innovativeness in mobile telecom services is also affected from certain motives such as social, functional, hedonic, and cognitive and results into buying of new and different telecom services with disruption of behaviour rather than remaining of available consumption patterns only. The following section of literature represents the motives of consumer innovativeness with their roles in affecting consumer behaviour-

a. Socially Motivated Consumer Innovativeness (s-MCI)

The socially motivated consumer innovativeness stresses on social need of differentiation i.e. social identity that induces consumer innovativeness. Roehrich (1994) empirically explained that consumers with high social innovativeness are relatively early in adopting innovation or new products as compared to others in social system. The past studies empirically validated the relationship between consumer innovativeness and social identity (Maden and Koker, 2013). A social identity facilitates a way to communicate oneself to others in a social group. Hugstad, Taylor and Bruce (1987) analyzed the effect of social class on consumer's information search and consumption choices. The study revealed that consumption pattern of an individual reflects his or her identity. Reed and Forhand (2003) suggested that social identity as a cause to motivate the purchase. Grewal, Mehta and Kardes (2000) identified the role of social identify function on consumer innovativeness & opinion leadership and examined its impact. They concluded that social identity plays an important role in adoption and diffusion of innovation in a particular society. Fisher and Price (1992) also examined the social contextual factors on consumers' intention to adopt new products & services as a source of social differentiation in social system.

b. Cognitively Motivated Consumer Innovativeness (c-MCI)

 The cognitively motivated consumer innovativeness refers to consumers' intellectual, perceptual, and attitudinal characteristics that influence buying innovation due to stimulation of mind (Grutzmann, Macedo and Zanbalde, 2013). The early innovation adopters under

gone various cognition processes such as information acquisition & processing, thinking, reasoning, decision-making get motivated to purchase new products (Wang, Wang and Wang, 2006). In mobile telecom services, optimum selection of price plan, SMS packs, internet packs, tariff plans, bonus plans, flexible talk times and other customized plans as per the need and budget require cognitive thinking and individuals those are highly motivated due to cognitive motives are highly inclined to purchase new offers and schemes. The individuals' attitude and decision towards buying new technological products are highly affected by cognitive structure. The previous studies reveal that cognitively innovative personalities are inclined towards use of innovation (Irani and O'Malle, 2000). Huang (2003) studied the role of cognitive innovativeness in functional products and found a positive relationship with innovative buying behavior. Hoffmann and Soyez (2010) predicted domain-specific innovativeness for utilitarian products and found that innovativeness in this category is highly affected by specific need for cognition and opinion leadership.

c. *Hedonically Motivated Consumer Innovativeness (h-MCI)*

The hedonically motivated consumer innovativeness refers to buying new products on the basis of affective or sensory stimulation. Roehrich (1994) identified enjoy of newness of the products as a hedonic motives that act as a driving force to adopt innovation in some individuals. In mobile telecom services, the hedonically motivated individuals are more inclined to purchase recreational services by choosing a particular mobile-VAS such as news and updates, astrology, jokes etc. Yang and Forney (2013) identified the determinants for adopting new mobile shopping services, and found that consumers with more hedonic expectancy performance and social influence are more inclined towards using mobile shopping services first in the social group. Wang et al. (2008) empirically investigated the effects of hedonic values on the consumer behavior; and found that hedonic values and utilitarian orientation are contradictory to each other. They suggested that hedonic values are positively associated with the novelty seeking behavior. Kim (2008) examined the relationship of consumer innovativeness and fashion orientation on adoption of innovative products and suggested that consumer innovativeness depends on consumers' hedonic and utilitarian attitude. The study conducted by Negm, Sahn and Tantawai (2012) towards measuring the impact of hedonic, rationale and influential components on consumers'

adoption of purchasing innovative fast moving consumer goods indicates that both hedonic and rationale components affect 'innovation adoption intention'.

d. *Functionally Motivated Consumer Innovativeness (f-MCI)*

The functionally motivated consumer innovativeness induces innovative buying behavior in individuals due to functional performance of innovation results into better task performance and accomplishment improvement. In mobile telecom services, better network quality, reliability, more value added services, high internet speed, and better customer care are some functional features that motivates consumers to become innovative. Vandecasteele and Geuens (2008) suggested that consumers are functionally motivated by realization of physiological needs and functional features of products to solve problems and work more effectively. They further revealed that functional aspects of products such as ease of use, rationality, handiness, compatibility, efficiency, comfort, ease, quality, and reliability are functional motives for consumer innovativeness towards mobile telecom services.

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

Sr. No.	Region	Districts	Selection of Households	Respondents
1.	Malwa	Ludhiana, Patiala, Sangrur, Firozpur, Moga, and Fatehgarh Sb.	(5 Blocks x 3 Villages x 2-3 Households/ Village)	200
2.	Majha	Amritsar, Gurdaspur, and Tarn Taran	(5 Blocks x 3 Villages x 4-5 Households/ Village)	200
3.	Doaba	Jalandhar, Hoshiapur, Nawanshahr, and Kapurthala	(5 Blocks x 3 Villages x 3-4 Households/ Village)	200

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.
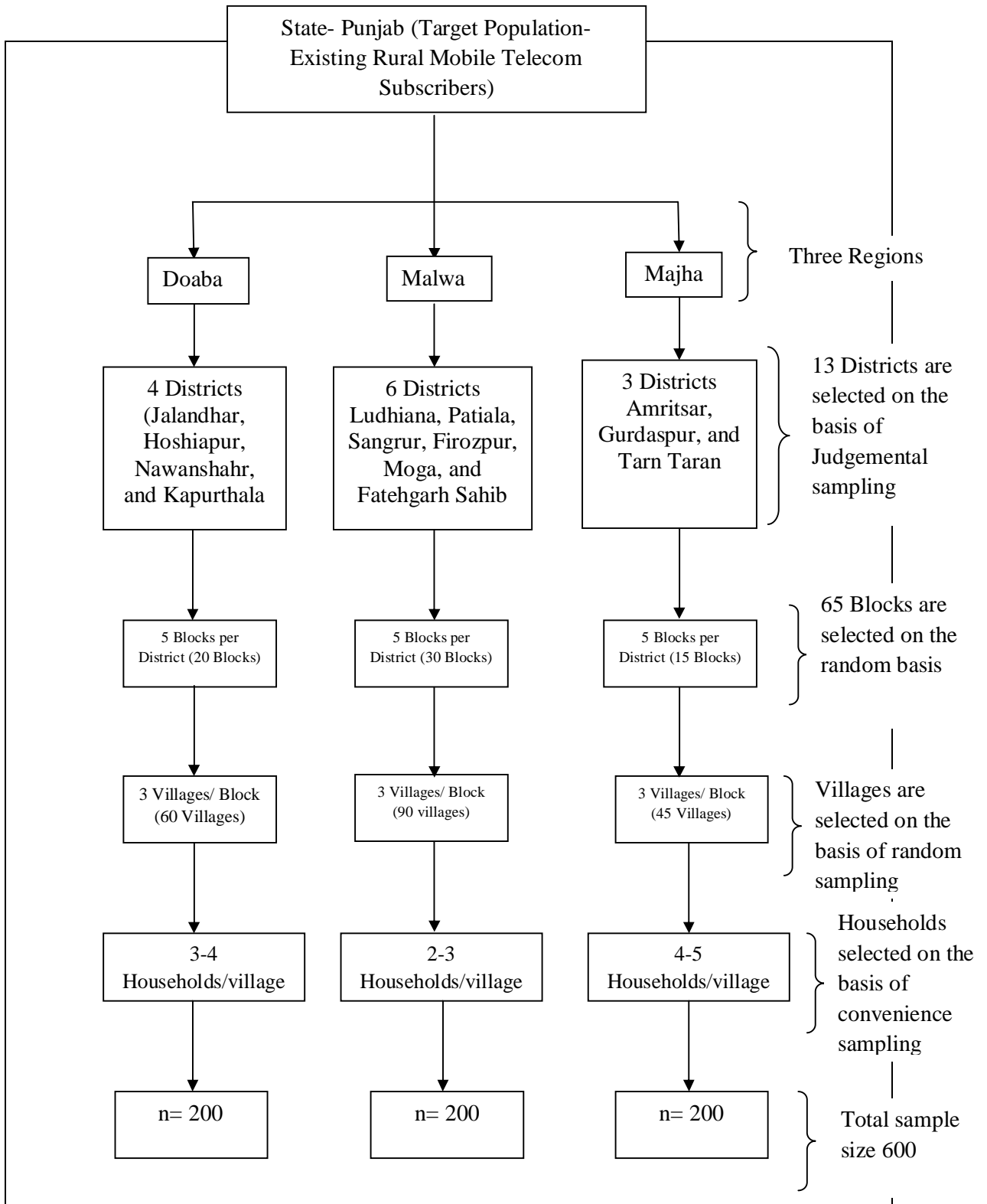
Fig. 3.1 Sampling Design Process

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

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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

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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 1st 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 2nd 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 3rd 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 4th 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 5th 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 $H_{A5:}$ **μ >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}: **μ ≤ 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 $H_{A6:}$ **μ >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}: **μ ≤ 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 $H_{A7:}$ **μ >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}: **μ ≤ 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 $H_{A8:}$ **μ >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 (α) 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 α>0.9 (excellent), α>0.8 (good), α>0.7 (acceptable), α>0.6 (questionable), α>0.5 (poor) and α <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 (α) as a measure of internal consistency for various constructs used in the instrument (Table 3.2). As Cronbach's alpha (α) 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

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

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

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

*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-

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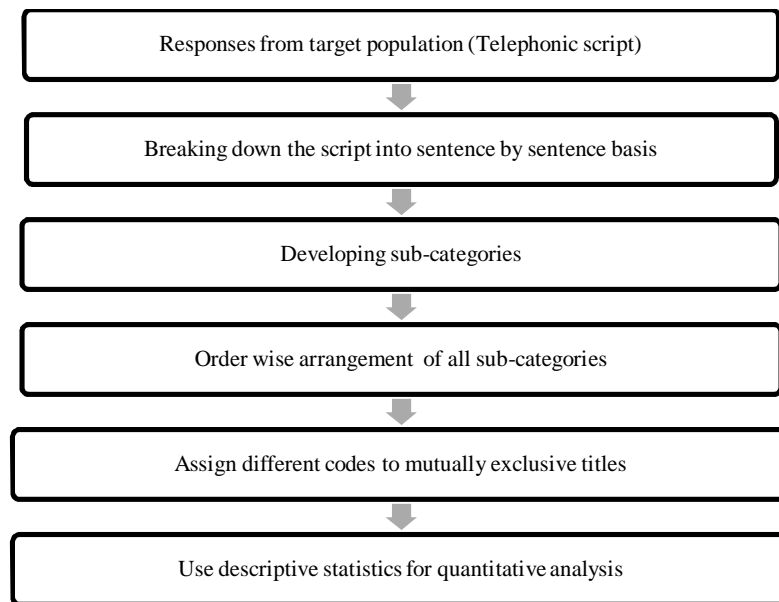

Fig 3.2 Coding and Categorization Process

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

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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.

4. Data Analysis and Interpretation

This part of study lays emphasis on illustrating and interpretation of results based on data analysis aiming to convert raw data into meaningful information. Both qualitative and qualitative data analysis techniques have been used in the study and both verbal descriptions and numerical codes have also been used in the analysis. The descriptive statistics such as proportions and frequencies have been computed to interpret the qualitative data whereas, univariate analysis based on t-statistics, correlation coefficient, multiple linear regression, and interdependent multivariate analysis technique viz., hierarchical and non- hierarchical clustering procedures have been used to describe, explain and predict the quantitative data in the study. The findings of data analysis have been also interpreted with respect to research objectives as mentioned in the study aiming to make inferences whether the results are consistent with respective hypotheses or theories. Along with this, the findings also include the conceptual frameworks of "Rural Entrepreneurship" and "Public-Private Partnership" on the basis of most relevant literature and secondary data.

4.1 Problems Related to Rural Mobile Telecom Services

The study starts with identification of problems associated with rural mobile telecom service. Both qualitative and quantitative research methods have been used to attain first objective of the study. In qualitative research method, an unstructured, exploratory research methodology based on small sample (size=16) has been used to gain insights and understanding of problem setting. An in-depth interview based on telephonic technique has been used for data collection from the target population. A direct approach has been used in study in which purposes of the research project are disclosed to the respondents. The quantitative research methods used in study seeks to quantify the data for statistical analysis. The following section represents the findings of qualitative research design by adopting 'Open Coding Approach' and illustrated in various sub-categories and main-categories of problems related to mobile telecom services with certain proportions.

4.1.1 Identifying Sub-categories and Main Categories of Problems

The responses from target population through telephonic interview have been used in exploratory research designs. The entire telephonic script of each respondent is broken down into sentence by sentence basis and relevant sub-categories have been identified respectively for each sentence. Each sub-category derived from scripts reveals a unique problem related to

mobile telecom services. All sub-categories have been arranged in a specific order and naming has been done for all common sub-categories that represent the main category of problem related to mobile telecom services. This entire process has been repeated for whole the verbal transcript to produce main categories of problems and subsequent sub-categories. A care has been taken while formulating and giving the titles to all main categories. A different alphabetic code (A, B, C, D) has given to all main categories for distinction among the categories. The titles of main categories are mutually exclusive in nature and also matched with the categories as reflected in most relevant literature. The entire process of 'coding and categorization' results identification of 33 sub-categories and 4 main categories of problems. The result indicates seven sub-categories (A1 to A7) related to technical problems (Code-A); ten sub-categories (B1 to B10) for infrastructural problems (Code-B); seven sub-categories (C1 to C7) for manpower related problems (Code-C), and finally nine sub-categories (D1 to D9) for customers' perspective related problem (Code-D) as presented in below mentioned table-

Table 4.1 Sub-Categories and Main-Categories of Problems

Sr. No.	Sub-Category	Main Category	Codes
1	Network Quality (A1)	Technical	A
2	Low Speed of Internet (A2)		
3	Call Break (A3)		
4	High Operational Cost of BTS (A4)		
5	Call Establishment Time (A5)		
6	Site Off Due to Power Cut (A6)		
7	Optical Fibre Cut Problem (A7)		
8	High Distribution and Operating Costs (B1)		
9	In availability of Recharge Coupons/ e-Recharge , News Schemes and Plans (B2)		
10	Lack of After Sales Services (B3)		
11	Collection of Bills (B4)		B
12	Inadequate Nos. of Shops (B5)		
13	Difficulty to Complete Documentation Process (B6)		
14	Flow of Information and Communication (B7)	Infrastructural	B

15	High Service costs (B8)		
16	Service Availability Issues (B9)		
17	Geographical Problems (B10)		
18	Lack of Technical Skills and Knowledge[C1]		
19	Lack of Sufficient and Quality Manpower [C2]		
20	Appointment and Retention of Distributors [C3]		
21	Low Literacy level [C4]	Manpower	C
22	Training and Development [C5]		
23	Objection by Rural People for Tower Setup[C6]		
24	Low Awareness [C7]		
25	Value for Money [D1]		
26	Low Awareness and Knowledge [D2]		
27	Inability to Understand Bills and Tariff plans [D3]		
28	Insufficient Subscriber Base and Low Usage [D4]		
29	Retaining Rural Customers [D5]	Customers' Perspective	D
30	Low Contact with Customer Care [D6]		
31	Difference in Rural Consumers Profile [D7]		
32	Non-Availability of Smart Phones [D8]		
33	Non-Availability of Proper UID [D9]		

Source: Telephonic Verbal Transcript

4.1.2   Descriptive Analysis of Sub-categories

All the sub-categories derived from 'Open Coding Approach' have been further analyzed to find out their relative proportion in respective main category in order to assess the degree of intensity. The descriptive statistics based on 'frequency analysis' has been done for computing the percentage for all sub categories. The proportion of a particular sub-category is derived by dividing the total instances of that sub-category found in the survey with total sample size and multiplied with hundred. The relative proportion of each sub-category has been portrayed by separate bar-charts as shown follows-

a) *Proportion of Sub-Categories of Technical Problem*

The bar chart as mentioned below reveals the relative proportion of seven sub-categories of technical problem as per their instances found in the survey (Fig. 4.1). The chart reveals two sub-categories viz., network quality (88%) and high operational costs of BTS (75%) in high proportions followed by site off (19%), low internet speed (13%), call establishment time (6%) and optical fiber cut problem (6%).
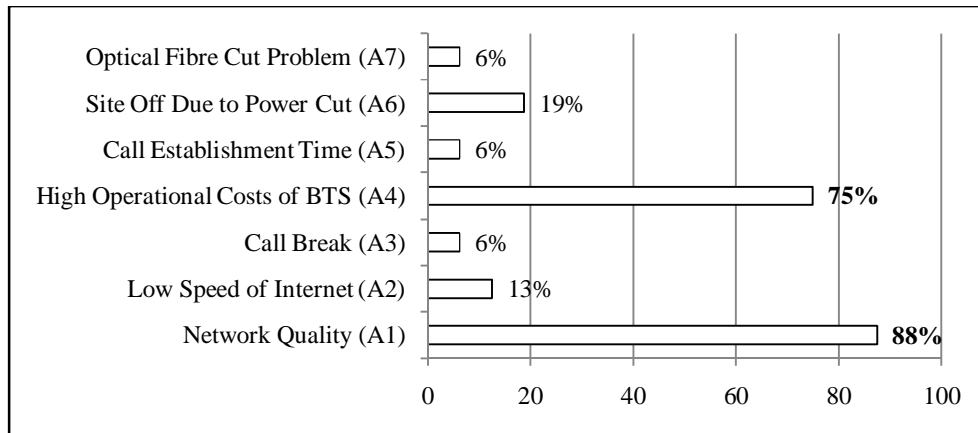

Fig. 4.1 Sub-Categories of Technical Problem

b) *Proportion of Sub-Categories of Infrastructural Problem*

The bar chart as mentioned in Fig. 4.2 reveals the relative proportion of ten sub-categories of infrastructural problem as per their instances found in the survey. The chart reveals four sub-categories viz., high distribution and operating cost (31%), lack of after sales services (31%), flow of information and communication (31%), and service availability issues (31%) found in high proportions followed by an un-availability of recharge facility (25%), difficulty in documentation process (25%), improper distribution (13%), geographical problem (13%), inadequate shops (6%) and collection of bills (6%).
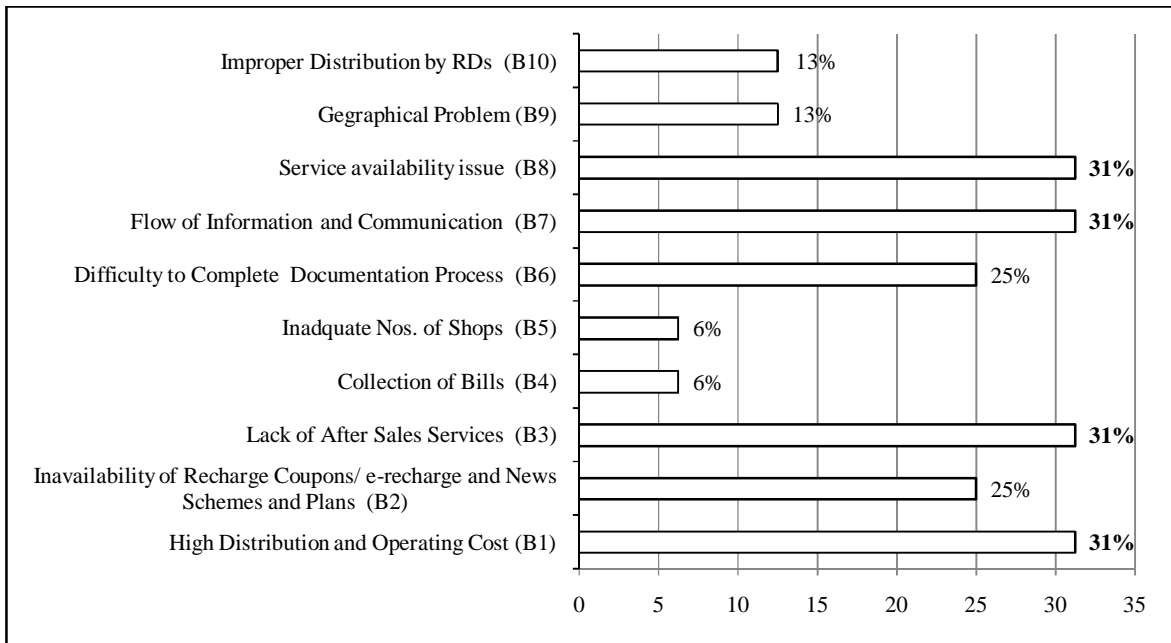
Fig. 4.2 Sub-Categories of Infrastructural Problem

c) *Proportion of Sub-Categories of Manpower Related Problem*

The bar chart as mentioned below reveals the relative proportions of six sub-categories of manpower related problems as per their instances found in the survey. The chart reveals that three sub-categories viz., lack of technical skill and knowledge (31%), sufficient and quality manpower (19%), and appointment and retention of distributors (19%) in high proportions followed by low literacy level (13%), training and development (06%), and objection by rural people for tower set up (06%).
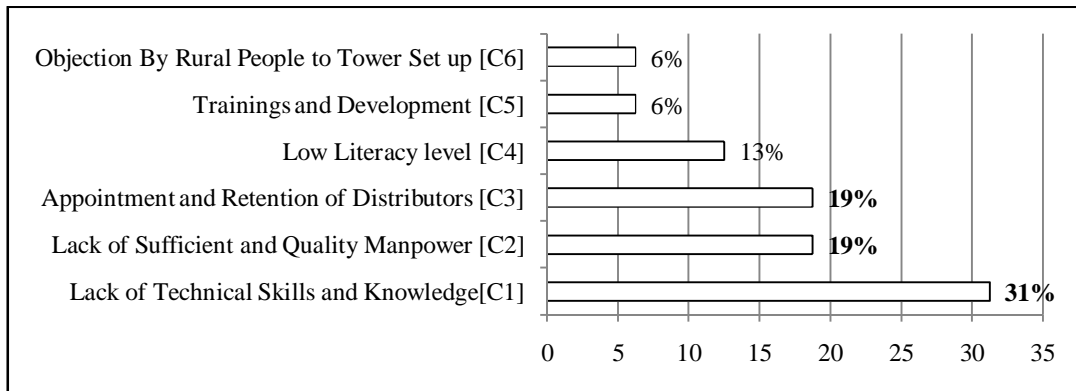

Fig. 4.3 Sub-Categories of Manpower Related Problem

d) Proportion of Sub-Categories of Customers' Perspective Problem

The bar chart as mentioned below reveals the relative proportion of nine sub-categories of customers' perspective problems as per their instances found in the survey. The chart reveals that three sub-categories viz., low awareness and knowledge (63%), insufficient subscriber base and low usage (44%), and inability to understand bills and tariffs plan (25%) found in high proportions followed by seeking value for money (19%), retaining consumers (06%), low contact with customer care (06%), different rural customer profile (06%), non-availability of smart phone (06%), and non-availability of proper UID (06%).
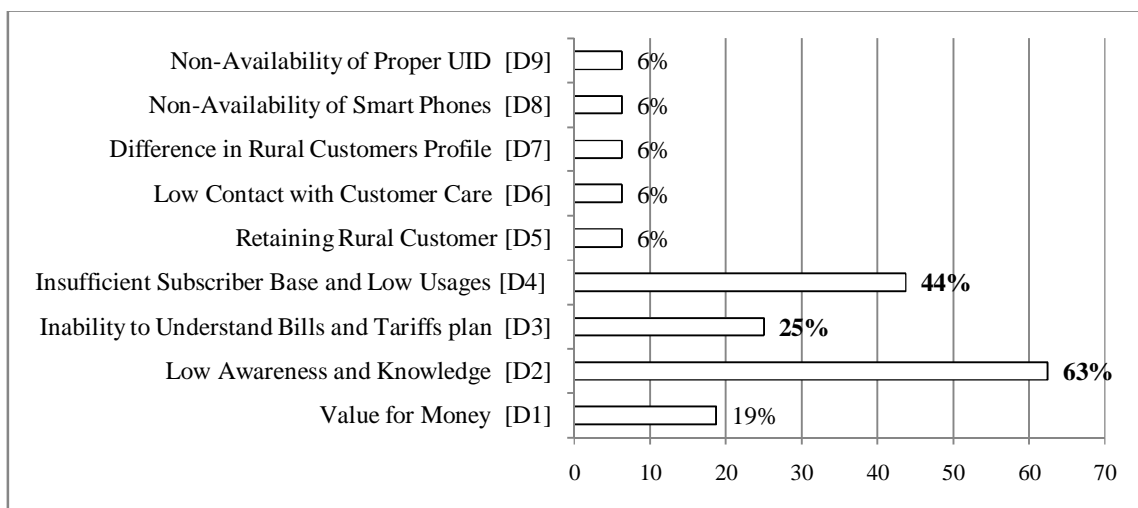

Fig. 4.4 Sub-Categories of Customers' Perspective Problem

4.1.3 Results of Qualitative Data Analysis

The findings of qualitative data analysis manifest the problems related to mobile telecom services in rural Punjab. The main problems identified in this preliminary part of study are as follows-

  i.   Lack of network quality and reliability
 ii.   High operational cost to maintain Base Transceiver Station (BTS)
iii.   Site off due to frequent power cut
 iv.   High distribution and operating costs
  v.   Lack of after sales services
 vi.   Lack of information and communication flow

vii. Difficulty to complete documentation process to acquire new customers

viii. Lack of technical skills and knowledge among rural people

ix. Insufficient and lack of quality manpower

x. Retention of rural distributors

xi. Low literacy level

xii. Low awareness and knowledge for mobile telecom services

xiii. Insufficient subscriber base and low usage

xiv. Inability to understand bills and tariffs plans

xv. Seeking value for money

4.2 Inclusive Framework for Rural Mobile Telecom Services

The inclusive approach in rural marketing is based on the philosophy that rural markets can't be ignored by contemporary marketers due to substantial growth occurred during last one decade in rural markets and the rural consumers should not be considered as poor rather they can be used as business partners, entrepreneurs or as change agents. This approach is used to create buying power among rural people by promoting the concept of 'rural entrepreneurship'; hence marketers are required to empower the rural people as converting them into local entrepreneurs and developing micro enterprises in rural areas. The objective as mentioned in the study to develop conceptual framework of inclusive approach is based on qualitative analysis of secondary data related to telecommunication business models initiated by global telecom players. The successful business models related to rural telecommunication firms such as Grameen Telecom- Bangladesh, Smart Incorporation- Philippines, Village Phone- Uganda and Celtel- Nigeria have been used to explore the dimensions of rural entrepreneurship framework for rural mobile telecom services. The individual organization is considered as a separate case and 'case study method' has been used for making in-depth study of a particular organization. The external secondary data sources such as relevant articles form journals, books and web-published materials have been used to extract information for designing the required framework. The following cases of mobile telecom service providers have been studied for developing the conceptual framework of inclusive approach for rural mobile telecom services.

Case 1- Grameen Telecom- Bangladesh

The Grameen Telecom- Bangladesh is a successful rural telecommunication business model initiated by Md. Yunus, Chairman, Grameen Telecom on March 26, 1997 on the Independence Day of Bangladesh. This business model represents a successful joint venture among various stakeholders with aim to facilitate telecommunication services through affordable cellular pay phones at doorstep of rural community in Bangladesh. This model has been initiated in rural Bangladesh to promote economic development by helping people and businesses gain efficiency through improved communication and socio-economic development for telephone enterprises. The huge untapped potential of rural Bangladesh with 80 percent rural population base coupled with contributing 50 percent in Gross Domestic Product (GDP) in country, reveals a significance of this model for rural communities. This model is based on multi -stakeholder partnership consisting of Grameen Phone- a cellular operator and service provider emerged as a joint venture of four companies; Grameen Telecom- a non-profit rural telecommunication company with aim to ensure affordability, acceptability, awareness and availability of telecom services at remote areas of country; Grameen Bank- a micro-finance institution to avail financial facility for local entrepreneurs to start and run the business and Village Phone Operators (VPOs)- the rural women act as business partners or change agents and responsible to carry out business activities in a particular community (Molina, 2006 and Stanley, 2005). This model also represents a Public-Private Partnership (PPP) in promoting information and communication technology (ICT) at rural corner of the country. The private players, civil society, local or state government, financial institutions and international bodies joined hand together to bridge the digital divide in rural areas (Keogh and Wood, 2005).

Major Partners

 a. **Grameen Telecom-** The Grameen telecom represents a non-profitable telecommunication company having 38 per cent share in Grameen Phone (the largest GMS operator in Bangladesh) with aim to provide affordable and quality telecom services to rural Bangladesh. The company provides telecom connectivity at affordable price so as to penetrate mobile telecom services in rural community. In order to acquire rural consumers and substantial reach to rural markets the company provides 50 percent of discount rate on airtime to village phone operators. The Grameen telecom distributes individual invoice to all village phone operators and

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collect the respective billing amount from the corresponding Grameen Bank branch. The various customized products such as prepaid price plan, preloaded talk time, electronic and scratch card based recharge, data usage services, village phone community pricing scheme, and one-second pulse plans are introduced by company so as to provide affordable and value-added products to rural consumers. The main objectives of Grameen Telecom are to enhance accessibility, affordability of telecom services, spread awareness about customised plans and schemes, maintaining relationship with rural consumers, and empowering rural people by providing them business & employment opportunities to promote inclusive growth in rural Bangladesh.

b. **Grameen Phone –** The Grameen Phone is part of Telenor group and represents a leading telecommunication operator in Bangladesh. The Grameen Phone started 'Village Phone Program' as pioneering initiative to empower rural women and introduced GSM cellular technology first time in country amongst all the operators. Various efforts done by company are manifested as achievement of 99 per cent coverage of people in network areas with mobile to mobile telephony segment (Annual Report, Grameen Phone-2014). The company also introduced first time pre paid plan services and constantly make innovations with aim to introduce new products and services to satisfy rural telecom market. The Grameen Phone earns revenue on the basis of total billing amount based on air time used (US$ 0.04 per minute for local calls during peak hours) from all village phone operators belong to a particular village (Eusuf, Toufiqe and Shamannay, 2007).

c. **Grameen Bank-** The Grameen bank is a micro-credit bank having substantial number of branches in rural Bangladesh and delivers micro-credit facility to women entrepreneurs acting as Village Phone Operators (VPOs) in rural communities. The loan amount borrowed by VPOs from Grameen bank is used to access working capital such as buying mobile phones and carry out other business expenses. The Grameen bank earns the profits on the basis of interest against the loan paid to VPOs.

d. **Village Phone Operators (VPOs) -** The Village Phone Operators (VPOs) are the rural women acting as business partners or intermediaries in the business model. The company selects VPOs among a particular community with aim to run the business,

facilitating the sale of telecom services, generating trust among rural people, spread awareness about telecom products in dark and grey media zones in rural areas. The earnings of VPOs depend on amount of revenue generated from telecom services and this can lead to net average income of US$52 per month with covering all costs and liabilities (Eusuf, Toufiqe and Shamannay, 2007). The VPOs are the local entrepreneurs that act as a link between company and rural community not only to accelerate the business activities but also promote inclusive growth in rural economy by promises board developments benefits, including enhanced productivity, providing information and communication technology (ICT) and generating new source of rural income.

Stakeholders' Growth and Expansion

a. **Grameen Phone-** The model facilitates substantial revenue for Grameen phone by developing new markets in rural areas and resulting into 15 per cent of total gross revenue of Grameen Phone from VPOs only. A significant growth in Average Revenue Per User (ARPU) has been noticed from Bangladeshi Taka (BDT) 0.53 million in 1997 to BDT 1,114 million in 2002 and BDT 2,070 in 2003 (Islam, 2005). The number of Grameen Phone subscribers has also increased from 193,588 to 247,000 from 2000 to 2001 (Cohen, 2001). Today, the Grameen Phone is the largest and leading telecom service provider in Bangladesh having more than 50 million subscribers as in 2014 and covering approximately 43 per cent of market share. The model generates employment to about 500,000 people directly as promoting dealers, retailers, scratch cards outlets, suppliers, vendors and contractors (Corporate Information- Grameen Phone, 2014) in the value chain. The total gross revenue of the company has also increased from INR 231 million to INR 29627 million from 1997 to 2005 (Eusuf, Toufiqe and Shamannay, 2007).

b. **Grameen Bank-** The Grameen Bank is the largest microfinance institution in Bangladesh with wide network coverage in rural areas. The total members of Grameen Bank are more than 4 million having 96 per cent of rural women, with 1257 branches spread all over the country that serve 40,000 villages (68 per cent of the total villages) in the country (Islam, 2005). The profitability of bank depends on the interest against the loan paid to village phone operators and its share in the sales of

airtime services. The profit is further used to meet out administrative and managerial expenses to run the business model successfully.

c. **Village Phone Operators (VPOs)** – The number of village phone operators has increased from one hundred to 150 thousand during 1997 to 2005 (Islam, 2005). The micro credit schemes introduced by Grameen bank to run the business activities and to enhance accessibility, availability and affordability of mobile telecom services in remote areas made possible to reach the benefits of information and communication technology (ICT) in improvised rural environment. The various trade promotions such as discount schemes to village phone operators induce favourable environment for business expansion in rural areas along with the growth of village phone operators.

d. **Community Members-** The resource poor local community members are highly benefitted by utilizing telephone services at affordable price. The local community members gained advantages of ICT in the villages due to increased connectivity, sharing of knowledge and information and thus enhancing social welfare, economic activities, eliminating poverty and inequality. The past studies indicate that approximately 8 per cent of calls made by farmers and business people in order to get knowledge of better prices as compared to others and 42 per cent of the calls related to remittances from the family members living in larger cities of Bangladesh (Cohen, 2001).

Case 2- Smart Communication Inc., Philippines

The Smart Communication Inc. is known as leading wireless telecommunication service provider aiming to satisfy the needs of both urban as well as rural consumers in Philippines having 54.2 million subscribers on GSM network as on March, 2015. The company made significant efforts in anticipating, identifying and satisfying consumers' requirements through suitable marketing mix in order to deliver superior values to its subscribers. The customized products and services at affordable price, unique and innovative business model with effective marketing communications result into maximising subscription as competitive advantage in the industry (Corporate Profile- Smart Communication Inc.,2015; Billou and Anderson, 2006; Smith, 2004). The rigorous and comprehensive analysis regarding shopping pattern and purchasing behaviour of consumers are made constantly by company in order to

introduce new and innovative products in general and for rural consumers in particular. The Smart Communication Inc. is the first one to develop and introduce the smallest denominations of telecom recharge in industry to serve 'bottom of the pyramid market' and also initiated an innovative mechanism of 'demand response stocking system' to minimize the physical product distribution costs so as to reduce the risk across the firm (Billou and Anderson , 2006; Smith, 2004).

Innovative Products and Services- The innovations made in products and services are used to satisfy the demand of rural people having low purchasing ability by delivering value of money. The wireless service leader, Smart Inc. always concentrates on market shaping services that are relevant to the needs of customers. The company not only provides voice services but also comes out with various value added services such as mobile money and data in very affordable and convenient manner. Some of the famous products which successfully cater to the needs of rural consumers are as follows-

a. Smart Buddy and Pure Text- The smart buddy is a prepaid GSM product consisting pre-stored airtime and ranges from Philippine Peso (P) 100 (US$1.80) to P 1000 (US$17.95) having 'call and text' facility. The Pure Text 100 is a prepaid text card, delivers the value of P 100 (US$1.80) and company used this plan as strategy to retain the customers during limited capacity of time period so as to reduce the switching rate.

b. Smart Money- The smart money is used for financial inclusion and was initiated in the year 2000 for facilitating mobile banking and e-commerce facilities to GSM subscribers. The smart money enables consumers to transfer certain amount of money from a bank account to smart money account and also facilitates to transfer the money from one Smart Money Card to another through Short Message Service (SMS). The consumers can use this, as a debit card also, in purchasing variety of products and services. Later on, this card has been modified into advance version viz., Smart MBS (Mobile Banking Services) and can be used for multi-purpose such as for account balance inquires, fund transferring, and reloading the Smart Money account through short message service.

c. Smart Load- This special service launched in 2003 for transferring the airtime (call and text) via SMS, and it is an advanced version of previously launched Pure Text100. The purpose of this card is to deliver efficient and quick service to pre paid subscribers in general and for rural areas in particular so as to increase the revenue from pre-paid users. This pre-paid card is useful in electronic transfer of airtime from retailer merchants to pre-paid

customers; hence it reduces the burden of establishing expensive distribution network in remote areas for regular supplying of pre-paid cards. In this process, the mechanism of electronic reloading consists of two steps; in first step, the pre-paid subscribers choose a specific Smart Load denomination by making a contact with Smart Load retailer and pay the specific money to retailer. In the second step, after receiving the money, the retailer loads airtime and electronically transfers to subscribers' phone from his own SIM as per the desired denomination demanded by customers. This type of transaction does not require physical space, involvement of intermediaries and distribution network to distribute the services; hence it reduces the distribution cost as well.

Distribution- The poor accessibility in rural areas due to lack of transportation facilities, coupled with sparsely located small retailers, enhance distribution cost. The Smart Inc. introduced an innovative distribution system of 'electronic load transfer' that facilitates in transferring the airtime pre-paid from SIM retailers to consumers without any presence of intermediaries and physical requirements. These SIM retailers (small retailers, neighbourhood stores) act as distribution agents and serve particular market area on the basis of 'demand response stocking system' (Smith, 2004).

Rural Entrepreneurship and Social Empowerment- The company also promotes rural entrepreneurship in remote areas by appointing small retailers as SIM retailers or company's distributers. Approximately, 500,000 rural retailers connected with Smart's innovative distribution system as business partners and act as change agents in their specific regions. These small SIM retailers are the main link between the company and the rural customers. This model helps to generate job opportunities in remote areas and social & economic empowerment by providing ICT in rural corner of the country. It has been observed that some SIM retailers are capable to transfer the money up to US$ 18.00 every day (Smith, 2004).

Case 3- Celtel International, Nigeria

The Celtel International with its 28 per cent market share and 8 million subscribers in the year 2013 is considered as the second largest mobile telecommunication company in Nigeria. At the time when approximately, 50 per cent of population related to rural area and deprived from basic telecommunication services in Nigeria, the company paid significant attention to serve these remote areas by introducing innovative products and services. The company faced a great challenge in meeting out Capital Expenses (CAPEX) and Operating Expenses (OPEX) to provide telecommunication services in remote areas due to lack of infrastructure,

long power cut, high operating & maintenance costs involved in establishing & operating the mobile towers, dependency on diesel for operating generators, lack of distribution, inefficient supply chain mechanism and inefficient marketing channels (Anderson and Kupp, 2009;). Due to realization of huge potential in rural markets, and substantial demand coupled with positive political & economic environment, liberalization process embarked by the Nigerian Communication Commission in 2003, the company contemplated to bring benefits to poor by providing affordable and quality ICT services (Ikpe and Idiong, 2011). The liberalization and positive economic environment made remarkable changes in telecom sector such as reduction in prices, wider service availability, more investment by operators and resulting into growth of market penetration from 1.2 per cent in 2002 to 21.6 per cent in 2006 and touched 28 per cent at the end of 2007.

Distribution- Initially, till the end of 2007, the corporate sector was considered as main target market only and the total market share was measured 28 per cent during this period. But it is important to note, that corporate sector contributed only less than 2 per cent of the total revenue hence, by realizing this fact, the company identified another two other major segments viz., consumer mass market and SMEs (public call offices and umbrella man shops) as main potential markets. The Celtel established a strong distribution network in general and for rural market in particular. In this distribution channel, the products and services (SIM packs and recharge vouchers) are sold through dealers and subsequently the dealers sold to other channel partners like sub-dealers, kiosks, umbrella man outlets, and hawkers. The ubiquitous umbrella man kiosks and outlets used to sale recharge coupons and contributed to 75 per cent of sale in the Nigerian market. In mid 2007, the company made a substantial improvement in dealer-driven marketing and communication and hence, the company emphasized on proper use and monitoring of POS (point-of-sale) units in order to make effective marketing communication.

Emerging Rural Potential – By the end of 2007, the Nigerian mobile telecommunication industry recognized a huge potential of ICT in rural Nigeria and estimated that approximately 80 per cent of the mobile telecom subscribers would have come from rural areas during the period from 2008 to 2012. The company also forecasted that the rural corner of the country will contribute approximately, 20 per cent of total industry revenue during the same period as compared to only 2 per cent in 2007. The industry has faced a great challenge to penetrate this huge untapped potential of rural market due to lack of infrastructure, disparity in network especially in north-east Nigeria, high operating costs, and sparsely populated regions. The

company conducted an intensive research to find out the rural preferences for telecom services so as to identify and explore the value added products as per customers' needs and demands. The findings of the research indicated that 40 percent of the rural people were non-telecom users and used to spend only 14 per cent of their income in telecommunication products and services. The study also revealed some of the barriers such as price; poor network quality and tariff complexities that affect adoption and continuity of mobile telecommunication in rural communities.

Rural Acquisition Initiative (RAI) – The company initiated rural entrepreneurship program viz., 'Rural Acquisition Initiative' with aim to penetrate telecom services in rural markets by generating employment and business opportunities. This program has been formulated and designed to promote micro enterprises among rural people by giving micro-franchise with aim to start the business in specific regions so as to spread the business in rural communities. The franchises are considered as trade-partners, business partners or associate distributors and act as company's representatives to run business activities in rural communities and based on the revenue sharing basis (Anderson and Kupp, 2008).

Case 4- Village Phone Program (MTN) - Uganda

The Village phone program (MTN) - Uganda is a replica of Grameen Telecom, Bangladesh aiming to provide telecommunication services at rural doorstep with affordable price and innovative products.

Major Stakeholders - The MTN village phone project is based on the partnership of six different stakeholders known as MTN Uganda, is one of the largest telecommunication service providers in Africa. The company initiated business development approach by establishing a partnership with Grameen Foundation, USA; MTN Publicom, is an associated company of MTN that provides public payphones, phone booths or fixed call boxes to ensure the access of communication requirements in urban Uganda; MTN Village Phone, a partnership between MTN-Uganda and Grameen Foundation-USA responsible to manage day-to-day operations of village phone program; Microfinance institutions, engaged as partnership with MTN Uganda to provide credit facilities to village phone operators through innovative offerings such as individual or group credit schemes with aim to alleviate poverty in Uganda. The micro credit and Micro Finance Institutions (MFIs) are the backbone of the Village phone project as they minimise the financial risk by facilitating sustainable finance and entrepreneurial infrastructure. The Village phone operators are the retailers who run

business in rural communities and deliver communication services to local community in lieu of return healthy retail margins (net monthly revenue potential is excess to US$31), develop community trust, acquire customers and source of authentic feedback from rural people. The Grameen Foundation USA- is a non-profit organization based in USA that provides business development support through technical skills and knowledge with aim to empower Uganda's poor people with access of financial services and information and communication technology (Keogh and Wood, 2005).

Success and Growth- The Village phone-Uganda provides benefits to all stakeholders involved in the model. Each stakeholder performs his own role to create win-win situation for all the stakeholders. The MTN-Uganda provides managerial support, the MTN-village phone provides airtime distribution, the Grameen Foundation USA facilitates business development support, and the VPOs acquire the business from local communities. The rural community is benefited not only with affordable and accessible telecommunication services but also benefited with social well-being through poverty reduction and new source of rural income. The number of village phone units has increased from 142 in 2003 to 9000 at the end of 2008.

4.2.1 Identification of Major Stakeholders in Rural Entrepreneurship

The success and feasibility of rural entrepreneurship in mobile telecom business depend on sustainability of all stakeholders involved in the model with their adequate performance and respective roles in direction to achieve overall objective of project (Table 4.2). The distinguished roles of stakeholders are imperative for developing strong partnership with aim to create win-win situation in the model. The major stakeholders involved in rural entrepreneurship have been identified on the basis of analyzing the initiatives of various global telecom service providers in rural markets and presented as follows-

1. **Mobile Telecom Operator-** A telecommunication company is responsible for building a consistent network infrastructure so as to provide reliable and quality network in rural areas. The service operator is also responsible for designing and implementing channel management practices for effective sales and distribution suitable in sparsely populated rural areas, identifying the needs of rural customers, developing rural entrepreneur as business partner, providing better services and building partnership with other stakeholders such as NGOs, financial institutions, and

cooperative societies to improve the access and reach of the telecommunication services in rural areas.

2. **Microfinance Agencies –** The microfinance institutions are important components in this model as they minimise the financial risk by providing sustainable financing and entrepreneurial infrastructure for developing business in rural areas. The microfinance agencies such as local bank, cooperative or Grameen banks in rural areas develop a sustainable rural entrepreneurship project by providing microcredit to rural people and also vet a feasibility of business plan in rural areas. The banks generate revenue by the interest of loan paid to rural entrepreneurs. Before delivering the credit to the rural people, the micro finance agencies also comprehend the scope of business in rural areas.

3. **Rural Entrepreneur-** The rural entrepreneurs act as local business partners appointed by telecom company with aim to facilitate telecom services in rural areas by providing affordable telecommunication to members of their community. As rural entrepreneurs acquaint with local language and knowledge hence, they establish a link between company and rural consumers. These small entrepreneurs facilitate the services in the local areas, acquire new customers, generate revenue from local communities, and also provide all local inputs to the service operator. The involvement of local people in this model is quite imperative to win community trust and community buy-in by establishing of non-traditional business partners.

4. **Local Community Members**- The local community members are highly benefitted due to accessibility and availability of telecom services at affordable price in their own areas. The access to information directly and indirectly benefits the rural people by facilitating them in getting touch in with rest of the world and thus helps in alleviating the poverty and inequality.

5. **Regulating Bodies or Govt Agencies**- It includes independent regulating bodies such as local, state or central government that protect the interest of all stakeholders and ensure the quality services at affordable price for rural markets with aim to bridge the digital divide in country by opening a path way for e-governance, and m- commerce programs to attain overall growth of rural economy.

Table 4.2 Distinguished Stakeholders in Rural Entrepreneurship

Sr. No.	Business Model/ Telecom Firm	Types and Role of Stakeholders				Beneficiaries
		Service Provider	Rural Entrepreneur	Microfinance Agencies	Regulating Bodies	
1.	Village Phone Program, Bangladesh	Grameen Telecom [Provides mobile infrastructure coverage to needed rural areas]	Village Phone Operators [Provides affordable telecom services to members of their community]	Grameen Bank [Provide loan to VPOs to start business in local areas]	Government [Ensure the delivery of affordable and quality services]	Customer Base [Local community members]
2.	Smart Communication Inc., Philippines	Smart Communication [Provides innovative products and services as per rural consumers needs and budget]	SIM Retailers [Performing the role of intermediaries as distributors]	Local Banks [Provided micro-finance to start the business]	Government & Associated Bodies [Decides quality standards in telecom services]	Improvised Rural Societies [Social well being through access of ICT]
3.	Celtel International, Nigeria	Celtel International- Mobile Telecom company [Wireless service operator]	Micro Enterprises [Rural Acquisition Initiative through Micro-franchises]	Government Bank [Provides credit facility]	Government and Associated Bodies [Ensure the delivery of quality and affordable services]	Rural Customers [Connectivity and sharing the information]
4.	MTN- Uganda	MTN Publicom	VPOs [Run	Microfinance	State and	Rural Customers

		[Provides public payphones, phone booths]	the business in local community and generate the revenue]	institutions [Provide credit to VPOs for purchasing equipments to run the business]	local government [Ensure the access of standardized telecom services]	Base [Access to affordable telecommunication]

Source: Literature Search

4.2.2 Designing an Inclusive Framework (Rural Entrepreneurship) for Rural Mobile Telecommunication Services

On the basis of most relevant literature and real case studies from global telecom players, the study provides a conceptual framework on rural entrepreneurship for telecom industry aiming to access the rural markets. The rural entrepreneurship model not only facilitates a separate distribution channel for rural mobile telecom services but also helps in community based economic development through networking, optimum utilization of resources and risk pooling to overcome the physical isolation and limited access to markets through developing unique linkages (Jasrai, 2013; Lee and Phan, 2008). The model facilitates inclusive growth through promoting entrepreneurship in rural areas aiming to create buying power and wealth among rural people rather than merely generating revenue from rural areas. The main stakeholders involved in the framework are mobile telecom operator or service provider, rural entrepreneur, micro-finance agencies, regulating bodies and customers (Figure 4.5). The partners involved in this model are interconnected to each other and entire task is shared among these multi-stakeholders, hence each stakeholder is equally responsible for quality service delivery and success of the model. The mobile telecom service provider is responsible for developing reliable and quality network, standardising the services, introducing innovative & customized offerings for tailor made solutions, identifying underserved or unmet customer needs, selecting rural entrepreneurs & giving them proper training and maintaining growth and sustainability of telecom business with rural partners. The micro-finance agencies (local banks, grameen banks or cooperative banks) provide financial assistance to rural entrepreneurs for purchasing the telecom equipments and to start-up other business activities. The funds provided by financial institutions are based on credit

rating of rural entrepreneurs, feasibility of business plan, potential of locality, and types of products and services being offered in the area. The rural entrepreneurship promotes direct sales agents, dealers, or franchisees through involvement of local people for running telecom business in rural communities with effective marketing and communication aiming to capture huge potential of rural areas. The rural entrepreneurs also provide proper feedback and sharing valuable information such as problems, opportunities, purchasing behaviour of rural consumers with the business organization. They are also responsible for collecting bills amount or usage charges from rural customers and repay the loan to financial institution for maintaining the continuity of business. At last but not the least, the end consumers in this model are members of rural communities those are benefitted by valuable products & services at affordable price and access of information and communication technology (ICT). The flow of revenue and investment among different stakeholders involved in this model are represented by a particular pattern and give important insights about rotation of money and continuity of the business model. Initially the directions of investment flows are headed towards rural entrepreneurs from both mobile telecom service providers and micro-finance agencies. The mobile telecom service providers initially bear all operational and infrastructural costs and also invest in promotional mix expenses for effective communication and marketing activities in rural areas. The micro-finance agencies give credit to rural entrepreneurs and earn revenue in the form of interest amount during repay of loan from the borrowers (rural entrepreneurs). The micro-finance partner also receives ongoing revenue from a share of airtime sales as per the agreement in the partnership. The revenue of rural entrepreneurs is derived on the basis of selling phone airtime for calls to rural people. They also earn revenue by selling products and services to rural communities and other non-airtime sources such as from solar recharge facility and from message delivery. The smooth functioning of business model depends on the constant flow of revenue and investment among all the partners aiming to create win-win position.
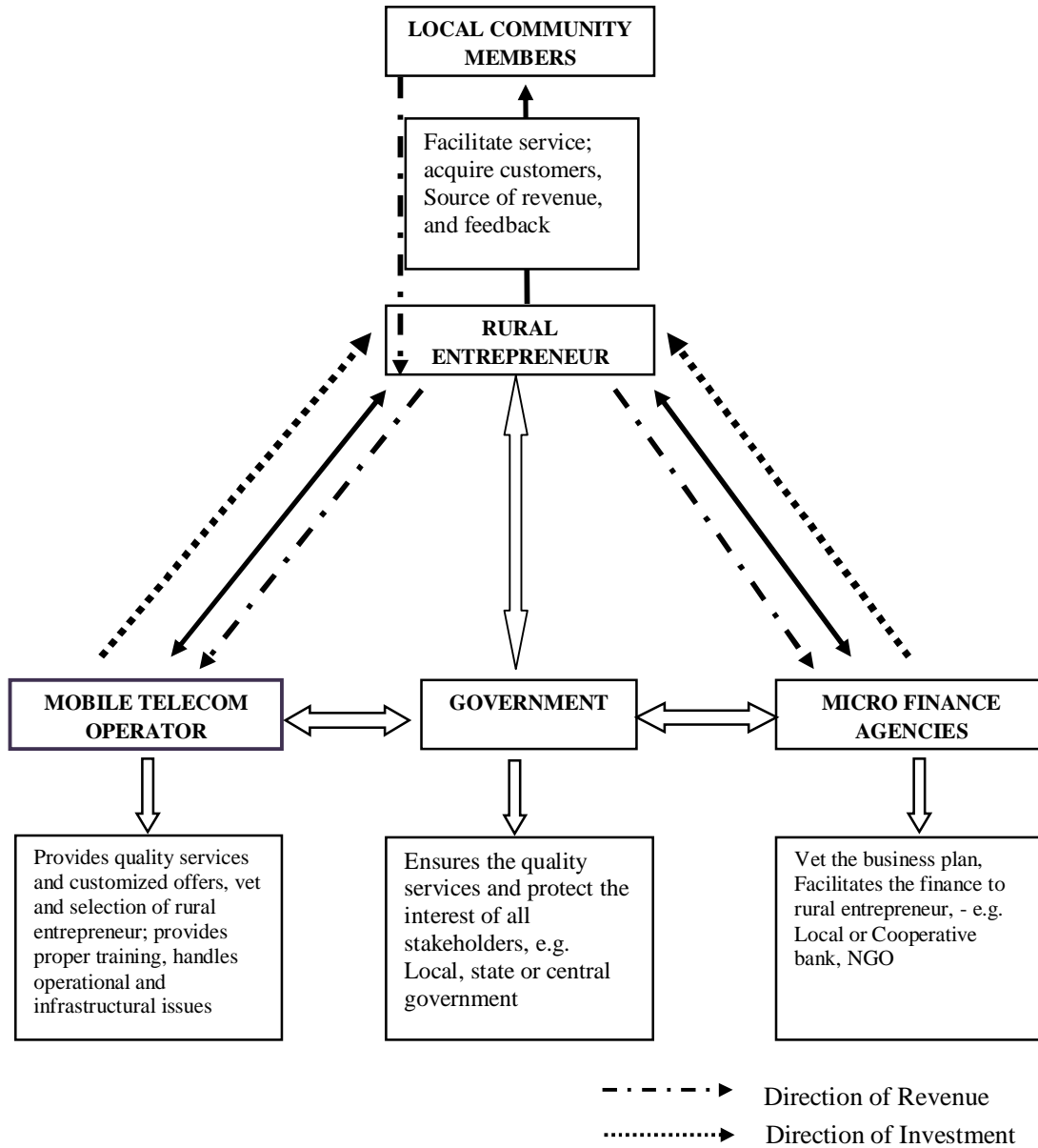
LOCAL COMMUNITY MEMBERS

Facilitate service; acquire customers, Source of revenue, and feedback

RURAL ENTREPRENEUR

MOBILE TELECOM OPERATOR

GOVERNMENT

MICRO FINANCE AGENCIES

Provides quality services and customized offers, vet and selection of rural entrepreneur; provides proper training, handles operational and infrastructural issues

Ensures the quality services and protect the interest of all stakeholders, e.g. Local, state or central government

Vet the business plan, Facilitates the finance to rural entrepreneur, - e.g. Local or Cooperative bank, NGO

- · - · - ▶ Direction of Revenue
··············▶ Direction of Investment

Fig. 4.5 Framework of Rural Entrepreneurship for Mobile Telecom Services

4.2.3 Significance of Rural Entrepreneurship for Rural Mobile Telecom Services

Instead of substantial growth in mobile telecom service industry since last decade, the continuous fall in Minutes of Usage per subscriber per month (MOU) from 496 minutes to 359 minutes during 2008 to 2012, declining average revenue per user per month from INR 396 to INR 98 during 2004 to 2013, continuous fall in voice tariffs, intense competition, and saturated urban teledensity compel marketers to identify and serve rural areas considering as potential target market (Cellular Operators Association of India, 2013). In current situation, the role of telecom service providers is very crucial to attain the vision of National Telecom Policy-2012, targeting to achieve the current level of rural teledensity from 39 per cent to 70 per cent by the end of 2017 and 100 per cent by the year 2020. To ensure availability, acceptability, affordability and awareness of telecom products and services in rural area, it is imperative to overcome the plethora of challenges in rural area such as insufficient infrastructure, improper supply chain mechanism, lack of technical skills & knowledge and low population density. Hence, it is high time to formulate and implement relevant rural marketing strategy aiming to fulfil inclusive growth to ensure economic development, empowering rural people, developing community trust, generating wealth among rural people. In this direction, the rural entrepreneurship could be considered as an alternative business model for improving the access of telecom services in rural areas.

4.3 Evaluating Rural Satisfaction and Preferences Towards Mobile Telecom Services

This section of the study stresses on assessing the satisfaction and preferences towards mobile telecom services for tailor-made local solutions for rural consumers. Both descriptive and inferential analyses have been used to achieve this particular objective of the study. The set of questions included in 'Part-A' of the questionnaire have been used for the analysis and findings are presented in the following headings-

4.3.1 Evaluating Current Usage Pattern of Mobile Telecom Services

The current usage pattern of mobile telecom services among rural consumers has been analyzed through descriptive statistics by computing frequency calculations, whereas, satisfaction and preferences have been analyzed through parametric test procedure. The results of descriptive statistics for various parameters like current service provider, duration

of using mobile phones, change of mobile service provider, monthly average expenditure, and type of maximum calls are presented as follows-

Table 4.3 Current Usage Pattern of Mobile Telecom Services

Sr. No.	Parameters	Categories	Frequency (Out of 600*)	Percentage
		Current Usage Pattern		
1.	Current Mobile Telecom Service Provider	**Bharti Airtel**	**212**	**35.3**
		Vodafone	89	14.8
		Tata Comm.	42	7.0
		BSNL	69	11.5
		Aircel	34	5.7
		Idea	130	21.7
		Reliance	9	1.5
		Videocon	15	2.5
		Uninor	0	0
2.	Mode of Service	**Pre-Paid**	**593**	**98.8**
		Post-Paid	7	1.2
3.	Duration of Using Mobile Phone	Up to 2 years	103	17.2
		2-4	74	12.3
		4-6	**139**	**23.2**
		6-8	**134**	**22.3**
		8-10	81	13.5
		More than 10 Years	69	11.5
4.	Change Mobile Service Provider	**None**	**316**	**52.7**
		One Time	99	16.5
		Two Times	110	18.3
		Three Times	54	9.0
		Four Times	19	3.2
		Five Times	1	0.2
		More than Five	1	0.2
5.	Monthly Average Expenditure (INR)	**Up to 200**	**228**	**38.0**
		201-400	110	18.3
		401-600	113	18.8
		601-800	59	9.8
		801-1000	50	8.3
		More than 1000	40	6.7
6.	Types of Maximum Calls	**Local Only**	**304**	**50.7**
		STD Only	65	10.8
		Local & STD Both	189	31.5
		ISD Only	42	7.0

*Total sample size

Table 4.3 reveals that maximum rural consumers (35%) were subscribed with Bharti Airtel followed by Idea Cellular (21%) and Vodafone (15%), along with this, almost all the consumers (98%) were using pre-paid mode of connection. A majority of consumers (45%) had been using mobile phone from the last 4 to 8 years (4 to 6 years- 23% and 6 to 8 years- 22%) followed by 17% from 'up to 2 years' and 12% from 2 to 4 years. The statistics regarding change of mobile telecom service provider reveal that majority of consumers (52%) had not changed their mobile telecom service providers, and around 16% of consumers had changed at once, whereas 19% of consumers had changed their mobile service providers at two times till the survey. The statistics also reveal that majority of the consumers (38%) spend up to Rs. 200 as monthly average expenditure on mobile telecom services followed by Rs. 401-600 (18% of customers) and it is also worth noting that maximum consumers (50%) use local calls only for the communication purpose.

4.3.2   Demographic Profile of Rural Customers

Table 4.4 reveals that 60.8% respondents are male, whereas 39.2% are female consumers. It is also revealed that maximum consumers with age profile of 20-30 years (25.8%), followed 40-50 years (22.7%), 30-40 years (20.5%), less than 20 years (17.5%) and more than 50 years (13.5%). The statistics regarding education level of consumers reveal that majority of the respondents (26.0%) with high school, followed by illiterate (19.2%), middle school (13.8), primary school (13.2%), graduate (12.3%), diploma (10.5%) and PG (4.3%). The table also shows that majority of consumers were engaged in non-agricultural occupation (26.7%), followed by agricultural (23.0%), salaried and labour (12.5 %). The statistics regarding monthly household income of consumers indicate that maximum of the respondents belong to the income group of 2001-5000 INR (26%) followed by 5001-1000 INR (27.3%) in the sample.

Table 4.4 Details of Customer Profile

Sr. No.	Profile	Categories	Frequency (Out of 600*)	Percentage
	Demographic Profile			
1.	Gender	**Male**	**365**	**60.8**
		Female	235	39.2
2.	Age (Years)	Less than 20	105	17.5
		20-30	**155**	**25.8**
		30-40	123	20.5
		40-50	136	22.7
		More Than 50	81	13.5
3.	Education Level	Illiterate	119	19.8
		Primary School	79	13.2
		Middle School	83	13.8
		High School	**156**	**26.0**
		Diploma	63	10.5
		Graduate	74	12.3
		PG	26	4.3
		Others	___	___
4.	Marital Status	**Married**	**400**	**66.7**
		Unmarried	200	33.3
		Others (Single)	___	___
5.	Primary Occupation	Regular Salary	75	12.5
		Self Employment in agriculture	138	23.0
		Labour	75	12.5
		Self Employment in Non-Agriculture	**160**	**26.7**
		Students	105	17.5
		House Wife	47	7.8
6.	Monthly House Hold Income (INR)	Up to 2000	83	13.8
		2001-5000	**156**	**26.0**
		5001-10000	104	17.3
		10001-15000	164	27.3
		15001-20000	55	9.2
		More than 20000	38	6.3

*Total sample size

4.3.3 Preferences for Selecting Mobile Telecom Service Provider

The preferences for selecting a particular mobile telecom service provider have been analyzed on the basis of frequency calculation. The ranking (from 1 to 10) for each parameter has been given from all the respondents for ten different parameters. The preference for each parameter either high or low has been ascertained on the basis of rank given by all the respondents and used in finding out the common opinion of respondents towards identifying the preferences for selecting the telecom services. It has been observed that respondents have given first rank to 'strong and reliable network', followed by 'reference of family/friends' and 'communication clarity' as second and third rank respectively for selecting the telecom services. The other parameters such as 'customer care service' and 'promotional offers' are at 8th rank, whereas the 'advertisement' and 'variety of tariff plans' are at 6th and 7th rank respectively. It is also important to note that 'value added service', 'brand reputation' and 'celebrity endorsement' are the least preferred parameters with 10th rank (Table 4.5).

Table 4.5 Ranks for Parameters for Selecting Mobile Telecom Services

Preferences for Selecting Mobile Telecom Service Providers										
Ranking ⟶										
Parameters↓	1	2	3	4	5	6	7	8	9	10
Strong and reliable network	**164***	152	109	62	46	27	15	15	8	2
Communication quality	83	135	**185***	110	37	17	12	5	13	3
Advertisement	29	18	69	96	91	**98***	64	61	57	17
Customer care service	18	50	38	19	80	89	83	**114***	78	31
Variety of tariff plans	26	17	44	41	46	76	**115***	100	76	59
Promotional offers	40	64	28	44	72	32	82	**106***	80	52
Reference of family/friends	147	**168***	91	37	29	9	32	18	36	33
VAS	13	18	12	44	48	64	82	69	122	**128***
Brand reputation	18	6	7	54	82	68	71	60	94	**140***
Celebrity endorsement	39	29	15	67	43	82	41	85	71	**128***

*Rank preference for respective quality parameter

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4.3.4 Satisfaction and Preference towards Need & Interest, Importance and Usage of Mobile -Value Added Services

The following section stresses on examining the satisfaction and preferences for mobile telecom services by addressing various parameters like identifying utmost need and interest of using mobile phones, importance & usage of mobile-value added services (m-VAS), identifying major barriers affecting adoption & continuity of mobile telecom services, measuring customer satisfaction towards service quality parameters, after sales services, customer care services and customer loyalty. The univariate analysis has been used to make inferences about the target population on the basis of sample statistics. As the sample size is greater than 30, and standard deviation (population parameter) is unknown to the researcher, hence hypothesis test procedure used in the study is based on mean score that utilizes t-distribution. The 5- points Likert type scales with the response anchors (level of importance, frequency, level of affect, level of satisfaction, and level of likelihood) have been used in the survey. As hypothesis testing procedure used in analysis is based on one-tailed test, hence p-values computed by statistical software have been divided by 2 and then compared with 5 per cent level of significance (95% confidence interval) for taking the decisions (Carver and Nash, 2012).

a) Need and Interest for Using Mobile Phone

The responses to identify need and interest for using mobile phones have been measured on 5-point Likert scale, anchored with '1= not at all important' to '5= very important' and assumed to be interval scale i.e. a scale in which the numbers are used to rate the objects such that numerically equal distances related to characteristics being measured (Malhotra and Dash, 2011). The hypothesis testing procedure by using 'one sample T-test' based on single population mean has been used for statistical analysis. One tailed test or directional test that places entire probability of an unlikely outcome into tail, specified by alternative hypothesis has been used for making the decision. The eight distinct functions related to need and interests for using mobile phone have been examined on the basis of specific hypotheses. The desired level of significance has been taken as 5% in the analysis and probabilistic values (p-values) that are computed by most statistical softwares have been used for the decision rules. The p-value is the probability of observing sample values as extreme as, or more extreme than, the value actually observed, given that null hypothesis is true. The p-value is compared to the significance level (α), for rejecting or accepting the null hypothesis. The decision rule is based on the principle that, if p-value $<\alpha$, reject the null and if p- value $> \alpha$, accept null

hypothesis (Cooper, Schindler and Sharma, 2013). The statistical software SPSS has been used in the analysis with test value of 2.5 (the value decided on the basis of null hypothesis) during one-sample T-test. The test statistics for all the functions of need and interests are presented as follows-

Table 4.6 Test Statistics for Functions of Need and Interest

Functions for Need and Interest	t-Value	Sig.(1-tailed)	Mean	Mean Difference	Decision	Results
Emergency Function	24.95	.000	3.74	1.24	Reject H_0	Significant
Keep in Touch	21.09	.000	3.61	1.11	Reject H_0	Significant
Business Activities	12.14	.000	3.17	.67	Reject H_0	Significant
Agricultural Information	-.090	.464	2.49	-.005	Accept H_0	Insignificant
Style and Status	-.088	.465	2.49	-.005	Accept H_0	Insignificant
Entertainment	12.29	.000	3.24	.746	Reject H_0	Significant
Cheapest Comm.	7.78	.000	2.96	.460	Reject H_0	Significant
Financial Transactions	.43	.331	2.52	.021	Accept H_0	Insignificant

The hypothesis for various functions of need and interest is 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 insignificant 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 significant for rural consumers]

The decision for above mentioned hypothesis has been taken on the basis of p-values at 5 per cent level of significance. The Table 4.6 indicates that the p-values associated with 'one-sample T-test' are less than 0.05 (at 5% level of significance) for 'emergency function' (p<0.000), 'keep in touch with family members' (p<0.000), 'business function' (p<0.000), 'entertainment function' (p<0.000), and 'cheapest source of communication' (p<0.000), hence we reject the null hypotheses for these functions and conclude that these functions are significant with respect to need and interests for using mobile phones, whereas the p-values found more than 0.05 (at 5% level of significance) for 'information availing function' (p>0.464), 'style and status' (p>0.465), and 'financial transaction function' (p>0.331), hence we accept the null hypotheses for all these functions and conclude that these functions are insignificant with respect to need and interest for using mobile phones.

b) Assessing the Importance of m-VAS

To examine the importance of VAS in mobile telecom services the responses have been measured on 5-point Likert scale anchored with '1= not at all important' to '5= very important' and assumed to be interval scale (metric data). The hypothesis testing procedure by using 'one sample T-test' with test value of 2.5 has been used for statistical inferences to assess the importance of value added services in mobile telecom services. The statistics of 'one sample T-test' for nine distinct value added services are presented as follows-

Table 4.7 Test Statistics for Importance of VAS

Value Added Services	t-Value	Sig. (1-tailed) *	Mean	Mean Difference	Decision	Results
SMS	9.066	.000	3.10	.60167	Reject H_0	Significant
MMS	-13.854	.000	1.85	-.64667	Reject H_0	Significant
Financial transactions	-4.321	.000	2.26	-.23500	Reject H_0	Significant
Educational	-1.155	0.124	2.43	-.06833	Accept H_0	Insignificant
Treatment support	-1.896	.029	2.39	-.10167	Reject H_0	Significant
Local new	1.876	.030	2.60	.10935	Reject H_0	Significant

Agricultural	11.693	.000	3.19	.69699	Reject H_0	Significant
Ringtones	14.031	.000	3.38	.88397	Reject H_0	Significant
Internet	9.454	.000	3.13	.63167	Reject H_0	Significant

*p-values divided by 2

The hypothesis to examine the importance of mobile value added services is expressed as-

Null H_{02}**: μ≤ 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 insignificant for rural consumers]

Alternative H_{A2}: **μ >2.5**   [The various VAS related to mobile telecom services like SMS, MMS, financial transactions, educational information, diagnostic and treatment support, availing local and regional news, availing agricultural information, ringtones and internet are significant for rural consumers]

The decision for above mentioned hypothesis has been taken on the basis of p-values at 5 per cent level of significance. The p-values of 'one-sample T-test' for all the value added services are examined separately for taking the decisions. The table 4.7 indicates that the p-values are less than 0.05 (at 5% level of significance), for 'SMS' (p<0.000), 'MMS' (p<0.000), 'financial transaction services' (p<0.000), diagnostic and treatment support' (p<0.029), 'agricultural availing services' (p<0.000), 'entertainment'(p<0.000), 'internet services' (p<0.000), and 'availing local and regional news' (p>0.03), hence we reject the null hypothesis for all these services and conclude that these VAS are significant with respect to their importance, whereas the p-values are found more than 0.05 for only 'educational' value added services (p>0.124), hence we accept the null hypothesis and conclude that education availing service is insignificant with respect to the importance for rural consumers.

c)   **Assessing the Usage Pattern of Value Added Services**

To examine the usage of VAS, the responses have been measured on 5-point Likert scale anchored with '1= never use' to '5= very often' and assumed to be interval scale. The univariate test statistics for nine distinct mobile value added services with respect to usage have been computed by applying 'one sample T-test' with a test value of 1.5 (based on null hypothesis) and the results are shown as below-

Table 4.8 Test Statistics for Usage of VAS

Value Added Services	t-Value	Sig. (1-tailed) *	Mean	Mean Difference	Decision	Results
SMS	16.762	.000	2.44	.94	Reject H_0	Significant
MMS	2.128	0.017	1.57	.07	Reject H_0	Significant
Financial Transaction	-1.139	0.127	1.46	-.03	Accept H_0	Insignificant
Educational	1.253	0.105	1.54	.04	Accept H_0	Insignificant
Treatment	-.352	0.362	1.48	-.01	Accept H_0	Insignificant
Local news	16.815	.000	2.34	.84	Reject H_0	Significant
Agricultural	13.848	.000	2.11	.61	Reject H_0	Significant
Ringtones	18.756	.000	2.48	.98	Reject H_0	Significant
Internet	8.643	.000	2.01	.51	Reject H_0	Significant

*p-values divided by 2

The hypothesis to examine the usage for VAS is expressed as-

Null H_{03}: $\mu \leq 1.5$ (The VAS like SMS, MMS, financial transactions, educational information, diagnostic and treatment support, availing local and regional news, availing agricultural information, ringtones and internet are never used by rural consumers)

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

The Table 4.8 indicates that the p-values associated with 'one sample T-test' are less than 0.05 (at 5% level of significance) for 'SMS' (p<0.000), 'MMS' (p<0.017), 'availing local and regional news' (p<0.000), 'availing agricultural information'(p<0.000), 'entertainment' (p<0.000), and 'internet' (p<0.000), hence we reject the null hypothesis for all these value added services and conclude that these VAS are significant with respect to usage, whereas the p-values found more than 0.05 (at 5% level of significance) for 'financial transactions'

(p>0.127), 'availing educational information' (p>0.105), and 'diagnostic and treatment support' (p>0.362), hence we accept the null hypotheses for all these services and conclude that these VAS are insignificant with respect to the usage by rural consumers.

d) Barriers Affecting Adoption and Continuity of Mobile Telecom Services

To identify the major barriers affecting adoption and continuity of mobile telecom services, the responses have been measured on 5-point Likert scale anchored with '1= Not at all affect' to '5= very affect' and assumed to be interval scale (metric data). The nine major barriers have been examined by applying 'one sample T-test' with a test value of 2.5 and the test are shown as below-

Table 4.9 Test Statistics for Major Barriers Affecting Mobile Telecom Services

Major Barriers	t-Value	Sig. (1-tailed) *	Mean	Mean Difference	Decision	Results
Lack of connection	.459	0.323	2.52	.026	Accept H_0	Significant
Weak network	9.622	.000	3.06	.561	Reject H_0	Insignificant
High call rate	13.312	.000	3.26	.760	Reject H_0	Significant
Unfit tariff	10.130	.000	3.09	.590	Reject H_0	Significant
Lack of information	13.152	.000	3.23	.733	Reject H_0	Significant
Unable to understand	3.452	.001	2.69	.196	Reject H_0	Significant
Unavailability recharge	4.464	.000	2.76	.261	Reject H_0	Significant
Talk time validity	-2.123	0.123	2.56	.061	Accept H_0	Insignificant
Lack of after sales service	4.017	.000	2.72	.221	Reject H_0	Insignificant

*p-values are divided by 2

The hypothesis to examine major barriers affecting mobile telecom services is expressed as-

Null H_{04}: $\mu \le 2.5$ (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 effect adoption and continuity of mobile telecom services)

Alternative H_{A4}: **μ >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 significantly effect adoption and continuity of mobile telecom services)

The decision for above mentioned hypothesis has been taken on the basis of p-values at 5 per cent level of significance. The p-value associated with 'one-sample T-test' for all barriers are examined separately for taking the decisions. The Table 4.9 indicates that the p-values associated with 'one- sample T-test' are less than 0.05 (at 5% level of significance) for 'weak network' (p<0.000), 'high call rate' (p<0.000), 'unfit tariff plan' (p<0.000), 'lack of information for latest offers'(p<0.000), 'lack of recharge facility' (p<0.000), and 'lack of after sales services' (p<0.000), hence we reject the null hypothesis for these barriers and conclude that they significantly affect adoption and continuity of mobile telecom services, whereas the p-values have found more than 0.05 (at 5% level of significance) for 'lack of connection' (p>0.323), and 'unfit talk time validity' (p>0.123), hence we accept the null hypothesis and conclude that these barriers do not affect adoption and continuity of mobile telecom services in rural areas.

e) Measuring Service Quality

To assess the satisfaction regarding service quality parameters in mobile telecom services, the responses have been measured on 5-point Likert scale anchored with '1= highly dissatisfied' to '5= highly satisfied' and assumed to be interval scale (metric data). The univariate test statistics for eleven dimensions of service quality parameters in mobile telecom services have been computed by applying 'one sample T-test' with test value taken as 2.5 (based on null hypothesis) and the results are shown as follows-

Table 4.10 Test Statistics for Service Quality Parameters

Features	t-Value	Sig. (1-tailed) *	Mean	Mean Difference	Decision	Results
Network coverage	.34	0.36	2.52	.020	Accept H_0	Insignificant
Reliability	-1.69	0.45	2.40	-.095	Accept H_0	Insignificant
Signal strength	1.25	0.10	2.56	.068	Accept H_0	Insignificant
Establishment connection	16.24	.000	3.34	.841	Reject H_0	Significant
Completed calls	17.54	.000	3.34	.841	Reject H_0	Significant
Call set up time	14.41	.000	3.24	.741	Reject H_0	Significant
Connectivity at peak hours	5.64	.000	2.79	.291	Reject H_0	Significant
Clarity communication	.18	0.453	2.51	.010	Accept H_0	Insignificant
Accessibility of calls	19.27	.000	3.41	.910	Reject H_0	Significant
Talk time denomination	8.82	.000	2.94	.441	Reject H_0	Significant
Validity	19.80	.000	3.42	.921	Reject H_0	Significant

*p-values divided by 2

The hypothesis to examine the satisfaction for service quality parameters for mobile telecom services is 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]

The decision for above mentioned hypothesis has been taken on the basis of p-values at 5 per cent level of significance. The p-value associated with 'one-sample T-test' for all service parameters have been examined separately. The table 4.10 indicates that the p-values associated with 'one- sample T-test' are less than 0.05 (at 5% level of significance) for 'establishment connection time' (p<0.000), 'no. of completed calls' (p<0.000), 'call set up time' (p<0.000), 'connectivity at peak hours'(p<0.000), 'accessibility of calls' (p<0.000), and 'talk time denomination' (p<0.000), and 'validity'(p<0.000), hence we reject the null hypothesis for these dimensions and conclude that consumers are satisfied with these services, whereas the p-values more than 0.05 (at 5% level of significance) have been found for 'network coverage' (p>0.36), 'reliability' (p>0.45), 'signal strength'(p>0.10), and 'clarity of communication' (p>0.453), hence we accept the null hypotheses for these services and conclude that rural consumers are not satisfied with these quality dimensions.

f) Measuring After Sales Services

To assess the satisfaction regarding after sales services in mobile telecom services, the responses have been measured on 5-point Likert scale anchored with '1= highly dissatisfied' to '5= highly satisfied' and assumed to be interval scale (metric data). The univariate test statistics for five dimensions of after sales services have been computed by applying 'one sample T-test' with test value of 2.5 and the results are shown as follows-

Table 4.11 Test Statistics for After Sales Service Quality

After Sales Services	t-Value	Sig. (1-tailed)*	Mean	Mean Difference	Decision	Results
Combinations of plans	.71	0.236	2.53	.03	Accept H_0	Insignificant
Various modes of payment	8.30	.000	2.94	.44	Reject H_0	Significant
Recharge coupons	1.19	0.116	2.56	.06	Accept H_0	Insignificant
Regular information	13.79	.000	3.22	.72	Reject H_0	Significant
Safe custody	12.90	.000	3.12	.62	Reject H_0	Significant

*p-values divided by 2

The hypothesis to examine the satisfaction for after sales service is expressed as-

Null H_{06}: **μ ≤ 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 application of safe custody]

Alternative H_{A6}: **μ >2.5**   [The rural consumers are satisfied with availability of different combination of plans, availability of various modes of payment, availability of recharge coupons, regular information, and application of safe custody]

The decision for above mentioned hypothesis has been taken on the basis of p-values at 5 per cent level of significance. The p-value associated with one-sample T-test for various dimensions of 'after sales service quality' have been examined separately for making inferences about target population. The Table 4.11 indicates that the p-values associated with 'one- sample T-test' are less than 0.05 (at 5% level of significance) for 'availability of various modes of payment' ($p<0.000$), 'regular information' ($p<0.000$), and 'application of safe custody' ($p<0.000$), hence we reject the null hypothesis for these dimensions and conclude that consumers are satisfied with these services, whereas the p-values more than 0.05 (at 5% level of significance) have found for 'availability of different combinations of Plans' ($p>0.236$), 'availability of recharge coupons' ($p>0.116$), hence we accept the null hypothesis for these dimensions and conclude that consumers are not satisfied with these services.

g) *Measuring Customer Care Services*

To measure the satisfaction regarding customer care services in mobile telecom, the responses have been acquired on 5-point Likert scale anchored with '1= highly dissatisfied' to '5= highly satisfied' and assumed to be interval scale (metric data). The univariate test statistics for five dimensions of customer care services in mobile telecom have been computed by applying 'one sample T-test' with test value of 2.5 and the results are shown as follows-

Table 4.12 Test Statistics for Customer Care Services

Parameters for Customer Care Service	t-Value	Sig. (1-tailed) *	Mean	Mean Difference	Decision	Results
Counter service	16.79	.000	3.31	.81	Reject H_0	Significant
Prompt assistance	16.25	.000	3.28	.78	Reject H_0	Significant
Response during complaint handling	1.02	0.135	2.55	.05	Accept H_0	Insignificant
Time spend for resolving the complaint	17.54	.000	3.34	.84	Reject H_0	Significant
Satisfaction on decisions	18.19	.000	3.42	.92	Reject H_0	Significant

*p-values divided by 2

The hypothesis to examine the satisfaction for customer care services is 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 spent for resolving the complaint, satisfaction on decision]

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, satisfaction on decision]

The decision for above mentioned hypothesis has been taken on the basis of p-values at 5 per cent level of significance. The p-value associated with 'one-sample T-test' for various dimensions of 'customer care services' have been examined separately for making the inferences about target population. The Table 4.12 indicates that the p-values associated with 'one- sample T-test' are less than 0.05 (at 5% level of significance) for 'counter service' (p<0.000), 'prompt assistance' (p<0.000), 'time spend resolving the complaint' (p<0.000), and 'satisfaction on decisions'(p<0.000), hence we reject the null hypothesis for these dimensions and conclude that consumers are satisfied with these dimensions, whereas the p-values more than 0.05 (at 5% level of significance) have found only for 'response during complaint handling' (p>0.135), hence we accept the null hypotheses for this dimension and conclude that consumers are not satisfied with this quality dimension.

h) *Measuring Customer Loyalty*

To measure customer loyalty the responses have been acquired on 5-point Likert scale anchored with '1= extreme unlikely' to '5= extreme likely' and assumed to be interval scale (metric data). The univariate test statistics for four dimensions of customer loyalty in mobile telecom services have been computed by applying 'one sample T-test' with test value of 2.5 and the results are shown as follows-

Table 4.13 Test Statistics for Customer Loyalty

Customer Loyalty	t-Value	Sig.(1-tailed)	Mean	Mean Difference	Decision	Results
Choose same service again	12.15	.000	3.29	.79	Reject H_0	Significant
Recommend others	17.49	.000	3.36	.86	Reject H_0	Significant
Sharing experience	16.62	.000	3.32	.82	Reject H_0	Significant
Likeliness to switch	5.95	.000	2.85	.35	Reject H_0	Significant

*p-values divided by 2

The hypothesis to examine the customer loyalty in mobile telecom services is expressed as-

Null H_{08}: $\mu \le 2.5$ [The rural consumers do not like to choose same telecom service again and recommend to others, do not share the experiences and rarely do they switch over 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]

The decision for above mentioned hypothesis has been taken on the basis of p-values at 5 per cent level of significance. The p-value associated with 'one-sample T-test' for various dimensions of 'customer loyalty' have been examined separately for making the inferences about target population. The table 4.13 indicates that all the p-values associated with 'one-sample T-test' are less than 0.05 (at 5% level of significance), hence we reject the null hypothesis for all these dimensions and conclude that rural consumers like to choose same telecom service again, recommend others, share the experience to others and reluctant to switch for another telecom service.

4.4 Integrated Framework for Rural Mobile Telecom Services

The findings related to objective of designing a conceptual framework of Public-Private Partnership (PPP) for mobile telecom services in rural areas are based on extensive literature search related to PPP in general and for telecom services particular. The literature review has been done by referring to the most relevant articles, prescribed text books of rural marketing, research articles of business management and from official websites. The various initiatives of PPP in telecommunication sectors such as Government's Universal Service Obligation Funds (USOF), Common Service Center Program (Gulati, 2007); Oregon telecommunication (2003); the Rural Service Center by Viom Network (2011); the Peru's PPP telecommunication project; The Bangladesh Village Phone Program (Islam, 2005) have been studied to design the proposed framework. The PPP refers to a project based on contract or concession agreement, between government body or statutory entity on one side and a private sector company on the other side for delivering an infrastructure service on payment of user charges (Asian Development Bank, 2006). The partnership facilitates capital inflows, technological & managerial innovations from private sector and socio-economic facilities from the public sector. This partnership can be generated between government body and one or more private players. The purpose of this partnership is to provide better quality public services at affordable prices and to improve the access and reach of services for public in general and for rural population in particular. It creates a win-win situation for government and private players by sharing the risk and rewards of the venture and acts as an innovative tool for remedying the traditional public services (Jasrai, 2013 and Jamali, 2004). The major activities involved in the PPP model are the operational and financial management, developing infrastructure facilities for improving the access of public services and formulation & implementation of terms and conditions for successful succession. The success of this model depends on mutual trust among the partners, higher the trust among the stakeholders, greater will be the formal coordination among the partners.

4.4.1 Designing a Conceptual Framework of PPP for Rural Mobile Telecom Services

The proposed framework of public-private partnership for mobile telecom services in rural areas consists of three stakeholders namely public, private and society. The public entity provides financial support for model aiming to provide inclusive growth and alleviates economic sustainability by enabling mobile telecom services at affordable price. Private bodies provide state-of-the-art technology, technical expertise and offer customized mobile

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solutions for improving the livelihood of rural people. The telecom service providers, value added service providers; mobile virtual network operators can be included in the model as private bodies to deliver better services. Before implementing the PPP in telecommunication services, the problems as well as opportunities must be identified in rural areas for better results. The PPP opens a pathway to attract domestic or foreign telecommunication players to invest in telecom sector aiming to improve the access of telecom services in rural areas on the basis of optimum utilization of resources, using modern technology and better project designs. It is high time to capture the untapped rural potential as the telecom industry is facing sluggish growth due to continuous decline of Minutes of Use per subscriber per month (MOU) and average revenue per user per month. The MOU has declined by around 17.6 % from 462 to 369 during 2007 to 2010 and 4.4 % from 612 to 585 from 2011 to 2012. The ARUP in GSM services continuously dropped by around 70% from INR 462 per subscriber per month to INR 369 per subscriber per month during 2005 to 2013, whereas for CDMA services, it has dropped by around 62% from INR 256 per subscriber per month to INR 95 per subscriber per month during the same period (Annual Report- COAI, 2013). The PPP model should be initiated by government to implement the partnership with private telecom players representing as a source of expertise aiming to improve the accessibility of telecom services as door step of rural people. As the mobile phone users in rural areas are continuously increasing, hence the purpose of PPP is to expand the wireless services in rural areas with subsidized rate with aim to increase rural teledensity from the current level of around 39 to 70 by the year 2017 and 100 by the year 2020 (National Telecom Policy, 2012). The conceptual framework of PPP in telecommunication has been designed on the basis of studying most relevant PPP projects in telecommunication sector such as Village Phone Programme, Bangladesh; Peru's PPP Project; Viom's Rural Service Centre, Noida, India; depict the structure of partnership between government and private telecom operators coupled with their individual roles to ensure the project efficiency and effectiveness. The government acts as a supervising authority that provides substantial technical, managerial and monitoring supports to private players involved in the partnership. The government can be initiated this partnership by inviting private telecom players (domestic as well as foreign national) through least cost subsidy auction method and decides the funds for establishing telecom infrastructure facilities in rural areas. The amount of the subsidy out of the funds will be given on the basis of competitive bids from all the called telecom players. The lowest amount of subsidy proposed by the telecom service provider can be considered one of the influential factors to win the bidding process. After implementing the PPP, the grant of

subsidies for selected telecom service provider will be based on the periodic assessment of progress of project, timing, period of instalments and overall performance of the telecom partner. The success of model depends on the partnership deed between the government and private players. The partnership deed clearly depicts the type of partnership among the stakeholders such as BOT (build, operate, and transfer), BOOT (build, own, operate, and transfer), BOO (build, own and operate), BT (build and transfer), or BBO (buy, build and operate); disclosure of financial and operating risks, tenure of partnership, standards of installing telecommunication services, tariff structure, service quality, key performance criteria, and penalty norms in case of lack of performance. In this partnership, the telecom company is responsible for affordability, availability, acceptability and creating awareness of telecom services at door step of the rural population. This partnership also opens a pathway for local or state government aiming to acquire the land for establishing BTS (Base Transceiver Station) as well as promoting the e-education, e-governance, and e-health programs in rural areas. This PPP model creates win-win situation for the stakeholders involved in the partnership; the remotest rural people or public will be benefited by availing quality telecom services at affordable price, and can access basic financial services (mobile banking, mobile transactions), medical facilities (telemedicine, diagnostic treatment support and digital prescription), and e-governance (information about agri-commodity prices, land registration, mandi rates); the government can achieve his vision to bridge digital divide through wide range of telecom services aiming to enhance rural literacy and financial inclusion; and the private players can avail long term business opportunity by making the investment in telecommunication as high potential sector to serve huge rural population base of the country. The roles of private and public players involved in PPP model are presented as follows (Table 4.14).

Table 4.14 Stakeholders Involved in PPP

S. No.	Public Entity (Government)	Private Entity (Telecom Players)
1	Central, State or Local government	Telecom service providers, value added service providers; mobile virtual network operators
2.	Acts as a supervising and controlling body for smooth functioning	Facilitates state-of-the-art technology, and technical expertise
3.	Facilitates financial support for the continuity of the model	Provides secure, reliable, and affordable quality telecom services
4.	Substantial technical, managerial and monitoring supports	Strengthen the delivery of customized telecom products in rural areas
5.	Accountable for succession of the PPP model by sharing the risks among the stakeholders	Responsible for ensures the affordability, availability, accessibility of telecom services for rural people

The conceptual framework of PPP for telecommunication sector as presented in Fig.4.6, consists of all the stakeholders with their prime responsibilities aiming to induce smooth functioning of the model. The flow of funds shown by one sided arrows ensures the continuity of the model.
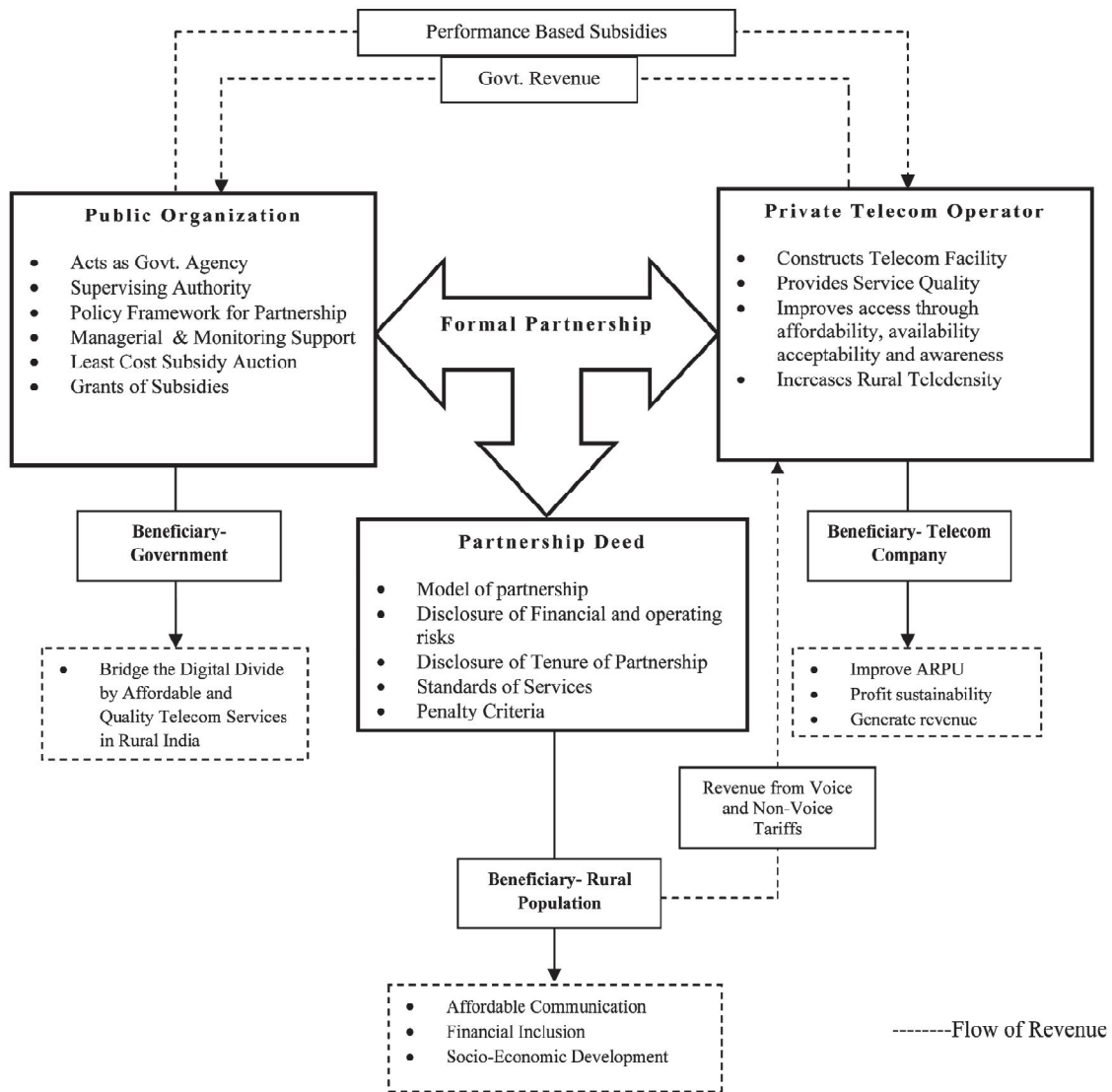
Fig.4.6 PPP in Telecommunication Sector

4.5 Measuring Rural Consumers' Innovativeness and Motives Towards Mobile Telecom Services

The following section stresses on measuring rural consumers' innovativeness and determinants of consumer innovativeness such as opinion leadership, price sensitivity, product involvement, need for uniqueness and venturesomeness for mobile telecom services by using domain specific innovativeness scale. This section also finds out the association between rural consumers' innovativeness and above mentioned determinants, along with it, examining the effects of opinion leadership, price sensitivity, product involvement, need for uniqueness and venturesomeness on mobile telecom service innovativeness. The mobile telecom service has been considered specific domain for study and the responses have been acquired on 5-point Likert scale anchored with '1= highly dissatisfied' to '5= highly satisfied' for measuring the same.

4.5.1 Measuring Rural Consumers' Innovativeness and Determinants for Mobile Telecom Services

The univariate analysis based on 'one-sample T-test' has been used for measuring the rural consumers' innovativeness and determinants. The test value of 2.5 (based on null hypothesis) has been used in analyzing the same and p-value associated for test statistics of consumer innovativeness, opinion leadership, price sensitivity, product involvement, need for uniqueness and venturesomeness has been compared with at 5 per cent level of significance for taking the decision for hypothesis. The test statistics are presented below-

Table 4.15 Test Statistics for Consumer Innovativeness and Determinants

Innovativeness and Determinants	T-Value	Sig.(1-tailed)	Mean	Mean Difference	Decision	Results
Innovativeness	5.95	.000	2.8	.26	Reject H_0	Significant
Opinion leadership	17.85	.000	3.1	.56	Reject H_0	Significant
Price Sensitivity	33.05	.000	3.7	1.24	Reject H_0	Significant
Product Involvement	8.94	.000	2.9	.40	Reject H_0	Significant
Need for Uniqueness	8.81	.000	2.8	.39	Reject H_0	Significant
Venturesomeness	13.50	.000	3.1	.54	Reject H_0	Significant

The hypothesis to measure consumer innovativeness and determinants is expressed as-

Null H_{01}**: μ ≤ 2.5**   [The rural consumers' innovativeness, opinion leadership, price sensitivity, product involvement, need for uniqueness, and venturesomeness towards mobile telecom services are insignificant]

Alternative $H_{A1:}$ **μ >2.5**   [The rural consumers' innovativeness, opinion leadership, price sensitivity, product involvement, need for uniqueness, and venturesomeness towards mobile telecom services are significant]

The Table 4.15 indicates that all the p-values associated with 'one- sample T-test' is less than 0.05 (at 5% level of significance), hence we reject the null hypothesis for all these constructs and conclude that rural consumers' innovativeness, opinion leadership, price sensitivity, product involvement, need for uniqueness, and venturesomeness towards mobile telecom services are significant.

4.5.2 Measuring Association between Rural Consumer Innovativeness and Determinants

The association between consumer innovativeness (INNO) and its determinants such as opinion leadership (OL), price sensitivity (PS), product involvement (PDI), need for uniqueness (NQ), and venturesomeness (VEN) has been analyzed through bivariate correlation. The Pearson's correlation coefficient (r) ranging from -1 to +1 has been used for finding the strength and direction of association among the constructs and the results are shown as follows-

Table 4.16 Association between Consumer Innovativeness and Determinants

Constructs	INNO	OL	PS	PDI	NQ	VEN
INNO	1					
OL	0.63**	1				
PS	0.03 (0.343)	0.06 (0.095)	1			
PDI	0.47**	0.31**	0.17**	1		
NQ	0.31**	0.19**	-0.03 (0.434)	0.34**	1	
VEN	0.55**	0.33**	0.07 (0.059)	0.40**	0.42**	1

** Correlation is significant at the 0.01 level

The hypothesis between association of consumer innovativeness and determinants is expressed as-

Null H_{01}: 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_{A1}: r ≠ 0 [Association exists between consumer innovativeness and opinion leadership, price sensitivity, product involvement, need for uniqueness, and venturesomeness for mobile telecom services]

The table 4.16 reveals that almost all the Pearson's correlation coefficients (r) are significant at 1% level of significance except the coefficient between price sensitivity and innovativeness. It can also be seen that rural consumer innovativeness is highly associated with opinion leadership (r=+0.63; p<0.000), followed by venturesomeness (r=+0.55; p<0.000), product involvement (r=+0.47; p<0.000), and need for uniqueness (r=+0.31; p<0.000), hence we reject the null hypothesis for these four constructs as the p-values associated with correlation coefficients are less than 0.05 (5 % level of significance) and we accept the null hypothesis for price sensitivity (r=+0.06; p>0.095) as p-values associated with correlation coefficient is more than 0.05 (5 % level of significance).

4.5.3 *Measuring the Effects of Opinion Leadership, Price Sensitivity, Product Involvement, Need for Uniqueness and Venturesomeness on Mobile Telecom Service Innovativeness*

This part of analysis is based on multiple regression technique that develops a mathematical relationship between two or more independent variables and interval-scaled dependent variable. The mobile telecom services innovativeness is considered as dependent variable whereas the determinants such as opinion leadership, price sensitivity, product involvement, need for uniqueness, and venturesomeness are considered independent variables for conducting the analysis. The findings of multiple regression are useful in following ways-

- Examining the effects of opinion leadership, price sensitivity, product involvement, need for uniqueness, and venturesomeness on mobile telecom services innovativeness.
- Investigating variation in consumers' innovativeness is explained in terms of variation in the determinants.

- Analyzing the relative importance of all determinants in consumer innovativeness towards mobile telecom services.

The analysis and interpretation of multiple regression is based on studying four different components viz., statistics of model summary, over all model fit, model summary table and assessing the assumptions of regression model in estimating parameters and in significance testing. The following section represents the analysis of all these different components along with relevant discussion-

I. Model Summary

The multiple regression yields a model to predict the consumers' innovativeness on the basis of five predictors viz., opinion leadership, price sensitivity, product involvement, need for uniqueness, and venturesomeness. The model summary produced by statistical software is used to assess the overall model fit, and whether the predictors used in the study are successful in predicting the consumer innovativeness (Field, 2009). The model summary includes various statistics such as multiple correlation coefficient (R), coefficient of multiple determination (R^2), adjusted R^2, change statistics and Durbin-Watson value. The multiple correlation coefficient (R) indicates the association between predictors and criterion (dependent variable), the coefficient of multiple determination (R^2) is used to measure the proportion of variance of the dependent variable about its mean that is explained by independent variables in the model. This value varies between 0 to 1, higher the value, greater will be the explanatory power of regression equation to measure the dependent variable. The adjusted R^2, indicates coefficient of multiple determination, is adjusted for the number of independent variables and the sample size to account for diminishing returns. The adjusted coefficient of multiple determination may fall if the added independent variables have little explanatory power or if the degrees of freedom too small. The Durbin-Watson statistics represent the lack of autocorrelation in data (Hair et al., 2011; Field, 2009). All these statistics are used to interpret the model summary as follows-

Table 4.17 Model Summary (Determinants of CI)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
	.75	.565	.561	.72	.565	154.26	5	594	.000	1.86

It can be seen in model summary (Table 4.17) that multiple correlation coefficient (R=0.75) is strong positive between all the predictors and dependent variable (outcome). The value of adjusted R square (R^2 =0.561) indicates, that 56 per cent of proportion of variance of consumer innovativeness (dependent variable) about its mean is explained by all five determinants (independent variables) in the model. The difference between coefficients of multiple determination (R^2=0.561) and adjusted coefficients of multiple determination (adjusted R^2 =0.565) is found only 0.004. This difference indicates the accuracy of model for generalization of the results for the population, smaller the difference greater will be accuracy of the model. The small value of this difference 0.004 or 0.4% indicates that if the model is derived from the population, it will explain 0.4% less variance in consumer innovativeness (Hair et al, 2011). The value of Durbin-Watson statistics (1.86) is closer to 2.0 indicating the lack of autocorrelation in the data as a good for model fit (Hair et al., 2011).

II.   Over all Model Fit

The statistical significance of regression model is based on 'overall model fit' and tests the hypothesis that the amount of variation explained by the regression model is more than the base line prediction i.e. R^2 is significantly greater than zero. The each sum of squares with its appropriate degrees of freedom produces an estimate of variance. The top portion of F-ratio indicates the variance explained by the regression model and the bottom portion indicates unexplained variance. The overall model fit depends on the regression variate, whether it is significant in explaining the dependent variable or not. The F- statistics indicates the significance of ratio to determine the difference from zero. If it is statistically significant, the researcher can make conclusion that the regression model not only valid for the particular sample of study but would be expected to be significant for the multiple model of samples from the population.

Table 4.18 Over all Model Fit

ANOVA						
Model		**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
	Regression	402.713	5	80.543	**154.26**	**.000**
	Residual	310.129	594	.522		
	Total	712.842	599			

The F- ratio 154.26 as mentioned in overall model is calculated on the basis of the following formulae-

$$F \text{ ratio} = \frac{\text{Sum of Squares }_{(regression)} / \text{Degrees of Freedom }_{(regression)}}{\text{Sum of Squares }_{(residual)} / \text{Degrees of Freedom }_{(residual)}}$$

The degrees of freedom $_{(regression)}$, equals to the number of estimated coefficient (including intercept-1), whereas degrees of freedom $_{(residual)}$, equals to the sample size reduced by number of estimated coefficient (including intercept). Table 4.18 reveals that F-ratios for multiple regression with five independent variables is 154.26 and also significant (p< 0.000) at 5 % level of significance, thus we reject the hypothesis that R^2 is significantly greater than zero and concludes that the amount of variation explained by the regression model is more than the baseline model hence, the results prove the contribution of model in predicting consumer innovativeness as compared to base line model.

III.   Model Summary Table

The model summary table consists various statistics such as regression coefficients (B and Beta), standard error of coefficients, t- values of variables and collinearity statistics for estimating the regression model and to examine the effects of independent variables on the dependent variable. The regression coefficients (B) and the standardized coefficients (β) reflect the change in dependent variable by making one unit change in the independent variables. The differences in regression coefficients indicate the relative importance of each variable in the regression model. The standard error of the regression coefficients reflect how much the regression coefficient of each independent variable will vary between the same samples size taken from the same population. The smaller the standard error, more reliable

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will be the prediction and therefore smaller the confidence interval. The t-values of the variables indicate that the coefficients are not equal to zero at the stated level of error. The t-values are calculated by dividing the regression coefficient by the standard error. The t-values those are significant at the certain level of significance, ensure as a predictor for dependent variable. The collinearity statistics express the relationship between two (collinearity) and more (multicollinearity) independent variables. The multicollinearity occurs in case of any single independent variable used in the regression model is highly correlated with set of other independent variables. The two measures viz., tolerance and VIF (variance inflation factor) have been used to check the multicollinearity among the variables. The tolerance of the particular variable (TOL_i) is equals to 1- $R^{2*}i$, where $R^{2*}i$ is the coefficient of determination for the prediction of variable i by the others independent variables. Smaller the tolerance value, higher will be the prediction by the other independent variables.   The VIF reflects the effect of other independent variables have on the standard error of a regression coefficient. The VIF is equal to the 1/ (TOL_i) and higher the VIF, greater will be the multicollinearity among the variables.

Table 4.19 Model Summary (Relative Importance of Determinants of CI)

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta (β)			Tolerance	VIF
(Constant)	-.681	.178		-3.834	.000		
OL	.651	.041	.462	15.717	.000	0.848	1.180
PSEN	-.063	.033	-.053	-1.930	.054	0.956	1.046
PIVN	.205	.031	.208	6.623	.000	0.745	1.343
NQ	.014	.031	.014	0.452	.651	0.771	1.297
VEN	.346	.036	.312	9.683	.000	0.707	1.415

The statistics of model summary (Table 4.19) is used to develop the multiple regression model to examine and measure the consumer innovativeness on the basis of five predictors viz., opinion leadership, price sensitivity, product involvement, need for uniqueness, and venturesomeness . The proposed model to explain the consumer innovativeness on the basis of five determinants is as follows-

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> Y (Consumer Innovativeness) = - 0.681+ 0.651 (opinion leadership)- 0.063 (price sensitivity)+ 0.205 (product involvement)+ 0.014 (need for uniqueness)+ 0.346 (venturesomeness)

It is important to note that all the regression coefficients of predictors are positive in nature except for price sensitivity. Hence, higher the opinion leadership, product involvement, need for uniqueness and venturesomeness; more will be the consumer innovativeness except for price sensitivity. The different magnitude of regression coefficients reveals the degree to which the consumer innovativeness is affected with various determinants. It can be observed that if, opinion leadership is increased by one unit for mobile telecom services, the overall consumer innovativeness is increased by 0.651 units, likewise if product involvement, need for uniqueness, and venturesomeness are increased by one unit, the overall consumer innovativeness would be increased by 0.205, 0.014 and .346 units respectively. Whereas, the consumer innovativeness would be decreased by 0.063 units, in case of price sensitivity increased by one unit. The t-test statistics associated with all five predictors reveal the contribution of independent variables in affecting the consumer innovativeness. Higher t-values with smaller sig. (p-values), greater will be the contribution of independent variable in predicting the consumer innovativeness. The t-statistic for a particular predictor has been derived by dividing the regression coefficient by its respective standard error as shown below-

Table 4.20 T-test Statistics for Determinants

Predictors	Regression Coefficient (B)	Std. Error	t-test statistics (t)
Opinion leadership	.651	.041	t= 0.651/0.041= 15.7[*]
Price sensitivity	-.063	.033	t= -0.063/0.033=-1.93
Product involvement	.205	.031	t= 0.205/0.031= 6.62[*]
Need for uniqueness	.014	.031	t= 0.014/0.031= 0.452
Venturesomeness	.346	.036	t= 0.346/0.036=9.68[*]

[*] Significant at 5% level of significance

It can be seen in the Table (4.20) that opinion leadership (t= 15.717, p<0.05), product involvement (t= 6.623, p <0.05), and venturesomeness (t=9.68, p<0.05) significantly affect consumer innovativeness, hence we reject the null hypothesis for these determinants, whereas price sensitivity (t=-1.93, p >0.05), and need for uniqueness (t=0.452, p> 0.05), do not significantly affect rural consumer innovativeness for mobile telecom services. The

collinearity statistics (Table 4.19) reveals that the average score of Variance Inflation Factor (VIF = 1.25) is close to 1.0 that indicates absence of collinearity in the data. The reciprocal of the VIF i.e. tolerance and its values above 0.1 indicate that the regression model developed in the study is not biased by the effect of multicollinearity (Field, 2009).

IV.   Assessing the Assumptions for Inferences in Regression Model

The assumptions of regression model are required to ensure that the results obtained are truly representative of the sample and whether the proposed regression model giving the best results or not. These assumptions comprehend whether the errors present in the regression variate are the results of an actual absence of relationship among the variables or they caused by some characteristics of data. The following assumptions are required for validity of the model and for making inferences for the target population-

I.   Linearity of the phenomenon measured
II.   Constant variance of the error terms
III.   Independence of the error
IV.   Normality of the error term distribution

The linearity of the relationship between dependent and independent variables represents the degree to which the change in dependent variable is associated with the independent variables. The assumption of homoscedasticity and linearity in the model have been examined by making a plot of regression standardized residuals against regression standardized predicted values. As the graph shows, random distribution of dots around the zero instead of showing a particular pattern, hence assumptions of homoscedasticity and linearity in the model have been proven (Fig.4.7). The assumption of constant variance of error term can be examined by plotting the standardized residuals against standardized predicted values of dependent variable.   As the pattern shows the random distribution, hence this assumption has also been met.
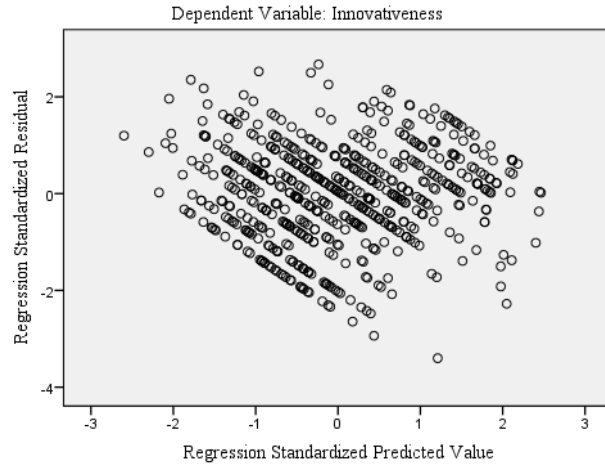
Fig. 4.7 Plot of Homoscedasticity in the Model

The assumption of normally distributed error in the model has been examined by testing the normality of residuals through Normal P-P plot. In this plot, the standardized residuals are compared with the normal distribution. The normal distribution reflects a straight diagonal line and the plotted residuals are compared with the diagonal line. If all the plotted residuals follow the line, the distribution will become normal. As all the points of the observed residuals are on the straight line, hence, the assumption of normally distributed errors has also been met (Fig. 4.8).

Fig. 4.8 Normal PP Plot for Normally Distributed Residuals

4.5.4 *Measuring Association Between Rural Consumer Innovativeness and Motives*

The association between consumer innovativeness and the motives such as social, functional, hedonic and cognitive has been examined on the basis of bivariate correlation coefficient. The Pearson's correlation coefficient (r) ranging from -1 to +1 has been used for finding the strength and direction of association among the constructs. The test statistics are presented as follows-

Table 4.21 Association between Consumer Innovativeness and Motives

Constructs	Innovativeness	Social	Functional	Hedonic	Cognitive
Innovativeness	1				
Social	0.58** (0.000)	1			
Functional	0.52** (0.000)	0.30** (0.000)	1		
Hedonic	0.46** (0.000)	0.44** (0.000)	0.31** (0.000)	1	
Cognitive	0.48** (0.000)	0.35** (0.000)	0.35** (0.000)	0.52** (0.000)	1

** Correlation is significant at the 0.01 level

The hypothesis to examine the association between consumer innovativeness and motives expressed as-

Null H_{012}**: r = 0** [No association exists between consumer innovativeness and social, functional, hedonic and cognitive motives towards mobile telecom services]

Alternative H_{A12}**: r ≠ 0** [Association exists between consumer innovativeness and social, functional, hedonic and cognitive motives towards mobile telecom services]

Table 4.21 reveals that all the Pearson's correlation coefficients (r) are positive and significant at 1% level of significance between consumer innovativeness and motives. It can also be seen that consumer innovativeness is highly associated with social motives (r=+0.58; p<0.000), followed by functional (r=+0.52; p<0.000), cognitive (r=+0.48; p<0.000), and hedonic (r=+0.42; p<0.000) motives. As the p-values associated with all correlation coefficients are less than 0.05 (5 % level of significance), hence we reject the null hypothesis for all these constructs and conclude that a significant association exists between consumer

innovativeness and social, functional, hedonic and cognitive motives in mobile telecom services.

4.5.5 *Measuring the Effects of Social, Functional, Hedonic and Cognitive Motives on Rural Consumer Innovativeness*

The multiple regression has been used to develop a mathematical relationship between four independent and one dependent variable. The mobile telecom services innovativeness is considered as dependent variable whereas the four motives of consumer innovativeness such as social, functional, hedonic, and cognitive are considered as predictors for the study. The multiple regression analysis has been used to comprehend the followings-

- Examining the effects of social, functional, hedonic, and cognitive motives on mobile telecom services innovativeness.
- Analyzing the variation in consumers' innovativeness explained in terms of variation in motives.
- Assessing the relative importance of motives in inducing the consumer innovativeness among rural consumers for mobile telecom services.

The statistics of model summary, over all model fit, model summary table and assumptions of inferences in regression model have been examined in estimating the population parameters and significance testing. The following section represents the detailed analysis along with relevant discussion as follows-

I.   Model Summary

The multiple regression yields a model to measure the effects of social, functional, hedonic, and cognitive motives on mobile telecom services innovativeness. The model summary produced by statistical software is used to examine the overall model fit vis a vis whether the predictors (motives) used in study are successful in motivating the consumer innovativeness (Field, 2009). The model summary includes various statistics such as multiple correlation coefficient (R), coefficient of multiple determination (R^2), adjusted R^2, change statistics and Durbin-Watson value. The multiple correlation coefficient (R) indicates the association between the predictors and criterion (dependent variable), the coefficient of multiple determination (R^2) is used to measure the proportion of variance of the dependent variable about its mean that is explained by independent variables in the model. This value varies between 0 to 1, higher the value greater will be the explanatory power of regression equation

to measure the dependent variable. The adjusted R^2 indicates coefficient of multiple determination, is adjusted for the number of independent variables and the sample size to account for diminishing returns. The adjusted coefficient of multiple determination may fall if the added independent variables have little explanatory power or if the degrees of freedom too small. The Durbin-Watson statistics represent the lack of autocorrelation in the data (Hair et al., 2011; Field, 2009). All these statistics are presented in model summary as shown below-

Table 4.22 Model Summary for Motives

Model Summary										
Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**	**Change Statistics**					**Durbin-Watson**
					R Square Change	F Change	df1	df2	Sig. F Change	
	.717	.515	.511	.762	.515	157.727	4	595	.000	1.903

The model summary (Table 4.22) reveals a strong positive multiple correlation coefficient (R=0.71) between all predictors and dependent variables (outcome). The value of adjusted R square (R^2 =0.511) indicates, that 51 % of variance of motivated consumer innovativeness (dependent variable) about its mean is explained by all four motives (independent variables) in the model. The difference between coefficients of multiple determination (R^2= 0.511) and adjusted coefficients of multiple determination (adjusted R^2 =0.515) has been found only 0.004. The difference between R^2 and adjusted R^2 indicates the accuracy of model for generalization the results for target population, smaller the difference greater will be accuracy of model. The small value of this difference 0.004 or 0.4% indicates that if the model is derived from the population, it will explain 0.4% less variance in consumer innovativeness. The value of Durbin-Watson statistics (1.86) is closer to 2.0 that indicate lack of autocorrelation in the data as a good for model fit (Hair et al., 2011; Field, 2009).

II.   Over all Model Fit For Motives

The statistical significance of regression model is based on 'overall model fit' and testing of hypothesis that the amount of variation explained by the regression model is more than the base line prediction i.e. R^2 is significantly greater than zero. The each sum of squares with its appropriate degrees of freedom produces an estimate of the variance. The top portion of F-ratio indicates the variance explained by the regression model and the bottom portion indicates unexplained variance. The overall model fit depends on the regression variate, whether it is significant in explaining the dependent variable or not. The F- statistics indicates the significance of ratio to determine the difference from zero. If it is statistically significant, the conclusion can be made that the regression model is not only valid for the particular sample of study but would be expected to be significant for the multiple models of samples from the population.

Table 4.23 Over all Model Fit

ANOVA					
Model	**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
Regression	366.861	4	91.715	**157.72**	**.000**
Residual	345.981	595	.581		
Total	712.842	599			

The F- ratio 175.72 as mentioned in the table 4.23 has been derived on the basis of following formulae-

$$F\text{ ratio}= \frac{\text{Sum of Squares}_{(regression)} / \text{Degrees of Freedom}_{(regression)}}{\text{Sum of Squares}_{(residual)} / \text{Degrees of Freedom}_{(residual)}}$$

The degrees of freedom $_{(regression)}$, equals to the number of estimated coefficient (including intercept-1), whereas degrees of freedom $_{(residual)}$, equals to the sample size reduced by number of estimated coefficient (including intercept). The Table 4.23 reveals that F-ratio for multiple regression with four independent variables is 157.72 and also significant ($p < 0.000$) at 5 % level of significance, hence we reject the hypothesis that R^2 is significant greater than zero and conclude that the amount of variation explained by the regression model is more

than the baseline model hence, the result proves the contribution of model in predicting motivated consumer innovativeness as compared to base line model.

III. Model Summary Table

The regression coefficients (B and Beta), standard error of the coefficients, t- values of variables and collinearity statistics are the main statistics involved in the model summary table. All these statistics are used to estimate regression model and to examine the effects of independent variables on the dependent variable. The regression coefficients (B) and the standardized coefficients (β) reflect the change in the dependent variable by making one unit change in the independent variables. The differences in regression coefficients indicate the relative importance of each variable in the regression model. The standard error of the regression coefficients reflect how much the regression coefficient of each independent variable will vary between the same samples size taken from the same population. The smaller the standard error, more reliable will be the prediction and therefore smaller confidence interval. The t-values of the variables indicate that the coefficients are not equal to zero at the stated level of the error. The t-values are calculated by dividing the regression coefficient by the standard error. The t-values those are significant at the certain level of significance ensures as a predictor for dependent variable. The collinearity statistics express the relationship between two (collinearity) and more (multicollinearity) independent variables. The multicollinearity occurs in case of any single independent variable used in the regression model is highly correlated with set of other independent variables. The two measures viz., tolerance and VIF (variance inflation factor) have been used to check the multicollinearity among the variables. The tolerance of the particular variable (TOL_i) is equals to 1- $R^{2*}i$, where $R^{2*}i$ is the coefficient of determination for the prediction of variable i by the others independent variables. Smaller the tolerance value, higher will be the prediction by the other independent variables. The VIF reflects the effect of other independent variables have on the standard error of a regression coefficient. The VIF is equal to the 1/ (TOL_i). Higher the VIF, greater will be the multicollinearity among the variables.

Table 4.24 Model Summary for Relative Effects of Motives

Model		Unstandardized Coefficients		Standardized Coefficients	t – Values	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
	(Constant)	-.381	.134		-2.850	.005		
	SOCIAL	.367	.032	.380	11.545	.000	.754	1.326
	FUNC	.353	.035	.313	10.007	.000	.834	1.200
	HEDO	.111	.039	.102	2.866	.004	.646	1.548
	COG	.195	.040	.171	4.889	.000	.663	1.508

The statistics of model summary are used to develop the multiple regression model to examine and measure the motivated consumer innovativeness on the basis of four predictors viz., social, functional, hedonic, and cognitive. The proposed model is used to measure motivated consumer innovativeness and expressed as follows-

> Y (Motivated Consumer Innovativeness) = - 0.381+ 0.367 (Social)+ .353 (functional)+ 0.111 (hedonic)+ 0.195 (cognitive)

It is important to note that all the regression coefficients of motives are positive in nature. Hence, higher the degree of social, functional, hedonic, and cognitive motives, greater will be the consumer innovativeness. The differences of regression coefficients among all predictors reveal the degree to which the motivated consumer innovativeness is affected. It can be observed that if, social factors are increased by one unit for mobile telecom services, the overall consumer innovativeness is increased by 0.367 units, likewise if functional, hedonic, and cognitive factors are increased by one unit, the overall consumer innovativeness would be increased by 0.353, 0.111 and .346 units respectively (Table 4.24). The t-test statistics associated with all the four predictors reveals the contribution of predictors in motivating the consumer innovativeness. Higher the t-values with smaller sig. (p-values), greater will be the contribution in predicting the consumer innovativeness. The t-statistics for a particular

predictor has been derived by dividing the regression coefficient by its respective standard error as shown below-

Table 4.25 T-test Statistics for Motives

Predictors	Regression Coefficient (B)	Std. Error	t-test statistics (t)
Social	.367	.032	t= 0.367/0.032= 11.5[*]
Functional	.353	.035	t= 0.353/0.035=10.00[*]
Hedonic	.111	.039	t= 0.111/0.039= 2.8[*]
Cognitive	.195	.040	t= 0.195/0.040= 4.88[*]

[*]Significant at 5% level of significance

It can be seen that social (t= 11.5, $p<0.05$), functional (t= 10.00, $p<0.05$), hedonic (t=2.8, $p<0.05$) and cognitive (t=4.88, $p<0.05$) motives significantly affect consumer innovativeness hence, we reject the null hypotheses and conclude that all these factors significantly motivate the consumer innovativeness for mobile telecom services. The collinearity statistics (Table 4.24) reveal that the average score of variance inflation factor (VIF = 1.3) is close to 1.0 which indicates no collinearity in the data and the tolerance values are above 0.1 indicate that proposed regression model is not biased by multicollinearity (Field, 2009).

IV.   Assessing the Assumptions of Inferences in Regression Model

The assumptions of regression model ensure that the results obtained are truly representative of the sample and whether the proposed regression model giving the best results or not. These assumptions also comprehend whether the errors present in the regression variate are the results of an actual absence of relationship among the variables or they caused by some characteristics of data. The following assumptions are required to be examined-

- Linearity of the phenomenon measured
- Constant variance of the error terms
- Independence of the error
- Normality of the error term distribution

The linearity of the relationship between dependent and independent variables represents the degree to which the change in the dependent variable is associated with the independent

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variables. The assumption of homoscedasticity and linearity in the model is examined by making a plot of regression standardized residuals against regression standardized predicted value. As the graph shows, random distribution of dots around the zero instead of showing a particular pattern, hence assumptions of homoscedasticity and linearity in the model have been proven (Fig. 4.9). The assumption of constant variance of error term can be examined by plotting the standardized residuals against standardized predicted values of dependent variable. As the pattern shows the random distribution, hence this assumption is also met.
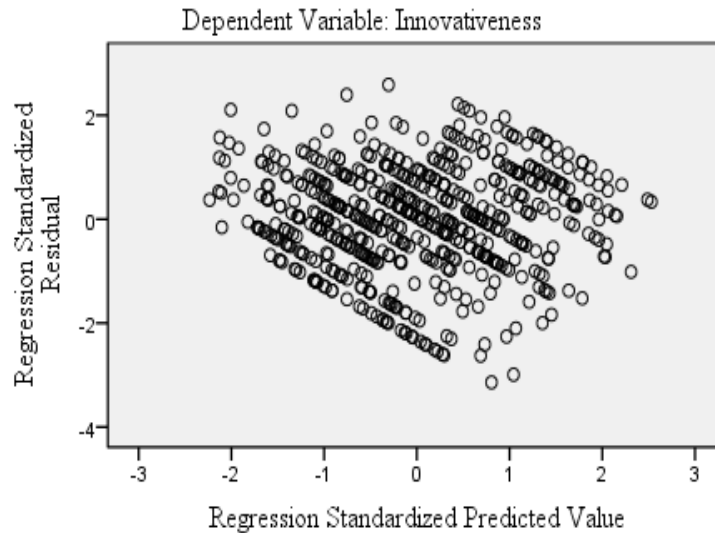
Fig. 4.9 Plot of Homoscedasticity in the Model (MCI)

The assumption of normally distributed error in the model is examined by testing the normality of residuals through Normal P-P plot. In this plot the standardized residuals are compared with the normal distribution. The normal distribution reflects a straight diagonal line and the plotted residuals are compared with the diagonal line. If all the plotted residuals follow the line, the distribution will become normal. As all the points of the observed residuals are on the straight line hence, the assumption of normally distributed errors has also been met (Fig. 4.10).

Dependent Variable: Innovativeness
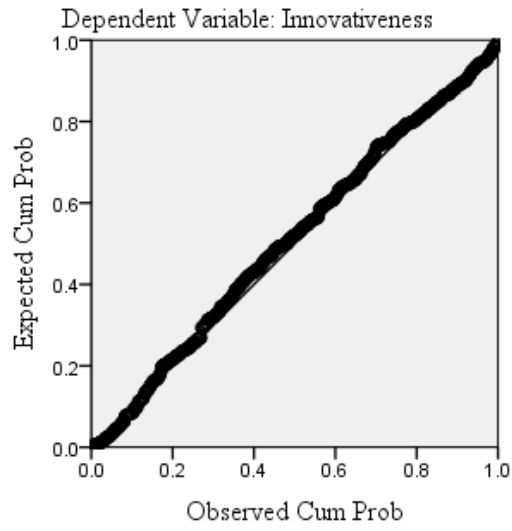
Fig. 4.10 Normal PP Plot for Normally Distributed Residuals

4.6 Segmentation of Rural Consumers Based on the Determinants of Mobile Telecom Service Innovativeness

The effective marketing strategy options are based on identifying the characteristics of homogenous groups within a population, aiming to recognize relevant segment and implementation of target marketing. A very popular multivariate technique viz., cluster analysis is used for grouping individuals or objects into certain clusters so that objects of a one cluster are more similar as compared to the objects of another. In this way, the objects of one cluster are more homogenous in nature whereas each cluster is heterogonous with other clusters. The present section stresses on classifying rural consumers into relatively more homogenous groups on the basis of various determinants of consumer innovativeness. In this application, a set of seventeen variables related to opinion leadership, price sensitivity, product involvement, need for uniqueness, and venturesomeness have been used to identify various homogenous groups of rural consumers aiming to make distinguish among each other for developing taxonomies with suitable managerial implications. The segmentation based on consumer innovativeness gives useful insights for marketers to comprehend the spread of innovative telecom products within a social system. The steps involved in cluster analysis are presented as follows-

a) Formulation of Problem

The primary objective of cluster analysis is to develop taxonomy that segments mobile telecom service users on the basis of consumer innovativeness. A total seventeen variable related to five determinants of consumer innovativeness have been adapted from the most relevant scales and measurements by reviewing past studies, and used in the segmentation process. The respondents were asked to express their degree of agreement for various statements (Part-B of the questionnaire) on a 5-point Likert scale (1= highly disagree to 5= highly agree). The identification of groups or segments is based on empirically derived classification of actual objects and reveals the characteristics of rural consumer innovators towards mobile telecom services.

b) Measure of Distance

To attain the objective of clustering, the similar objects should be possessed in a one group and the objects are required to be assessed with their similarity or dissimilarity among each other. The measure of similarity depends on the distance between the pairs of the objects. The

objects having less distance are more similar to each other as compared to the larger distances. The most commonly used measure 'euclidian distance' has been used in the analysis to assess the similarity between the objects. The euclidian distance represents the square root of sum of squared differences for values of each variable.

c) Clustering Technique

Both hierarchical and non-hierarchical methods have been used to accomplish the cluster analysis in the study. The hierarchical method has been used to identify the preliminary set of cluster solutions that will be further used in non-hierarchical procedure for obtaining final cluster solution. The Wards method has been used for hierarchical procedure in which the similarity measures are used to join the clusters and computed by sum of squares between the two clusters summed overall variables. The agglomerative method is also used in hierarchical analysis that refers to begin with each object or observation in a separate cluster and in each subsequent step; the two most similar clusters are combined to build a new cluster until all the clusters are combined into a single cluster. The non-hierarchical cluster is used to produce only a single cluster solution for a set of cluster seeds.

4.6.1 Results of Hierarchical Clustering Process

The hierarchical clustering process contains stepwise clustering procedures involving a combination of objects into clusters. The results generate a hierarchy or tree like structure which depicts the formation of clusters. This process produces total N-1 cluster solutions, where N represents the total number of objects used in the analysis.

a) Agglomeration Coefficient and Clustering Schedule

The agglomeration coefficient and clustering schedule have been used to describe the clustering process with identification of any single observation or cluster throughout the process. The agglomeration coefficient indicates a measure of increase in heterogeneity with combination of two clusters. Higher the value of agglomeration coefficient, higher will be the heterogeneity occurs between the clusters. The Table 4.26 represents the agglomeration coefficients for various stages of clustering-

Table 4.26 Agglomeration Coefficients and Clustering Schedule

Stage	Cluster Combined		Agglomeration Coefficient	Stage Cluster First Appear		Next Stage of New Cluster Appears
	Cluster1	Cluster 2		Cluster1	Cluster 2	
1	135	136	0.00	0	0	178
2	443	545	1.50	0	0	52
3	119	227	3.00	0	0	24
4	160	252	5.00	0	0	24
5	56	134	7.00	0	0	83
6	130	133	9.00	0	0	82
7	48	62	11.00	0	0	15
8	123	169	13.50	0	0	82
9	55	159	16.00	0	0	42
10	21	132	18.50	0	0	133
11	581	596	21.50	0	0	117
12	384	447	24.50	0	0	351
13	32	175	27.50	0	0	81
14	115	166	30.50	0	0	110
15	48	183	33.83	7	0	64
16	131	591	37.33	0	0	81
17	506	582	40.83	0	0	392
18	289	577	44.33	0	0	397
19	248	550	47.83	0	0	80
20	437	459	51.33	0	0	277
Intermediate stages from 21 through 578 omitted						
579	29	37	10816.52	570	509	590
580	1	12	10942.96	568	559	587
581	2	3	11078.92	571	555	589
582	16	138	11238.41	567	561	583
583	16	66	11404.01	582	572	592
585	8	15	11747.69	549	573	591
586	5	17	11933.87	576	540	595
587	1	4	12123.94	580	569	593
588	55	217	12314.36	562	544	594
589	2	9	12509.87	581	563	595
590	29	96	12708.57	579	577	598
591	6	8	12996.40	584	585	594
592	16	20	13284.60	583	574	596
593	1	7	13577.27	587	578	599
594	6	55	13946.24	591	588	596
595	2	5	14433.64	589	586	597
596	6	16	15045.78	594	592	597
597	2	6	15680.58	595	596	598
598	2	29	16813.53	597	590	599
599	1	2	18887.78	593	598	0

In the Table 4.26 the first column 'stage' refers to the clustering process where two most similar clusters are combined. The total 599 stages appears (N-1 stages), hence 599 observations are being clustered. The second column gives information about the combination of clusters in each stage. The agglomeration coefficient indicates the 'squared euclidian distance' between two clusters (or two objects) joined at each stage. The next column 'Stage Cluster First Appear' indicates the prior stage at which each cluster being combined was involved. The value 'zero' in this column represents that the cluster is still single member cluster and not combined with any other cluster before this stage and the last column represents the next stage in which the new cluster appears. It can be seen in Table 4.26 that cluster analysis starts with total 599 clusters and at stage 1st, where the case 135 and case 136 are combined as having minimum squared euclidian distance of 0.000. The value zero occurs in 'Stage Cluster First Appear' also indicates that neither of these two cases has been previously clustered. It can also be seen that the last column indicates the new cluster appears at the stage 178. It can be observed that at stage 178, the case 135 combined with case 119 having an agglomeration coefficient of 961.56. Likewise, at stage 2nd, the case 443 and case 545 are combined with having squared euclidian distance of 1.5. The value zero occurs in 'Stage Cluster First Appear' also indicates that neither of these two cases has been previously clustered. The last column represents the new cluster appears at the stage 52. It can be observed that at stage 52, the case 443 combined with case 451 having an agglomeration coefficient of 182.6. At stage 15, the case 48 combines with case 183 (having an agglomeration coefficient of 33.83) and it can also be seen that the case 48 also combined with the case 62 at stage 7 and subsequently combined with case 104 at the stage 64 (having an agglomeration coefficient of 237.51). Likewise, at stage 579, the case 29 combines with case 37 (having an agglomeration coefficient of 10816.52) and it can also be seen that the case 29 also combined with the case 80 at stage 570 with an agglomeration coefficient of 9863.94 and the case 37 combines with case 86 with an agglomeration coefficient of 6366.42 and subsequently the case 29 combined with case 96 at the stage 590 (with having an agglomeration coefficient of 12708.57). In this way on the basis of squared euclidian distance, this process continues until all the cases are clustered in a single group. The same information as generated by agglomeration coefficient and clustering schedule can be displayed in the forms of 'vertical icicle plot', and dendrogram. The icicle plot is the graphical display of clustering results; it resembles a row of icicles hanging from eaves of house. The rows in the graph indicate the number of clusters and are always interpreted from bottom to top, whereas as the dendrogram is tree like graph in which the vertical lines

represent the clusters that are joined together (excluded in report as 'clustering schedule' mentioned as substitute). The position of the line on the scale indicates the respective distances at which clusters are joined together.

b) Determining the Preliminary Cluster Solutions

The hierarchical clustering process is used to find out the set of preliminary cluster solutions and these cluster solutions are the bases of non-hierarchical clustering process to ascertain final cluster solution. The preliminary set of solutions is based on 'stopping rule' principle aiming to identify a small number of cluster solutions and examining the profile of each solution on the basis of clustering variables. The stopping rule is based on assessment of change in heterogeneity between the cluster solutions. The agglomeration coefficients are used in this stopping rule principle. The small amount of agglomeration coefficient indicates the merging of homogenous cluster whereas the large amount indicates the merger of different clusters. It is also important to note that each combination of clusters consequence in increasing the heterogeneity, hence the larger percentage change in the agglomeration coefficients gives important insights about the preliminary cluster solution. The prior stage is considered the cluster solutions when the large increase in heterogeneity occurs. The Table 4.27 indicates the percentage change in agglomeration coefficients for all the clustering stages aiming to ascertain a set of preliminary cluster solutions. The main focus has been laid on clustering solutions ranging from 10 to 2 clusters instopping rule as presented below.

Table 4.27 Stopping Rule for Preliminary Cluster Solution

| Stage | Hierarchical Process | | Stopping Rule | | |
| | Number of Clusters | | Agglomeration Coefficients | | |
	Before Joining	After Joining	Values	Change Occurs	% Increase to Next Stage
590	11	10	12708.57	198.7	1.6
591	10	9	12996.40	287.8	44.9
592	9	8	13284.60	288.2	0.1
593	8	7	13577.27	292.7	1.6
594	7	6	13946.24	369.0	26.1
595	6	5	14433.64	487.4	32.1
596	5	4	15045.78	612.1	25.6
597	4	3	15680.58	634.8	3.7
598	3	2	16813.53	1133.0	78.5
599	2	1	18887.78	2074.2	83.08

It can be seen in Table 4.27 that heterogeneity increased 25% from 5 clusters to 4 clusters, 3% from 4 to 3 clusters, 78% from 3 to 2 clusters and 83% from 2 to 1 cluster solution. To find out the relative increases in heterogeneity, the % change in agglomeration coefficients has been calculated from 10 clusters to 1 cluster (stage 590 to 599) solutions. It can be seen that the large differences or change in agglomeration coefficients appear from stages 593 to 594 (13577.27 versus 13946.24), stages 594 to 595 (13946.24 versus 14433.64), stages 595 to 596 (14433.64 versus 15045.78), and from stages 596 to 597 (15045.78 versus 15680.58). On the basis of stopping rule principle, when large increases in heterogeneity occur, the prior cluster solution is the best because the combination joins quite different clusters. With this respect, we consider three and four clusters as preliminary cluster solutions because in two clusters solution heterogeneity increased by 78% (three clusters solution possessed only 3.7% of heterogeneity) and in selecting five clusters solution heterogeneity increased by 32 % (the four clusters solution possessed 25% of heterogeneity).

c) *Profiling the Clustering Variables*

Before proceeding to final cluster solution, the profiling of each cluster, identified from clustering schedule is required to assess 'cluster distinctiveness' on the basis of clustering variables. The variables are required to be converted into Z-score and these standardized values are used in profiling so as to remove the effect of varying levels of dispersion among the variables. The Figure 4.11 and 4.12 provide profile analysis of two clusters (3 cluster solution and for 4 cluster solution) on the basis of 17 standardized values of variables. It can be seen in Figure 4.11 that three clusters solution is more distinct as compared to four clusters solution.
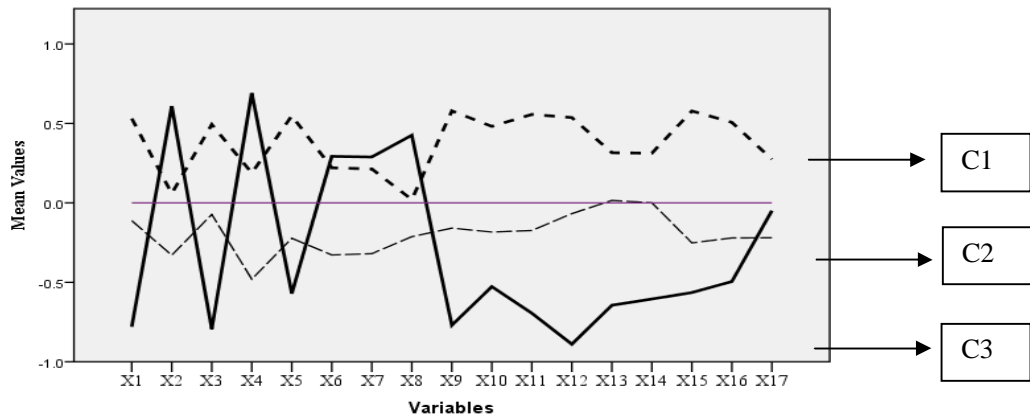
Fig. 4.11 Profiling of Clustering Variables for Three Clusters

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It is also worth noting to verify whether each cluster solution is relatively distinct with their magnitude of clustering variables or not. The first cluster represents higher values on clustering variables; second cluster possesses all lower values whereas the third cluster represents both lower and higher values of clustering variables. It can be seen in Table 4.28 that all clustering variables are statistically significant at 0.000 significance. The first, second and third clusters containing 226, 257 and 117 objects respectively.

Table 4.28 Profile Analysis for Three Cluster Solution

Clustering Variables	Ward Method			
	C-1	C-2	C-3	Total
X1	.53	-.11	-.77	0.000
X2	.05	-.32	.60	0.000
X3	.49	-.07	-.79	0.000
X4	.18	-.48	.69	0.000
X5	.54	-.22	-.57	0.000
X6	**.22**	**-.32**	**.29**	0.000
X7	**.21**	**-.31**	**.28**	0.000
X8	**.02**	**-.21**	**.42**	0.000
X9	.57	-.15	-.76	0.000
X10	.48	-.18	-.52	0.000
X11	.55	-.17	-.69	0.000
X12	.53	-.06	-.88	0.000
X13	.31	.01	-.64	0.000
X14	.31	.00	-.60	0.000
X15	.57	-.25	-.56	0.000
X16	.50	-.22	-.49	0.000
X17	.27	-.21	-.04	0.000
Cluster Size	**226**	**257**	**117**	

In case of four cluster solution, it can be seen in Fig. 4.12, that the differences are not too much distinct among the magnitude of clustering variables.
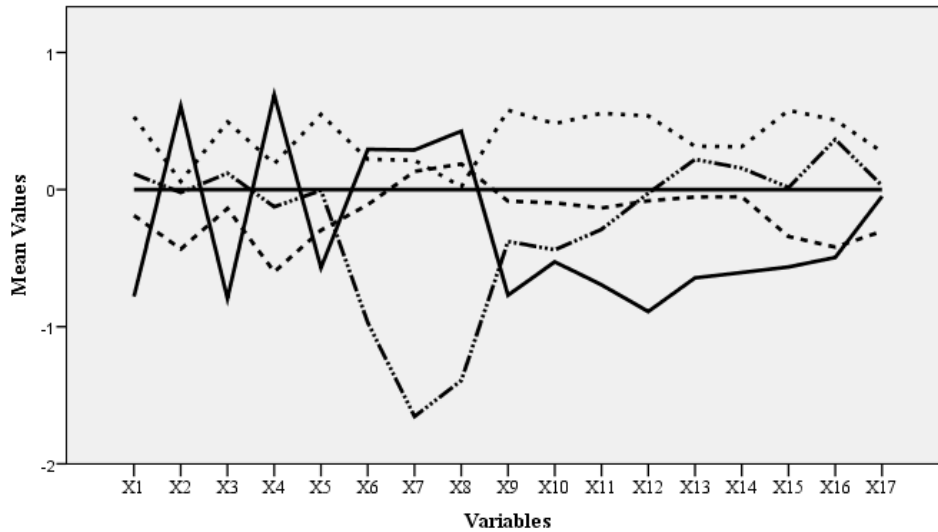
Fig. 4.12 Profiling of Clustering Variables for Four Clusters

It can be seen in the Table 4.29 that first cluster is having higher values of variables and clusters two and three both are having lower values, whereas cluster four is having both higher and lower values of the clustering variables. The first, second, third and four clusters are also showing a disparity in size i.e. 226, 192, 65 and 117 objects respectively.

Table 4.29 Profile Analysis for Four Cluster Solution

Clustering Variables	Ward Method				
	1	**2**	**3**	**4**	**Total**
X1	.53	-.19	.11	-.78	0.000
X2	.06	-.43	-.02	.61	0.000
X3	.49	-.14	.12	-.79	0.000
X4	.19	-.60	-.13	.69	0.000
X5	.55	-.30	-.01	-.57	0.000
X6	**.22**	**-.11**	**-.97**	**.29**	0.000
X7	**.21**	**.13**	**-1.65**	**.29**	0.000
X8	**.02**	**.19**	**-1.39**	**.43**	0.000
X9	.58	-.08	-.38	-.77	0.000
X10	.48	-.10	-.44	-.53	0.000
X11	.56	-.13	-.29	-.69	0.000
X12	.54	-.08	-.03	-.89	0.000
X13	.32	-.05	.22	-.64	0.000
X14	.31	-.05	.16	-.60	0.000
X15	.58	-.34	.02	-.56	0.000
X16	.51	-.42	.37	-.49	0.000
X17	.27	-.30	.03	-.05	0.000
Cluster Size	226	192	65	117	---

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The results of comparison of mean of clustering variables in both three and four clusters solutions can be comprehend with F-statistics. The F-statistics belong to each variable have been computed by dividing the mean square- between the group by its mean square within the group. Higher the value of test statistic of clustering variable, higher will be the difference of mean among the clusters. The comparison in F-statistics for all clustering variables between three and four clusters reveals that almost all the variables are statistically more significant differ in three cluster solution (except X6, X7 and X8 variables) due to large F-statistic values (Table 4.30).

Table 4.30 Comparison of Means for Clustering Variables between 3 & 4 Clusters

Clustering Variables	F-Statistic Values	
	3- Cluster Solution	4- Cluster Solution
X1	89.36	62.00
X2	40.77	30.72
X3	82.89	56.91
X4	77.24	57.29
X5	73.79	51.23
X6	**26.39**	**32.64**
X7	**25.00**	**100.64**
X8	**17.38**	**68.84**
X9	101.15	69.85
X10	55.23	39.43
X11	86.18	58.01
X12	107.80	71.84
X13	40.21	28.33
X14	36.28	25.03
X15	82.00	57.96
X16	59.27	54.62
X17	15.59	12.37

4.6.2 *Results of Non-Hierarchical Clustering Analysis*

The stopping rule principle and profiling analysis during hierarchical clustering process indicate '3-clusters' as optimum cluster solution for segmenting the rural consumers on the basis of consumer innovativeness for mobile telecom services. This '3-clusters' solution will be further examined through non- hierarchical clustering process for identifying the final cluster solution. The non- hierarchical clustering process performs K-means cluster analysis aiming to minimize within-cluster variation and maximize between-cluster variation for

identifying more stable cluster solution. The final cluster solution will be judged by assessing criterion validity. The results of non- hierarchical clustering process are as follows-

a) Initial Cluster Centres

The result of non- hierarchical clustering process initially finds 'K-centres' that represent the values of three randomly selected cases having dissimilarity to each other and then similar cases join to these values iteratively until the formation of distinct clusters. In each iteration process, cases join different clusters resulted into change of cluster centres. Any value corresponding to iteration process indicates a distance of new cluster (after joining the cases) from the previous cluster centre. This process will be continued till the zero appears in the iteration progress.

b) Cluster Membership

The next result gives important insights about cluster membership for each case. The distance between the subjects (cases) with respective cluster is mentioned in the column *distance*. The magnitude of distance indicates the 'representativeness' of case with the concerned cluster. Lower the distance, higher will be the representativeness (Table 4.31).

Table 4.31 Cluster Membership

Case Number	Concerned Cluster	Distance
1	3	4.31
2	2	6.05
3	2	5.42
4	3	3.75
5	1	5.14
6	3	4.43
7	3	5.52
8	2	5.96
9	1	6.22
10	3	3.70
Intermediate Cases from 11 through 589 omitted		
590	2	5.61
591	3	3.77
592	1	5.11
593	2	3.96
594	2	4.61
595	2	4.80
596	2	4.28
597	2	4.23
598	1	5.59

599	2	6.45
600	2	5.11

c) Final Cluster Centres

The final cluster centres indicate the mean value of each clustering variable within each cluster solution. For example cluster 1 is described by the mean values of variable X1=2.8, X2= 2.8, X3= 2.8, X4= 2.6 and so on. Similarly, the cluster 2 is described by the mean values of variable X1=2.1, X2= 3.7, X3= 2.0, X4= 3.4 and so on. Likewise, the cluster 3 is identified by the mean values of variable X1=3.7, X2= 3.1, X3= 3.8, X4= 3.3 and so on. The mean information for each clustering variable within cluster has been used to interpret the characteristics for each homogenous cluster as mentioned below-

- **Cluster 1**

All the cases belonging to this cluster are having mean values almost equal to 3.0 for majority of the clustering variables (except X5, X6, X12, X13, X14 variables) and overall depicts the neutral responses of consumers towards mobile telecom service innovativeness and various determinants. The consumers involved in this cluster are neutral with regard to persuade other people in their social circle for buying latest schemes and offers; low involvement as compared to the new offers or schemes with old ones; with respect to their cautiousness towards accepting new services and offers; and also neutral in accepting the new telecom services in the social group. The consumers belong to this cluster are having low interest in new schemes and offers, they rarely seek information about new schemes and plans from informal and media sources. A slightly higher means values for X1: 3.07, X13: 3.08, X14: 3.16 variables indicate their interest towards need for uniqueness. Nevertheless, these consumers are willing to distinguish themselves from others by purchasing new services and offers in their social group.

- **Cluster 2**

All cases belonging to this cluster are having mean values lower than 3.0 for majority of the clustering variables (except X2, X4, X6, X7, X8 variables) and overall depicts that consumers belong to this cluster falls into category of non-innovators. In their social circle, people rarely come to them for advice about choosing telecom services. Their opinion on what to buy seems not to count upon by other people. They least influence others about

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buying a new telecom services. These consumers are very price sensitive as usage and rental charges are very important to them; they often hesitate to buy a new offer, in case of high in price. They are having very low interest in new schemes and offers; they never seek information about new schemes and plans. Nevertheless, these consumers are risk lover consumers as they are not much cautious about accepting new services and offers, and least afraid to purchase any new telecom services in their social group.

- **Cluster 3**

All cases belonging to this cluster are having mean values more than 3.5 for majority of the clustering variable (except X2, X4, X13, X14 variables). The high mean values of majority of clustering variables indicate innovative behaviour towards telecom services. These consumers often persuade other people for buying the latest offers and schemes in their social circle, majority of the people purchase a specific telecom service on the basis of their opinion, they often influence others in buying telecom services. These consumers are very price sensitive as usage and rental charges are very important to them; they often hesitate to buy a new offer in case of high in price. They are having great interest in new schemes and offers, they often seek information about new schemes and plans, first one to purchase the new products and services (Table 4.32).

Table 4.32 Final Cluster Centres

Clustering Variables	Cluster Centres		
	C-1	C-2	C-3
X1	2.84	2.12	**3.76**
X2	2.78	**3.72**	3.12
X3	2.82	2.02	**3.80**
X4	2.68	**3.46**	3.35
X5	**3.01**	2.32	**3.77**
X6	**3.14**	**4.05**	**4.10**
X7	**2.98**	**4.33**	**4.25**
X8	2.77	**4.19**	3.79
X9	2.21	2.29	**4.17**
X10	2.27	2.37	**3.74**
X11	2.59	2.16	**3.85**
X12	**3.08**	1.81	3.64
X13	**3.07**	2.07	3.45
X14	**3.16**	2.01	3.47
X15	**2.92**	2.15	**3.79**
X16	2.86	2.23	**3.67**
X17	2.79	2.81	**3.83**

d) Distances Between Final Cluster Centres

The distance between final cluster centres is measured by 'euclidian distance'. Relatively large differences in values indicate the greater dissimilarity in cluster centres. The cluster 1 is having a distance of 3.5 and 4.1 from cluster 2 and cluster 3 respectively, whereas cluster 1 and cluster 3 are having the highest dissimilarities (Table 4.33).

Table 4.33 Distances between the Clusters

Cluster	1	2	3
1	---	3.5	4.1
2	3.5	----	5.4
3	4.1	5.4	----

e) ANOVA Table

The ANOVA table is used to identify the clustering variables that are important in final cluster analysis and segmentation. The value of mean square indicates the variance in clustering variables that can be attributed to clusters whereas mean square error indicates the variance in variables that contribute less in the clusters. The F-statistics is the ratio of cluster variance to the error variance. Larger the value of F, greater will be the importance of concerned variable in the particular cluster. It can be seen in the Table 4.34 that comparatively high values of error means and lower F-statistics values of variables X2 , X4, X6,and X17 indicate relatively less contribution in segregating the clusters. It is also important to note that all the clustering variables are statistically significant.

Table. 4.34 Results of ANOVA

Clustering Variable	Cluster Mean Square	Error Mean Square	F-Ratio	Significance
X1	138.50	1.86	74.33	.000
X2	**43.37**	**2.18**	**19.88**	.000
X3	163.74	1.34	121.82	.000
X4	**33.96**	**1.80**	**18.84**	.000
X5	108.69	1.55	70.10	.000
X6	**56.71**	**1.29**	**43.76**	.000
Clustering Variable	**Cluster Mean Square**	**Error Mean Square**	**F-Ratio**	**Significance**
X7	109.82	1.18	92.94	.000
X8	102.70	1.23	83.15	.000
X9	255.96	1.42	180.23	.000
X10	140.97	1.28	110.15	.000

X11	158.67	1.31	120.44	.000
X12	177.17	1.25	141.36	.000
X13	101.38	1.21	83.64	.000
X14	117.22	1.21	96.83	.000
X15	137.66	1.58	87.00	.000
X16	107.17	1.52	70.25	.000
X17	**74.56**	**1.58**	**46.94**	.000

f) ***Number of Cases in Three Cluster Solution***

It is also worth noting that in 3-cluster solution, the number of cases almost remains same in non- hierarchical clustering process. Out of 600 cases, 190 cases belong to cluster 1 and 2, and 220 cases belong to cluster 3. The non- hierarchical cluster solutions indicate more similar cases as compared to hierarchical cluster solution (C1-226 cases, C2-257cases, and C3-117cases). A difference in the size of clusters is an indication of dubious results and re-assessment of clustering variables is required with respect to their importance in research questions.

4.7 Segmentation of Rural Consumers Based on Motives Related to Mobile Telecom Services Innovativeness

The rural consumers' segmentation on the basis of motives related to mobile telecom services classifies rural consumers into homogenous groups with common characteristics of innovativeness and develops understanding about the role of motives in segmenting the rural consumers. In this regard, the cluster analysis has been used for grouping similar subjects on the basis of four distinct motives namely social, functional, hedonic and cognitive in mobile telecom services. A set of twenty five variables related to above mentioned motives has been used as clustering variables in the study to classify rural consumers into homogenous groups. The cluster analysis used in this part of study is aimed to develop taxonomies with managerial applications. The segmentation approach based on 'motivated consumer innovativeness' gives useful insights for marketers to comprehend innovative buying behaviour of rural consumers due to certain motives and also helps marketers to identify relevant strategies for targeting the particular segment. The following steps have been used in cluster analysis and are presented as follows-

a) *Formulation of Problem*

The cluster analysis is a set of interdependence technique for grouping similar objects and people. The primary objective of this part of study is to develop taxonomy that segmenting rural consumers on the basis of certain motives for mobile telecom services innovativeness. Total, twenty five variables related to four motives (social, functional, hedonic and cognitive) in mobile telecom services have been adapted from previous scales & measurements and used in cluster analysis as clustering variables. The respondents were asked to express their degree of agreement for various statements (Part-B of the questionnaire) on a 5-point scale (1= highly disagree to 5= highly agree) in order to assess their response for motives in mobile telecom services.

b) *Measure of Distance*

To attain the objective of clustering, the similar objects should be possessed in one group and the objects are required to be assessed with their similarity or dissimilarity among each other aiming to develop mutually exclusive clusters (maximization of within-cluster similarity and between cluster differences). The measure of similarity depends on the distance between the pairs of the objects. The objects having less distance are more similar to each other as

compared to the larger distances. The most commonly used measure 'euclidian distance' has been used in analysis to assess the similarity between the objects. The 'euclidian distance' represents the square root of the sum of squared differences in values for each variable.

c) Clustering Technique

Both hierarchical and non-hierarchical methods have been employed to accomplish the cluster analysis for the study. The hierarchical method has been used to identify the preliminary set of the cluster solutions that will be used further in non-hierarchical procedure for identifying the most stable cluster solution. The Ward's method has been applied in hierarchical procedure with the use of similarity in joining the clusters and computed as the sum of squares between the two clusters summed overall variables. The agglomerative method used in hierarchical analysis, begins with each object or observation in a separate cluster and in each subsequent step; the two most similar clusters are combined to build a new cluster until all the clusters are combined into a single cluster. The non-hierarchical cluster is used to ascertain only a single cluster solution for a set of cluster seeds with more stability.

4.7.1 Results of Hierarchical Clustering Process

The hierarchical clustering process contains stepwise clustering procedure that involves combination of objects into clusters. The results generate a hierarchy or tree like structure depicts the formation of clusters. This process produces total N-1 cluster solutions, where N represents the total number of the objects used in the clustering process.

a) Agglomeration Coefficient and Clustering Schedule

The details of clustering process with identification of any single observation or cluster throughout the process are analyzed by agglomeration coefficient and clustering schedule. The agglomeration coefficient indicates a measure of increase in heterogeneity with combination of two clusters. Higher the value of the agglomeration coefficient, higher will be the heterogeneity occurs between the clusters. The Table 4.35 represents the agglomeration coefficients for various stages of clustering-

Table. 4.35 Agglomeration Coefficient and Clustering Schedule

Stage	Cluster Combined		Agglomeration Coefficient	Stage Cluster First Appear		Next Stage of New Cluster Appears
	Cluster1	Cluster 2		Cluster1	Cluster 2	
1	94	390	2.00	0	0	10
2	41	502	5.00	0	0	119
3	111	118	8.00	0	0	30
4	10	99	11.00	0	0	22
5	42	54	14.00	0	0	71
6	562	577	17.50	0	0	333
7	535	550	21.00	0	0	31
8	43	85	24.50	0	0	87
9	84	406	28.50	0	0	47
10	94	293	32.50	1	0	122
11	46	58	36.50	0	0	23
12	530	569	41.00	0	0	262
13	547	563	45.50	0	0	239
14	534	541	50.00	0	0	190
15	295	378	54.50	0	0	267
16	23	289	59.00	0	0	131
17	109	132	63.50	0	0	94
18	93	127	68.00	0	0	331
19	123	125	72.50	0	0	95
20	416	449	77.50	0	0	50
Intermediate Stages from 21 through 578 omitted						
579	36	97	14339.79	562	565	587
580	4	66	14638.55	575	570	586
581	5	19	14791.05	577	555	596
582	13	137	14947.90	578	550	584
583	13	82	15126.90	583	558	589
585	190	205	15309.07	566	560	590
586	2	4	15503.38	576	581	592
587	35	36	15703.84	553	579	593
588	21	52	15911.84	569	574	595
589	9	13	16138.38	580	584	594
590	6	190	16377.33	523	585	598
591	29	56	16631.83	548	551	594
592	1	2	16894.23	571	586	597
593	3	35	17318.18	564	587	596
594	9	29	17845.40	589	591	595
595	9	21	18460.11	594	588	598
596	3	5	19210.36	593	582	597
597	1	3	20274.89	592	596	599
598	6	9	22077.85	590	595	599
599	1	6	27201.51	597	598	0

The first column 'stage' (Table 4.35) refers to the clustering process where, two most similar clusters are combined. The clustering schedule consists of 599 stages (total N-1 stages appear); hence 599 subjects or cases are being clustered. The second column gives information about the identification of clusters combines in each stage. The agglomeration coefficient indicates the 'squared euclidian distance' between the two clusters (or two objects) joined at each stage. The next column 'Stage Cluster First Appear' indicates the prior stage at which each cluster being combined was involved. The value 'zero' in this column represents that the cluster is still single member cluster and not combined with any other cluster before this stage and the last column represents the next stage in which the new cluster appears. It can be seen in the Table 4.35 that cluster analysis starts with total 599 clusters and at stage 1st, where the case 94 and case 390 are combined with minimum squared euclidian distance of 2.00. The value zero occurs in 'Stage Cluster First Appear' indicates that neither of these two cases has been previously clustered. In the last column, the new cluster appears at the stage 10. It can be observed that at stage 10, the case 94 combined with case 293 with agglomeration coefficient of 32.50. Likewise, and at stage 2nd, the case 41 and case 502 are combined with squared euclidian distance of 5.0. The value zero occurs in 'Stage Cluster First Appear' also indicates that neither of these two cases has been previously clustered. In the last column, the new cluster appears at the stage 119. It can be observed that at stage 119, the case 41 combined with case 110 having an agglomeration coefficient of 839.35. It can also be seen that at the stage 122, the case 94 also combined with the case 30 with agglomeration coefficient of 868.12 and subsequently the case 30 attached with 42 having an agglomeration coefficient of 416.10 at the stage 71. Likewise, at stage 579, the case 36 combines with case 97 (with agglomeration coefficient of 14339.79) and it can also be seen that the case 36 also combined with the case 76 at stage 562 with agglomeration coefficient of 12335.05 and the case 97 combines with case 170 with agglomeration coefficient of 12622.03 and subsequently the case 36 combined with case 35 at the stage 587 (with agglomeration coefficient of 15703.84). In this way, on the basis of squared euclidian distance, this process continues until all the cases are clustered in a single group. The same information as generated by agglomeration coefficient and clustering schedule can be displayed in the forms of 'vertical icicle plot', and dendrogram. The icicle plot is the graphical display of clustering results; it resembles a row of icicles hanging from eaves of house. The rows in the graph indicate the number of clusters and are always interpreted from bottom to top, whereas as the dendrogram is tree like graph in which the vertical lines represent the clusters that are joined together (excluded in report as 'clustering schedule'

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mentioned as substitute). The position of the line on the scale indicates the respective distances at which clusters are joined together.

b) Determining the Preliminary Cluster Solutions

The primary objective of hierarchical clustering process is to find out preliminary set of cluster solutions for conducting non-hierarchical clustering process to ascertain final and stable cluster solution. The preliminary set of solutions is based on 'stopping rule' principle to identify a small number of cluster solutions and subsequently use in examining the profile of each solution on the basis of clustering variables. The stopping rule is based on assessment of change in heterogeneity between the cluster solutions. The agglomeration coefficients are used for applying the stopping rule principle. The small amount of agglomeration coefficient indicates the merging of homogenous cluster whereas the large amount indicates the merger of different clusters. It is also important to note that each combination of clusters, consequences in increasing the heterogeneity, hence the larger percentage change in agglomeration coefficients gives important insights about preliminary cluster solution. The prior stage is considered the appropriate cluster solutions at the stage of large increase in heterogeneity. The Table 4.36 indicates the percentage change in agglomeration coefficients for all the clustering stages aiming to ascertain a set of preliminary cluster solutions. The main focus has been laid on clustering solutions ranging from 10 cluster to 2 cluster during the application of stopping rule as presented below (the stages beyond 10 clusters omitted from the table)-

Table 4.36 Stopping Rule for Preliminary Cluster Solution

Stage	Hierarchical Process Number of Clusters		Stopping Rule Agglomeration Coefficients		
	Before Joining	After Joining	Values	Change Occurs	% Increase to Next Stage
590	11	10	16377.33	238.94	5.5
591	10	9	16631.83	254.50	6.5
592	9	8	16894.23	262.39	3.1
593	8	7	17318.18	423.95	61.6
594	7	6	17845.40	527.21	24.4
595	6	5	18460.11	614.71	16.6
596	5	4	19210.36	750.25	22.0
597	4	3	20274.89	1064.52	**41.9**
598	3	2	22077.85	1802.96	**69.4**
599	2	1	27201.51	5123.66	184.2

The Table 4.36 reveals that heterogeneity increased 22% from 5 clusters to 4 clusters, 41% from 4 to 3 clusters, and 69% from 3 to 2 clusters and 184% increased from 2 to 1 cluster solution. The relative increases of heterogeneity have been computed by calculating per cent change in agglomeration coefficients from 10 clusters to 1 cluster (stage 590 to 599) and used for finding preliminary cluster solution. It can be seen that the large differences or change in agglomeration coefficients are appeared from stages 595 to 596 (18460.11 versus 19210.36), 596 to 597 (19210.36 versus 20274.89), and 597 to 598 (20274.89 versus 22077.85). On the basis of stopping rule principle, when large increases in heterogeneity occur, the prior cluster solution is the best because the combination joins quite different clusters. With this respect, we consider three and four clusters solutions as preliminary set of clusters because in two clusters solution heterogeneity increased by 69%, hence three clusters would be selected as possessed less heterogeneity (41.9%) as compared to two cluster solution and if we select three clusters solution, the heterogeneity increased by 41.9 %, hence four clusters would also be selected as possessed less heterogeneity (22%) as compared to three cluster solution.

c) *Profiling the Clustering Variables*

The profiling of each cluster solution identified from the clustering schedule will be examined to assess cluster distinctiveness on the basis of clustering variables. The variables are required to be converted into Z-score and the standardized values are used in the profiling so as to remove the effect of varying levels of dispersion among the variables. The Figure 4.13 and 4.14 provide profile analysis of two clusters (3-cluster solution and for 4-cluster solution) on the basis of 25 standardized variables. It can be seen in figures 4.13 that 3-cluster is more distinct as compared to 4-clusters.
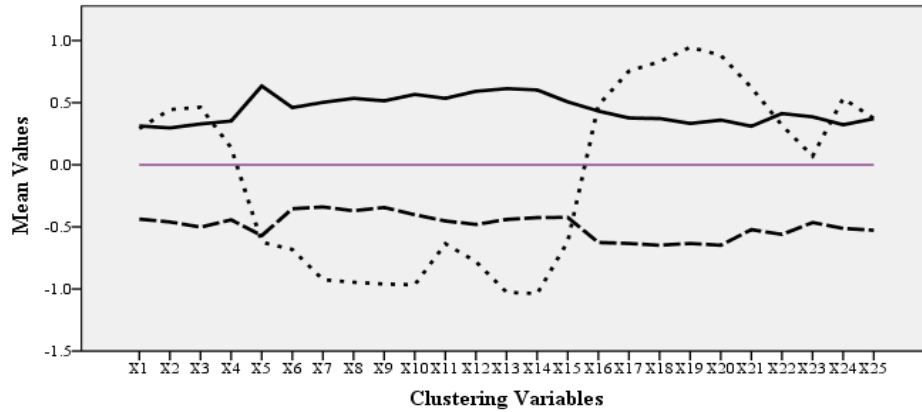
Fig. 4.13 Profiling of Clustering Variables for Three Clusters

It is also important to verify whether each cluster solution is relatively distinct with their magnitude of clustering variables or not. The first cluster represents higher values on clustering variables, second cluster having both higher and lower values whereas third cluster contains all lower values of the clustering variables. All the clustering variables are statistically significant at 0.000 significance (Table 4.37). The first, second and third clusters are having 287, 65 and 248 objects respectively.

Table 4.37 Profile Analysis for Three Cluster Solution

Clustering Variables	Ward Method			
	C-1	C-2	C-3	Total
X1	.31	.29	-.44	.00
X2	.30	.44	-.46	.00
X3	.33	.46	-.50	.00
X4	.35	.14	-.44	.00
X5	.63	-.62	-.57	.00
X6	.46	-.68	-.35	.00
X7	.50	-.93	-.34	.00
X8	.53	-.95	-.37	.00
X9	.51	-.96	-.34	.00
X10	.57	-.97	-.40	.00
X11	.53	-.64	-.45	.00
X12	.59	-.78	-.48	.00
X13	.61	-1.03	-.44	.00
X14	.60	-1.04	-.43	.00
X15	.51	-.62	-.42	.00

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X16	.43	.48	-.63	.00
X17	.38	.75	-.63	.00
X18	.37	.83	-.65	.00
X19	.33	.95	-.63	.00
X20	.36	.88	-.65	.00
X21	.31	.62	-.52	.00
X22	.41	.32	-.56	.00
X23	.39	.07	-.47	.00
X24	.32	.53	-.51	.00
X25	.37	.37	-.53	.00
Cluster Size	**287**	**65**	**248**	----

It can be seen in Fig.4.14 that the differences are not too much distinct among the magnitude of clustering variables in four cluster solution.
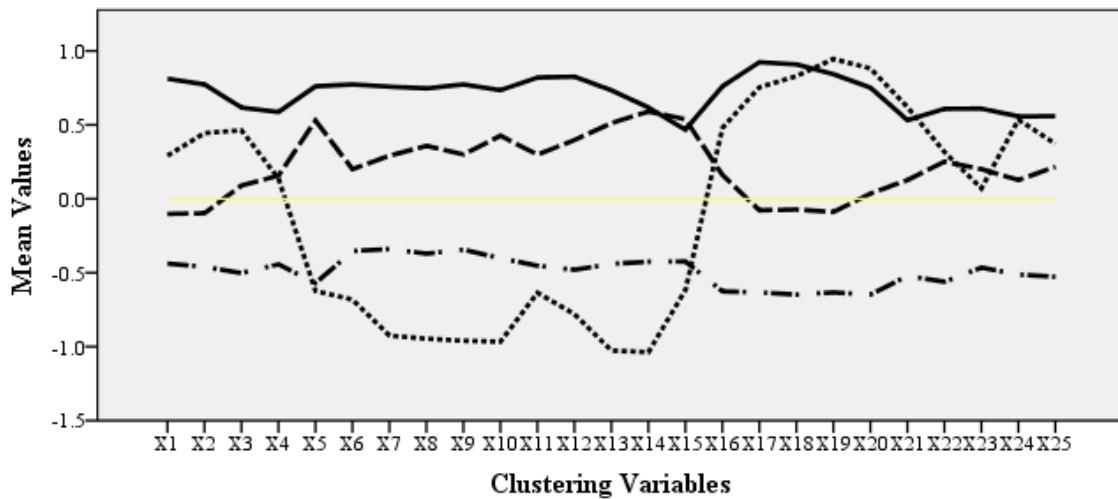
Fig. 4.14 Profiling of Clustering Variables for Four Clusters

It can be seen in Table 4.38 that first and second clusters are having higher values of variables for majority of the clustering variables, cluster four are having low values, whereas cluster three is having both higher and lower values of clustering variables. The first, second, third and four clusters are having 130, 157, 65 and 238 objects respectively.

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Table 4.38 Profile Analysis for Four Cluster Solution

Clustering Variables	Ward Method				Total
	1	2	3	4	
X1	.81	-.10	.29	-.44	.00
X2	.77	-.10	.44	-.46	.00
X3	.62	.09	.46	-.50	.00
X4	.59	.16	.14	-.44	.00
X5	.76	.53	-.62	-.57	.00
X6	.77	.20	-.68	-.35	.00
X7	.76	.29	-.93	-.34	.00
X8	.75	.36	-.95	-.37	.00
X9	.77	.30	-.96	-.34	.00
X10	.74	.43	-.97	-.40	.00
X11	.82	.30	-.64	-.45	.00
X12	.83	.40	-.78	-.48	.00
X13	.73	.51	-1.03	-.44	.00
X14	.62	.59	-1.04	-.43	.00
X15	.47	.54	-.62	-.42	.00
X16	.76	.16	.48	-.63	.00
X17	.92	-.08	.75	-.63	.00
X18	.91	-.07	.83	-.65	.00
X19	.84	-.09	.95	-.63	.00
X20	.75	.04	.88	-.65	.00
X21	.53	.13	.62	-.52	.00
X22	.61	.25	.32	-.56	.00
X23	.61	.20	.07	-.47	.00
X24	.56	.13	.53	-.51	.00
X25	.56	.22	.37	-.53	.00
Cluster Size	**130**	**157**	**65**	**248**	

The comparison among means of clustering variables in both three and four cluster solutions can be better analyzed with F-statistics. The F-statistics belonging to each clustering variable have been computed by dividing the mean square- between the group by its mean square within the group. Higher the value of F-statistic, higher will be the difference of mean among the clusters. The comparison in F-statistics for all clustering variables between three and four clusters reveals that the variables more significantly differ in three cluster solution (except X1, X2, X18 and X19 variables) due to larger F- statistic test values (Table 4.39).

Table 4.39 Comparison of Clustering Variable between 3 & 4 Clusters

Clustering Variables	F-Statistic Value	
	4-Cluster Solution	3-Cluster Solution
X1	**60.83***	46.65
X2	**63.29***	53.27
X3	53.59	65.30
X4	39.16	49.66
X5	119.63	174.92
X6	63.6	76.35
X7	80.1	105.79
X8	88.68	122.31
X9	86.07	113.58
X10	99.28	141.72
X11	84.31	107.95
X12	107.44	146.52
X13	121.91	178.69
X14	114.56	172.07
X15	62.32	93.33
X16	93.30	114.29
X17	**140.77***	125.26
X18	**149.41***	137.14
X19	**143.41***	137.99
X20	122.44	140.63
X21	56.13	75.00
X22	62.07	85.62
X23	44.03	57.48
X24	53.22	69.71
X25	52.85	72.85

*Higher F-statistics values

4.7.2 Results of Non-Hierarchical Clustering Analysis

The stopping rule principle and profiling analysis during hierarchical clustering process indicate 3-clusters as optimum cluster solution for segmenting the rural consumers on the basis of motives of consumer innovativeness for mobile telecom services. The 3-cluster solution has been further examined in non- hierarchical clustering process for assessing final cluster solution. The non- hierarchical clustering process performs 'K-means' cluster analysis aiming to minimize within-cluster variation and maximize between-cluster variation for identifying more stable cluster solution. The final cluster solution will be judged by assessing criterion validity. The results of non- hierarchical clustering process are as follows-

a) *Initial Cluster Centres*

The result of non- hierarchical clustering process initially finds K-centres that indicates the values of three randomly selected dissimilar cases to each other and then similar cases join these values iteratively until the formation of distinct clusters. In each iteration process, cases join different clusters resulted into change of cluster centres. Any value corresponding to iteration process indicates a distance of new cluster (after joining the cases) from the previous cluster centre. This process continues till the zero appears in the iteration progress.

b) *Cluster Membership*

The next result gives important insights about cluster membership for each case. The distance between the subject (case) and respective cluster is mentioned in the column *distance*. The magnitude of distance indicates the 'representativeness' of case with the concerned cluster. Lower the distance, higher will be the representativeness (Table 4.40).

Table 4.40 Cluster Membership

Case Number	Concerned Cluster	Distance
1	3	5.24
2	3	3.91
3	3	6.70
4	3	5.88
5	3	6.13
6	1	5.58
7	3	4.44
8	3	4.93
9	2	5.38
10	3	4.70
Intermediate Cases from 11 through 589 omitted		
590	1	7.35
591	3	7.28
592	2	5.16
593	2	6.75
594	3	6.22
595	2	7.84
596	2	4.17
597	2	6.01
598	1	6.25
599	1	6.48
600	2	6.77

c) Final Cluster Centres

The final cluster centres indicate the mean value of each clustering variable within 3-cluster solution. For example, the cluster 1 is described by the mean values of variable X1=3.24, X2= 3.57, X3= 3.74, X4= 3.57 and so on. Similarly, cluster 2 is described by the mean values of variables X1=1.95, X2= 2.18, X3= 2.30, X4= 2.24 and so on. Likewise, cluster 3 is described by the mean values of variable X1=3.54, X2= 3.60, X3= 3.66, X4= 3.51 and so on. The mean information for each clustering variable within cluster has been used to interpret the characteristics for each homogenous cluster as mentioned below-

- **Cluster 1**

In this cluster, some of clustering variables are having mean values lower than 3.0 (X5 to X15 variables) others have been found above than 3.0 (X1, X2, X3, X4 and X16 to X25 variables). The consumers belonging to this cluster are influenced by social motives as they love to use new mobile telecom services to impress others in social group, believe that owning new mobile telecom services makes them different from others in social group, they would like to get experience of a new services for presenting themselves and deliberately buy new services aiming to get respect from others. It is important to note that consumers included in this cluster express almost neutral or low level of agreement for the functional motives, where as their agreement is moderate to high for the hedonic and cognitive motives. These consumers, influenced by hedonic and cognitive motives, are always keen to search innovations to satisfy their analytical mind, think logically and take rationale decision in accepting the innovation in mobile telecom services.

- **Cluster 2**

All the cases belonging to this cluster are having mean values either almost equal to 3.0 or lower than 3.0. This depicts that consumers belonging to this cluster are least influenced by social, functional, hedonic and cognitive motives related to mobile telecom services. The consumers included in this cluster are not interested to use new mobile telecom services aiming to impress others and getting respect in social group, these customers have shown low level of agreement with the functional motives such as network coverage, VAS, tariffs plans, talk time, validity of denominations of coupons, customer care, regular awareness about latest plans and offers, and establishment of connection. These consumers are not interested to

search innovations to satisfy their analytical mind, logical thinking and don't take rationale decision for accepting the innovation in mobile telecom services. They also have low level of agreement to search innovation in mobile telecom services aiming to make life more exciting, happy, and enjoyable.

- **Cluster 3**

All the cases belonging to this cluster are having mean values more than 3.0 for all the clustering variables. The high mean values of all clustering variables indicate more influence of social, functional, hedonic and cognitive motives. It is also important to note that these consumers are highly influenced by functional motives as shown comparatively higher mean values for the concerned variables. The consumers involved in this cluster are always keen to search innovations to satisfy their analytical mind, think logically and take rationale decision for accepting the innovation in mobile telecom services. They also have comparatively high level of agreement to search innovation for telecom services aiming to make life more exciting, happy, and enjoyable (Table 4.41).

Table 4.41 Final Cluster Centres

Clustering Variables	Cluster Centres		
	C-1	C-2	C-3
X1	**3.24**	1.95	3.54
X2	**3.57**	2.18	3.60
X3	**3.74**	2.30	3.66
X4	**3.57**	2.24	3.51
X5	2.58	2.14	**3.92**
X6	2.43	2.39	3.62
X7	2.56	2.58	**3.95**
X8	2.52	2.65	**4.14**
X9	2.58	2.61	**3.92**
X10	2.61	2.70	**4.20**
X11	2.01	2.37	**4.40**
X12	2.21	2.45	**4.30**
X13	2.44	2.58	**4.30**
X14	2.46	2.71	**4.30**
X15	2.52	2.78	**4.02**
X16	**3.43**	2.16	3.58
X17	**3.50**	2.08	3.48
X18	**3.46**	1.85	3.43
X19	**3.66**	1.97	3.35
X20	**3.61**	2.03	3.55
X21	**3.51**	2.37	3.63
X22	**3.36**	2.58	3.83

X23	3.08	2.33	3.58
X24	**3.72**	2.35	3.40
X25	**3.48**	2.44	3.77

d) *Distances Between Final Cluster Centres*

The distance between the final cluster centres is measured by 'euclidian distance' to identify the distinctness among the clusters. Relatively large differences in values indicate the greater dissimilarity in cluster centres. The cluster 1 is having a distance of 4.9 and 5.6 from cluster 2 and cluster 3 respectively, whereas cluster 1 and cluster 2 is having greatest dissimilarities (Table 4.42).

Table- 4.42 Distances between the Clusters

Cluster	1	2	3
1	---	4.9	5.6
2	4.9	----	7.3
3	5.6	7.3	----

e) *ANOVA Table*

The ANOVA table is used to identify the clustering variables that are important for segmentation during clustering procedure. The value of mean square indicates the variance in the clustering variables that attributes to the clusters whereas mean square error indicates the variance in variables that contributes less in the clusters. The F-statistics is the ratio of cluster variance to the error variance (e. g. F value for X1: 157.12/ 1.62= 96.8) Larger the value of F, greater will be the importance of the concerned variable to contribute variance in cluster. It can be seen in the table 4.43 that comparatively high value of error means and low F-statistics belong to X21, X23, and X24 variables that indicate relatively less contribution in segregating the clusters. Though, it is also important to note that all the clustering variables are statistically significant.

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Table 4.43 Results of ANOVA

Clustering Variable	Cluster Mean Square	Error Mean Square	F-Ratio	Significance
X1	157.12	1.62	96.8	0.000
X2	141.91	1.36	103.6	0.000
X3	137.75	1.24	110.9	0.000
X4	118.59	1.38	85.9	0.000
X5	190.45	1.19	159.8	0.000
X6	102.42	1.17	86.9	0.000
X7	132.13	1.08	121.7	0.000
X8	166.47	1.10	151.1	0.000
X9	122.91	1.22	100.1	0.000
X10	164.97	1.24	132.5	0.000
X11	335.38	1.29	258.4	0.000
X12	265.26	.96	274.0	0.000
X13	221.26	1.04	212.6	0.000
X14	201.68	1.12	179.5	0.000
X15	128.32	1.41	90.7	0.000
X16	132.56	1.43	92.3	0.000
X17	141.79	1.39	101.9	0.000
X18	179.59	1.25	143.0	0.000
X19	163.77	1.24	131.9	0.000
X20	168.10	1.14	147.2	0.000
X21	**104.40**	**1.56**	**66.8**	0.000
X22	91.57	1.17	77.9	0.000
X23	**89.40**	**1.86**	**47.9**	0.000
X24	**103.31**	**1.53**	**67.3**	0.000
X25	107.87	1.52	70.9	0.000

f) ***Number of Cases in Three Cluster Solution***

It is also worth noting that in 3-cluster, the number of cases almost remain the same in non-hierarchical clustering process. Out of 600 cases, 145 cases (24.2%) belong to cluster 1, 233 cases (38.8%) belong to cluster 2, and 222 cases (37%) cases belong to cluster 3. The non-hierarchical cluster solution produces comparatively similar number of cases as compared to hierarchical cluster solution (C1-287 cases, C2- 65 cases, and C3-248 cases). The wide variation in size of clusters is an indication of dubious results and re-assessment of clustering variables are required with respect to their importance in research questions.

5. FINDINGS, RECOMMENDATIONS AND CONCLUSION

5.1 Research Findings

This chapter summarises main findings of the present study entitled "A Study on Integrated, Innovative, and Inclusive Framework for Rural Mobile Telecom Service Users in Punjab". The research findings in this section are followed by recommendations and conclusion aiming to give important insights for mobile telecom services in rural Punjab. The findings are also important for theoretical and managerial implications of the latest rural marketing approach (Integrated, Innovative, and Inclusive- 3Is) for strengthening mobile telecom services in rural Punjab. The major findings are presented as follows-

5.1.1   Problems of Mobile Telecom Services

The qualitative research technique based on direct approach has been used to find out the problems associated with rural telecom services in Punjab. The 'open coding' process has been applied to convert the verbal transcripts of telephonic interview into numeric data. With the use of this technique, the problems have been identified and accordingly naming has been done for each category. Total four main categories viz., technical (Code-A), infrastructural (Code-B), manpower (Code-C) and customers' perspective (Code-D) have been identified from the analysis. Further, each main category has been divided into various sub-categories and ends with identification of total 33 sub-categories of main problems. The technical problem consists of 7 sub-categories (from A1:A7), the infrastructural consists of 10 sub-categories (from B1:B10), the manpower related problems consist of 7 sub-categories (from C1:C7), and 9 sub-categories (from D1:D9) identified from customers' perspective related problem (Table 4.1).

5.1.2   Proportion of Intensity of Problems

 The descriptive statistics based on frequency analysis (percentage) have been used to find out the intensity of problems related to each category. The summary of the findings reveals that network quality, and high operation costs of BTS identified main problems related to 'technical category' as reported by 88% and 75% of the respondents respectively, whereas high operating and distributing costs, lack of after sales services, lack of flow of information and lack of service availability (all equal proportion of 31%) identified major problems related to 'infrastructural category'; lack of technical skill and knowledge (31%), lack of sufficient and quality manpower (19%) and appointment & retention of rural distributors

(19%) identified major problems related to 'manpower category' and low awareness & knowledge (63%), insufficient subscriber base& low usage (44%), and inability to understand bills & tariffs plan (25%) identified major problems related to customers' perspective category (Fig. 4.1 to Fig. 4.4).

5.1.3 Major Stakeholders for Inclusive Framework

The inclusive approach gives emphasis on promoting 'rural entrepreneurship' aiming to create buying power, generation of wealth and developing community trust. The objective as mentioned in the study to design the conceptual framework of inclusive approach for mobile telecom services in rural Punjab is based on the qualitative analysis of secondary data. The successful global initiatives in rural telecommunication such as Grameen Telecom-Bangladesh, Smart Incorporation- Philippines, Village Phone- Uganda and Celtel- Nigeria have been used to explore the main stakeholders required to design rural entrepreneurship for rural mobile telecom services. The findings of study identified five major stakeholders involved in the framework- (i) Mobile telecom service providers- responsible for handling operational issues, developing network infrastructure and service quality, (ii) Microfinance agencies- provide financial assistance to local people for business startups, (iii) Rural entrepreneurs- the involvement of local people as business partner aiming to deliver telecom services in rural areas and strengthen rural ecosystem with income generation opportunities (iv) The Government bodies- local, state or central government for formulating, controlling and supervising the quality of telecom services, (v) Local community members- seeking benefits of affordable quality telecom services with connectivity from rest of the world (Fig. 4.5).

5.1.4 Current Usage Patterns of Mobile Telecom Services

The current usage pattern of mobile telecom services is based on the findings of survey among 600 existing telecom subscribers of rural Punjab. The results of descriptive analysis (based on frequency and percentage) reveal that the sample comprised 365 (60.8%) male and 235 (39.2%) female respondents. Majority of rural consumers subscribed with Bharti Airtel (35.3%), followed by Idea (21.7%), Vodafone (14.8%), and BSNL (11.5%) and almost all the consumers (98.8%) had pre-paid mode of connection. Around 23.2% consumers had been using mobile phone from 4-6 years, 22.3% consumers from 6-8 years, 17.2% consumers from 2 years and 12.4% consumers from 2-4 years. Maximum of the consumers (38%) had monthly expenses of mobile phone up to 200 Rs., 18.3% of the consumers had monthly

expenses of 201-400 Rs. and 401-600 Rs., 9.8% of the consumers had 601-800 Rs., whereas 8.3 % of the consumers had monthly expenses of 801-1000 Rs. per month. Maximum of the consumers (52.7%) never changed their service provider till date of survey, whereas 16.5% of consumers changed once time and 18.3% changed their service providers twice. It is also important to note that half of rural consumers used mobile phone for local calls only.

5.1.5 Preferences for Selecting Mobile Telecom Services

The preferences for selecting mobile telecom services are based on the findings of frequency calculation of ranks given by all the respondents for ten different parameters. The results of descriptive analysis (based on frequency calculation) reveal that 'strong and reliable network', is the most preferred parameter for selecting a brand of mobile telecom service followed by 'reference of family/friends' (2nd rank) and 'communication clarity' (3rd rank). It is also important to note that 'value added service', 'brand reputation', 'celebrity endorsement', 'customer care service' and 'promotional offers' are the least preferred parameters for selecting a brand of mobile telecom services for rural consumers.

5.1.6 Demographic Profile of Rural Mobile Telecom Service Users

The results of survey indicate that around one-fourth of consumers (25.8%) belonged to the age group of 20-30 years followed by 40-50 years (22.6%), 30-40 years (20.5%), less than 20 years (17.5%) and more than 50 years (13.5%). In case of educational qualification, around 80% of the rural consumers were literate and out of this, one-fourth of consumers (26%) were high school, 12.3% were graduate and 4.3% were post graduate. In the survey, 66.7% consumers were married and 33.3 % were unmarried. In the case of primary occupation, majority of consumers (26.7%) engaged in non-agricultural work, followed by agricultural work (23%), salaried and labour (12.5%), and 17.5% & 7.8% related to students and housewife respectively. It is also important to note that around half of the consumers had monthly households' income from 2001-5000 Rs. and 10001-15000 Rs.

5.1.7 *Rural Consumers Satisfaction and Preferences towards Mobile Telecom Services*

The satisfaction and preferences related findings are based on hypothesis testing procedure of single population by using t-distribution (mean score). The one Sample T-test has been used for the statistical inferences. The summaries of the findings are presented as follows-

a) *Need and Interest of Using Mobile Phone*

In the study, the rural consumers have been found very peculiar about using mobile phones. The findings reveal that rural consumers' need and interest for using mobile phone are due to emergency purpose, keep in touch with family members, for business activities, entertainment purpose and as the cheapest source of communication. Whereas, the other functions such as availing agricultural information, symbol of style and status, and means for financial transactions seem to be least significant by rural consumers.

b) *Importance and Usage Pattern of Value Added Services*

The study indicates that all the major VAS such as SMS, MMS, financial transactions, diagnostic and treatment support, availing local and regional news, agricultural information, entertainment and using internet considered as important services by the rural consumers except availing educational information. Nevertheless, majority of value added services have been found important for rural consumers but the usages of these services vary. It reveals that some VAS such as financial transactions, diagnostic and treatment support, and availing educational information are never used by rural consumers.

c) *Major Barriers of Rural Mobile Telecom Services*

The major barriers that affect adoption and continuity of mobile telecom services in rural areas identified as weak network, high call rate, unfit tariff plans, lack of information about the latest plans and schemes, unavailability of recharge facility and lack of after sales services in the rural areas, whereas acquiring new connection, talk-time and validity seems not to be important barriers.

d) Measuring Customer Satisfaction of Service Quality Parameters

The study indicates that rural consumers are not satisfied with the network quality, reliability & signal strength, and clarity of communication. Whereas, they are satisfied with the time required for establishment of connection, number of completed calls, call setup time, connectivity during peak hours, talk time and validity of the recharge denominations.

e) Measuring After Sales Service Quality and Customer Care

The rural consumers are not satisfied due to lack of availability of latest service plans & offers, and unavailability of recharge coupons, but they are satisfied with the regular information and availability of different mode of payments. As far as the customer care services are concerned, the rural consumers are satisfied with various dimensions of customer care services such as counter service, prompt assistance, time spend on the resolving the problems and satisfied with the decisions but dissatisfied with the response during complaint handling procedure.

f) Measuring the Customer Loyalty

The rural consumers indicate positive attitude towards the mobile telecom services loyalty. The findings reveal that rural consumers like to choose same telecom service again, recommend to others, share the experience and reluctant to switch.

5.1.8   Major Stakeholders for Integrated Framework

The successful business models such as Grameen Telecom-Bangladesh, Village Phone-Uganda, Smart Incorporation- Philippines, and Celtel- Nigeria, Peru's PPP telecommunication, Viom's Network, Noida have been used to explore the dimensions for designing conceptual framework on PPP for rural telecom sector. The government (state, local or central), the private telecom players (domestic or foreign) and public have been identified as major stakeholders for developing risk sharing business model aiming to access the mobile services in rural areas.

5.1.9   Measuring Rural Consumers' Innovativeness

The findings of this part are based on the analysis of multiple regressions by considering consumer innovativeness as dependent variable and major determinants such as opinion

leadership, price sensitivity, product involvement, need for uniqueness, and venturesomeness as independent (predictor) variables. The major findings are summarized as follows-

a) Measuring Mobile Telecom Service Innovativeness and Determinants

The findings reveal that rural consumers' innovativeness towards mobile telecom services is significant and the major determinants of consumer innovativeness such as opinion leadership, price sensitivity, product involvement, need for uniqueness and venturesomeness of towards mobile telecom services are also significant for rural consumers. It is also important to note that rural consumers' level of agreement is comparatively high for price sensitivity followed by opinion leadership, venturesomeness , and need for uniqueness.

b) Association between Rural Consumer Innovativeness and Its Determinants

The findings of correlation analysis (Pearson's product moment correlation) reveal that opinion leadership is highly associated with mobile telecom innovativeness, followed by venturesomeness , product involvement and need of uniqueness, whereas an insignificant & weak association has been measured between consumers' innovativeness and the price sensitivity.

c) Effects of Opinion Leadership, Price Sensitivity, Product Involvement, Need for Uniqueness and Venturesomeness on Mobile Telecom Service Innovativeness

The magnitude of regression coefficients associated with each predictor variable indicates the relative effects of each determinant on mobile telecom service innovativeness. The opinion leadership, product involvement and venturesomeness significantly affect rural consumers' innovativeness towards mobile telecom services, whereas price sensitivity, need for uniqueness do not affect consumer innovativeness. It is also important to note that, higher the opinion leadership, product involvement and venturesomeness, higher will be the innovativeness, where as higher the price sensitivity, lower will be the innovativeness for mobile telecom services among rural consumers.

5.1.10 Measuring Motivated Rural Consumers' Innovativeness

The findings of this part are also based on analysis of multiple regressions by considering consumer innovativeness as dependent variable and four motives of consumers' innovativeness such social, functional, hedonic and cognitive as independent variables. The major findings are summarized as follows-

a) Association Between Rural Consumer Innovativeness and Motives

The findings of correlation analysis (Pearson's product moment coefficient) reveal that social motive is highly associated with rural consumer innovativeness followed by functional, cognitive, and hedonic motives.

b) Measuring the effects of Social, Functional, Hedonic, and Cognitive Motives on Mobile Telecom Service Innovativeness

The magnitude of regression coefficients associated with each independent variable (four motives) indicates the relative effects of these motives on mobile telecom service innovativeness. All the motives namely social, functional, hedonic and cognitive significantly motivate rural consumer innovativeness towards mobile telecom services. It is also worth noting that higher the social, functional, hedonic and cognitive motives, higher will be the innovativeness towards mobile telecom services. The consumers' innovativeness towards mobile telecom services is highly influenced by social motives followed by functional, cognitive and hedonic motives.

5.1.11 Rural Consumer Segmentation Based on Determinants of Consumer Innovativeness

With the application of hierarchical clustering process, the initial clustering solution has been used to identify 3-cluster as the most stable and final cluster solution that depicts distinct innovative characteristics of rural consumers towards mobile telecom services. The consumers belonging to first cluster (C-1) show neutral behaviour for opinion leadership, price sensitivity, and venturesomeness with low product involvement but it is worth noting that due to their high need for uniqueness, they show openness for experience of purchasing rare items (new telecom services) in socially accepted behaviour. The consumers assigned in second cluster (C-2) are characterised as low opinion leadership, product involvement, venturesomeness, need for uniqueness along with high price sensitivity. These consumers rely on others for guidance rather than trusting themselves for purchasing new telecom services. The consumer belonging to third cluster (C-3) are considered as innovators with their high opinion leadership, product involvement, venturesomeness , need for uniqueness but it is worth noting that these consumers possess high price sensitivity also (Table 5.1).

Table 5.1   Rural Consumer Segmentation (Based on Determinants of Innovativeness)

Cluster	Characteristics of Innovators
C-1	Open-Minded
C-2	Opinion- Seekers
C-3	Innovators

5.1.12 Rural Consumer Segmentation Based on Motives of Innovativeness

With the application of hierarchical clustering process followed by non-hierarchical process, 3-clusters identified as final cluster solution that depicts segmentation on the basis of four motives namely social, functional, hedonic and cognitive for mobile telecom services. The consumers belonging to the first cluster (C-1) are moderately influenced by all the motives excluding the functional motive, whereas the consumers belonging to second cluster (C-2) are not influenced by any motive, and the consumers belonging to third cluster (C-3) are influenced by all the motives along with high functional motives (Table 5.2).

Table 5.2 Rural Consumer Segmentation (Based on Motives)

Cluster	Characteristics of Consumers
C-1	Stimulators
C-2	Passive-Innovators
C-3	Value-Seekers

5.2   Recommendations of Study

This study has practical implications for both the academicians and the practitioners aiming to strengthen mobile telecom services in rural areas of Punjab. The recommendations as presented in the study are related to the latest rural marketing approach i.e. Integrated, Innovative, and Inclusive (Krishnamacharyulu and Ramakrishnan, 2012; Prahalad and Stuart, 2002) and are based on the findings from both qualitative and quantitative research techniques. The recommendations presented here, are based on the empirical survey conducted among existing mobile telecom service users & telecom officials from all three areas of rural Punjab (Malwa, Doaba and Majha) as well as from the qualitative analysis of secondary data. The recommendations are presented as follows-

5.2.1 Recommendations Related to Integrated Approach

The recommendations related to integrated approach stress on recognition and formation of synergistic alliances among public sector, private sector, NGOs, financial institutions and other organizations aiming to strengthen rural telecom infrastructure in order to enhance rural teledensity. The major recommendations are as follows-

i.   The findings of exploratory study indicate the prevalence of technical, infrastructural, and manpower related problems affecting availability, acceptability, affordability and awareness (4As) of mobile telecom services in rural Punjab. In order to meet the infrastructure gap and lack of resources in rural areas, the study emphasizes on invitation of national and foreign telecom players through USOF (Universal Service Obligation Funds) aiming to develop the mobile telecom infrastructure in rural Punjab through creating synergistic partnerships with government or other organizations.

ii.   The lack of secure, reliable and consistent network quality coupled with high operating costs of BTS (Base Transceiver Stations) create a challenge for government to achieve the vision of National Telecom Policy-2012 to enhance the current level of rural teledensity from 39 per cent to 70 per cent by the end of 2017 and 100 per cent by the year 2020. Hence, it is recommended to initiate PPP model through grants of time bound subsidies to originate responsive participation from private players aiming to improve the access of telecom services at affordable prices by incorporating modern technology, and innovative business models.

iii. It is highly required to deliver innovative practices either in mobile infrastructural or at customer premises equipments in order to enhance rural teledensity; hence the effectiveness of subsidy disbursement through USOF scheme should be evaluated in terms of availability, acceptability, affordability and awareness (4As) of mobile telecom services.

iv.   In order to enhance the awareness and acceptability of telecom services in rural environment (shortage of power and battery back-up problems), it is required to initiate some pilot projects in the form of partnerships among technology providers, telecom service operators and USOF administration in rural areas to demonstrate the mobile telecom technologies in rural areas.

v. The PPP model facilitates to utilize the private players as a continuous source of finance, source of better technical know-how & better project design to expand the telecom services at rural door step.

vi. The success of PPP model depends on achievements of mutual benefits and creating win-win situations for all the stakeholders involved in the partnership. Hence, the study stresses on following assessments for strengthening the model-

a. Acceptability of telecom services- Delivering affordable (lower tariffs charges) and quality telecom services with innovative products (customer premises equipments or tailor made products & services) for socio-economic development.

b. Achievement of Government Vision- Achieving the vision of National Telecom Policy-2012, to provide universal access of quality services, financial inclusion, e-healthcare, e-education and e-Governance facilities through access of ICT services in rural areas.

c. Telecom Players- Garnish the market share in rural areas and generating substantial revenue and subscribers' growth.

5.2.2 Recommendations Related to Innovative Approach

The recommendations related to innovative approach stress on requirement of distinct business model, introducing innovative & customized products, identifying rural innovators and using the concept of consumer innovativeness for successful diffusion and adoption of innovation of telecom products within a particular rural social system. The major recommendations are presented in the following categories-

a) *Satisfaction and Preferences Related Recommendations*

i. The findings related to need and interest of using mobile phone indicate that rural consumers found insignificant for style & status and for agriculture availing information functions. Hence, a favourable change in attitude of rural consumers is required in order to realize the importance and need recognition for these functions by offering suitable marketing mix.

ii. The findings related to importance and usage pattern of m-VAS reveal that diagnostic and treatment support, availing local and regional news, and financial transaction services are rarely used by rural consumers and are considered unimportant also. At the time of sequential dip of voice Revenue Per Minute (RPM) in top telecom

companies, the m-VAS can be used as additional source of revenue to make business viable. Therefore, it is recommended to identify the target customers and spread awareness about m-commerce (m-banking transactions, m-ticketing, and m-payment), m-education (exam alerts, tailored educational contents, agricultural information, local and regional news), and m-health services (basic medical guidance on non-emergency health problems, tele-consultation, ambulance services, doctor-on-call) in order to create interest and receptivity of these value added services.

iii. In order to enhance the usage of m-VAS, it is recommended to evolve tie-ups with healthcare and education technology partners to offer these services on mobile by incorporating regional language interface to make services customized and addressable to various rural customers.

iv. As it is evident from the study that pre-paid consumers being higher in number (98%) in rural areas and perceived high call rate, hence the telecom service providers should pay special attention towards creating and delivering value for money for pre-paid services so as to enhance satisfaction and increase the size of subscriber base in rural areas.

v. The talk-time validity and lack of after sales services are identified to be the major barriers that affect adoption and continuity of mobile telecom services in rural areas. It is revealed from the study that majority of rural consumers are pre-paid subscribers and spend up to Rs. 200 as monthly average expenditure on mobile telecom services, hence the features of recharge coupons/ e-recharge (with respect to value and talk time) affect acceptability and affordability of telecom services. Therefore, it is recommended to incorporate innovative features in recharge coupons (e.g. freebies-same amount of talk time for a lower price or more talk time for the same price, micro recharge coupons, life time pre-paid plans, and handset bundling), customization as per the need of multiple rural segments, and cyclic nature of agricultural disposable income aiming to enhance the willingness to consume.

vi. The second major issue that has been found in the study is the lack of after sales services. It includes deficiency in service availability (acquiring new customers, lack of availability of latest plans, schemes and all range of denominations of recharge), improper distribution, and lack of information and communication. In order to overcome these barriers, the innovations are to be evolved in order to strengthen the availability and awareness for telecom products. Therefore, it is recommended to design innovative distribution by allowing local people into distribution channel. The

companies can use these local people as source of credibility, influence leaders, brand promoters, relationship marketers and harbinger of change in the particular rural social community.

vii.   Maintaining an effective distribution channel in rural areas is a great challenge as high costs are involved, hence telecom service providers are suggested to evolve partnerships with cooperative societies, NGOs, public distribution system, in order minimize the distribution costs. It is also recommended to use some unique distribution models such as syndicated distribution model aiming to enhance the distribution efficiency in the rural areas.

viii.   In order to overcome the availability issues, the telecom companies are suggested to focus on distribution priorities in rural areas as '*distribution to the rural outlets*' (more penetration) and '*distribution in the rural outlets*' (effective display). The study recommends exploring the application of 'multi-stage distribution model' characterized as serving the bigger villages first followed by the villages well connected near to small towns, and at last, the villages those are in remote areas to enhance distribution reach. The telecom companies are also suggested to give proper training to rural distributors and local entrepreneurs to enhance their skills and knowledge about telecom products and services (specially where women run the shops) and use *haats* (periodic rural markets often held once a week) and *mandis* for spread awareness about telecom latest plans and services.

ix.   The findings related to the service quality indicate that maximum of rural consumers are not satisfied with network quality (59 per cent), followed by signal strength (54 per cent), and clarity in communication (50 percent). The study recommends improving network quality and with optimum utilization of base transceiver stations (BTS) to ensure the minimum call drops and clarity in communication. The study also recommends improving technical aspects of service quality so as to retain the active subscribers (consumers who made as least one revenue call in the last 60 days) aiming to ensure cover up the operational costs of BTS and to sustain the profitability of sites.

x.   The study also recommends focusing the customer care services as maximum of the rural consumers (52 per cent) are not satisfied with the responses they got during complaint handling process. Therefore, the study stresses on understanding the needs of rural consumers thoroughly with fair consumers' complaint redressal system primarily in the favour of consumers rather than companies itself only. It is also advisable to take consent from rural consumers for activating paid m-VAS (often

monthly charged such as caller-ring-back tones, music download, customised ring tones etc.) by telecom companies as maximum of rural consumers are unaware about the terms and conditions and majority of m-VAS starts due to ignorance.

b) *Recommendations Related to Mobile Telecom Services Innovativeness*

The recommendations of this section are based on personal characteristics of innovators such as opinion leadership, product involvement, prise sensitivity, need for uniqueness and venturesomeness for rural mobile telecom service users. The following recommendations give important insights about targeting rural consumers based on innovative buying behaviour that affect diffusion of innovation in a particular society. The major recommendations are presented as follows-

i. The research findings indicate that rural consumers are innovators due to their characteristic of innovativeness towards mobile telecom services hence; they can also become early adopters or innovators in the rural context. Therefore, the study recommends the rural consumers as promising target segment just like the urban ones.

ii. The findings also indicate that the 'rural consumer innovators' are very likely to be opinion leaders, hence, it is recommended to recognize and target these opinion leaders first in a particular rural community in order to create substantial awareness for innovative products & services and use these opinion leaders as an important source of Word of Mouth (WOM) communication to potential later adopters regarding acceptance of new telecom products.

iii. The empirical findings also indicate that rural consumers are very cautious and price sensitive towards adopting innovative products and services, hence it is important to incorporate innovative features as per the usage pattern & need of the rural consumers so as to deliver tailor-made offerings to create value for money.

iv. A significant rural consumers' product involvement towards mobile telecom services as found in the study, indicates that rural consumers are more likely to give greater deliberation to purchase new telecom services aiming to achieve greatest utility, hence marketers should focus on designing and communicating certain cues that can lead to cognitive awareness of needs and drives towards purchasing of new mobile telecom services for rural consumers. Therefore, it is recommended to design products and services carefully to meet rural consumers' needs, goals and values in order to generate frequent purchase and continuous use of same service.

v. The findings based on multiple regression reveal that opinion leadership, product involvement and venturesomeness are the major determinants that accelerate innovative buying behaviour for mobile telecom services in rural people. Therefore, the service providers are required to focus on these characteristics of rural consumers aiming to develop strategies to enhance the market acceptance for innovation.

vi. The rural consumers' innovativeness towards mobile telecom services can be an important criterion for effective targeting of rural customers in order to spread new telecom services in rural communities. The telecom service providers can contemplate a 'moving target approach' for three distinct consumers segments as identified in the study i.e. open minded (C-1), opinion-seekers (C-2) and innovators (C-3). Therefore, it is recommended that incorporating newness or innovative features in marketing mix of telecom products should be designed separately to target these segments as a part of diffusion enhancement strategies.

vii. The study also finds that rural consumers' innovativeness is highly affected by social and functional motives; hence innovative features in marketing mix of telecom products should enhance social as well as functional utilities such as strong & reliable network coverage, customized & affordable m-VAS, tariff plans, regular awareness for the latest plans, and regional language interface so as to enhance the adoption and continuity of telecom services among rural people.

viii. The perceived motives for innovativeness could be important criterion for identifying target market and marketing mix selection for mobile telecom services among rural people. The three distinct rural segments as identified in study i.e. stimulator (C-1), passive-innovators (C-2), and value- seekers (C3) could be used as market segmentation, strategic targeting and service positioning.

5.2.3 Recommendations Related to Inclusive Approach

The recommendations related to the inclusive approach stress on promoting rural entrepreneurship aiming to enhance the access of telecom services in rural areas and create buying power among rural people. The major recommendations are presented as follows-

i. Doing business in rural area is a big challenge for telecom companies due to lack of distribution channel, sparsely population, improper supply chain mechanism, media dark zones, and high distribution cost as compared to the urban ones. Hence, the study

emphasizes on identification of local skilled persons in a particular area and used them as intermediaries to facilitate the business activities in local areas.

ii. The mobile telecom service providers are suggested to train these local people for strengthening the connect between the company and rural consumers aiming to facilitate the availability of after sales services, information flow, completing the documentation and acquiring new customers. The companies can also involve these local people actively in the communication strategies for spreading the message and can get advantage due to gaining of community trust.

iii. The intermediaries persons involved in the channel should be trained in handling, resolving and communicating the complaints in order to satisfy the existing customers and build better relationship with them.

iv. As the study found that majority of rural consumers face a problem to understand tariff plans and schemes, hence choosing a right product for rural people is a challenge, hence, the rural retailers involved as channel members should receive proper guidance from service providers to promote suitable offerings to pre-paid users which can satisfy the rural consumers along with increase revenue also.

v. The telecom companies are suggested to build partnerships with other stakeholders such as NGOs, banks, microfinance agencies and cooperative societies in rural areas in order to access the finance for local entrepreneurs to start business activities in their local areas.

vi. The mobile telecom service providers are suggested to ensure the regular supply of recharge coupons (with all the denominations), e-recharge facilities, availability of all updated tariff plans and information at rural distributors and *kirana* stores in order to satisfy the demand of existing customers so as to create a positive word of mouth for attracting new customers and retaining rural distributors to the business.

vii. In order to make business viable and maintain the retention of rural entrepreneurs (rural distributors), the mobile telecom service providers are suggested to get constant feedback from rural distributors regarding various business activities such as continuous availability of telecom products or services, availing information about new schemes and services, time taken for activation of new SIM, and identification of unmet needs so as to retain them in business.

viii. The study also revealed that the female consumers as mobile service users are less (39 per cent) as compared to the male consumers; hence the mobile telecom service providers are suggested to give special attention to those intermediaries where women

run the business activities in order to use them in convincing the prospective female customers for availing telecom services.

5.3 Conclusion

As per the National Telecom Policy (2012), the government is committed to provide affordable and quality telecommunication services in rural areas with state-of-the-art network aiming to bridge the digital divide, socio-economic development, enabling e-Governance and m-commerce in rural corner of the country. The independent regulatory bodies such as TRAI has vision to increase the rural teledensity from the current level of around 39 per cent to 70 per cent by the year 2017 and 100 per cent by the year 2020. Hence, the role of telecom players is very important in providing secure, reliable, affordable and high quality telecommunication services in rural areas, strengthening the delivery of customized products, effective after sales services, VAS at affordable price, and trustworthy grievance handling procedure in general and for rural customers in particular. Nevertheless, the Indian mobile telecom industry manifests substantial growth during the last decade but the continuous fall in Minutes of Usage per subscriber per month (MOU) from 496 minutes to 359 minutes during 2008 to 2012, decline of average revenue per user per month from INR 396 to INR 98 during 2004 to 2013, steep fall in voice tariffs, intense competition, and saturated urban markets (with teledensity of 130 per cent) compel telecom players to identify and serve rural areas to acquire the new customer base. To ensure availability, acceptability, affordability and awareness of telecom products and services in rural areas, it is imperative to recognize the problems of rural areas and work out appropriate strategies to overcome those problems. The present study focuses on theoretical and managerial implications of latest rural marketing approach i.e. integrated, innovative, and inclusive for mobile telecom service in rural areas of Punjab with aim to strengthen the telecom services. The study identified research gap on the basis of literature searched and identification of four distinct categories of problems of rural telecom services in Punjab viz., technical, infrastructural, manpower and customers' perspective from the exploratory research findings.

5.3.1 Integrated Approach- Developing Partnership

The integrated approach stresses on synergistic alliances in the form of Public-Private Partnership (PPP) among public sector (state, local or central government), private sectors (foreign or national telecom players), technology service providers, NGOs, and other

organisations (such as financial institutions) in order to access the telecom and information infrastructure in rural areas. In this context, the successful business models of global telecom players such as Grameen Telecom-Bangladesh, Village Phone- Uganda, Smart Incorporation- Philippines, and Celtel- Nigeria, Peru's PPP, Viom's Network, Noida have been studied to identify various stakeholders involved in PPP along with their expected roles for improving the access of telecommunication services in rural areas. The PPP model fulfils the objectives for both government and telecom players' perspective. The government can meet the challenges of infrastructure gap, limitation of resources in rural areas; utilize private players as source of finance, source of better know-how, and the latest technology; delivering innovative products and services and implementing new business models whereas this model facilitates long term business opportunity for private telecom players in the high potential sector of ICT.

5.3.2   *Innovative Approach- Leveraging Local Solution and Diffusion of Innovation*

The innovative approach stresses on developing rural marketing strategies, unique business model or innovative products and services with aim to improve affordability and availability of telecom services in rural counterparts. The deep local insights, effective use of local and global knowledge, examining rural needs and preferences are required to leverage the local solution for mobile telecom services. In this regard, the rural preferences and satisfaction have been examined for mobile telecom services for tailoring local solution. The continuous innovation and advances in value-added services, voice and data services make this industry highly dynamic; hence successful adoption and diffusion of innovation of telecom services are imperative to ensure substantial penetration and profit maximization in rural areas. In this context, the innovative approach also stresses on measuring consumer innovativeness, identification of characteristics of rural innovators and segmentation of rural consumers on the basis of determinants and motives of consumer innovativeness. The five determinants namely opinion leadership, price sensitivity, product involvement, need of uniqueness and venturesomeness have been used to assess innovativeness in consumers towards mobile telecom services. The study also highlights the sources of motivation to buy innovative mobile services on the basis of social, functional, hedonic and cognitive motives.

5.3.3   Inclusive Approach- Wealth Creation

The inclusive approach is based on the philosophy that rural people cannot be ignored by the marketers rather they can be used as suppliers or producers or business partner in marketing activities. The rural entrepreneurship is considered as a main activity involved in the inclusive approach that facilitates community based economic development, utilizes local resources, acquires local people as business representative and serves small market by developing community trust and creating buying power among the rural people. The study provides a conceptual framework of rural entrepreneurship for strengthening the mobile telecom services in rural Punjab on the basis of extensive literature searched and studying various global telecom service operators such as Grameen Telecom of Bangladesh, MTN of Uganda, and Smart Communication Inc. of Philippines, and Celtel of Nigeria. The study identified five major stakeholders such as mobile telecom service operators, microfinance agencies, the local skilled person as rural entrepreneur, the local, state or central government as regulating bodies and local community members in this rural entrepreneurship. This multi-stakeholder model creates win-win situations for all the partners involved and will result into economic development, empowering rural people, developing community trust, generating wealth among rural people through promoting entrepreneurship and business opportunities and could be used as alternative business model for improving the access of telecom products and services in rural Punjab aiming to facilitate accessibility, availability, acceptability and awareness (4A's) for mobile telecom services.

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REFERENCES

- Accenture 2009, *Wanted: New business models for profitable rural expansion*, viewed 20 June 2013 from http://www.accenture.com/SiteCollectionDocuments/PDF/Accentu re_Research_New_Businss_Models_Profitable_Rural_Expansion_India.pdf

- Accenture 2010, *Masters of rural markets: The hallmarks of high performance*, viewed 25 July 2013, from http://www.accenture.com/in-en/landing-pages/Documents/RuralMarket-15/pdf/Accenture_Masters_of_Rural_Markets.pdf

- Accenture 2014, *India in 2014*: *Creating value with speed and quality*, viewed 13 July 2013, from: http://careers.accenture.com/in-en/Documents/pdf/India-in-2014.pdf

- Aggarwal, A., 2013, 'Performance appraisal of rural entrepreneurship development programs', *International Journal of Management & Business Studies,* 3(3), 32-38, viewed 10 June 2015, from: http://www.ijmbs.com/33/anil.pdf

- Agyapong, G. K.Q., 2011, 'The effect of service quality on customer satisfaction in the utility industry – A case of Vodafone (Ghana)', *International Journal of Business and Management*, 6(5), 203-210.

- Akter, S., Ray, P. & D'Ambra, J., 2012, 'Continuance of M- health services at the bottom of the pyramid: The roles of service quality and trust', *Electronic Markets*, 23(01), 29-47.

- Almossawi, M. M., 2012, 'Customer satisfaction in the mobile telecom industry in Bahrain: Antecedents and consequences', *International Journal of Marketing Studies*, 4(6), 139-156, viewed 13 July 2013, Research Gate Database.

- Alom, K., khan, A. I. & Uddin, M., 2010, 'Selection of cellular operators in Bangladesh: An empirical analysis*, International Journal of Mobile Marketing, Winter*, 5(2), 114-125.

- Amue, G.J. & Adiele, K.C., 2012, 'New product development and consumer innovative behavior', *European Journal of Business and Social Science*, 1(6), 97-109.

- Anderson, J., Markides, C. & Kupp, M., 2010. 'The last frontier: Market creation in conflict zones, Deep rural areas and urban slums', *California Management Review*, 52 (4), 6-27, viewed 10 June 2015, from: http://www.jamieandersononline.com/uploads/CMR_Article_PRINT.pdf

- Anderson, J. & Kupp, M., 2008, 'Serving the poor: Drivers of business model innovation in mobile', *International Journal of Emerging Markets*, 3(2), 1-08, viewed

  10 December 2012,   Research Gate Database.

- Andrianova, O., 2011, 'Public Private Partnership in ICT infrastructure: The case study on telemedicine in Belarus', *International Conference on Knowledge-Based Development and Innovative Entrepreneurship*, Baku, Azerbaijan, 01-13.

- Annamalai, K. & Rao, S., 2003, 'What works: ITC's e-choupal and profitable rural transformation', *World Resource Institute, Michigan Business School,* 01-31.

- Ansari, A. & Sanayei, A., 2012, 'Determine the effects of mobile technology, Mobile learning on customer satisfaction and loyalty (Case Study: Mellat Bank)', *International Journal of Information Science and Management*, (1), 137-152, viewed 25 December 2013, from http://ijism.ricest.ac.ir/index.php/ijism/article/viewFile/159/144

- Ansari, B., Mirdamadi, S. M., Zand, A. & Arfaee, M., 2013, 'Sustainable entrepreneurship in rural areas', *Research Journal of Environmental and Earth Sciences*, 5 (1), viewed 20th June 2014, from http://maxwellsci.com/print/rjees/v5-26-31.pdf

- Anupindi, R. & Sivakumar, S., 2005, 'ITC's e-choupal: A platform strategy for rural transformation', *BSAP Conference,* viewed 12 November 2012, from http://www.hbs.edu/socialenterprise/pdf/2-Anupindi&Sivakumar.pdf

- Aroean, L. & Michaelidou, N., 2014, 'Are innovative consumers emotional and prestigiously sensitive to price?', *Journal of Marketing Management,* 30 (3-4), 245-267, viewed 20 December 2014, Taylor & Francis Database.

- Asian Development Bank., 2006, *Facilitating Public–Private Partnership for accelerated infrastructure development in India. Regional workshops of chief secretaries on Public–Private Partnership*, New Delhi, 06-73, viewed 15 July 2013, from http://www.pppinindia.com/pdf/FINALPPP10Jan2007.pdf

- ASSOCHAM., 2011, '*Mobile value added services (MVAS) - A vehicle to usher in inclusive growth and bridge the digital divide'*, viewed 26 August 2013, from http://digitalknowledgecentre.in/files/2012/02/FINAL_Deloitte_ASSOCHAM_MVAS_Study2.pdf

- Attewell, J. & Smith, C. S., 2004, 'Mobile learning and social inclusion: Focusing on learners and learning', *Learning with Mobile Devices. London. In Learning and Skills Development Agency*, 3-11, viewed 20th January 2014, from http://www.m-learning.org/docs/Learning%20with%20Mobile%20Devices%20-%20A%20Book%20of%20Papers%20from%20MLEARN%202003.pdf

- Baines, P., Fill, C., Page, K. & Sinha, P. K., 2013, *Marketing Management,* 2 Ed, Oxford University Press, New Delhi, 180-200.

- Beh, L., 2010, 'Public-Private Partnership in China: A responsive participation', *Journal of US-China Administration,* 7(8), 30-35, viewed 20th January 2014, from http://unpan1.un.org/intradoc/groups/public/documents/UN-DPADM/UNPAN042408.pdf

- Bell, D.E., Sanghavi, N., Fuller, V. & Shelman, M.L., 2008, 'Hariyali kissan bazaar- A rural business initiative', *Harvard Business School Case*, 508-512.

- Bhagal, S., 2008, 'Managing public-private partnership', *Economic and Political Weekly*, 43(33), 23-26.

- Bhukya, R. & Singh, S., 2013, 'Brand preference of students towards choosing cellular service providers in Hyderabad city', *Asia Pacific Journal of Marketing & Management Review*, 2 (5), 17-29, viewed 20th January 2014, from http://indianresearchjournals.com/pdf/APJMMR/2013/May/2.pdf

- Bian, X. & Moutinho, L., 2008, 'The role of product involvement, knowledge, and perceptions in explaining consumer purchase behaviour of counterfeits: Direct and indirect effects', *Research Memorandum.* 3.

- Billou, N. & Anderson, J., 2006, 'Innovation through market orientation- Smart communication inc. Philippines', *European School of Management and Technology*, 1-32, viewed 5 April 2015, from   http://www.esmt.org/fm/290/SMART%20article.pdf

- Boccacin, L., Giovanna, G.R. & Bramanti, D., 2011, 'Partnership, social capital and good practices among public, private and the third sector', *Journal of US-China Public Administration*, 8 (03), 241-260.

- Bondos, I., 2014, 'Price and service bundling – an example of the telecommunications market in Poland', *Slovenia International Conference*, viewed 25 September 2013, from http://www.toknowpress.net/ISBN/978-961-6914-09-3/papers/ML14-566.pdf

- Bowonder, B., Gupta, V. & Singh, A., 2007, 'Developing a rural market e-hub: The case study of e-choupal experience of ITC', viewed 25 September 201, from

http://www.planningcommission.gov.in/reports/sereport/ser/stdy_ict/4_echoupal%20.pdf

- Brinkerhoff, D. W. & Brinkerhoff, J. M., 2011, 'Public–Private Partnerships: perspectives on purposes, publicness and good governance', *Public Administration and Development*, 31, 02–14.

- Bull, S. & Reid, E., 2004, 'Individualized revision material for use on a handheld computer', *Learning and Skills Development Agency*, 44 (2), 35-42.

- Burns, D.J. & Krampf, R. F., 1991, 'A semiotic perspective on innovative behavior. *15th Annual Conference. Academy of Marketing Science*, 32-35, viewed 25 September 2013, Springer Database.

- Capgemini 2008, *Connecting Rural India: The Untapped Growth Opportunity*, viewed 25 June 2013, from https://www.capgemini.com/resource-file-access/resource/pdf/tl_Connecting_Rural_India___The_Untapped_Growth_Opportunity.pdf

- Cellular operators association of India 2013, *Annual Report 2012-13, Year of Survival,* New Delhi.

- Census of India 2011, *Census Data Online,* viewed 19 June 2013, from http://censusindia.gov.in/2011-common/censusdataonline.html

- Chadha, S.K. & Kapoor, D., 2009, 'Effect of switching cost, service quality and customer satisfaction on customer loyalty of cellular service providers in Indian market', *The IUP Journal of Marketing Management*, 8(1), 23-37.

- Chan, K. K., & Misra, S., 1990, 'Characteristics of the opinion leader: A new dimension', *Journal of Advertising,* 19(3), 53–60, viewed 24 June 2013, Jstor Database

- Chapagain, D.P., 2006, 'PPP led ICT enabled services in rural Nepal', *Economic Policy Network*, Economic Affairs and Policy Analysis Division Ministry of Finance, Government of Nepal, 14, 01-16.

- Chaudhary, A. & Uprety, I., 2013, 'Identification of telecom service quality dimensions in India with fuzzy analysis', *Global Journal of Management and Business Studies,* 3(5), 467-474.

- Chaudtry, S.A. & Irshad, W., 2013, 'Leadership and its role in buyer decision making' *Academy of Contemporary Research Journal*, II(1), 16-23, viewed 25

February 2013, from http://aocrj.org/wp-content/uploads/2013/04/AOCRJ-V2I1P3-OPINION-LEADERSHIP-AND-ITS-ROLE-IN-BUYER-DECISION-MAKING.pdf

- Chawla, S., 2004, 'Public private partnership: Has India learnt from its PPP experience from a decade', Dissertation, CRISIL

- Childers, T.L., 1986, 'Assessment of psychometric properties of an opinion leadership scale', *Journal of Marketing Research*, 184-188.

- Choi, J., Seol, H., Lee, S., Cho, H. & Park, Y., 2008, 'Customer satisfaction factors of mobile commerce in Korea', *Internet Research.* 18 (03), 313 – 335.

- Chowdhury, S.K., 2001, 'Provision of telecom using business- NGO partnership: Village pay phone program in Bangladesh as a case study,' *University of Bonn,* Bonn, 2-17.

- CKS Consulting Pvt. Ltd 2008, *Rural Marketing Practices for Telecom Services*, viewed 30 May 2013 from http://cks.in/wp-content/uploads/2012/10/RuralMarketingPractices.pdf

- Cohen, N., 2001, 'What works: Grameen telecom's village phone', *The World Resource Institute*, 1-15, viewed 25 April 2015, from http://www.its.caltech.edu/~e105/readings/cases/grameen-phone.pdf

- Confederation of Indian Industry & Yes Bank 2007, *Rural Retail: The next phase in retailing*, viewed 30th May 2013, from http://www.printsasia.in/book/rural-retail-the-next-phase-in-retailing-cii-yes-bank-report

- Confederation of Indian Industry 2010, *FMCG road map to 2020: The game changer*, Chandigarh, viewed 25 August 2013, from: http://www.strategyand.pwc.com/media/file/CII_FMCG-Roadmap-to-2020.pdf

- Cooper, D.R. and Schindler, P. S., 2008, *Business Research Methods*, 9 Ed, Tata McGraw-Hill Publishing Company Limited, New Delhi.

- Corporate Catalyst India 2013, *A brief report on telecom sector in India, New Delhi,* viewed 20 June 2014, from www.cci.in/pdfs/surveys-reports/Telecom-Sector-in-India.pdf

- Corporate Profile 2015, Smart Communication Inc., viewed 20 April 2015, from http://smart.com.ph/About/meet/corporate-profile

- Corrocher, N. & Zirulia, L., 2010, 'Demand and innovation in services: the case of mobile communication', *Research Policy*, 39 (7), 945-955, viewed 14 August 2013, from http://www.dime-eu.org/files/active/0/CorrocherZirulia.pdf

- Credit Libanais Economic Research Unit 2011, *Public-private partnership in Libanon*, viewed 15 September 2014, from http://www.creditlibanais.com.lb/Content/uploads/

  Public- Private_Partnership_Report.pdf

- Credit Suisse 2011, *India consumer survey 2011 of 'small town' bulls and 'low frill' need, Hong Kong*, viewed 2[5th] August 2013, from: https://research-and-analytics.csfb.com/docView?language=ENG&source=ulg&format=PDF&document_id=868401161&serialid=b0oz1anA6Qb%2F2FDlRBNXJrwmWj8LgIPHr1P8cFVDZkQ%3D

- Cunningham, K., 2009, 'Connecting the milk grid: smallholder dairy in India', *National Dairy Development Board, New Delhi,* viewed 25 May 2013, from http://www.ifpri.org/sites/default/files/publications/oc64ch17.pdf

- Dadzie, A. & Mensah, F. B., 2011, 'Brand preference for mobile phone operator services in the Cape Coast Metropolis', *International Journal of Business and Management,* 6 (11), 190-205, viewed 10 June 2015, from http://www.ccsenet.org/journal/index.php/ijbm/article/viewFile/9978/9002

- Darden, W. R. & Reynolds, F. D., 1972, 'Predicting opinion leadership for men's apparel fashions', *Journal of Marketing Research,* 9(3), 324–328, viewed 25 March 2013, Jstor Database

- Dash, M. K., Patwardhan, M. & Verma, S.K., 2011, 'Malls for rural entrepreneur in India: An ICT innovation approaches in emerging Hariyali Kisaan Bazaar', *European Journal of Scientific Research*, 56 (4), 453-461.

- Department of Planning 2004, *Human Development Report 2004- Punjab*, Government of Punjab, viewed 12 December 2013, from http://pbplanning.gov.in/HDR/merged_hdr.pdf

- Department of Planning 2013, *Block wise list of villages category wise,* Government of Punjab, viewed 12 December 2014, from http://www.pbplanning.gov.in/districts.htm

- Department of Telecommunication 2010, *Annual Report 2011-12*, New Delhi. Ministry of Communication & Information Technology, viewed 28th June 2013, from http://www.dot.gov.in/sites/default/files/AR%20Englsih%2011-12_0.pdf

- Department of Telecommunication 2012, *New Telecom Policy* 1999, Telecom Regulatory Authority of India, viewed 18 August 2011, from http://www.trai.gov.in/Content/ntp_1999.aspx

- Department of Telecommunication 2012, *Annual Report 2011-12*, Ministry of Communication & Information Technology, New Delhi, viewed 10 April 2013, from http://www.dot.gov.in/sites/default/files/AR%20Englsih%2011-12_0.pdf

- Department of Telecommunication 2012, *National Telecom Policy-2012*, Ministry of Communication & IT, Government of India, viewed 10 March 2014, from http://www.trai.gov.in/WriteReadData/userfiles/file/NTP%202012.pdf

- Department of Telecommunication 2013, *Annual Report 2012-13*, Ministry of Communication & Information Technology, New Delhi, viewed 28 June 2014, from http://www.dot.gov.in/sites/default/files/Telecom%20Annual%20Report-2012-13%20(English)%20_For%20web%20(1).pdf

- Department of Telecommunication 2014, Universal service obligation fund, Ministry of Communication & IT, Government of India, viewed 15 March 2015, from http://www.usof.gov.in/usof-cms/miscellaneous/USOF-Brochure.pdf

- Desai, S. S., 2013, 'Rural retail innovations in India: New dimension in marketing', *International Journal of Multidisciplinary and Current Research*, 226-229, viewed 25 May 2014, from http://ijmcr.com/wp-content/uploads/2013/12/Paper19226-229.pdf

- Dobre, C., Dragomir, A. & Preda, G., 2009, 'Consumer innovativeness: A marketing approach', *Management and Marketing*, 4 (2), 19-34, viewed 28 June 2013, from http://www.managementmarketing.ro/pdf/articole/133.pdf

- Donald, L. & Recardo, L., 2014, 'Innovativeness of consumers in the adoption of mobile technology in the Philippines', *International Journal of Economics, Commerce and Management*, II (1), 1-12.

- Donnell, J.O. & Sauer, P., 2005, 'A domain specific innovativeness perspective of student enrolment in new major offerings', *Journal of College Teaching & Learning*. 2(6), 75-82, viewed 25th June 2013, from http://www.cluteinstitute.com/ojs/index.php/TLC/article/view/1838

- Emerah, A.A., Oyedele, S.O. & David, J.O., 2013, 'Determinants of customer satisfaction in the Nigerian telecommunication industry: An empirical evidence', *International Journal of Management and Strategy*, 4 (6), 1-12, viewed 2 September 2014, from http://www.facultyjournal.com/webmaster/upload/__DETERMINANTS% 20OF%20CUSTOMER%20SATISFACTION%20IN%20THE%20NIGERIAN%20 TELECOMMUNICATION%20INDUSTRY.-1%20(1).pdf

- Enjo, I. F., 2009, 'Strategies for low cost rural telephony', *The Pacific Journal of Science and Technology*, 10 (1), 256-261, viewed 13 November 2014, from http://www.akamaiuniversity.us/PJST10_1_256.pdf

- Ernst & Young Global Ltd. 2014, *India 2014: Enabling the prospects*, viewed 20 April 2013, from: http://emergingmarkets.ey.com/eys-attractiveness-survey-india-2014/

- Ernst & Young Global Ltd. 2012, *Accelerating public-private partnership in India,* viewed 20 April 2013, from http://www.ey.com/Publication/vwLUAssets /Accelerating_PPP_in_India/$FILE/Accelerating%20PPP%20in%20India%20-%20FINAL%28Secured%29.pdf

- EU Rural Review 2012, *Rural Entrepreneurship*, EU, viewed 10 June 2014, from: http://enrd.ec.europa.eu/enrd-static/fms/pdf/ED5808AC-994A-47AD-928F-0D3088716910.pdf

- Eusuf, M A., Toufiqe, M K. & Shamannay U., 2007, 'Trade, development and poverty linkages: A case study of cellular phone in Bangladesh*', Consumer Unity & Trust Society International*, 01-30, viewed 25 April 2015, from http://www.cuts-citee.org/tdp/pdf/Case_Study-Cellular_Phone_in_Bangladesh.pdf

- Faculty of Business Economics and Entrepreneurship 2013, 'Employment, education and entrepreneurship', Serbia, viewed 20 May 2014, from http://vspep.edu.rs/_img/downsekcija/2013/10/vol1eee2013.pdf

- Faullant, R., Fuller, J. & Matzler, K., 2012, 'Mobile audience interaction – Explaining the adoption of new mobile service applications in socially enriched environments', *Engineering Management Research*, (1), 59- 76, viewed 25 December 2013, from http://www.ccsenet.org/journal/index.php/emr/article/view/16717

- Feldman, L. P. & Armstrong, G. M., 1975, 'Identifying buyers of a major automotive innovation', *Journal of Marketing*, 39(1). 47–53, viewed 20 June 2015, from http://connection.ebscohost.com/c/articles/4996416/identifying-buyers-major-automotive-innovation

- Field, A., 2009, *Discovering Statistics Using SPSS*, 3rd Ed., Sage Publication, New Delhi.

- FICCI, Enrst & Young 2012, *Accelerating public-private partnership in India*, viewed 15 November 2015, from http://www.ey.com/publication/vwluassets/ey-

public-private-partnership-the-next-continuum/$file/ey-public-private-partnership-the-next-continuum.pdf

- Fisher, R. & Price, L. L., 1992, 'An investigation into the social context of early adoption behavior', *Journal of Consumer Research*, 19 (3), 386, viewed 13 July 2014, from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2275260

- Flick, U., 2010, *An Introduction to Qualitative Research,* 4 Ed, Sage Publication Pvt. Limited, New Delhi.

- Ganesh, U., 2014, Transforming rural India with digital technologies, *Yojana*, Ministry of Broadcasting and Communication, New Delhi, 26-27.

- Ganiyu, R. A. & Adeosun, L.P. K., 2013, 'Perceived attributes of successful and unsuccessful innovations', *International journal of Innovative Research in Management,* 2 (1), 1, viewed 25 December 2013, from http://www.vnmpublication.com/IJIRM/January_2013/1.pdf

- Gazbar, Y., 2013, 'Models of diffusion, adoption, innovation and acceptance of a new technology, and social communication', *Interdisciplinary Journal of Contemporary Research in Business,* 4(10), 810-821.

- George, D. and Mallery, P., 2011, *SPSS for Windows: Step by Step*. 10 Ed, Pearson Education, New Delhi.

- Goldsmith, R., 1983, 'Psychographics and new product adoption: An exploratory study', *Perceptual and Motor Skills*, 57, 1071–1076, viewed 25 December 2013, from: http://www.amsciepub.com/doi/abs/10.2466/pms.1983.57.3f.1071

- Goldsmith, R.E. & Emmert, J., 1991, 'Measuring product category involvement: a multitrait, multi-time hold study', *Journal of Business Research*, 23, 363-371.

- Goldsmith, R. E., Flynn, L. R. & Goldsmith, E. B., 2003, 'Innovative consumers and market maven', *Journal of Marketing Theory and Practice*, 11(4), 54–65, viewed 10 March 2013, Jstor Database

- Goldsmith, R.E. & Hofacker, C.F., 1991, 'Measuring consumer innovativeness', *Journal of Academy of Marketing Science*, 19 (3), 209-220, viewed 20 October 2014, from http://jam.sagepub.com/content/19/3/209.abstract

- Grameenphone, 2014, *Annual Report 2014, Business Performance*, 10-17, viewed 15 March 2015, from http://www.grameenphone.com/sites/default/files/investor_ relations/annual_report/Full-Report-2014.pdf

- Greenpeace India 2012, *Enabling Clean Talking,* Bengaluru, India, viewed 2^0 April 2014, from http://www.greenpeace.org/india/Global/india/report/Enabling-Clean-Talking.pdf

- Grewal, R., Mehta, R. & Kardes, F. R., 2000, 'The role of the social-identity function of attitudes in consumer innovativeness and opinion leadership', *Journal of Economic Psychology,* 21, 233-252, viewed 25 June 2013, from http://www.personal.psu.edu/rug2/Grewal%20Mehta%20and%20Kardes%202000%20JOEP.pdf

- Grutzmann, A., Macedo, F.M. F. & Zanbalde, A. L., 2013, 'Knowledge management and innovation: The role of virtual social networks in innovative consumer behavior', Journal *of Technology Management & Innovation,* 8, 209-220.

- Guclu, A., Dees, J.G., Anderson, B. B., 2002, 'The process of social entrepreneurship: Creating opportunities worthy of serious pursuit', *Fuqua School of Business*, 1-15.

- Gulati, A.G., 2007, 'Public private partnership for rural ICT services -From obligation to opportunity', *Management in Government*, viewed 25th March 2015, from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1415563

- Gumel, A.M. & Othman, M.A., 2013, 'Reflecting customers' innovativeness and intention to adopt Islamic banking in Nigeria', *Business and Management Quarterly Review,* 4 (3&4), 27-37.

- Hair, J.F., Black, W.C., Babin, B. J., Anderson, R. E. & Tatham, R.L., 2011, *Multivariate Data Analysis*. 6 Ed. Pearson Education, New Delhi.

- Hair, J.F., Bush, R.P. and Ortinau, D.J., 2007, *Marketing Research: Within a Changing Information Environment*, 3 Ed. Tata McGraw-Hill Publishing Company Limited, New Delhi.

- Hanif, M., Hafeez, S. & Riaz, A., 2010, 'Factors affecting customer satisfaction', International *Research Journal of Finance and Economics*, 60, 45-52.

- Haque, A., Rahman, S. & Rahman, M., 2010, 'Factors determinants the choice of mobile service providers: Structural equation modeling approach on Bangladeshi consumers', *Business and Economics Research Journal*, 1(3), 17-34.

- Hassan, M., Hassan, S., Nawaz, M. S. & Aksel, I., 2013, 'Measuring customer satisfaction and loyalty through service fairness, service quality and price fairness perception: An empirical study of Pakistan mobile telecommunication sector', 25 (4),

971-980, viewed 12th October 2014, from http://www.sci-int.com/pdf/204359195453-
-971-980--masood%20&%20Saad%20final.pdf

- Hawkins, D.I., Motherbaugh, D.L., & Mookerjee, A., 2011, *Consumer Behavior: Building Marketing Strategy*, 11 Ed. Tata McGraw Hill, New Delhi.

- Hirschman, E.C., 1980, 'Innovativeness, novelty seeking, and consumer creativity', Journal *of Consumer Research,* 7 (3), 283-295.

- Ho, C.H. & Wu, W., 2011, 'Role of innovativeness of consumer in relation between perceived attributes of new products and intention to adopt', *International Journal of Electronic Business Management*, 9 (3), 258-266.

- Hoffmann, S. & Soyez, K., 2010, 'A cognitive model to predict domain-specific consumer innovativeness', 63 (7), 778-785, viewed 20 June 2014, from http://econpapers.repec.org/article/eeejbrese/v_3a63_3ay_3a2010_3ai_3a7_3ap_3a77 8-785.htm

- Hoyer, MacInnis and Dasgupta, 2008, *Consumer Behavior*, 8 Ed, Biztantra Publication, New Delhi.

- Hsu, H. Y. & Kulviwat, S., 2006, 'Personalization and customer satisfaction in mobile commerce', *Encyclopedia of E-Commerce, E-Government, and Mobile Commerce,* 914-918.

- Hu, F. & Liu, Y., 2011, 'An empirical examination on mobile services adoption in rural China', *International Journal of Digital Content Technology and its Applications,* 5(1), 328-334.

- Huang,Y.A., 2003, 'Consumer innovativeness and consumer expectations for new IT products: Implications for purchase behavior', 8 (2),113-134, viewed 20 June 2014, from: http://apmr.management.ncku.edu.tw/comm/updown/DW0712070535.pdf

- Hugstad, P., Taylor, J.W. & Bruce, G. D., 1987, 'The effects of social class and perceived risk on consumer information search', *Journal of Services Marketing*, 1(1), 47-52, viewed 25 March 2013, from: http://www.emeraldinsight.com/doi/abs/10.1108/eb059588

- Hui, T.K. & Wan, D., 2004, 'The role of consumer innovativeness in the adoption of internet shopping in Singapore', *The Internet Business* Review, 01, 1-20, viewed 25 June 2013, from: http://bizfaculty.nus.edu/publications/121

- Hung, M.C., Yang, S.T. & Hsieh, T. C., 2012, 'An examination of the determinants of mobile shopping continuance', *International Journal of Electronics Business Management*, 10 (1), 29-37.

- Hung, Y. C., 2007, 'A Model for Service Quality and Customer Satisfaction of Mobile Commerce', *Journal of Global Business Management*, 3 (1). p.1.

- Ikpe, E H., & Idiong, NS., 2011, 'Liberalizing telecommunication in Nigeria: Argument for a democratic model', *Journal of Social Science*, 26 (3), 211-216, viewed 25 March 2015, from: http://www.krepublishers.com/02-Journals/JSS/JSS-26-0-000-11-Web/JSS-26-3-000-11-Abst-PDF/JSS-26-3-211-11-1031-Ikpe-E-H/JSS-26-3-211-11-1031-Ikpe-E-H-Tt.pdf

- India Brand Equity Foundation 2013, *The Indian infrastructure sector: investments, growth and prospects*, viewed 10 September 2014, from http://www.ibef.org/download/Infrastructure-Sector-040213.pdf

- International Institute for Population Sciences 2006, *Ranking and mapping of districts, Rank of districts in Punjab according to composite index,* Mumbai, viewed 20 March, 2013, from http://www.jsk.gov.in/punjab/punjab_composite.pdf

- Irani, T. & O'malley, M., 2000, 'Cognitive innovativeness as a predictor of student attitudes and intent: An application of the theory of planned behavior to technology delivered instruction', 50 (1), 32-39, viewed 25 June 2011, from http://jsaer.org/pdf/vol50Whole.pdf

- Islam, M.N., 2005, 'Multi stakeholder partnership in ICT4 D-A case study of village phone program in Bangladesh,' *Relief International School-Online, Bangladesh*, 15-26.

- Islam, M. B. & Rima, A. R., 2013, 'Factors affecting customer experience in telecommunication services and its importance on brand equity: A study on telecommunication companies in Bangladesh', *Interdisciplinary Journal of Contemporary Research in Business*, 5 (8), 254-262, viewed 10 June 2015, from: http://journal-archieves36.webs.com/254-262dec.pdf

- Jain, S., 2013, 'Impact of e-choupal on information empowerment of rural people of Rajasthan', *Indian Research Journal of Extension Education*, 13 (1), 88-95, viewed 25 June 2014, from: http://www.seea.org.in/vol13-1-2013/17.pdf

- Jamali, D., 2004, 'Success and failure mechanisms of public private partnerships (ppps) in developing countries insights from the Lebanese context', *The International Journal of Public Sector Management*, 17 (5), 414-430.

- Jasrai, L., 2013, 'A conceptual framework for public-private partnerships for rural mobile telecom services', *International Conference on Research in Marketing*, December 21-22, IIT, New Delhi.

- Jasrai, L., 2013, 'Rural Entrepreneurship: An innovative approach for rural mobile telecom services marketing', *The IUP Journal of Entrepreneurship Development*, X (1), 6-20.

- Javed, A., Azam, N., Fazal, M. & Butt, A. A., 2013, 'Most popular and used cellular network on the basis of customer satisfaction in Pakistan', *Interdisciplinary Journal of Contemporary Research in Business*, 5 (2). 205-226, viewed 25 June 2014, from http://journal-archieves33.webs.com/205-226.pdf

- John, J., 2011, 'An analysis on the customer loyalty in telecom sector: Special reference to Bharath Sanchar Nigam Limited, India', *African Journal of Marketing Management*, 3(1), 1-05, viewed 10 June 2015, from http://www.academicjournals.org/article/article1379666018_John.pdf

- Jordaan, Y. & Simpson, M. N., 2006, 'Consumer innovativeness among females in specific fashion stores in the Menlyn shopping centre', *Journal of Family Ecology and Consumer Sciences*, 34, 32–39, viewed 28 August 2012, from http://www.ajol.info/index.php/jfecs/article/download/52887/41489

- Kamal & Kumar, P., 2013, 'e-choupal: Importance for rural India', *International Journal of Management*, 4 (5), 134-138, viewed 10 June 2015, from: http://www.iaeme.com/MasterAdmin/UploadFolder/10120130405016%5C101201304 05016.pdf

- Kashyap, P., 2012, *The Rural Marketing*, 2 Ed., Pearson Education, New Delhi.

- Kashyap, P. & Raut, S., 2010, *The Rural Marketing*, Biztantra Publication, New Delhi.

- Kargin, B., Basoglu, N. & Daim, T., 2009, 'Exploring mobile service adoption: customer preferences', 42nd Hawaii International Conference, viewed 28 September 2013, from http://www.academia.edu/4124973/Exploring_Mobile_Service_ Adoption_Customer_Preferences

- Kaishik, A.K. & Rahman, Z., 2014, 'Perspectives and dimensions consumer innovativeness: A literature review and future agenda', *Journal of International Consumer Marketing*, 26 (3), 239-263, viewed 05 November 2015, Taylor & Francis Database

- Keogh, D., & Wood, T., 2005, 'Creating sustainable access to affordable telecommunication for the rural poor', *Village Phone Replication Manual, Grameen Foundation USA,* 04-23, viewed 25 April 2015, from: http://www.infodev.org/infodev-files/resource/InfodevDocuments_14.pdf

- Khan, M. A., 2010, 'An empirical assessment of service quality of cellular mobile telephone operators in Pakistan', *Asian Social Science*, 6 (10), 164-177.

- Khayyat, N. T. & Heshmati, A., 2013, 'Determinants of mobile telecommunication adoption in Kurdistan', *International Journal of Communication*. 7, 2285–2311.

- Kim, Y. H., 2008, 'An empirical examination of consumers' innovation adoption: The role of innovativeness, fashion orientation, and utilitarian and hedonic consumers' attitudes', M.Sc. Thesis, The Faculty of the Graduate School, The University of North Carolina.

- Kothari, R., Sharma, A. & Rathore, J., 2011, 'Service quality in cellular mobile services: An empirical study of cellular mobile users', *The Indian Journal of Management*, 4 (1), 11-20.

- Kotler, P., Armstrong, G., Agnihotir, P. Y. & Haque, E., 2010, *Principles of Marketing*, 13 Ed. Pearson Education, New Delhi, A27-A37.

- KPMG 2013, *Public private participation in Indian Infrastructure*, viewed 12 April 2014, from http://www.ibef.org/download/India_Infrastructure.pdf

- Krishnamacharyulu, C.S.G. and Ramakrishnan, L., 2012, *Rural Marketing,* 2 Ed. Pearson Education, New Delhi.

- Kumbhar, V.M., 2013, 'Some critical issues of women entrepreneurship in rural India', *European Academic Research*, 01(02). 185-192, viewed 10 August 2014, from: http://euacademic.org/uploadarticle/13.pdf

- Lawson, C. & Meyenn, N., 2000, 'Bringing cellular phone service to rural areas', *Public Policy For The Private Sector,* The World Bank Group, Note No., 205.

- Lee, S. H. & Phan, P., 2008, 'Initial thought on a model of rural entrepreneurship in developing countries', *World Entrepreneurship Forum*, 2-31.

- Liang, Y.P., 2012, 'The relationship between consumer product involvement, product knowledge and impulsive buying behavior', *International Conference on Asia Pacific Business Innovation and Technology Management*, 57, 325-330, viewed 28 June 2013, from http://www.sciencedirect.com/science/article/pii/S1877042812046551

- Lule, J. K., Gitta, S.N., Lindfors, A., Okuonzi., S., Onama, V. O. & Forsberg, B.C., 2010, 'Private and public health care in rural areas of Uganda', *BMC International Health and Human* Rights, 10 (29), 01-08.

- Lyer, V., 2010, 'Rural Marketing', *SIES Journal of Management*, 6 (2), 104-111.

- Maden, D. & Koker, N. E., 2013, 'An empirical research on consumer innovativeness in relation with hedonic consumption, social identity and self-esteem', Journal *of Educational and Social Research,* 3(7), 569-578.

- Malhotra, N.K. and Dash, S., 2011, *Marketing Research: An Applied Orientation,* 6th Ed, Pearson Education, New Delhi.

- Mamun, A. A., Rahman, M. K. & Robel, S. D., 2014, 'A critical review of consumers' sensitivity to price: managerial and theoretical issues', *Journal of Internal Business and Economics*, 2(2), 1-09, viewed 25 December 2015, from http://jibe-net.com/journals/jibe/Vol_2_No_2_June_2014/1.pdf

- Marumbwa, J. & Mutsikiwa, M., 2013, 'An analysis of the factors influencing consumers' adoption of mobile money transfer services in Masvingo Urban, Zimbabwe', *British Journal of Economics, Management & Trade*, 3(4), 498-512.

- Mazouz, B., Facal. J. & Viola, J., 2008, 'Public-private partnership: Elements for a project-based management typology, '*Project Management Journal*, 39 (2), 98-110.

- McKinsey & Company 2007, *The 'Bird of Gold': The rise of India's consumer market,* viewed 30 July 2013, from http://www.mckinsey.com/insights/asia-pacific/the_bird_of_gold.#sthash.4afF2irL.dpuf

- McKinsey & Company 2010, *m-Health: A New Vision for Healthcare*, London, viewed 20 July 2014, from: http://www.mckinsey.com/client_service/ initiatives/mhealth

- Miao, M. & Jayakar, K., 2013, 'Bounded rationality and consumer choice: An evaluation of consumer choice of mobile bundles in China', 1-21, viewed 15 October July 2014, from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=224158

- Midgley, D.F. & Dowling, G.R., 1978, 'Innovativeness: The concept and its measurement', *Journal of Consumer Research,* 4 (4), 229-242, viewed 15 June 2013, Jstor Database

- Ministry of Communication & Information Technology, 2011, *Vioms' network rural service centre*, New Delhi.

- Mokhlis, S. & Yaakop, A. Y., 2012, 'Consumer choice criteria in mobile phone selection: An investigation of Malaysian university students', *International Review of Social Sciences and Humanities*, 2(2), 203-212, viewed 10 March 2015, from http://irssh.com/yahoo_site_admin/assets/docs/23_IRSSH-200-V2N2.9010410.pdf

- Molina, A., 2006, 'The village phone constituency in Bangladesh. A case for a sustainable e-inclusion enterprises', *SPRU 40ᵗʰ Anniversary Conference*, University of Edinburgh, 1-42.

- Mort, G. S., & Drennan, J., 2007, 'Mobile communications: a study of factors influencing consumer use of m-services', *Journal of Advertising Research*, 47(3), 302–312, viewed 25 September 2013, Research Gate Database

- Mukherjee, A., Bahal, R., Burman, R. R. & Dubey, S. K., 2012, 'Factors contributing farmers' association in Tata Kisan Sansar: A critical analysis', *Indian Research Journal of Extension Education,* 12(2), 81-86.

- Munoz, T.G., Gijon, C., Amaral, T. P., Lopez., R., 2013, 'Customer satisfaction of mobile-internet-users: an empirical approximation for the case of Spain', *Journal of Reviews on Global Economics,* 2, 442-454, viewed 25 September 2014, from http://www.lifescienceglobal.com/pms/index.php/jrge/article/viewFile/1547/988

- Myers, J.H. & Robertson, T.S., 1972, 'Dimensions of opinion leadership', *Journal of Marketing Research*, 9(1), 41-46.

- Nagabhushanam, M. & Nargundkar, R., 2009, 'Consumer innovativeness and product innovation- A study of the relationship in the mobile telephony market', *Advances in Consumer Research*, 8, 283–284, viewed 05 November 2013, Research Gate Database

- Negm, E.M., Sahn, F. & Tantawai, P., 2012, 'Measuring the impact of certain hedonic, rational, and influential components on consumers' intention to adopt innovative fast moving consumer goods (FMCG) in Egypt', *The International Journal of Business and Management Research*, 5(1), 51-68, viewed 14 January 2015, from http://ijbmr.org/yahoo_site_admin/assets/docs/2012_Issue.0192727.pdf

- Ng, M., 2014, 'Factors influencing Chinese youth consumers' acceptance of mobile marketing: consumer innovativeness, online trust and social influence', *11th International CIRCLE Conference,* Manchester, viewed 25 September 2012, Research Gate Database

- Ngorora, G.P.K. & Mago, S., 2013, 'Challenges of rural entrepreneurship in South Africa: insights from Nkonkobe municipal area in the Eastern Cape Province', *International Journal of Information Technology and Business Management,* 16 (1), 1-11.

- Nielsen, C. & Samia, P. M., 2008, 'Understanding key factors in social enterprise development of the BOP: A systems approach applied to case studies in the Philippines', *Journal of Consumer Marketing*, 5 (7), 446–454.

- Ocloo, C.E. & Tsetse, E. K., 2013, 'Customer retention in the Ghanaian mobile telecommunication industry', *European Journal of Business and Social Sciences*, 2(7), 136-160.

- Oregon Telecommunications, 2003, Public-private partnerships for Telecommunications in Oregon, *Coordinating Council*, 01-31, viewed 25 March 2015, from http://library.state.or.us/repository/2009/200907281053302/index.pdf

- Oruc et al., 2013, 'Linking rural entrepreneurs and Diaspora in Albania and Bosnia-Herzegovina', *CEDAR, Regional Research Promotion Program*, Balkans, 16-25.

- Ozgen, E. & Minsky, B. D., 2007, 'Opportunity recognition in rural entrepreneurship for developing countries', *International Journal of Entrepreneurship,* 11, 49-70.

- Pandiya, D., Kumar, B. & Choudhury, M.H., 2014, 'A study of customer satisfaction on telecom service providers', *PARIPEX-Indian Journal of Research*, 3 (5), 57-60, viewed 25 September2013, from http://theglobaljournals.com/paripex/file.php?val=May_2014_1400577564_b091d_84.pdf

- Paninchukunnath, A., 2010, '3P Framework: Rural marketing in India', *SCMAS Journal of Indian Management*, 07(01), 54-67.

- Parasuraman, A., Grewal, D. and Krishan, R., 2009, *Marketing Research,* Biztantra, New Delhi.

- Park, F.E., Yu, F. & Zhou, F.X., 2010, 'Consumer innovativeness and shopping styles', *Journal of Consumer Marketing*, 27 (5), 437-446, viewed 25 September 2013, Emerald Database

- Pato, M. L. & Teixeira, A.C. C., 2013, 'Twenty years of rural entrepreneurship: A bibliometric survey', *FET Working Paper*, 516, 1-32, viewed 25 September 2013, from http://wps.fep.up.pt/wps/wp516.pdf

- Paulrajan, R. & Rajkumar, H., 2011, 'Service quality and customers preference of cellular mobile service providers', *Journal of Technology Management & Innovation,* 6(1), 38-45.

- Pirayesh, A., Mansori, S. & Ismail, Z.M.M., 2013, 'The relationship between innovativeness, fashion orientation and attitudes toward purchasing an innovative, high-tech product; iPhone 4', *International Journal of Contemporary Business Studies*, 4(4), 6-19.

- Planning Commission of India 2011, *Annual Report 2010-11,* New Delhi, 05-10.

- Popescu, A. I., 2005, 'Product innovation strategies on emerging markets: Bringing theory and practice together', *European Journal of Interdisciplinary Studies,* 5(2), 15-30.

- Potluri, R.M. & Hawariat, H.W., 2010, 'Assessment of after-sales service behaviours of Ethiopia telecom customers', *African Journal of Economic and Management Studies*, 1(1), 75-90, viewed 15 June 2014, Emerald Database

- Prahalad, C.K., 2005, *The fortune at bottom of the pyramid*, Wharton School Publishing, Pearson Education, NJ.

- Prahalad, C. & Stuart, L.H., 2002, 'The fortune at the bottom of the pyramid', *Strategy + Business Magazine*, Hamilton, Booz Allen, 26, 1-14.

- Price Waterhouse Coopers 2011, *Connect with consumers- value added services: The next wave,* viewed 10 July 2014, from http://askvisory.com/research/connect-with-consumers-value-added-services-the-next-wave-3/

- Rahman, S., Haque, A. & Ahmad, M.I.S., 2011, 'Choice criteria for mobile telecom operator: Empirical investigation among Malaysian customers', *International Management Review*, 7 (1), 50-57.

- Ramaswamy, V.S. & Namakumari, S., 2014, *Marketing Management*, 5th Ed. McGraw Hill Education Pvt. Limited, New Delhi.

- Ratnesh, K. & Kansal, A., 2013, 'An analytical study of customer satisfaction influencing brand loyalty and foster recommendation for mobile services providers of Indian telecom industry', *International Journal of Emerging Research in*

Management & Technology, 2 (12), 84-90, viewed 10 June 2014, from: http://www.ermt.net/docs/papers/Volume_2/issue12_December2013/V2N12-150.pdf

- Reed, A. & Forhand, M., 2003, 'Social identity in marketing research. An integrative framework', 1-55, viewed 15 February 2013, from http://qbox.wharton.upenn.edu/documents/mktg/research/Simktstrategy-ar14.pdf

- Roehrich, G., 2004, 'Consumer innovativeness concepts and measurements', *Journal of Business Research*, 57, 671-677.

- Rogers, E.M. & Cartano, D.G., 1962, 'Methods of measuring opinion leadership', *The Public Opinion Quarterly*, 26 (3), 435-441.

- Rogers, E.M. & Shoemaker, F.F., 1971, 'Communications of innovations-A cross cultural approach', *New York: The Free Press*, 476, viewed 15th June 2013, from http://garfield.library.upenn.edu/classics1991/A1991FT75500001.pdf

- Rohatynskyj, M., 2011, 'Development disclosure and selling soap in Madhya Pradesh, India', *Human Organization*, 70 (1), 63-73.

- Rose, P. & Kim, J., 2011, 'Self-monitoring, Opinion leadership, opinion seeking: a sociomotivational approach', *Curr Psychol*, 30, 203-214.

- Sabir, R.I., Irfan, M., Sarwar, M. A., Sarwar, B. & Akhtar, N., 2013, 'The impact of service quality, customer satisfaction and loyalty programs on customer's loyalty: An evidence from telecommunication sector', *Journal of Asian Business Strategy*, 3(11), 306-314.

- Santouridis, I. & Trivellas, P., 2010, 'Investigating the impact of service quality and customer satisfaction on customer loyalty in mobile telephony in Greece', *The TQM Journal*, 22 (3), 330-343, viewed 15 June 2011, Emerald Database

- Schiffman, L.G., Kanuk, L.L. & Kumar, S.R., 2011, *Consumer Behavior*, 10th Ed. Pearson Education, New Delhi.

- Sciulli, N., 2010, 'Building a framework for public private partnerships research', *International Review of Business Research Papers*, 6(1), 367-381

- Schmidt, J. B. & Calantone, R. J., 2002, 'Escalation of commitment during new product development', *Journal of Academy of Marketing Science*, 30 (2), 103-118, viewed 15 November 2012, from http://www.uk.sagepub.com/chaston/Chaston%20Web%20readings%20chapters%20 1-12/Chapter%208%20-%2014%20Schmidt%20&%20Calantone.pdf

- Shahrokh, N., Mezei, J., Bouwman, H. Liu., Y., 2011, 'Factors influencing the adoption of mobile services consumers' preferences using analytic hierarchic process', 22nd European Regional ITS Conference, Budapest, viewed 15 June 2012, from
  http://www.researchgate.net/profile/Harry_Bouwman/publication/256484969_Factors _influencing_the_adoption_of_mobile_services_consumers'_preferences_using_analy tic_hierarchy_process/links/0deec529da0d40a368000000.pdf

- Sharma, V. & Seth, P., 2004, 'Effective public private partnership through e-governance facilitation', *Critical Thinking in E-Governance*, 194-206, viewed 25 April 2014, from http://www.csi-sigegov.org/critical_pdf/22_194-206.pdf

- Shih, Y. W., 2011, 'Facilitators and benefits of using mobile entertainment services', International *Journal of Mobile Communication*, 9 (5), 458-476.

- Shrivastava, M. & Israel, D., 2010, 'Predicting select mobile service preferences based on demographic profile of mobile users in Oman', *International Journal of Mobile* Marketing, 5 (1), 98, viewed 3 May 2014, Ebsco Database

- Shulka, R., 2007, 'How Indian earns, spends and saves, *The Max-NCAER: Indian Financial Protection* Survey', *The Creative Edge.* New Delhi, 5-80.

- Simonson, I., & Nowlis, S. M., 2000, 'The role of explanations and need for uniqueness in consumer decision making: unconventional choices based on reasons', *Journal of Consumer Research*, 27(1), 49–68, viewed 14 August, 2014, Jstor Database

- Singh, R. & Bhagat, K., 2013, 'New corporate initiatives in Indian agriculture', viewed 10 October 2014, from file:///C:/Users/THIS%20PC/Downloads/SSRN-id2372011.pdf

- Singh, A. & Prakash, G., 2010, 'Public–private partnerships in health services delivery: A network organizations perspective', *Public Management Review*, 12 (06), 829-856.

- Smith, S., 2004, 'What works: Smart Communication- expanding network, expanding Profits', *World Resource Institute*, 1-22.

- Sridharan, S. & Viswanathan, M., 2008, 'Marketing in subsistence marketplaces: Consumption and entrepreneurship in a South Indian context', *Journal of Consumer Marketing,* 25 (7), 455–462.

- Srinuan, C., Srinuan, P. & Bohlin, E., 2013, 'Pricing strategies and innovations in the Thai mobile communications market', *Info*, 15(1), 61-77, viewed 15 June 2014, Emerald Database

- Stanley, R. 2005, 'Village phone- A tool for empowerment', *Grameen Foundation Publication Series,* 1-8.

- Sudha, P.S., 2011, 'Mobile value added service-Vital tool for inclusive growth in India', *International Journal of Research in Finance & Marketing*, 1(4), 153-166.

- Summers, J.O., 1971, 'Generalized change agents and innovativeness', *Journal of Marketing Research*, 8, 313-316.

- Swain, S. C., 2009, 'Channelization of potential private investment for infrastructure development in Orissa: A public private partnership approach', *The IUP Journal of Infrastructure*, VII (3&4), 32-55.

- Synder, H. L. & Fromkin, C.R., 1980, 'The search for uniqueness and valuation of scarcity', *Social Exchange*, 57-75, viewed 15 June 2013, Springer Database

- 'The changing profile of rural consumers', The Strategist, Business Standard, 2 March 2015, p.3.

- Telecom Regulatory Authority of India 2013, *Annual Report 2012-13.* New Delhi, viewed 23 May 2014, from http://www.trai.gov.in/WriteReadData/UserFiles/ Documents/AnuualReports/TRAI-English-Annual-Report-10032014.pdf

- Telecom Regulatory Authority of India 2015, *Annual Report 2014-15.* New Delhi, viewed 23 June 2015, from http://www.trai.gov.in/WriteReadData/WhatsNew/ Documents/PR-No=47.pdf

- Thakur, A. & Jasrai, L., 2014, 'A study on integrated, innovative and inclusive (3Is) framework for telecom services in rural India', *International Journal of Applied Business and Economic Research*, 12 (3), 925-940.

- Thekkudan, J. & Tandon, R., 2009, 'Women's livelihoods, global markets and citizenship'. *Institute of Development Studies, University of Sussex Brighton.* Working Paper, 336, 01-39.

- Thomsen, S., 2005, 'Encouraging public-private partnerships in the utilities sector: The role of development assistance', *The New Partnership for Africa's Development and OECD Investment Initiatives*, 01-37.

- Thurani, A. & Shqau, G., 2011, 'Public-private partnerships- For and against', *China-USA Business Review,* 10 (9), 893-898.

- Tractus Asia Ltd. 2012, *ICT Sector Overview: India.* State of Washington, Department of Commerce, viewed 15 August 2013, from: http://www.exportwashington.com/Documents/Tractus-Sector-Overview-India-ICT-2012-07-30.pdf

- Tripathi, S.N. & Siddiqui, M.H., 2009, 'An empirical investigation of customer preferences in mobile services', *Journal of Targeting, Measurement and Analysis for Marketing*, 18(01), 49-63.

- Truong, Y., 2013, 'A cross-country study of consumer innovativeness and technological service innovation', *Journal of Retailing and Consumer Services,* 20, 130-137.

- Tung, F.C., 2013, 'Customer satisfaction, perceived value and customer loyalty: the mobile services industry in China*, African Journal of Business Management*, 7(18), 1730-1737, viewed 18 May 2014, from http://www.academicjournals.org/article/article1380456064_Tung.pdf

- Ugboaja, P.C., 2010, 'Sustainable rural transportation in Nigeria through public-private partnerships', *Interdisciplinary Journal of Contemporary Research in Business,* 2(3), 199-217.

- United Nations Industrial Development Organization 2003, *Developing Rural and Women Entrepreneurship*, Vienna, viewed 12 April 2014, from https://www.unido.org/fileadmin/import/11092_RuralwomenEntrepreneurshipBrochure_April2003.2.pdf

- Vandecasteele, B. & Geuens, M., 2008, 'Motivated consumer innovativeness: concept, measurement and validation', 2-42, viewed 25 August 2014, from http://wps-feb.ugent.be/Papers/wp_09_550.pdf

- Velayudhan, S. K., 2007, *Rural Marketing: Targeting the Non-Urban Consumers*, 2 Ed. Sage publication, New Delhi

- Viswanathan, M., Purushothaman, K. & Navaneethakumar, V., 2012, 'A strategy to exploit marketing and human resource potential through inclusive growth in rural India', *European Journal of Social Science*, 29 (4), 512-520.

- Wang, C.L., Chen, Z., Chan, K. K. & Zheng, Z. C., 2008, 'The influence of hedonic values on consumer behaviours', 14 (1-2), 169-186, viewed 25 April 2014, Taylor & Francis online Database

- Wang, S., Wang, S. & Wang, M. T., 2006, 'Shopping online or not? Cognition and personality matters', *Journal of Theoretical and Applied Electronic Commerce Research,* 1(3), 68-80, viewed 25 April 2014, from http://www.redalyc.org/pdf/965/96510307.pdf

- Wang, X., 2013, 'The impact of microfinance on the development of small and medium enterprises: The case of Taizhou, China', 2(9), 1-22, viewed 15 February 2014, from http://econ.jhu.edu/wp-content/uploads/sites/27/2013/07/ seniorthesis_xitian_wang.pdf

- Wankel, C., 2008, '*Alleviating poverty through business strategy*', 1 Edition, Palgrave Macmillan, New York.

- Wei, R., 2008, 'Motivations for using the mobile phone for mass communications and entertainment', *Telematics and Informatics*, 25(1), 36-46.

- World Business Council for Sustainable Development 2014, *Inclusive Business Perspective: Linking Local Communities with Big Business*, viewed 30 May 2013, from http://www.inclusive-business.org/inclusive-business.html.

- Xavier, M.J., Raja, J. & Nandhini, S.U., 2008, 'Impact assessment using path models of micro-entrepreneurs developed by a business corporation in India', *World Academy of Science, Engineering and Technology*, 40, 461-474.

- Yadav, R. K. & Dadhade, N., 2013, 'Impact of service quality on customer satisfaction on mobile users: a case study of Airtel', *International Journal of Innovative Research and Studies*, 2 (5), 139-163, viewed 30 May 2015, from http://www.ijirs.com/vol2_issue-5/11.pdf.

- Yang, K. & Forney, J.C., 2013, 'The moderating role of consumer technology anxiety in mobile shopping adoption: differential effects of facilitating conditions and social influences', *Journal of Electronic Commerce Research*, 14 (4), 334-347, viewed 15 April 2014, from http://web.csulb.edu/journals/jecr/issues/20134/Paper4.pdf