CHAPTER II

REVIEW OF LITERATURE

Introduction

Review of literature is a systematic search of existing facts on a particular topic. It is very useful to know what has happened and what has been found out on the topic and to decide what should be found out in future research. The researcher can understand the gap in which aspect no research has been undertaken in the past period. In this way, such survey takes an important role in a research process.

The present chapter attempts to bring out the important findings of the past surveys and researches on customer studies in the telecom sector briefly. The review of previous researches can highlight the tendency of the researches and finally it will identify the areas on which a research gap exists. The methodology, objectives, contents and findings of the previous researches are alike with each other in many cases. And the same findings are confirmed again in theses researches so that the chapter does not classify the previous works on any basis. The chapter presents and points out the past studies briefly in chronological order.

Das and Srinivasan (1999) estimated the aggregate demand for telephone usage in India, using both time series and panel data models. In time series model (using data from 1964 to 1997), demand for per capita metered call units is estimated as a function of price of per metered call unit, telephone density, share of services in GDP and per capita GDP. In panel data model (using those data for 19 states for the years 1992-93 to 1996-
determinants of telephone usage are estimated in terms of price of metered call unit, telephone density and share of services in State Domestic Product.

Manoj Rengarajan (2000) decides the pressure for the consolidation of the telecom industry is driven by the increasing customer demands, falling tariffs, fast changing technologies and shift in competitive strengths. According to his observation, the global telecom market is undergoing a paradigm shift and the market is expected to be dominated by agile players that can capture and retain customer base and run business profitably after catering to a ever increasing demand for higher bandwidths from the heave usage segment.

Determinants of demand are useful for many policy purposes, such as, estimation of gross value added (in terms of gross earnings, however) by telecom service providers through introduction of new services, changes in price of existing services, and due to changes in purchasing power of people. In essence, this calls for estimation of price and income elasticity of demand for telecom services. Surprisingly, this estimation remains a neglected area of academic and policy interest in India. This is evident, for instance, by the absence of Indian studies in the excellent and recent international survey articles on demand for telecom services [Taylor (2004), and Garbacz and Thompson Jr (2007)].

In view of Moazzem Hossain and Rajat Kathuria (2003) the telecommunications service in India is an example of a paradox of the 1990s. There is still an opportunity to reform and simplify the regulatory framework further and maintain the growth rates during the next decade as seen in the past. What are the lessons from the Indian experience? First, the analysis of the Indian telecom sector presents a picture of
“managed competition”. While the traditional public monopoly is coming to an end, effective competition has been hard to achieve for a number of reasons. The incumbent with an extensive network has retained market power. The number of networks that have come up or are about to come up are limited because of the costs of building the network. The availability of spectrum is a constraint in the market especially for cellular mobile services. Given these circumstances, however, the expansion of telecommunications services has been phenomenal over the last decade. Second, new market-based approaches to the supply of telecommunications services have been introduced in India and technological changes have led to cost reduction and expanded scope of product choice.

The number of initiatives on the drawing board makes impressive reading and present immense opportunity for the sector and thus for the economy. TRAI has already issued consultation papers on Internet Telephony and Interconnection and opening of international long distance (ILD) services to private competition. These initiatives suggest a greater reliance on market forces than before. As market-based approach to the provision of telecom services has been adopted, the question to be addressed is whether there should be more or less regulatory intervention. Third, following the widespread adoption of market-based approaches to the supply of telecommunications services, there is also a growing consensus that regulators should not be involved in detailed “management” of the sector. Instead, the regulators’ role is seen to involve maintenance of a regulatory environment conducive to the efficient supply of telecommunications services to the public. Also, while there is likely be an increase in regulatory activity around the time of introduction of competition, the level of regulatory intervention can be
expected to reduce once competitive markets are established. Regulation where none is justified can distort or undermine competition.

Finally, under the given market-based approach and the current regulatory framework in place, the telecommunications industry has contributed to establish a ‘new’ sector in the economy driven by the IT/Software and IT enabled services. Within a short period of time, the ‘new’ economy sector has substantially contributed to reversing the age old current account problem and has created hundreds and thousands of jobs in newly established domestic companies and in India based major MNCs. These achievements, however, are not immune from any threat in the future. The major challenges can be identified in terms of India’s image problem to outside world, gradual withdrawal of tax incentives in place, WTO intervention on behalf of the other member nations and direct competition faced from East and South East Asian nations.

**Jalava and Pohjola (2002 and 2007),** have made a framework to accounting for direct contribution of telecom services to aggregate economic growth is presented here. Let the aggregate value added (Y), at any given time (t), consists of telecom services (YCS,t) and non-telecom goods and services (YNCGSt). Hence, from the production side, national income is equal to gross value added by the telecom services and non-telecom goods and services. It is straightforward to show that Yt* = (SCS,t.YCS,t*) + (SNCGS,t.YNCGS,t*), where * indicates the rate of change or proportional growth rate, and {SCS,t, SNCGS,t} are weights and equal to nominal output share of telecom services and non-telecom goods and services. Thus, production of telecom services contributes directly to total value added generated in the economy. This contribution is
equal to the product of $SCS,t$ and $YCS,t^*$. Value added by telecom services is essential for estimation of $SCS,t$ and $YCS,t^*$.

In recent past, performance indicators of telecom services have been used to construct indices of international competitiveness of countries. These indices include World Economic Forum’s World Competitiveness Index and Networked Readiness Index, IMD World Competitiveness Yearbook, ITU’s Digital Access Index, and A.T. Kearney/Foreign Policy Globalization Index. This emphasizes the need for higher performance of telecom services in global context. The above performance of telecom services are related to supply of telecom services. From the production side of the national economy, they are contributory to value added by the telecom sector and, hence, contributory for economic growth.

Leonard Waverman, et al (2003) investigated into telecom sector and the authors find that mobile phones in less developed economies are playing the same crucial role that fixed telephony played in the richer economies in the 1970s and 1980s. Mobile phones substitute for fixed lines in poor countries, but complement fixed lines in rich countries, implying that they have a stronger growth impact in poor countries. Many countries with under-developed fixed-line networks have achieved rapid mobile telephony growth with much less investment than fixed-line networks would have needed.

They subjected the impact of telecoms rollout on economic growth in poorer nations to a thorough empirical scrutiny. We employed two different approaches— the Annual Production Function (APF) approach following the work of Roller and Waver
man (2001) and the Endogenous Technical Change (ETC) approach similar to the work of Robert Barro (1991). The latter provided us with the most robust and sensible estimates of the impact of mobile telephony on economic growth. We used data on 92 countries, high income and low income, from 1980 to 2003, and tested whether the introduction and rollout of mobile phone networks added to growth.

They find that mobile telephony has a positive and significant impact on economic growth, and this impact may be twice as large in developing countries compared to developed countries. This result concurs with intuition. Developed economies by and large had fully articulated fixed-line networks in 1996. Even so, the addition of mobile networks had significant value-added in the developed world: the value-added of mobility and the inclusion of disenfranchised consumers through pay-as-you-go plans unavailable for fixed lines. In developing countries, we find that the growth dividend is far larger because here mobile phones provide, by and large, the main communications networks; hence they supplant the information-gathering role of fixed-line systems.

The growth dividend of increasing mobile phone penetration in developing countries is therefore substantial. All else equal, the Philippines (a penetration rate of 27 percent in 2003) might enjoy annual average per capita income growth of as much as 1 percent higher than Indonesia (a penetration rate of 8.7 percent in 2003) owing solely to the greater diffusion of mobile telephones, were this gap in mobile penetration to be sustained for some time.
A developing country that had an average of 10 more mobile phones per 100 populations between 1996 and 2003 would have enjoyed per capita GDP growth that was 0.59 percent higher than an otherwise identical country. For high-income countries, mobile telephones also provide a significant growth dividend during the same time period. Sweden, for example, had an average mobile penetration rate of 64 per 100 inhabitants during the 1996 to 2003 period, the highest penetration of mobiles observed. In that same period, Canada had a 26 per 100 average mobile penetration rate. All else equal, we estimate that Canada would have enjoyed an average GDP per capita growth rate nearly 1 percent higher than it actually was, had the mobile penetration rate in Canada been more-than-doubled.

The research also provides new estimates of demand elasticity’s in developing countries – we find both the own-price and income elasticity’s of mobile phone demand to be significantly above 1. That is, demand increases much more than in proportion to either increases in income or reductions in price. They also suggest that mobile phones are substitutes for fixed-line phones.

Pentland et.al, (2004) and Gunasekaran and Harmantzis, (2007) made two different studies on rural telecom in North Indian States. According to their views the characteristics of the rural areas, low population density and spread out population, difficult topographical and climatic conditions make it difficult to provide telecommunication service of acceptable quality by traditional means at affordable prices. So, they have recommended that villages near a larger town can take advantage of the fiber backbone; a remote village can be connected via VSAT link. From the fiber
backbone, a point-to-point or point-to multipoint WiMAX link can be used to connect one or more villages near the town, thus enabling WiMAX to distribute locally among all rural community groups in a given village using long distance Wi-Fi technology. The technology angle to providing telecom services has been not been given much attention as it has been written on by many authors and the focus of the current paper is marketing issues related to marketing if telecom services.

Recent international studies use cross-country empirical models to estimate the impact of telecom services on economic growth in developing countries, mainly due to the availability of data on large number of countries. These studies include El Khoury and Savvides (2006) which captures the impact openness policies (e.g. privatization, deregulation, and competition) in telecom sector as one of the determinants of economic growth. The empirical evidence offers support for the positive impact of telecom openness on economic growth of less developed countries (i.e. 23 countries below a threshold level of GDP that included India). These studies are in contrast to studies, such as, Sridhar and Sridhar (2004) which mainly used penetration indicators (e.g. teledensity of mainline telephones) to estimate impact of telecom on economic growth in developing countries.

Prahalad (2004) made an empirical study on Marketing Issues in Rural Telecom in India and he established a conceptual model (Bottom of Pyramid - BOP) in his research. He has tried to address the issue of the urban and rural gap and reaching to the rural masses can be addressed by falling back on the Bottom of the Pyramid (BOP) marketing strategies. The 4 ‘A’s are Availability, Affordability, Acceptability and
Awareness The BOP marketing strategies basically talk about aggregating the demand of consumers who have low individual purchasing power and are spread out. The basic commercial infrastructure suggested by Prahalad and Hart (2002) for the bottom of the pyramid markets constitutes of four things, creating buying power, improving access, tailoring local solutions and shaping aspirations. Availability the first A is about making the product reach the consumers and in the case of telecom services studies have shown this to be the biggest barrier to be overcome. It has been acknowledged by many that distribution systems are the most critical component and a barrier which needs to be overcome for success in marketing in rural areas.

The task of distribution in these areas is considered to be more difficult than in urban areas, low density of population and inaccessibility makes the problem of servicing villages individually difficult and often uneconomical. Direct delivery of goods even to the top one percent of villages cost twice as much as servicing urban markets. To overcome the difficulties posed in distribution a phased spread of the services is recommended, wherein bigger villages can be targeted first, then the ones which are near a small town and connected and last would be the remote villages. In the distribution the importance of small town markets cannot be ignored and need to be given importance as besides being a point of distribution they can also be used for promoting products as villagers tend to come to the town frequently for either purchase of agricultural inputs or sale of their produce. Acceptability issues would include issues needed to be addressed to improve the willingness to consume,
Keval J. Kumar (2006) Until the mid-1990s the ownership of a telephone in India was considered a luxury, not a consumer item. The waiting period for a landline could extend from five to 10 years. Even in 1996, for instance, people were waiting for a telephone after having paid a hefty amount as an application deposit for three to five years. Today in many states companies are competing to gain customers and there is no waiting list. Mobile telephone services have become so cheap now that subscriptions have outpaced fixed line connections. In 2005 and 2006 on average 4.5 million new mobile subscribers were added every month.

The rapid spurt in tele-density has been exceeded only by China. This article will offer a political economic analysis of the dramatic growth of the cellular telephone industry during the last decades in India and China, and the public policy on deregulation that has driven this growth. In India the liberalization of telecommunications was ushered in the early 1990s by the Congress regime; the nationalist BJP regime further liberalized the industry. The article will also discuss the ‘mobile divide’ in the country, and between the urban and the rural sectors, and how this divide has had an impact on economic development. Some experiments in taking cellular telephony to the rural poor will be described. Finally, the articles will ex-amine the uses and gratifications provided by cellular telephony, especially among the Indian youth.

Recent international studies estimate price elasticity of telecom demand in the framework of reforms (i.e. privatization, regulation, and competition) in telecom sector. For instance, Garbacz and Thompson Jr (2007) estimated among others, price and nonprice determinants of demand for telecom services by residential and mobiles
services, using a sample of 23 developing countries including India. Telecom prices are
distinguished between residential and mobile services. These prices enter into demand
estimations both as exogenous variables, and endogenously determined by telecom
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Ram Kumar Kakani and Sridev (2007) insist that the first step in customer
analysis in the telecom sector is to identify the organization’s customer segment and how
well they are being served. In the telecom industry, the cream of the clientele is restricted
to the top 10-20% of the subscriber base. The battle will be to gain control over this
segment, which makes the maximum number of out-going calls and avails of specialized
services. Other aspects of customer analysis involve the customer motivation and
identification of unmet needs.
Muttur Ranganathan Narayana (2008) highlighted his research findings in his discussion paper. His paper estimates the contribution of telecommunication (or telecom) services to aggregate economic growth in India. Estimated contribution is distinguished between public and private sectors to highlight the impact of telecom privatization on economic growth. Knowledge of policy determinants of demand of telecom services is shown to be essential to enhance growth contribution of telecom services. Using a recent sample survey data from Karnataka State in South India, price and income determinants of demand for telecom services are estimated by capacity of telephone exchanges. Estimation results offer evidence for significant negative own price elasticity and positive income elasticity of demand for telecom services. In addition, survey data were used to show for non-economic factors that influence demand for telecom services including non-awareness of the usage and cost of value added services. These results have implications for design of a national policy for promotion of demand for telecom services and economic growth.

This paper provides with a simple framework for estimation of direct contribution of telecom services to national economic growth, and to distinguish the contribution by public and private sectors from 1993-94 through 2003-04. Using subscribers’ level survey data from the Karnataka State in South India, income and price elasticity of demand are estimated by levels of exchange capacity. Non-economic factors that influence usage demand are distinguished from the survey data. Overall implications of these analyses for current and future telecom policy for promotion of demand and economic growth are highlighted.
Basic and value added telecom services are demanded by business, government, and residential/household subscribers. Basic services are provided to all subscribers without subscription charges. In contrast, value added services need subscription and are provided with distinct charges by services. Dial-up Internet connection is a value added service for subscribers of telecom services.

Data on usage of telecom services is not available from the published sources in India. Hence, it is newly collected from a sample survey of current subscribers of telecom services during January-March 2003. A current subscriber is identified with his/her subscription to fixed telephone or landline connection on the day of the survey, as provided by the public telephone company, viz., Bharath Sanchar Nigam Limited (BSNL). The BSNL is the largest provider of telecom services in Karnataka State.

The survey explored, among others, the call patterns and responses of subscribers on hypothetical price changes. By telecom distance zones, friends and relatives of subscriber are predominantly located in domestic short and long distance call areas in both rural and urban areas. Usage of telephone for social interactions is about 99 percent. Opinion of the subscribers on what would have been their increase in local and long distance calls (i.e. by less than 25 percent, more than 25 percent but less than or equal to 50 percent, or more than 50 percent) if the call rates were to be reduced by 25 percent, show interesting results. For instance, a reduction in local call rate by 25 percent leads to an increase in (a) less than 25 percent calls for 47.1 percent of rural subscribers and 39.1 percent of urban subscribers; more than 25 percent but less than 50 percent calls for 37 percent of rural subscribers and 45.2 percent of urban subscribers. In the same
way, a reduction in domestic long distance call rate by 25 percent leads to an increase in
(a) less than 25 percent calls for 46.3 percent of rural subscribers and 45.3 percent of
urban subscribers; more than 25 percent but less than 50 percent calls for 27.7 percent of
rural subscribers and 34 percent of urban subscribers.

These results are consistent with the fact that large number of friends and relatives
of both urban and rural subscribers are located within the local call areas. The above
survey insights have two implications. First, telecom reforms, as they have been related
to reduction in call rates, have relevance for subscribers in regard to falling domestic long
distance calls. Second, estimation of calls rates on demand for basic telecom services is a
policy imperative.

This paper focused on estimation of direct contribution of telecom services by
public and private sectors on aggregate growth in India. Gross earning of telecom
providers is an important determinant of value added by telecom services in India’s
National Income. Empirical knowledge of price and non-price determinants of demand
for telecom services is essential to aim at increase in gross earnings. Thus, estimation of
determinants of demand is a macroeconomic policy imperative for India’s telecom
service sector.

Since 1991, India’s telecom reforms have been focused on privatization,
deregulation, and competition. Over the years, the impact of reforms have been evident in
higher penetration, increased private participation in mobile telephony, and fall domestic
and international long distance calls. However, India’s public sector continues to be a
major provider of telecom services with the highest value added among all the service
providers. This implies that changes in demand for public telecom services have a major impact on contribution of telecom services to economic growth in India.

Estimates of determinants of demand for public telecom services offer evidence for significant price and income effects on aggregate demand for telecom services. Magnitude of negative price elasticity is higher in low capacity exchanges than in high capacity exchanges. This is consistent with the practice of telecom price policy of keeping lower prices for smaller capacity exchanges and is justifiable for increasing the contribution of telecom services for economic growth. In addition, awareness of services and their cost for subscribers is essential to promote higher utilization of provided services.

National telecom policies in India and elsewhere in the world aim at providing with universal services. Both access and usage are important for contribution of telecom services to economic growth. Based on the evidence in this paper, a telecom policy to promote for demand may include awareness programmes on uses and cost of services, and differential price reductions for services by exchanges capacity in rural and urban areas. Awareness is especially relevant to promote for access and usage of valued added services, as it leads to higher value added and economic growth.

The evidence and implications in this paper are indicative, as they are based on small sample survey data from within a state and focused on fixed public telephone subscribers in India. An all India sample survey in future, based on the sample design indicators and instruments of this paper, would be useful to establish for generality of results, across the
Such a survey may focus on collection of data for determinants of demand by fixed and mobile telephones by public and private providers, and test for substitutability and complementarily between fixed and mobile services based on the frameworks in international studies, such as, Garbacz and Thompson Jr (2007). Further, subject to the availability of data, telecom manufacturing and services may be combined with information technology goods and services to estimate the impact of ICT goods and services on economic growth, as developed by Jalava and Pohjola (2007).

R. Ravi Kumar et al (2008) viewed that services marketing plays a major role in the national economy. In the service sector, telecom industry is the most active and attractive. Though the telecom industry is growing rapidly, India's telecom density is less than the world's average telecom density as most of India's market is yet to be covered. This attracts private operators to enter into the Indian telecom industry, which makes the Bharat Sanchar Nigam Limited (BSNL) more alert to run its business and survive in the market.

Tayebeh Farahani and Manjappa D. H (2008) undertook a study. Their study attempts to develop an econometric model to determine cellular telephone pricing on the basis of market structure and regulation for the Indian domestic market. The authors found out a positive relationship between concentration and pricing, whereas more competition of cellular service is associated with lower prices which in turn, stimulated market demand. Thus, exerting a downward pressure on costs because of the economies of scale. In other words, market concentration and competition are determinants of prices.
and assist in evaluating of potential gains to reduce price rates towards the marginal cost of services.

It is found out that concentration combined with an independent regulator is negatively correlated with telecom price performance, i.e., competition couples with independent regulation leads to more prices. The empirical analysis indicates that market structure is far from competition, and pricing competition strategies are less effective even though price is falling. The operators have resorted to non-pricing competition strategies, such as offer of a variety of service plans like prepaid calling card schemes as a means to attract new customers.

The telecom companies benefit their loyal customers and that too in terms of money to make it complete customer benefit strategy. Anand Pawar (2008) calls it Desirable Monetary Benefit Strategy. In his view, the customer may not in a position to command any strategy or decision making, but is the sense of gratitude that the telecom companies should possess and think from the point of view of the customers.

According to Kathuria, R. (2009) access is essential to usage of telecom services. Thus, usage price of telecom services must be inclusive of access price. For a subscriber of fixed telephone by the BSNL, the monthly access and usage price include rentals and call charges. Call charges (a) are applicable beyond the free or uncharged calls; and vary by (b) exchange capacity and location of subscribers in rural and urban areas; and (c) pulse rates for calls by distance zones. The access and usage prices for basic telecom services for subscribers of fixed telephone by BSNL were used. Using the above information and survey data, an attempt is made below to estimate an approximate
price effect on aggregate demand for telecom services by exchange capacity (i.e. number of direct exchange lines). First, all the subscribers are categorized by their location in rural and urban. Second, within rural and urban areas, all subscribers are separated by level of the telephone exchanges.

These two categorizations are essential because the rental charges, number of free calls, and call rates are different by exchange levels in rural and urban areas. Next, all subscribers are classified by their exchange levels in rural and urban areas in each telecom district, and their average monthly spending on telephone services are computed by telecom districts. Average monthly expenditure on telephone services is computed for exchanges with less than 1000 lines and between 1000 and 29999 lines. The average monthly expenditure by these types of exchanges is used as a proxy for the access and usage price paid by subscribers for telecom services in their respective telecom districts. Demand for telecom services (AUD) is regressed on per capita income (PCI), and price for telecom services (PTS), using district level variables.

The variable descriptions and data sources are presented in the research. The regression is run using log.linear functional form. The predicted sign on coefficient of PCI is positive and on PTS is negative. The estimation results are presented below by Model 1 and Model 2. The essential difference between model 1 and model 2 is in terms of the specification of the variable PTS. In model 1, PTS1 represents the average monthly expenditure on telecom services by subscribers in exchanges with less than 1000 lines. In model 2, PTS2 represents the average monthly expenditure on telecom services by subscribers in exchanges between 1000 and 29999 lines.
According to Selvarajah, K. (2009) demand for telecom services depends on the extent of provisioning, utilization, and awareness of services. The field survey contained insights into these non-economic aspects, as presented below. He presents the extent of provisioning of the services by rural and urban exchanges, and utilisation and awareness of the services by rural and urban subscribers. In general, provisioning of services by exchanges is higher than utilisation of the services by subscribers; and awareness of services is higher than utilisation of the services by subscribers. In particular, electronic locking for STD and CLIP are most provided services, and abbreviated dialing and call transfer/forwarding are least provided services, in rural exchanges. In urban exchanges, the most widely provided services are electronic locking of STD, call alter/waiting, CLIP, number haunting and automatic wake-up/reminder calls. Among the other basic services, electronic locking facility is largely used in both rural and urban areas, and awareness is higher for electronic locking of STD/ISD, CLIP facility, and automatic wake-up/reminder call.

Sachs J D, Varshney A and Bajpai N (2009), pointed out in his research that lack of utilization of specific basic services and overall value added services might be attributable for lack of awareness of free of cost services, restricted use of telephones, and lack of usefulness and high cost of value added services. The survey did elicit responses of subscribers on these reasons. Select reasons are presented. Interestingly, awareness of the free of cost basic services is limited 46 percent in rural areas and 55 percent in urban areas. Restricted use of telephones for merely receiving incoming calls is relevant for 57 percent of subscribers in both rural and urban areas. Lack of awareness is the most
important reason for non-utilization of value added services for 51 percent of rural and 48 percent of urban subscribers. Other reasons for non-utilization of value added service include costliness and non-useful of services. High cost prevents for use of value added services for about 19 percent of rural subscribers and 44 percent urban subscribers. It might be added here that printed telephone directory is supplied, free of cost, to all subscribers. About 87 percent of rural subscribers and 91 percent of urban subscribers possessed telephone directory. The directory gives full information on the nature and cost of services provided, but its usefulness is limited to 17 percent of rural subscribers and 20 percent of urban subscribers. From the viewpoint of increasing the gross earnings of public telecom providers, provisioning, utilization, and awareness of uses and cost of value added services are important. Field insights reveal the need for improvements on these non-economic determinants of demand for telecom services.

K.Momaya,A.Goyal (2010) indicated that that with unprecedented growth rates, ICT has attracted best of attention in India. Sustaining the success demands understanding of real competitiveness, next stages and building competencies for rapid scale-up in face of intensifying focus on global giants on Indian markets. Trade competitiveness is an important factor of international competitiveness, widely used by progressive countries. Attempt has been made in this exploratory paper to get a feel for patterns of trade competitiveness to identify leading countries in telecom. Efforts are also made to quickly evaluate competitiveness of large telecom players in India. Finally, future areas of research are identified and some key implications are drawn for leadership in industry and government.
T. G. Arun, F. I. Nixson (2010) the provision of infrastructural facilities has traditionally been the responsibility of the public sector. However, fiscal constraints, technological innovations, low levels of operational efficiency and inappropriate pricing policies have led to fundamental changes. This paper looks initially at policy changes in the telecommunications sector in India since 1991. It argues that even though the reforms have been successful in terms of encouraging private participation in the sector, it is too early to say how effective they will be in the longer run in achieving sectoral and national development goals.

Ana Valéria Carneiro Dias (2011) has conducted his case studies in the Brazilian Automotive and Telecommunication Industries. This paper aims to propose some research questions related to the insertion of Brazilian subsidiaries of transnational companies (TNCs) in global product development networks, in particular in the automotive and telecommunications sectors. These questions arise as both sectors have been entering the “productive globalization” in a very fast manner, being sectors with strong presence of transnational companies, which drive the strategies of their productive chains. Then, it matters to verify, beyond production, how the global product development takes place in these chains. The participation of firms located in Brazil in the product development networks would create an important competitive advantage for the country, and incentives mechanisms could be created in order to increase this participation.

The study intends to verify if there is any Brazilian participation in the global product development in the automotive and telecommunications sectors, and to relate the
results to the presence – or absence – of some conditions, as the existence of incentives and governmental policies in order to stimulate the de-centralization of the product development activities, the existence of infrastructure – research centers, universities – and local competencies, specially in which refers to the availability of qualified personnel etc. In order to do this, we have been through an extensive bibliographic research and some case studies in firms in both sectors. We also based our arguments in specific literature on the path of the sectors in Brazil, especially in which concerns to the strategies of product development that had been adopted previous to their insertion in globalized markets.

The results point to a tendency of participation of Brazilian teams in the development of some “niche” products, as low motorization vehicles (“popular cars”), special motors components for low quality or alternative fuel (as ethanol) and suspension components in the automotive sector; and software for switching networks, small switches (few channels) and billing and charge systems in the telecommunication sector. The development of these “niche” products in Brazil depends on the strategies of the headquarters.

This exploratory study was designed around the common premise that some factors and conditions influence whether R&D units are located or not in developing country. Preliminary researches let we create a reference framework which shows the most important of these factors. Then, some case studies were developed in both telecommunication and automotive industries to test this framework in Brazil.
The initial hypothesis is that productive globalization leads to the adoption of strategies of production and commercialization of “global” products, that is, those conceived for production and consumption in different countries and/or regions. The conception of these products may be, or may not be, centralized in laboratories and development centers located in the same country or region where the head offices are located. In the case of Brazil, the centralization in the conception of some specific products mainly in the developed countries may signify the loss of a competitive advantage – the competence for technological development – which could lead to a sustainable growth. On the other hand, in some cases the transnational companies could, taking advantage of the competencies already installed in Brazil, include the Brazilian subsidiaries in the conception process of their products, or even use the local competencies to the development of specific global products for some market niches – for instance, products which would be adequate to markets in developing countries. For this strategy to occur, it would be necessary that some conditions were present, like the existence of incentives and governmental policies in order to stimulate the decentralization of the product development activities, the existence of infrastructure – research centers, universities – and local competencies, specially in which refers to the availability of qualified personnel; the particular path of the companies worldwide and in Brazil, which in some way shape their present strategies.

Tayebeh Farahani and Manjappa (2005) found out a positive relationship between concentration and pricing, whereas more competition of telecom service is associated with lower prices, which in turn, stimulated market demand. It is found out that concentration combined with an independent regulator is negatively correlated with
telecom price performance, i.e., competition couples with independent regulation leads to more prices.

**Conclusion**

From the above mentioned researches, it is clear that the past studies concentrated on telecom prices, contribution to development, marketing strategy and other related issues. The researchers have followed their own methodology to pursue the research. The present research follows their methodology and approach. It takes a small geographical area Thanjavur telecom circle is selected and a little segment of the telecom sector i.e, landline phone is taken up for the present study.