Chapter 2: External Marketing: Comparison Across Selected Incumbent Operators.

In this chapter, the researcher aims to study the different types of fixed broadband technologies available for the promotion of broadband services across the globe and also outlines the traditional marketing practices (4P’s: Product, Price, Place and Promotion) of BSNL in comparison with selected countries incumbent operators. In order to study different types of technologies, the researcher gives an overview of broadband, its advantage over narrowband, types of broadband and concludes with global market share of fixed broadband technology across the globe and in the country which are discussed in section 2.1 “Broadband and Its Types”.

Broadband service is not only considered as a vital source for the recovery of an economy and national competitiveness (broadband china, web source), but it is also considered as a determining factor for international competition (Krafft, 2006).

As discussed earlier (shown in chapter 1, fig 1.1 (c)) the wireline incumbent operators are compelled to retain their customers in a globally competitive broadband environment. Apart from this, the advancement in technology has enabled customers to access wide source of information, where they can compare details about the product, price, and place of availability from web sources, peers within the country and outside the country. So the service providers are forced to be innovative in promoting the broadband service and employ varied marketing strategies where they make promises about their service in future also, some of them are met and some may not. In this scenario, the study aims to explore and compare the external marketing practices (4P’s) of BSNL to identify how far it is able to set its promises to its customers.

In order to accomplish the second objective, the researcher has selected a few countries, the rationale behind selecting those countries are presented in section 2.2, and in section 2.3 the researcher compares the external marketing (4P’s) of selected incumbent operators in promotion of fixed broadband service (DSL). Section 2.4 presents the reason behind choosing Pondicherry for the area of study. Further in chapter 3 an exploratory research was carried to study the internal marketing practices; and is
followed by the chapter 4 in which the researcher studies the interactive marketing practices of BSNL.

2.1: Broadband and Its Types

2.1.1: Broadband Definition

Broadband, a multi-technology, multi-operator service has varied definitions. In ‘Birth of Broadband’ report by ITU (2003), broadband is referred as the “convergence of computing, communication and broadcasting technologies”, because the emergence of broadband brought a drastic change in the ICT (Information Communication Technology) and enabled people to access wide source of information across the globe within fraction of a second. Due to its ability to synchronize voice, data and video signals (Yun, Lee, & Lim, 2002), it is also referred as ‘triple-play’service. In electronics and telecommunication language broadband refers to wide range of frequencies that are splitted into channels (Anatory & Theethayi, 2010).

Broadband, in general, refers to increase in bandwidth; it is also defined mostly by its speed. Though FCC (Federal Commission for communication) in earlier days referred broadband as “bi-directional data transmission of at-least 200Kbps” (Gaskin J. E., 2004), later it referred the same to the speed of 800Kbps (Kim, Kelly, & Raja, 2010). It is also refers to the frequency covering the bandwidth from 384 Kbps to over 10Mbps (Office of the e-Envoy, 2001). ITU and OECD defines broadband as “network offering a combined speed equal to or greater than 256 Kbps either in one or both the direction” and this definition is considered as baseline by many broadband service providers for marketing their service across the globe.

2.1.2: Significance of Broadband

Internet defined as “Network of Networks” (en.wikipedia.org), broadband internet refers to internet with high speed and increased bandwidth to share and access the data on the net. Though the growth of broadband started only by the end of 1990’s, it witnessed a significant growth within a decade. One of the major reasons for the growth of broadband
service was the splitting of frequencies into channels which enabled the transmission of voice, video and data through the same medium (Gaskin J. E., 2004).

**Fig: 2.1.1 WireLine Channel used by Both Dial-up and Broadband Internet**

![WireLine Channel](source-image.png)

Source: (Woodford)

The above (fig 2.1.1) represents the utilization of wireline frequency by both the dial-up internet and broadband internet (DSL).

In case of dial-up the entire line could be used either for internet or voice, but in case of broadband due to classification of frequencies of the wireline into channels (Anatory & Theethayi, 2010), it permits for simultaneous transfer of both voice and data signals over twisted copper wire. This facilitated the users to use the telephone and internet simultaneously and it was not possible over the dial-up internet service, because every time while the user picks up or makes a call, the internet connection will get disconnected automatically. In addition to this the growth of narrowband was restricted
by limited bandwidth, slower speed and frequent interference of telephone calls (Broadband and Why it Matters).

While studies and reports state that the broadband speed is faster than narrowband, it was Gaskin J. E., (2004), who has given the picture of comparison of narrowband and broadband based on their speeds in his book “Broadband Bible” which is presented in table 2.1.1.

Table 2.1.1 Download Time Taken by Dial-up and Broadband Internet

<table>
<thead>
<tr>
<th>Size of the File</th>
<th>Time for Dial-up Hours:Minutes:Seconds</th>
<th>Time for Broadband Hours:Minutes:Seconds</th>
</tr>
</thead>
<tbody>
<tr>
<td>1MB</td>
<td>02:40:00</td>
<td>00:00:09</td>
</tr>
<tr>
<td>3MB</td>
<td>08:00:00</td>
<td>00:00:27</td>
</tr>
<tr>
<td>5MB</td>
<td>13:30:00</td>
<td>00:00:45</td>
</tr>
<tr>
<td>32MB</td>
<td>85:45:00</td>
<td>04:45:00</td>
</tr>
</tbody>
</table>

Source: (Gaskin J. E., 2004)

From table 2.1.1, it could be noted that to download 1MB (Mega Byte) of data, broadband took only nine seconds whereas dial-up took two hours and forty minutes. This portrays how the speed of broadband is far superior to narrowband (i.e dial-up). Information from the “Explain the Stuff” web resource by Woodford, also support the above notion by stating that an ordinary broadband with 512Kbps can operate nine times faster, and broadband with 8Mbps can operate 100 times faster than the dial-up internet.

Due to the increase in speed, broadband enables people to get connected to any part of the world within fraction of seconds (ITU, working Paper, 2003) and also stands as a key element in establishing an information society (Yun et al., 2002), which in turn would facilitate people to develop and improve their business, get information about their performance or the government, access information related to education, healthcare etc (Kim, Kelly, & Raja, 2010). They have also stated that promotion of various e-activities, like e-governance, e-commerce, e-education etc., is considered as a major driver for broadband adoption in Korea. It was also stated in ITU News that, the ICT convergence
was one of the major reasons for Korea to be in first position consecutively for the third year (ITU NEWS, 2014).

2.1.3: Growth of Broadband

Realizing that the high speed communication network infrastructure would lay the foundation for knowledge based society (SATRC, 2012); many Countries recognized and started to implement it by the end of 1990’s with existing infrastructures such as telecommunication and cable. As a result there has been a significant growth within a decade across the globe.
From chart 2.1.1, it could be observed that the global fixed broadband subscriber base was witnessing a significant growth from 2000 to 2013; i.e the broadband subscriber base with 15.89 million subscribers in 2000 reached a subscriber base of 674.33 million in 2013. This significant growth was achieved by the active participation of both the developed and developing countries.

Chart 2.1.1 Global Fixed Broadband Subscribers (2000 -2013)

In particular, the contribution of developed countries towards broadband promotion was greater compared to the developing countries. While the fixed broadband markets were in saturated position in most of the developed nations, it is still expected to have a futuristic growth in developing countries; notably its’ growth is still in the nascent stage in developing countries like China and India.

Even though China ranks number one in mobile sector with 1.15 billion subscribers as of March 2013 (REUTERS, 2013), it had acknowledged the need for
potential growth of broadband services. Andy, in his blog has stated that many of the traditional fixed-line telecommunications operators in China invested both their manpower and financial power to be competitive in this market.

In the present environment, Schwab & Porter state that only the economies which are innovative could be competitive. For eg: compared to many of the developed nations, Korean government which was innovative and had a futuristic vision that the information would lead the future globe, framed various policies and measures which was one of the major reasons for Korea to emerge as the broadband leader in the year 2000 itself (Yun et al., 2002), but it was a quite controversial situation in case of US which lagged in broadband growth. So service providers should not only focus in promoting broadband service but they should also be innovative. As broadband is a multi-technology service, varied technologies significantly contribute to the promotion of ‘always-on’ connection in the access network (Fast Net News, 2013; Structuring and Modularizing the Network) which connects the service provider to the end user through certain mediums such as copper wires, coaxial cables, fiber cables etc., so there exists varied types of fixed broadband across the globe.

2.1.4: Types of Broadband

Though there exists different types of broadband, all are broadly classified into two main categories i.e based on the mode of transmission; they are classified into wired and wireless broadband (as per OECD and ITU).

**Wired or fixed broadband:** It is the broadband service offered through any form of wired connections such as copper cables, coaxial cables, fiber cables etc.

**Wireless Broadband:** Broadband services provided through wireless platforms such as mobile and satellites.

As shown in fig 2.1.2, the wired and wireless broadband are further classified based on the technology used, i.e. wired broadband is classified into cable broadband, DSL, fiber and others; and wireless is classified into mobile and satellite broadband. All
the above mentioned classifications are as per OECD classifications (OECD web source, 2010).

Further, the fixed broadband in particular DSL is again classified into ADSL (Asymmetric Digital Subscriber Line), SDSL (Symmetric Digital subscriber Line), VDSL (Very-High-Data-Rate-DSL), XDSL (family of Digital Subscriber Line) etc., based on the speed (The Development of Broadband Access in OECD countries, 2001).

**Fig: 2.1.2 Types of Broadband**

Source: Compiled by the Researcher based on information from various sources

2.1.4.1: Wired Broadband

It refers to any form of wired connection that exists between the service provider and the customer premises. The ‘Birth of Broadband’ report by ITU (2003) defines fixed broadband as “transmission capacity with sufficient bandwidth to permit combined provision of voice and data through a fixed line such as DSL (telephone) and cable connection”. Different forms of wired broadband services are represented in fig 2.1.3.
Cable Broadband: Already existing coaxial cables are used to provide broadband service where the user can simultaneously have access to both broadband and television. It has the transmission speed of more than 1.5 Mbps (BROADBAND.GOV). Its' speed varies based on the traffic load since cable networks shares the same line for multiple users (transition.fcc.gov). As cable networks served as major infrastructure in many countries they act as tough competitor for the telephone companies (DSL service).

Fiber Optics: Countries which are innovative and thrive to upgrade their technology utilize fiber optics. The fiber optic technology converts the data from electric signals to light signals which are then transmitted through optic fiber cables which are very thin i.e just a diameter of a hair (BROADBAND.GOV). It could transmit signal from tens to hundreds of Mbps (Mega bits per second) in just a fraction of second. Since it is costlier, it is used as hybrid technology (fiber +DSL) by many countries. Based on the reach of fiber to the customer home or business, fiber technology is further classified into FTTH (Fiber to Home), FTTB (Fiber to Business) etc. Countries like Korea and Japan which were innovative have stepped in to the NGN (Next Generation Networks) by utilizing fiber optics.

DSL (Digital Subscriber Line): Already existing twisted pair of copper wires which was used for wireline communication is used for provision of DSL service.
Fig 2.1.4 Bandwidth for ADSL Broadband

Source: (WIKIPEDIA)

Fig (2.1.4) represents the frequency separation of voice signal used for ADSL broadband. It could be observed, out of the total frequency range, voice signals (Public Switched Telephone Network) used 4Khz of bandwidth and the rest which were unused was used for ADSL service. In the unused portion, bandwidth ranging from 25.875 Khz to 138KHz was used for upstream, the bandwidth ranging from 138Khz to 1104 Khz was used for downstream. There is unused bandwidth between 4 Khz and 25.875 Khz (BROADBAND.GOV) which avoids interference of signals.

Based on the usage of bandwidth for downstream and upstream, DSL is further classified in to ADSL, ADSL 2+, SDSL and VDSL.

**ADSL:** DSL by default refers to ADSL (Asymmetric Digital Subscriber Line) where the upstream and downstream used for data transfer are not symmetric. As majority of ADSL subscribers are residential users they prefer broadband mostly for playing games, information search, music download, video etc., and rarely use to upload data. Based on the necessity there exists vast difference between data upload and download. The data transfer ratio between the upstream and downstream data is 10:1 (Definition of ADSL).

Moreover, it is also one of the cost effective subset of DSL available to the users, in particular it also costs lesser than SDSL (Gaskin J. E., 2004). It has been used as one of the marketing strategies by service providers to market the DSL service.
**SDSL:** In Symmetric Digital Subscriber Line equal bandwidth is used for both the upstream and downstream data flow i.e data transfers up to 1.544 Mbps (Definition of ADSL). It is one of the rarely used forms of DSL service because it is costlier.

**VDSL:** One of the major limitations of DSL service is the distance between the customer premises and the telephone exchange. VDSL though can offer up to 1.5Mbps of downstream data it has a limitation that it can be accessed within the range of 1.5 Kms.

### 2.1.4.2 Wireless Broadband:

Compared to other broadband services mobile broadband witnessed a boom in the market due to vast spread of mobile subscribers and ease of its accessibility, availability and affordability. Satellite broadband though slower than DSL and cable; it is ten times faster than dial-up service. Even though it is costlier it is most preferable broadband in place where wired and mobile broadband are not available (BROADBAND.GOV).

Due to varied technologies, there is variation in speed for data transfer. Further the need for wider applications with increased bandwidth has created a demand for increase in speed (ITU Facts and Figures, 2010) across the globe. Data in table (2.1.2) gives a clear picture of how far the speed of data transfer has impacted the download of content.

#### Table 2.1.2 Download Time for Various Applications at Different Speeds

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Google Home Page (160 Kbps)</td>
<td>00:00:05</td>
<td>00:00:01</td>
<td>00:00:00</td>
<td>00:00:00</td>
</tr>
<tr>
<td>Music Track (5MB)</td>
<td>00:02:36</td>
<td>00:00:20</td>
<td>00:00:04</td>
<td>00:00:00</td>
</tr>
<tr>
<td>Video Clip(20MB)</td>
<td>00:10:25</td>
<td>00:01:20</td>
<td>00:00:16</td>
<td>00:00:02</td>
</tr>
<tr>
<td>CD/ low quality Movie ( 700MB)</td>
<td>06:04:35</td>
<td>00:46:40</td>
<td>00:09:20</td>
<td>00:00:56</td>
</tr>
<tr>
<td>DVD/high quality ( 4GB)</td>
<td>34:43:20</td>
<td>04:26:40</td>
<td>00:53:20</td>
<td>00:05:20</td>
</tr>
</tbody>
</table>

Source: (ITU Facts and Figures, 2010)
From table 2.1.2, it could be observed that to download the same content time varies based on speed. For eg: to download a video clip of size 20 MB, the broadband speed up to 256Kbps takes ten minutes and twenty five seconds, in the meantime broadband with a speed of 100Mbps takes only two seconds to download the file. It clearly gives an idea for the customers to decide which type of broadband service is needed for them.

Since the speed of broadband depends on the technology used, various technologies such as fiber broadband, mobile broadband, satellite broadband etc., have emerged and boomed in addition to already existing DSL and cable broadband. Thus it has necessitated the researcher to determine the global market share of each technology used for broadband promotion.

2.1.5.1: Global Market Share of Broadband Technology

Due to varied infrastructures, there exist varied technologies across the globe. This variation is not only across the countries but also within the country. Hence it is appropriate to consider the contribution of each technology for promotion of broadband across the globe. The broadband annual report portrays the global market share of broadband technologies (Broadband Commission, 2012).

Chart: 2.1.2 Global Market Share of Broadband Technologies (2011)

Source: Information given in (Broadband Commission, 2012)
The data in chart 2.1.2 indicates that the DSL is the dominant broadband technology as it holds a major share of 60.80% and it is followed by Cable modem with a market share of 19.40%. Even though fiber emerged only by mid of 2000’s across the innovative economies, it holds a market share of 14.10% in FTTX (Fiber to Business/Curb) and 2.60% in FTTH (Fiber to Home). The wireless broadband satellite or mobile together account for 1.90% of global market share and others including LAN (Local Area Network), Ethernet etc., holds a market share of 1.30% as of dec’2011.

The reason for DSL to lead the global market share was due to the availability of wide spread wired (wireline) infrastructure. Cable is also a major infrastructure in selected countries and has thrived to reach second position in the broadband market. As there are pros and cons for both technologies, the fiber technology with its own credibility of transferring data at faster speeds is recognized as one of the most needed technology for broadband service. Similarly, the wireless broadband services (mobile/satellite) due to availability at rural areas is also in the development phase.

Globally, though it was found that the wide wired infrastructure has greatly contributed to promotion of broadband service, the emergence of other forms of wired and wireless technologies could overshadow the already existing baseline technology (DSL). So service providers should be innovative in order to sustain in tough competitive broadband market.

2.1.5.2: Broadband Technologies in India

Looking into the availability of broadband technologies within India, it was found that DSL accounts for 86% of broadband technology and also acts as major factor in promotion of broadband service, followed by cable 8%, fiber 4%, Ethernet 1% and others 1% as represented in the chart: 2.1.3. As DSL holds major share of broadband technology in the country, it shows a positive sign for BSNL to promote its DSL service. In D&B website, titled Indian telecom industry, it was mentioned that many service providers in India consider DSL as the most preferred technology for broadband promotion.
Broadband is recognized as a universal service across many countries such as Finland, Germany etc., (Msimang, 2012) and also as the network expansion of existing networks. Fan (2005) suggest that market oriented reforms are must for telecom operators to achieve their objectives such as profitability, network expansion etc. The World Bank report (2009) also supports it by stating that, market oriented reforms and targeted incentives are to be considered as combined part of public sector to promote fixed broadband service in developing countries. Hence, BSNL should adopt market oriented strategy to achieve its broadband promotion objectives.

Though there are various marketing strategies the study considered 3M’s (external marketing, internal marketing, and interactive marketing) because it is complete by connecting the firm, employees and the customers who relate to “setting, making and delivering the promise”.

As external marketing is related to “setting the promises” (Zeithaml & Bitner, 2000), to examine external marketing practices of BSNL, the study tries to compare the 4P’s of BSNL with selected incumbent operators. As DSL depends on wired infrastructure, countries with an old telecom history and also with clear classification of technologies were considered.
2.2: Criteria for Selection of Countries

In selecting the countries, the study explored to find out the countries which lead in terms of subscriber base and penetration. It was found that, Asia-Pacific countries accounted for the higher share 41.6% (243 million subscribers) of total subscriber base as of 2011. Based on the broadband penetration, the European countries were found to be in the top position with 27.5 per 100 inhabitants as of 2011 (Broadband Commission, 2012).

Looking into Asia-Pacific countries the growth of subscriber base was high but was low in terms of penetration, in case of looking into countries based on penetration, most of the top ten countries are members of EU (European Union) (Liechtenstein, Monaco, Switzerland, Netherlands, Denmark, France, Denmark) (List of Countries Based on Broadband Subscription, 2012). Since EU sets certain unique standards for its member countries to achieve digital agenda there would not be much variation regarding policies and measures which had greater impact towards fixed broadband promotion.

In order to determine the role of DSL in promotion of fixed broadband service, the study focuses on countries which have clear classifications of technologies.

OECD which recognized the significant contribution of broadband for the economic development of the country and has taken considerable efforts and measures towards broadband promotion was considered. In the “Strategic Response to the Financial and Economic Crisis” by OECD (2009), it is defined, as a “unique form where the governments of (earlier 30) (present) 34 democracies work together to address the economic, social and environmental challenges of global competitiveness”.

OECD member countries are from varied regions of the globe, i.e it includes countries from Europe, Asia, North & South America and most of the developed economies (OECD, 2009). With respect to broadband service details related to price tiers, number of inhabitants (per hundred) for each technology, price charged per unit (which was earlier in Kbps and currently due to advance in technologies it is calculated for 1Mbps) are updated in the OECD database for every six months (June and December). More over the OECD DSL subscriber base of 339.001 million fixed broadband
subscribers shares nearly half of the global subscriber base (674.33 million) i.e 50.27% as of Dec’ 2013 (OECD, 2013) (Chart 2.2.1).

**Chart 2.2.1 OECD and Global Fixed Broadband Subscribers in Millions (Dec 2013)**

2.2.1: Criteria for Selection of Specified OECD Countries

OECD has a clear classification of number of inhabitants per hundred for each technology and also for overall fixed broadband; and fixed broadband subscribers in millions for each country separately.

**Chart 2.2.2 : Fixed Broadband Subscribers per 100 Inhabitants Across OECD Countries as of Dec’2013**

Source: (OECD Database, 2013)
From the above chart 2.2.2, it could be observed, Korea leads in fiber technology with 24.2 subscribers per 100 inhabitants that accounts for 64.53% of the total subscribers. France with 34.2 subscribers per 100 inhabitants accounts for 90.95% of fixed broadband subscribers and leads in DSL technology. US with 17.3 cable subscribers per 100 inhabitants accounted for 58.05% of cable technology as of dec’ 2013 (OECD database, 2013). In case of cable technology though Belgium, Netherland, Canada lead in cable broadband, US was considered because more than a developed nation, it is the birth place of internet.

Further, from chart 2.2.3, it could be observed that there exists a relationship among the selected OECD countries and the country (India) chosen for the study.

US with 87.97 million subscriber base ranked 2nd, France with 24.78 million subscribers ranked 5th, Korea with 18.35 million subscribers ranked 8th and India with 13.70 million subscribers ranked 10th in 2012 (chart 2.2.3).

Looking into the broadband penetration, it was found that Korea ranked 9th, US 24th, France 8th and India 137th globally (www.indexmundi.com).

**Chart 2.2.3 Top 10 Countries (Fixed Broadband subscribers) as of 2012**

- China, 174285380
- United States, 87974583
- Japan, 35560752
- Germany, 27640747
- France, 24780180
- United Kingdom, 21455368
- Brazil, 18275780
- India, 13701687

Source: (List of Countries Based on Broadband Subscription, 2012)
Table 2.2.1 Global Rank of Selected Countries
(Based on subscriber base and penetration)

<table>
<thead>
<tr>
<th>Countries</th>
<th>Rank (Subscribers)</th>
<th>Rank (penetration)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Korea</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>France</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>US</td>
<td>2</td>
<td>24</td>
</tr>
<tr>
<td>India</td>
<td>10</td>
<td>137</td>
</tr>
</tbody>
</table>

Source: (WIKIPEDIA)

To have a clear picture of the growth of broadband subscribers and penetration across the selected countries. Past years data i.e from 2000 to 2013 were considered.

Chart 2.2.4 Fixed Broadband Growth in Selected Countries (2000-2013)

Source: (The World Bank Database)

The growth of fixed broadband presented in chart 2.2.4 shows that both in US and Korea the fixed broadband growth was in a significant phase from the year 2000 onwards. The variation in growth across the two countries was mainly due to varied population i.e US ranked 3rd and Korea ranked 25th in population (Indexmundi). In case of France though the broadband has been initialized in 2000, it witnessed a momentous growth only from 2002 onwards. Similarly, in India it could be noted that though the
growth of broadband was initialized by 2001, it had a slight increase in growth only from 2004.

While the subscriber base represents the population using the service, penetration represents how much percentage of population have access, so the study aimed to determine the growth of broadband penetration which signifies the broadband growth of a country. From chart 2.2.5, it could be observed that compared to other three countries i.e US, Korea and France; India had very low penetration. Further comparing the chart 2.2.4 with chart 2.2.5 it could be noted that though US leads in subscribers, its penetration level is less compared to Korea and France.

The other important thing to be observed in chart 2.2.5 is that while US had only 2.48 subscribers per hundred in 2000 has reached to 29.8 subscribers per hundred by 2013, Korea which had a penetration of 8.42 subscribers per hundred by 2000 reached 37.5 subscribers per hundred as of 2013. France which had just 0.33 subscribers per hundred in 2000 reached 37.6 subscribers per hundred in 2013. In case of India it had just 0.01 subscribers per hundred as of 2002 and has reached only 1.16 subscribers per hundred as of 2013.

**Chart 2.2.5: Growth of Fixed Broadband Penetration of Selected Countries**

(2000-2013)

Source: The World Bank Database
Compared to all four countries, it could be stated that Korea was in significant growth phase before 2002 itself, US was in significant growth phase from 2002 to 2008, from 2008 to 2010 it was in saturated phase and again entered into the growth phase after 2010. In France broadband penetration was in significant growth from 2002 to till date. In case of India, the penetration has increased but it was not found to be significant. While comparing both the subscribers and penetration, India lags behind other countries.

As it has been stated in many studies that diffusion of broadband service is influenced by the demography, cultural and economic factors (Florence School of Regulation Communications & Media), the study discusses the demographic and economic factors of selected countries. Further, DSL considered as boost for declining wireline services, the position of DSL in each country and the role of incumbent wire line operators are discussed.

2.2.2: Overview of Korea

Korea also known as “Republic of Korea” (World Population Review, 2014) has a demography area of 99,392 Km\(^2\) (17% rural and 83% urban) which is linked to China in the west, Japan in the East, North Korea in the North and to the Korean peninsula in the South. It had a population of 48.86 million in the year 2012. In terms of literacy, Korea occupies an over 60\(^{th}\) rank globally with 97.9% of literacy rate (Literacy Rate, 2012).

Fig: 2.2.1 Korea

Source: [http://www.capuchinfranciscans.ie/What%20We%20Do/Missions/Korea/files/korea_map.jpg](http://www.capuchinfranciscans.ie/What%20We%20Do/Missions/Korea/files/korea_map.jpg)
Looking into the economy of the country, it should be stated that the economic growth in Korea was quite incredible. Because Korean economy in terms of GDP per capita was just less than $100 in 1960’s (Yun et al., 2002) after 4 to 5 decades it has reached $25,976 and placed Korean economy in 30th position as of 2013 (World Bank Database). Though the country was successful in the manufacturing and textile industry during 1980’s & 1990’s it made serious efforts in the promotion of telecom infrastructure. Once it recognized that information technology is going to lead the knowledge economy in the 21st century, it made serious efforts and identified broadband as the key driver for the information society (Bae & Yul). As a result, it started initializing its promotion with already existing cable and wireline infrastructures and achieved a massive growth which enabled it to emerge as “Broadband Leader” by 2000 (Yun et al., 2002). Looking into the significant increase in the ICT and also growth in economy of the country, it implies that ICT has significant impact towards the Korean economy (Katz, 2012).

2.2.2.1 Korean Telecom History:

Though the telecommunication history in Korea dates back to the period of 1880’s, even after a century i.e by 1960’s it had only 0.36 wire line subscribers per 100 inhabitants which was just one-tenth of world wired average (Kelly, Gray, & Minges, 2003). To increase the wire line subscriber base serious measures and efforts were taken in particular “one household, one telephone” plan was implemented in each and every corner of the country (Kim & Jayakar, 2010). As a result the country was completely wired and by 1980 it was equal to the world average with 7 wire line connections per 100 inhabitants. In 1982, government authorized and possessed Korean Telecom Corporation (KTC) as Korean Telecom Authority (KTA) (Yun et al., 2002). As monopoly operator it was successful in ADSL services before it was privatized in 2002. Korea telecom, the incumbent wireline operator offers various other telecom services such as wireline, wireless, ISDN and broadband (XDSL, Fiber etc).

2.2.2.2 DSL in Korea:

Even though, DSL technology was found to be a successful promoter for fixed broadband services in Korea, it emerged only after the promotion of cable modem by
Thrunet in 1998. Like other countries across the globe Korea Telecom (KT) dominated the voice services. So, Hanaro telecom, the private telecommunication service provider found difficult to find its entry space in the voice services. Alternatively, it found its entry through value added services and initialized the ADSL service by 1999 (Kelly et al., 2003) and achieved a great success within a year (Kim et al., 2010; Crandall, 2003).

After the success of Hanaro in ADSL services, Korea Telecom which earlier considered investment in ADSL as an expense entered into the promotion of ADSL in 1999 and achieved a huge inflow of subscribers’ i.e the subscriber base increased from 10,000 to 1.5 million within a year (Remeyi & Brown, 2001).

Kim et al., (2010) specify that the evolution of fixed broadband service market in Korea could be divided in to four stages. Due to commercialization of broadband service, 1998 to 1999 was referred as early stage, the period (2000 to 2002) during which the number of subscribers and penetration increased as growth stage, and the period (2003-2005) as maturity stage, since the growth of broadband (DSL) slightly declined, from 2006 onwards it moved to fiber stage.

In the first three stages DSL technology served as dominant technology, and attained the saturation stage after 2006 (Chart 2.2.6), but the growth in technology has stepped the country into the access of NGNs towards broadband promotion i.e into fourth stage.

Chart 2.2.6: Growth of DSL in Korea (2003-2013)

<table>
<thead>
<tr>
<th>Year</th>
<th>DSL</th>
<th>Fiber</th>
<th>Cable</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>13.7</td>
<td></td>
<td></td>
<td>14.1</td>
</tr>
<tr>
<td>2004</td>
<td>13.6</td>
<td></td>
<td></td>
<td>13.6</td>
</tr>
<tr>
<td>2005</td>
<td>11.4</td>
<td></td>
<td></td>
<td>9.5</td>
</tr>
<tr>
<td>2006</td>
<td>7.7</td>
<td>6.6</td>
<td></td>
<td>4.9</td>
</tr>
<tr>
<td>2007</td>
<td>4</td>
<td>4.9</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>2008</td>
<td>4</td>
<td>4.9</td>
<td>4</td>
<td>4</td>
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<tr>
<td>2009</td>
<td>4</td>
<td>4.9</td>
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<td>2010</td>
<td>4</td>
<td>4.9</td>
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<td>2011</td>
<td>4</td>
<td>4.9</td>
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<td>2012</td>
<td>4</td>
<td>4.9</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>2013</td>
<td>4</td>
<td>4.9</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>

Source: OECD Database
In 1999 i.e in the initial stage of broadband development only 0.5% of the total population had broadband connection and ADSL subscribers accounted for 31.35% of total broadband subscribers. Within a year it reached to 51.63% of fixed broadband subscribers. With this tremendous growth, it emerged as broadband leader in 2000 (Yun et al., 2002). By mid of 2000’s i.e by 2006 while the DSL technology has reached its maturity stage there were around 14.04 million fixed broadband subscribers (The World Bank, 2014) in Korea, after that fiber had a greater contribution for growth of broadband in Korea.

As the success of DSL technology promotion is not just limited to one operator but the role of incumbent towards its promotion is considered to be of vital importance. The Korea Telecom, incumbent wire line operator in Korea was very vibrant and dynamic in promotion of ADSL service. As a result it had a major share of 46% in ADSL service in the year 2001 (Lee & Chan-Olmsted, 2004) and by 2005 it had a market share of 50% in the broadband market.

2.2.3: Overview of France

France, one of the largest European Union countries had a population of 65.8 million (World Population Review, 2014) in the year 2013. The country accounts for 85.3% of urban population and 14.7% of rural population (Geohive, 2010).

Fig: 2.2.2 France

Source: [http://go.hrw.com/atlas/norm_map/france.gif](http://go.hrw.com/atlas/norm_map/france.gif)
It ranks 40th among the countries globally with 99% of literacy rate (Literacy Rate, 2012), and with $41,420 GDP per capita it was placed in 20th position in the year 2013 (World Bank Database).

2.2.3.1: France Telecom History

The telecommunication sector in France dates back to 1876 i.e the period while Alexander Graham Bell first had his telephone patent. Even after a century, only 8 per 100 inhabitants had wireline connection, due to development of telecommunication infrastructures in 1970’s and 1980’s it reached 30 per 100 inhabitants by 1985 (Regulatory Reform in France, 2003). In 1991, the Director General of Telecommunications (DGT) was renamed as France telecom and was converted to a limited company in 1996 where the government acted as the monopoly operator.

Even though ADSL service was initialized by 1999, only after recognizing broadband as global competitive tool and the role of NBP (National Broadband Plan) towards its promotion, the NBP was framed in 2004. More over due to the acquisition of France Telecom by the mobile operator Orange in 2000, the former brand was renamed by the latter brand (Orange) in the forthcoming years (Orange History).

With respect to DSL technology France holds the top position in DSL technology among the OECD countries with 34.2 of DSL subscribers per 100 inhabitants as on Dec‘2013 (OECD Database, 2013).

2.2.3.2: DSL in France

Like other EU countries, cable infrastructure was dominant even in France but it was not able to achieve a drastic growth in cable broadband. Once need for broadband was accredited, France Telecom with wide wired infrastructure was considered as major infrastructure to promote fixed broadband service. Due to liberalization policies and in particular LLP (Local Loop Unbundling) other private operators were able to make use of France Telecom’s wired infrastructure, which ultimately resulted for complete roll out of broadband technology i.e from chart 2.2.7 it can be found that broadband experienced a significant growth for the past ten years.
Fiber has made its entry as hybrid technology only after 2010. In the tough competitive broadband environment of 476 ISPs (arstechnica, ..) France Telecom was dominant; and had a major share of 42% in broadband service (European Commission, 2012).

2.2.4: Overview of United States

United States with a demographic area of 98,26,675 Km² had a population of 313.85 million in the year 2012 of which 82.3% were in urban and 17.7% were in rural (Geohive, 2010). With 85.63 million broadband subscribers and 99% of literacy rate the country globally ranks 2nd (Literacy Rate, 2012).

Fig: 2.2.3 United States
More over as a developed economy, the country was placed globally in 10th position with GDP per capita $53,142 as of 2013 (World Bank Database), but in broadband penetration it was in 24th position in the year 2012 (Rank of Countries – Broadband Penetration, 2012). Though the country is an upper income country with higher GDP per capita, that plays a vital role in determining the purchase power of the individual for the broadband service, the country lags behind in terms of penetration. Since cable networks has wide network compared to wireline network, cable companies dominate the telecom companies in US (Cable 70% and DSL 30%). In spite of this tough competition in each region of US, there existed at-least one DSL as a competitor for the cable broadband (Next Generation communications, 2009).

2.2.4.1: US Telecom History

Compared to other countries’ telecom history, US telecom history has a close association with Alexander Graham Bell inventor of telephone. Bell invented telephone in 1876 and started Bell Telephone Company which was the predecessor of AT&T in 1877. In less than a decade i.e by 1885 the American Telephone and Telegraph Company was established as a subsidiary to American Bell Telephone Company. It became government owned monopoly organization in the year 1913. Though mobile commercialization came into existence across the world by 1990’s, AT&T started to offer its first mobile service in 1946 and the first commercial MODEM was introduced in 1958. As the demand for telecom services arouse AT&T restructured into 3 companies in 1995 but the name AT&T was retained for its service companies (AT&T).

2.2.4.2: DSL in US

Even though US, is the birth place of internet and also globally leads IT & internet services, it did not have much success in broadband service. To be stated in particular that though broadband was commercialized one year earlier to Korea it attained a penetration of only 7.2 per 100 inhabitants in 2002 and reached 29.8 per 100 in 2013 (chart 2.2.5). One of the major reasons for lower DSL broadband penetration in US was mainly non availability of service to the scattered population. One of the survey report in
2011 stated that, though 1.3% of households in US were willing to get the connection, the answer to them was non-availability of the service.

**Chart 2.2.8 Growth of DSL in US**

In spite of advanced broadband technologies such as wi-max and fiber, still in each region of US, DSL provides a tough competition to the cable operators (Chart. 2.2.8). It could be observed that DSL which had only 3.3 per 100 inhabitants in 2003 reached to 9.9 per hundred inhabitants in 2013, and cable which had just 5.7 inhabitants per 100 in 2003 reached to 16.8 per hundred inhabitants in 2013. DSL though not significant was in growth phase till 2008. From 2008 onwards it got slowed down i.e from 10.3 subscribers per hundred in 2008 to 9.9 subscribers per 100 in 2013. Despite the tough competition created by other technologies such as FTTH, wi-max etc., in US the competition was limited to only one telecom operator and one cable operator in each region till 2011. Among various RBOCs (Regional Bell Operating Companies) and also from top 10 ISPs, the wire line telecommunication service provider and one of the DSL giants of US, AT&T was considered. Since AT&T, Verizon itself account for 75% of the DSL subscriber base in 2012 (Budde, 2011).
Table 2.2.2 US Telephone Companies DSL Subscriber Base as of June 2012

<table>
<thead>
<tr>
<th>Telephone Companies</th>
<th>Subscribers In millions (June 2012)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT&amp;T</td>
<td>16.43</td>
</tr>
<tr>
<td>Verizon</td>
<td>8.77</td>
</tr>
<tr>
<td>Century Link</td>
<td>5.76</td>
</tr>
<tr>
<td>Frontier</td>
<td>1.75</td>
</tr>
<tr>
<td>Windstream</td>
<td>1.361</td>
</tr>
<tr>
<td>Fairpoint</td>
<td>3.20</td>
</tr>
<tr>
<td>Cincinnati bell</td>
<td>2.57</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>36.464</strong></td>
</tr>
<tr>
<td>(Top Telecom Companies)</td>
<td></td>
</tr>
</tbody>
</table>

Source: (Malik, 2012)

2.2.5 Overview of India:

India with demographic area of 32,87,590Km² had 1.26 billion population in 2013 of which 70% of the population were in rural and 30% were in urban (Geohive, 2010).

Fig 2.2.4: India

Source: http://www.mapsofindia.com/images2/india-map.jpg
The northern part of the country is separated by hilly land and the southern part is surrounded by sea. The country though ranks 2\textsuperscript{nd} in population and 10\textsuperscript{th} in broadband subscriber base, increase in population on one hand and the unemployment, illiteracy, rural-urban gap etc., on other hand were some of the major reasons for India to lag in its economic position i.e with $1498 GDP per capita it ranks at 141\textsuperscript{th} place in the global economy list (World Bank Database).

2.2.5.1: An Overview of Telecom Sector in India

The telecommunication sector in India dates back to the mid of 19\textsuperscript{th} century. From the initial time of its establishment to till 1975, telecom sector was part of Post and Telegraph Department. After that, it emerged out as separate department, DOT (Department Of Telecommunication) which was framed to take over only the telecom services in India. By 1985 MTNL was whittled from DOT to carry out the telecom service operations in two major metro districts Delhi, and Mumbai (BSNL, 2011). Till 1990’s DOT and MTNL were the only incumbent telecom operators in the country.

After 1990’s due to LPG the telecom sector was opened for the private investment (TTDesk, 2011) but there was no massive change in the sector. The formulation of (National Telecom Policy) NTP’94 and in particular the NTP’99 brought a drastic change in the telecommunication sector by paving path for the entry of private operators. Due to their entry, there was a need to set the telecom regulatory body to formulate the policies and regulations. Hence, TRAI (Telecom Regulatory Authority of India) was established in the year 1995 and it came into effect from 1997 (Telecom Regulatory Authority of India, 2014).

It was in 2000, the operations wing of DOT was incorporated into BSNL to carry out only the operations of telecom services throughout India except Delhi and Mumbai. It was in the same period that the marketing wing of BSNL was also established. Both the public sectors (BSNL and MTNL) hold a major share of 79.12% in wireline service while the private operators hold a major share in the wireless sector 87.76% as of March 2013 (TRAI, 2013).
2.2.5.2: Broadband Plans and Policies

Globally it was recognized that broadband plans play a vital role in broadband promotion, in particular the formulation of plans and policies have greater impact on fixed broadband promotion (2.5%) (www.itu.int) compared to competition (1.4%) (Chart: 2.2.9).

Chart 2.2.9: Impact of Plans and Policies on Fixed Broadband Promotion

As a result the NBP was framed in 2004 with a target of achieving 10 million broadband subscribers and 20 million internet subscribers in 2010 (Broadband Policy 2004). Since the growth of broadband did not meet the expectations, to further promote broadband, 2007 was declared as the “Year of Broadband” (Bharath Sanchar Nigam). Despite various measures it reached only 10.55 million broadband subscribers as of October 2010, that was only half of the set target. More over as the growth of broadband was still in nascent stage, the NBP was framed in 2012 with the objective “Right to Broadband” and vision “Broadband to all”. Recognizing that broadband would attain a drastic growth due to utilization of various other technologies such as wi-max, mobile, fiber etc., it has set to achieve the target of 175 million subscribers by 2017 and 600 million subscriber by 2020 (Annual Report 2012 - 2013).

Despite this, as the rural population is greater than the urban population, in 2009 BSNL signed an agreement “Rural Wire line broadband Scheme” with USOF (Universal
Service Organization Fund) in order to make broadband affordable even to the rural part of the country. The agreement was signed to achieve the target of 8,88,832 wire line broadband connections which covers both the individual users and government institutions as their customers by 2014 and has also planned to establish 28,672 Kiosks by 2014 (Government Of India, 2011-2012), as of 2011, 3,38,617 broadband connections and 6,729 kiosks were established. With the recognition for promotion of broadband, in particular rural broadband, many ISPs were given license. As a result the country had 95 ISPs as of 2009 (d&b) which increased to 113 ISPs in 2013 (www.business.stdcom).

2.2.5.3: Top ten ISPs in India

Even though the regulatory authority has given license to more number of ISPs, only around hundred ISPs were active, though active they were not able to achieve significant growth because the top 10 ISPs by themselves account for 94.78% of the total subscriber base (BSNL, Reliance Communications, MTNL, Bharati Airtel, Hathway Cable, You Broadband and cable, Tilkona, Beam Telecom, Tata communications, Asian Satellite Comunications) in March 2013 (TRAI, 2013).

Chart 2.2.10: Broadband Market Share of Top Ten ISPs in India

Source: (TRAI, 2013)
As of March 2013 data, it was found that the top five ISPs accounted for 89.49% of total broadband subscriber base. Of the top five ISPs, the two public sector (BSNL & MTNL) accounted for 72.27% of total broadband subscribers.

**Bharati Airtel:** The Company was established in the year 1995 as Bharati-Tele-Ventures Ltd, to promote its mobile services. In 1998, it emerged as the first private operator to offer the wire line services in the country under the brand name Bharati-Telenet, which ended the monopoly role of DOT in fixed-line services. The company Bharati- Tele ventures was renamed to Bharati Airtel Ltd by April- 24- 2006 (Bharati Airtel Ltd). Under the common brand name Airtel, the firm offers a wide range telecom services which includes wire line, wireless, IPTV, broadband, digital TV, Mobile commerce, DTH, 3G, 2G, 4G LTE services etc., It operates across 19 countries. It has a share of 10.83% in wire line market, 21.79% of share in wireless market, 6.47% of share in broadband market as on March 2013 (TRAI, 2013).

**MTNL:** A part of DOT was incorporated as MTNL as of 28 Feb 1986 under the company’s Act, 1956 to carry out the telecom operations in Delhi and Mumbai. This is one of the Public sector companies in India which initially promoted the wire line services. It promoted ISDN service in the year 1996 and internet service in the year 1999. The firm underwent a pilot project of ADSL broadband services in 2003 which was launched in 2005 along with BSNL (MTNL company History). It holds 11.45% in wire line services, 0.58% of market share in wireless services and 9.06% of market share in broadband services in March 2013 (TRAI, 2013).

**Reliance Communication Infrastructure:** Once after the company was established in 1999. By next year it started to lay the optical fiber cables in India which covered around 60,000 Kilo meters and was estimated to cover 600 cities and towns in 18 out of 21 telecom circles in India (Reliance Communications; Anand, 2010). It also offers wide range of telecom services which includes wireless, fixed line, broadband, national and international services and other value added services. Due to the emergence of IPV6, the company emerged out as one of the world’s largest companies in IP oriented next generation networks. The company had 14.35% of market share in wireless services and
11.53% of market share in broadband services, 4.11% of share in wire line services as of March 2013 (TRAI, 2013).

**Hathway Cable and Datacom Pvt Ltd:** Though the firm was established initially as Chice Display Services Private Limited in the year 1959, it is one of the leading cable providers in the country. Due to change in ownership of the firm, it was renamed to Hathway Cable and Datacom Private limited in 1999. Further it was converted in to public limited company by 2009, i.e after a decade. The company started offering the cable broadband services using DOCSIS technology across 125 cities and towns in the country with the support of CISCO systems from 2000 onwards. As of March 2013 it had 2.42 million subscribers (TRAI, 2013) which is an increase of 24.2% from 1,00,000 broadband subscribers in 2004 (Hathway Cable & Datacom Ltd).

**You Broadband & Cable India Limited:** Initially the company was established as Iqara broadband in 2001, later it was owned by Citigroup Venture Capital International in 2006. It is the first broadband service provider in India to have an ISO accreditation. The company was the first to introduce the IP phones in India, where the user can make use of broadband connection to make calls instead of relying on telephone lines. It was the first service provider which announced about the provision of 2Mbps plans by 2007. It covers its targeted customers by offering high speed internet, voice and video broadband services through cable modem. It has reached a customer base of 1,00,000 subscriber base with the establishment of 2000 Kilo meters optical fiber cables along with the coaxial cables covering a range of 6000Kms. The Firm had a market share of 1.63% of total broadband subscriber base as of March 2013 (TRAI, 2013). As per CRISIL report the grade of You broadband was 2/5, this was due to the dominant nature of Telecoms in the broadband industry (YOU Broadband; CRISIL Research, 2010).

**Tikona Digital Networks India Ltd:** The Company was established in the year 2008 to offer the broadband products and services. To expand its services to six metros and also 19 tier I cities, it has shut down its broadband service in 13 out of 38 cities. The company won the government auctioned wireless spectrum in the year 2010 (The Economic Times).
**Tata Communication Internet Services Ltd:** Earlier the company was named as VSNL (Videsh Sanchar Nigam Limited), it was the first company to promote internet services across the country by 1995. By 1999, the company got access to operate in 6 cities. It was government owned company till 2002; by 2003 it merged with Tata Teleservices, Tata internet services and Tata net to form as Tata Indicom Business Enterprise unit. Later in 2008 VSNL became Tata Communications (Tata Communications Ltd). It holds a market share of 0.58% in broadband services, 4.98% in wire line market (TRAI, 2013).

**BSNL:** BSNL which was corporatized in 2000 by DOT to take care of telecom services has a wide wired infrastructure spread across the length and breadth of the country. The company operates in 26 telecom circles which offers a wide range of services such as wireline, mobile, ISDN, WLL, internet, broadband etc.,

BSNL which had a market share of 86.46% as of 2001 (Narayanan) in wireline service has been in decline phase from 2006 and holds a market share of 67.67% in March 2013 (TRAI, 2013). Due to decline in growth of wireline sector its revenue also got declined. Further due to less market share in wireless services BSNL was unable to generate much revenue out of it. But the growth of broadband, where the wireline infrastructure (DSL) holds the major share represents an increase in revenue and signifies a positive sign for the declining wireline sector

**Chart 2.2.11 Revenue of BSNL**

![Chart of BSNL Revenue](source: TRAI)
Even though BSNL holds a major share in both the wireline market and broadband market, from chart (2.2.11) it could be noted that, from 2007 while there was a decline in wireline revenue, the broadband revenue was steadily increasing which signifies that fixed broadband (DSL with 86%) if utilized properly could prosper growth and also generate the revenue for the declining wireline sector. The revenue of broadband is also related to wireline because a part of fee includes charge for the phone.

Even though studies state that plans and policies have impact on broadband diffusion, in case of India despite of framing NBP’s and formulating policies, the growth of broadband was still in the nascent stage of development. As fixed broadband service (DSL) dominates the broadband market, it implies scope for BSNL in DSL market. With that focus the external marketing of BSNL was compared with Korea Telecom (KT) in Korea, France Telecom (FT) in France and AT&T in US.

2.3: Comparison of 4P’s (External Marketing) of KT, FT, AT&T and BSNL

The traditional 4P’s (Product, Price, Place and Promotion) one of the earlier marketing strategies, Kotler & Levy (1969) defines it as “the task of finding and stimulating buyers for the firms output, which involves product development, pricing, distribution and communication”. Gronroos (1984) refers external marketing as “normal work done by companies to prepare price, distribute and promote the services to customers”. Among the 7P’s of services marketing mix, apart from additional 3P’s, the traditional 4P’s also has significant contribution.

In addition to considering the quality of product/service as of greater importance, customers also look into varied dimensions such as product attributes, price paid for service, availability of distribution channels, on-line information or referrals etc. Hence BSNL 4P’s are compared with its’ counterparts in selected countries.

2.3.1: Product

Though services are intangible, promotion of services make use of certain tangible products that enhances the quality of service. Armstrong & Kotler (2006) define product as “Anything that can be offered to a market for attention, acquisition, use or
consumption that might satisfy a want or need”. In reference to the broadband context, product refers to various items, i.e physical equipments, services and information as products of broadband service. BSNL has also referred all its services (wireline, wireless, internet, broadband etc.,) as products (Marketing Fundamentals, 2011).

Services which are part of products could not be separated from it. In order to make evaluation of service in an easy manner at various levels, Kotler (2000) has set five levels for the Product, i.e core benefit, basic product, expected product, augmented product and potential product. The broadband service (DSL) was also classified as per Kotlers’ five level approach.

Core benefit: It refers to the broadband service actually purchased by the customer.

Basic Product: The equipments that are used in the promotion of fixed broadband service (DSL) such as MODEM, Cable, Telephone and Filter (Dischinger et al., 2007).

Expected Product: Expected bandwidth, quality cable, uninterrupted service, effective customer support, clear billing etc., were considered as the expected product, as they all relate to what customers actually expect?

Augmented product: The service provider can provide information regarding availability of service, data security, provision of life security packages as offered by AT&T.

Potential Product: Broadband which works based on technology encompasses lot of variations and it should be incorporated in order to satisfy the customers’ needs. It is the one level which firms choose to distinguish themselves from their competitors. For eg: in case of DSL technology BSNL which initially offered 256Kbps has promoted its initial download stream to 512 kbps. From ADSL it makes its promotion towards VDSL, HDSL etc., and DSL to fiber and so on (BSNL.com).

In case of potential product AT&T's initial download starts with 768 Kbps (ATT signup), France Telecom with 512 Kbps in 2013.
Despite the five levels of service product only the physical equipments (basic product) which significantly contribute to the quality of broadband (DSL) service were considered.

**Fig: 2.3.1 Products used for DSL connection**

![Image of DSL connection products](http://www.orangedove.net/images/ims-1/45_att.jpg)

**MODEM:** MODEM refers to Modulator and Demodulator, is an electronic device used at the customer premises to transmit data to and from the computer. It modulates the signal at the sender end and demodulates at the receiver end (Thefreedictionary). As the cost of MODEM is high, it is provided either on rental basis or it could also be purchased from the service provider or from other outside vendors. Notably the cost of MODEM in Korea was $10000 in 1990’s only after a decade it came down to $100 (Crandall, 2003). In case of purchase from outside vendor, service providers specify the different types of MODEM that suits for their DSL service.

Korea Telecom, BSNL provides MODEM either on monthly rental basis or as own purchase by the customer.

**Splitter:** It splits the data into two different signals, i.e voice and data, and the data signals are forwarded to the computer through MODEM or even to fax. If splitters are not provided by the service vendors it is must be purchased and used by the customer. As it avoids the interference of noise signals and improves the quality of the signal due to separation of data and voice signals.
AT&T provides splitter along with the self installation kit. BSNL provides it most of the times, but sometimes it is purchased from outside vendors by the customers.

**Telephone:** Telephone is optional for broadband service. It could be used only if required. Hence many customers across the globe prefer for standalone service. Many service providers don’t offer standalone service for eg: Korea Telecom offered broadband connection only if customers go for a new phone connection in initial stages.

France Telecom offers broadband service as stand-alone service which does not require a telephone connection. BSNL provide DSL service only as bundled service and not as stand-alone service.

**Cable:** The quality of the cable plays a vital role in provision of quality service. In addition the signal quality is also influenced by the diameter of the cables used for DSL service. As the cables were installed for wireline service by many incumbent wireline operators in 1980’s and 1990’s, its quality gets declined due to the age of cables.

While the physical equipments just establish the link between the service provider and the customer premises, the actual link between the users is established only after getting connected to the net, where data is not secured. So data security for data is of utmost importance and also a basic necessity to prevent unwanted data such as spams, virus etc. More over it is the ultimate authorization taken by the telecommunication service providers to secure the information that flows through their networks.

As an initial step to avoid unwanted entries firewall security is provided by most of the service providers. AT&T, BSNL has it as the default option. More over for high speed internet connections AT&T offers e-mail antivirus, two-way firewall, spam guard and address guard as security features to its online customers (www.att.com).

IP (Internet Protocol) also has greater contribution in maintaining data security. As broadband is ‘always-on’ connection, the user can get connected to any part at any time so dynamic IP has greater role than static IP. Because once users get connected to broadband they are provided with an IP address which is dynamic i.e as soon as the user gets disconnected that IP gets randomly allocated to other user.
AT&T has static IP as an inclusive feature, while BSNL provides one static IP as free offer for combo limited plans and unlimited combo plans greater than INR 3000. It also provides for combo plans in unlimited for added cost (BSNL Teleservices).

**Table: 2.3.1 Comparison of Product**

<table>
<thead>
<tr>
<th>Speed</th>
<th>Korea Telecom</th>
<th>France Telecom</th>
<th>AT&amp;T</th>
<th>BSNL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ADSL 2/2+, SDSL, VDSL</td>
<td>DSL, ADSL, VDSL</td>
<td>DSL, U-verse</td>
<td>ADSL 2/2+</td>
</tr>
<tr>
<td>Security features</td>
<td>N.D</td>
<td>Firewall sometimes not provided by DSL providers</td>
<td>Firewall security provided</td>
<td>Firewall security provided</td>
</tr>
<tr>
<td>Static IP</td>
<td>N.D</td>
<td>N.D</td>
<td>Provided by default</td>
<td>Provided free for combo plans in limited plans and combo plans greater than INR 3000. For other combo plans it is charged if required.</td>
</tr>
</tbody>
</table>

Source: Compiled from different sources by the researcher

Note: N.D indicates No Data / Data not available

### 2.3.2 Price:

Price plays a major role in promotion of broadband service and hence it is considered as major differentiating factor for broadband services in addition to speed. The price for broadband service is costlier compared to other telecom services such as wireline, wireless etc, and it consumes part of monthly income. There exists a vast disparity in price for broadband across the globe.
Chart 2.3.1 Fixed Broadband Sub Basket as Percentage of GNI Per Capita.

Source: (www.itu.int, 2013)

Chart 2.3.1 evidently supports the wide disparity for fixed broadband price between the developed and developing nations. It could be further found that, while the average cost for broadband price was less than $2.5 across developed nations, its average cost across developing countries was more than $160 in 2008. So, price was considered as major impediment in promotion of fixed broadband service across the globe. In order to make the broadband service as affordable, the prices were brought down in many of the developing and developed countries. As a result there was a great reduction in broadband price across the globe i.e the average fixed broadband price fell down by 82% in developing countries with in four years (2008 to 2012), where as in developed countries, the average price stood at $1.7 for the third consecutive year from 2010 (Chart 2.3.1). Despite the fall in price the average costs for fixed broadband service is still high at $30 in developing countries and just $1.7 in developed countries as of 2012.

Further, from the survey by ITU across 173 countries, it was found that 95 countries paid only $5 or less than it as percentage of monthly GNI per capita as of 2012 (ITU Facts and Figures, 2013). While previous chart represented the price for developing and developed countries, the below figure (fig: 2.3.2) shows the broadband price charged by each country.
Fig: 2.3.2 Broadband Prices Worldwide

![Broadband Prices Worldwide](https://www.pingdom.com)

Source: (royal.pingdom.com)

Fig: 2.3.2 represents the average price charged for fixed broadband service for selected countries as of 2013. Among the four countries considered for study, three of the countries fixed broadband prices are shown in fig 2.3.2 i.e the price charged for the fixed broadband service in US is $20; in South Korea it is $25.7 and in India it is $6.1. This price refers to varied technology with varied speeds. To have clear representation for price charged, it is to be calculated per units’ i.e either in Kbps or Mbps. Atkinson (2007) study shows the unit price charged i.e Korea charged $0.45 for 1Mbps (fiber technology), France charged $1.64 for 1Mbps (DSL) and US charged $3.3 for 1Mbps (cable modem). In case of India, for 1Kbps of DSL service BSNL charges $0.03 as of 2013. All these variations are mainly based on various pricing strategies used in promotion of fixed broadband services.

2.3.2.1: Pricing Strategy

Though the cost for narrowband was costlier than broadband, narrowband users were not willing to shift to broadband in the earlier days. Service providers considered pricing strategy as one of the marketing strategies; in particular they used “flat-rate”
based pricing to attract new customers. This strategy was used by service providers across the globe to shift narrowband users to broadband service. It is one of the marketing strategies adopted by management while it entered the market with new product/service (Etzel, Walker, J.Stanton, & Pandit, 2010).

Kotler (2000) states that if the product is part of product mix then the strategy for setting the products price also varies. It coincides for the broadband service which has varied products and services that differ based on speed and data (voice, video and data). Among the five types of product mix pricing strategies, the captive-product pricing and product bundle pricing were considered as it suits for the pricing of fixed broadband service (DSL).

2.3.2.1.1: Captive-product pricing

Kotler (2000) has stated that Captive-pricing refers to two-part pricing in services, where the first part of the price includes the fixed fee and the second part includes the variable fee. With respect to broadband pricing the first part which is fixed refers to the installation cost that includes the cost of MODEM, telephone and other equipments provided but the MODEM installation charge is optional.

Further considering the cost of MODEM which varies from country to country, in Korea it was $10000 in 1999 and within a decade it fell down to $100 (Crandall, 2003). Mostly the cost of MODEM is reduced if it is manufactured within the country. For eg: Korea and France have manufacturing units within their countries. Since the cost of MODEM was one of the major reasons that slowed the initial promotion of broadband service it was also given for rental. Korea offered MODEM at a rental charge of $9.6 per month. BSNL offers four types of MODEM, the purchase cost for ADSL basic modem is INR 1400 while VDSL wi-fi costs INR 3250. Based on rental for ADSL basic the customer is charged just INR 50 per month and INR 130 per month for VDSL wi-fi service. In addition 500 INR is charged as security deposit (BSNL Teleservices).

With respect to broadband the second part of the captive pricing i.e variable fee refers to monthly subscription charge. As it is the major focus for service providers to
attract the customers, it is used for marketing the broadband service by the service providers.

2.3.2.1.2: Different Types of Variable-Fee Pricing

Sen, Joe-Wong, Ha, & Chiang (2013) study has given a broader classification for mobile broadband which also suits for the fixed broadband services.

**Fig 2.3.3: Different Pricing Strategies for Broadband**

Static Pricing Plans: These kinds of plans are used for services which are utilized for a longer time period that could be either in months or in years. It is widely used because it suits the needs of majority of the customers who prefer to pay the bills on monthly basis since price for broadband service consumes part of disposable income. The second part of the price subscription charge is classified into flat-Rate, usage based, Time of the Day (TOD), tiered based etc.
**Flat-Rate Based Pricing:** It is one of the common pricing strategies used by the broadband service providers in particular the telecommunication service providers across the globe to attract the narrowband users towards broadband service. Because it charges only fixed amount for every month without any consideration for the time spent on the net. So it simply refers to “All you Pay is All You Can Eat” (Sen et al., 2013). It has been used as penetration pricing by many operators across the globe. For eg: Korea Telecom, BSNL.

**Usage based Pricing:** In this kind of pricing, it is the responsibility of the customer to keep track of his or her account i.e usage of data. One advantage of this kind of pricing is that it charges only for the data used and not for the application used or time spent on the net. Though users are not willing to shift towards usage based pricing, still it is adopted by some operators. AT&T incorporated usage caps for its DSL and U-verse residential subscribers from may 2, 2011, where the users are subjected for usage caps only three times towards their entire account period. Once they exceed it they have to pay an additional charge of $10 for every 50GB above the subscribed cap (Gilory, 2013).

**Tiered-based Pricing:** Customers are charged a certain amount for specified data caps. Once the customer exceeds the specified range an additional amount based on increased usage is charged.

Tiered based and usage-based pricing were mainly adopted in order to avoid network congestion.

BSNL offers tiered-based pricing for BBG275 plan where the user could use upto 1Gb (Giga byte) once it is exceeded for every MB (mega Byte) 0.30 INR is charged up to 5GB and if exceeds beyond it charges 0.15INR per MB (BSNL, 2011).

**Time of the Day:** It seems to be quite attractive as the charge varies based on the usage time. Under this pricing scheme, globally most of the ISPs utilized the provision of free night usage for voice calls. BSNL also offers time of day pricing scheme where customers were allowed for free downloads from night 2 A.M to 8A.M for BBG FN COMBO 630 Plan (BSNL, 2011).
In France, Orange (ISP provider in France) offered Dolphin plan which provides a special offer for its customers to have unlimited internet access during peak hours in a day i.e the morning commute (8A.M to 9A.M), lunch break (12 P.M to 1P.M) late afternoon (4P.M to 5 P.M) and late night (10 P.M to 11P.M) under the plan of Euro 15 per month (Sen et al., 2013).

**Dynamic Broadband Pricing:** Compared to static pricing the dynamic pricing is not consistent over a time period. It is quite complicated and also controversial as it has been adjusted continuously in order to meet the needs of the customers (Kotler, 2000). The different types of Dynamic pricing plans are Raffle base, Real Time Congestion, Smart Market and Day ahead.

As stated earlier flat-rate pricing strategy was used as penetration pricing strategy by the telecommunication service providers to promote the fixed broadband service (DSL). Since fixed broadband emergence was considered as boost for declining wireline sector, but the implementation of flat rate system was seemed to increase the customer base but not increase in revenue. It was also supported from the CISCO IBSG (2012) analysis report that the flat rate system could be used as penetration pricing and the service providers should have to slowly shift towards value based pricing which will reduce network congestion and also boost the revenue of the telecom service providers.

While FT, AT&T have adopted usage based and value based pricing, BSNL has also adopted a shift from flat rate based pricing to tiered based pricing, usage based pricing and is expected to implement value based pricing in the near future.

**2.3.2.2: Product-Bundle Pricing**

There are varied definitions for bundling which has originated from either of the perspectives i.e marketing or economics. While Stremersch & J.Tellis (2002) defines bundling as “sale of two or more products in one package”, Kotler (2000) states bundling as, “sellers combine their products and offer the bundle at a reduced price”. It ultimately suits for the telecommunication bundle in particular for broadband service.
Customers in general value the product purchased based on pricing. Broadband service a multi-play service (voice, video, data and wireless) costs more when purchased individually and less when bundled i.e data + voice, data + video, voice + video + data and voice + video + data + wireless. It has been used by many of the ISPs to promote the broadband service. In Finland, most of the customers prefer the broadband connection from the telecommunication service providers mainly because of the bundled offer.

France Telecom, Korea Telecom, AT&T and BSNL all have incorporated the provision of bundled products.

From chart 2.3.2, it could be noted that the Korea telecom stand alone price (data) is costlier compared to bundled prices. It is also cheaper compared to France Telecom and AT&T bundled prices. Video is offered as stand-alone product by Korea telecom and AT&T. One major factor to be noted is that the bundled price for triple-play service (data+video +voice) offered by all the three service providers is at-most equal compared to other bundle prices or stand-alone product price.

**Chart 2.3.2: Bundled Price Offered by KT, FT and AT&T**

![Chart 2.3.2: Bundled Price Offered by KT, FT and AT&T](chart.png)

Source: (Broadband Bundling: Trends and Policy Implications, 2011)

**Discount:** Customers expect their service providers to offer some discount for the utilization of the service over a long period of time. Korea Telecom in Korea offered 33%
discount to its broadband customers who has entered in to the contract period of 36 months (Gilory, 2013). In case of BSNL, it discounts one month charge if enrolled for a year contract (BSNL, 2011)

As price is the only revenue generator which plays a vital role in the diffusion of broadband services, the service providers are further stipulated to adopt certain other marketing strategies for broadband price in order to make it to be affordable, because, price is one of the major reasons for the wide digital gap across the globe. It is evident from ITU Facts and Figures report (2013) that, the cost for fixed broadband service on average was 1.7% of GNI per capita in the developed nations and 30.1% of monthly GNI per capita in the developing nations (www.itu.int, 2013) (chart 2.3.1).

Table 2.3.2 Comparison of Price

<table>
<thead>
<tr>
<th></th>
<th>Korea Telecom</th>
<th>France Telecom</th>
<th>AT&amp;T</th>
<th>BSNL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pricing Strategy</td>
<td>Flat-rate</td>
<td>Flat-rate, Time Of the Day</td>
<td>Value based pricing, tiered based pricing</td>
<td>Flat-rate, Time of the Day, Tiered Based pricing</td>
</tr>
<tr>
<td>Unit cost (Based on available data)</td>
<td>1Kbps = $0.025 (2013) 1Mbps = $1.10 to $71.43 (2011)</td>
<td>1Kbps = $0.86 (2001) 1Mbps = $0.34 to $ 5.73 (2011)</td>
<td>1Kbps = $0.025 (2001) 1Mbps = $0.21 to $1.93 (2011)</td>
<td>1Kbps= $0.03 (2013)</td>
</tr>
<tr>
<td>Discount Offers</td>
<td>Discount is offered only if customer enters for three years contract</td>
<td>N.D</td>
<td>N.D</td>
<td>10% discount if customers enter for one year contract</td>
</tr>
</tbody>
</table>

Source: Compiled from different sources by the researcher

Note: N.D No Data

Compared to the global broadband leaders like South Korea and Japan; US lags in terms of speed and charges highest DSL prices. The Annual Review Broadband
commission report (2002) states that while South Korea telecommunications offers 10Mbps to 8 Mbps for $24.95 as average monthly price and Japan charges $23 for 10Mbps, US affords only up to 1.5Mbps download speed at cost of $49.96 which is one of the highest DSL price in the world.

2.3.3: Promotion

Promotion in general includes personnel selling, advertisements etc., irrespective of product or service. In case of broadband service, the ITU in its workshop on “Promoting Broadband” has stated few promotional strategies that could create demand for the service which includes awareness programs, role of government, formulation of national broadband plan, bundling offers etc (Reynolds et al., 2003).

2.3.3.1: Awareness Program

Broadband requires certain level of understanding (literacy / education) to utilize the service. It is ultimately the role of the government and the service providers to create awareness to the end user stating the need for technology, its usage and its beneficiary to the end user. Only few countries like Korea, Singapore, Japan etc., has created awareness programs targeting the end user. Notably the “Digital Literacy” program in Korea which was set for a target of 11 million population that included house wives, farmers, fishermen, students (Yun et al., 2002) was one of the major reasons for promotion of broadband service in the country.

2.3.3.2: Role of government

In addition to the active role by the ISPs in promoting the broadband service, the government and regulatory authorities also have greater contribution towards its promotion. As broadband has greater contribution to the economy of the country (Katz, 2012). Globally it was found that Korean government which identified that information would lead the future adopted a vibrant and dynamic participation by framing effective policies and measures such as KII (Korea Information Infrastructure), e-Korea, U-Korea etc., which extended for a period of five to ten years (Kim et al., 2010). Meanwhile it made efforts to measure the framed policies at regular intervals. In case of France in
addition to the government, the EU body framed certain policies to promote broadband service. Considering US & India the role of government were not much effective.

2.3.3.3: Broadband Plan

Broadband recognized by ITU secretary Dr. Hamdourne as key tool to achieve the MDGs (Millennium Development Goals). Framing of broadband plan was considered as of utmost important thing to promote broadband. It was also supported by ITU in WSIS report that irrespective of NBPs, i.e whether the plan is a small draft or lengthy NBPs, it was found to have greater impact towards fixed broadband diffusion compared to robust competition (www.itu.int).

In case of US the birth place of internet, the growth of broadband has not been up to the mark. In order to identify the reasons for slower penetration researches were carried out and it was identified that no NBP was framed till 2010. So the US government adopted the NBP by 2010 with the target of achieving 100 million population having access to 100 Mbps.

In India though the broadband plan was framed in 2004 and set with a target of achieving 10 million broadband subscribers by 2012 and 20 million by 2020 (Broadband Policy 2004). It has not achieved the set target. Hence again in 2012 the NBP was framed with the vision of “Right to Broadband” and has set a target of achieving 175 million subscribers by 2017 and 600 million subscribers by 2020.

With respect to France, as the European Union insisted each of its countries to adopt NBP which has significant impact on broadband promotion. France framed its NBP by 2006. In 2008 it framed “Digital Numerique” with a target of providing 512Kbps of data available for 100% of population by 2012. The Prime minister of France stated that about 95% of the 2008 plan was achieved by end of 2011. In 2011, “Digital France 2012-2020” plan was setup (European Commission, 2012) to promote high speed broadband.

In case of Korea, initialization of plans and policies before promotion of broadband service was one of the major reasons for Korea to attain success and emerge as broadband leader by 2000 itself.
It is of greater importance for each and every country to increase its broadband penetration, as it has an extensive contribution in driving the economic growth. CISCO report also supports the above view by stating that countries which adopt broadband plan can witness an increase in broadband adoption, which is represented in fig: 2.3.4 (Pepper, 2013).

In addition to the effective role of government, the regulatory authorities also have a dynamic and active role in promotion of broadband service by measuring the effectiveness of plan. In such a case, compared to TRAI, FCC was found to be very effective as it conducted surveys to customers in order to measure the delivery of broadband service by the service providers in terms of price, advertised speed, measuring quality of service etc., within a year after framing the NBP in 2010.

2.3.3.4: Bundling

In addition to bundling of services discussed earlier, certain countries like Korea, Taiwan and China have recommended their computer manufacturers to include the broadband modem and Ethernet Interface Cards as inbuilt features of the computer.
(Reynolds et al., 2003). Because, for a customer to have access to DSL service, just a telephone connection with broadband service is not sufficient it also requires computer to have access to the net.

Table 2.3.3 Comparison of Promotion

<table>
<thead>
<tr>
<th></th>
<th>Korea Telecom</th>
<th>France Telecom</th>
<th>AT&amp;T</th>
<th>BSNL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Awareness Programs</td>
<td>Digital Literacy Program</td>
<td>N.A</td>
<td>N.A</td>
<td>N.A</td>
</tr>
<tr>
<td>Role of Government</td>
<td>Effective and dynamic</td>
<td>Compared to the member countries, European Union role is active.</td>
<td>N.A</td>
<td>Not much effective</td>
</tr>
<tr>
<td>Broadband Plan</td>
<td>N.D</td>
<td>2006</td>
<td>2010</td>
<td>2004</td>
</tr>
</tbody>
</table>

Source: Compiled from different resources by the researcher
Note: N.D No Data, N.A Not Applicable

Compared to above countries the role of Korean government in adoption and promotion of the technology was highly adorable. With a futuristic vision the government initialized the plans before 1990’s, in particular the Computerization Master Plan by the government in 1978 and National Basic Information System Policy in 1980’s set a base for growth of broadband (Kelly et al., 2003). As the success of broadband can’t be achieved overnight, they framed policies which extended for 5 to 10 years.
2.3.4: Place

Place which commonly refers to affordability of the service has greater impact towards utilization and satisfaction, with respect to broadband service; customers expect easier access of data at faster speed. In order to meet the needs of the customers most of the service providers have created their own web portal for easy access of information about broadband service.

As DSL service availability varies mainly due to the distance from exchange to the customer premises (Stordahi, 2010), customers are not aware whether connection exists for their region or not. With this consideration France Telecom has enabled its online portal in a user friendly manner, so that the customer can type his/her area code and find whether connection could be availed or not. Based on the availability or non availability of DSL service, the user could choose an alternative technology.

The web portal also provides user friendly customer support service which includes automatic complaint recorder as provided by BSNL. AT&T went ahead further and provides separate numbers for audio conference and video conference for the entire 24×7 mode (www.business.att.com, 2008), so the customers can contact their service providers and clarify their doubts regarding the service.

AT&T has its web portal for purchase of various broadband equipments that includes modem, adopter, filter, phone of various companies that suits AT&T broadband service (DSL).

Apart from online service, customers also prefer to approach the service outlets for billing, complaint, installation etc., AT&T has more than 1000 number of retail outlets in US. France Telecom serves its customer with 1180 outlets in France. BSNL with wide spread infrastructure operates in 6000 blocks on average of 4 exchanges in each block and all are broadband enabled. It also has an estimated capacity of 50 million connections, but so far it has attained only around 14 million broadband connections.
Table 2.3.4 Comparison of Place (Distribution)

<table>
<thead>
<tr>
<th></th>
<th>Korea Telecom</th>
<th>France Telecom</th>
<th>AT&amp;T</th>
<th>BSNL</th>
</tr>
</thead>
<tbody>
<tr>
<td>No: of Outlets</td>
<td>N.D</td>
<td>1180 outlets</td>
<td>Operates in 49 states and has around 1000’s of outlets.</td>
<td>6000 blocks with an average of 4 electronic exchanges in each block.</td>
</tr>
<tr>
<td>Online facilities</td>
<td>N.D</td>
<td>Online purchase and complaint</td>
<td>Online shopping, placing orders, online billing and online complaint</td>
<td>Online billing and complaint</td>
</tr>
</tbody>
</table>

Source: Compiled from different sources by the researcher
Note: N.D No Data

Earlier at-least customers expected someone to install the modem and then get activated, but the advancement in technology has enabled customers to install modem through online guidance or sometimes the firms provide installation CD kit. AT&T provides installation kit and in certain circumstances i.e on customer request for installation it charges. BSNL charges Rs 500/- as installation cost. Korea Telecom has trained 2500 employees particularly for modem installation to meet the need of the customers in early time period itself.

So far the study was carried out in a broader perspective by exploring different types of wired broadband services, the position of DSL technology across the globe and in India. Further, an exploratory study was carried to compare the traditional 4P’s (external marketing) of incumbent wireline operators from selected OECD countries and BSNL in India for promotion of wireline broadband service (DSL). As the next chapters 3 & 4 deals with the 5th “P” People of service marketing mix i.e to analyze the internal and interactive marketing practices of BSNL. The study considered to choose any one operating area (SSA) due to BSNL’s wide wired network.
2.4: Criteria for selecting Area of Study

Fig 2.4.1 BSNL Telecom Circles

The BSNL network covers 55 million villages, 73330 cities, and 602 districts excluding Mumbai and Delhi. In order to link all these it has 38000 electronic exchanges and 6000 blocks. The exchanges are dispersed in such a way that each block on an average covers 4 telecom exchanges. Overall the network has an equipped capacity of 54.1 million connections. In order to make use of the infrastructure, BSNL set up 432 National Internet Backbone (NIB) centres and subsequently updated all the exchanges as broadband enabled by installing the DSLAM in each exchange (BSNL Company Profile).

In order to organize and co-ordinate its network across the country, it initially classified the entire country into 26 telecom circles which were further brought under the broader classification of four main circles i.e metro circle, circle A,B and C.
Metro circle included Delhi, Kolkata, Mumbai and Chennai. From 2007 onwards Chennai was also included into Tamilnadu circle. Circle A included the areas which have one or more large cities, for eg: Bangalore in Karnataka, Hyderabad in Telangana. Circle B includes states that have mid-sized urban area and larger towns, Circle C include the states that had more rural areas.

Circle A includes Andhra Pradesh, Karnataka, Gujarat, Maharastra and Tamilnadu (inclusive of puducherry) (India Calling Info), to be stated in particular only Pondicherry and Karaikal of Pondicherry Union Territory was included in the Tamil Nadu circle, while Yanam was included in Andhra circle and Mahe was included in Kerala circle.

**2.4.1: Narrowband and Broadband Internet Users across the Country**

Due to the commercialization of narrowband services in 1995, the internet users of narrowband were more than the broadband users, but slowly the upcoming broadband service has drawn the narrowband users towards broadband which could be noted from chart 2.4.1. i.e in three-fourth of the states in the country broadband has over powered the narrowband, in particular, Assam, Tamilnadu, Andhra Pradesh and Karnataka.

**Chart 2.4.1 BSNL Internet Subscribers across States**

Source: TRAI
2.4.2: Broadband Penetration across the Country:

Even though the broadband subscribers were found to be greater than the narrowband subscribers, the penetration of broadband was still considerably very less in most of the states i.e just 1%. (Upadhyay, 2012) Presentation in ITU has given a clear picture of the cities or towns in India which have broadband penetration.

Fig: 2.4.2 Broadband Penetration across the Country

From fig: 2.4.2, it could be observed that the top 10 cities Chennai, Delhi, Mumbai etc., account for 60% of total subscriber base and the next ten cities such as Vadora, Trivandrum etc., with 1% of penetration account for 10% and the rest cities/towns such as Mysore, Pondicherry, Noida etc., also have a minimum of 1% penetration and account for 24%.

2.4.3: Selection of Pondicherry as Study Area:

Even though Tamilnadu ranks in top 5, the fig: 2.4.2 shows that only few main cities/towns which are referred as SSAs in Tamilnadu have minimum penetration i.e Chennai 11%, Coimbatore 2%, Madurai 1% and Pondicherry 1%. Among these SSAs
Pondicherry was considered because of its demographic limit which includes 22 exchanges and serves as major criteria for studying the internal and interactive marketing practices of BSNL.

2.4.4 Profile of Pondicherry:

Pondicherry is one of the Union Territories in India. As it was a french colony the city has the french colonial heritage with beautiful colonial buildings, and also a systematic planning could be seen in the city. It is located in the southern part of the country which is around 160 Kms from Chennai, the capital of Tamilnadu. It has access to all form of transportations.

Fig: 2.4.3 The Golden Globe

Source: [http://pondicherryweekends.com/images/auro.jpg](http://pondicherryweekends.com/images/auro.jpg)

It is one of the notable tourist destination for domestic tourists and international tourists some of the notable tourist spots that attracts the tourists are, The Golden Globe, Annai Ashram, Virgin beaches, Temples, Churches etc. As of 2011, pondicherry had a population of 6,75,000 where both the genders represent equal percentage i.e 50% of the total population and the average literacy rate is 76%. Tamil, English, French are the commonly used languages. One notable thing is that though pondicherry is a separate union territory, BSNL has classified it as one of the SSAs in Tamilnadu Circle.
One of the advantages of Pondicherry SSA is that, it has NIB (National Internet Backbone) center, CSC (customer Service Center) and it is also connected to the head office in Delhi. It is one among very few SSAs which are connected to the head office and the rest are in process due to demographic limitation. BSNL Pondicherry SSA has 22 exchanges of which (10) are in urban and (12) are in rural.

The next chapter discusses the internal marketing practices and its effectiveness by surveying the employees in Pondicherry SSA who were indulged in fixed broadband promotion.