Strategic Priorities for the Indian Telecom Industry in the Next Decade

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ABSTRACT

The Indian Telecom Success Story in India is a feather in the caps of several stakeholders, principally the government, followed by the private sector players who have invested over 200 K crores to take advantage of the policy environment created by the government to set up large telecom networks in the country, and provide one of the best telecom services comparable to the best in the world. The mushrooming of services, devices, telecom towers, use of diesel have all brought in their wake, some issues as well, although the low cost of the voice services – said to be the lowest in the world – has washed away much of the criticism. In this paper, the authors trace the development of the Indian telecom industry. They developed a PESTEL framework, a Porter's Five Forces Field analysis framework, did a SWOT analysis, used the BCG Matrix – all to analyze and highlight the many aspects of this growing industry. These analyses provide some insights into the workings of the industry . The authors concluded that the way forward will include more attention to VAS products, more of 3G and 4G applications development, more new-product development suitable for the B to C, and in the inter-industry domains where B to B applications will have to propel growth in a world with increasing automation and mobile phone usage in day to day life activities.

Keywords : Indian Telecom Industry, PESTEL framework, Porter's Five Forces Model, SWOT Analysis, BCG Matrix, 3G and 4G Telecom Services, Communication, VAS Services
JEL Classification : L96

INTRODUCTION

One of the beneficiaries of the liberalization policies of the government has been the Indian Telecom industry . In early 2000, the government started to induct the licensing regime for spectrum in line with international practices. Auctioning of the spectrum, involving the private sector in the industry, thereby gradually reducing the government's role in the telecom industry were the steps that were envisaged . One of the defining moments was the sale of VSNL to the Tata Group in 2002 through an open auction. Since then, the industry has been regulated in a manner consistent with practices in developed nations. This has resulted in a huge build-up of the industry.

OBJECTIVE OF THE STUDY

The objective of the present paper is to trace the history and the key developments in the Indian Telecom industry. Furthermore, the paper used some of the modern strategy study aids such as Porter's Five Force Model , the BCG Strategy Matrix , and the SWOT analysis to understand the various forces defining the industry. Having done all these analyses, the final thrust of the paper was to explore the strategic direction the industry is emphasizing on from time to time .

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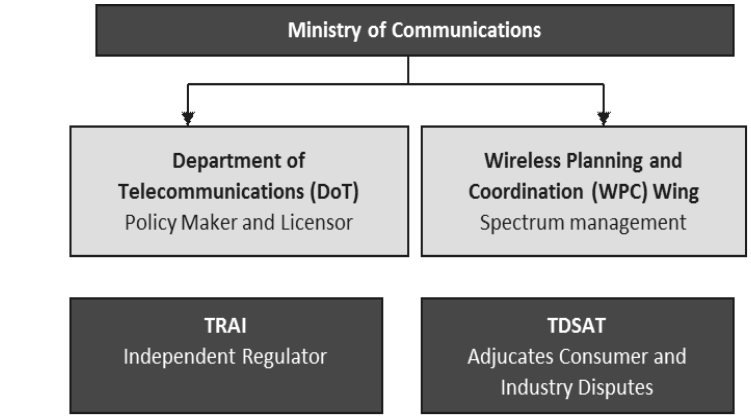
Figure 1 :A Snapshot of the Indian Telecom Industry

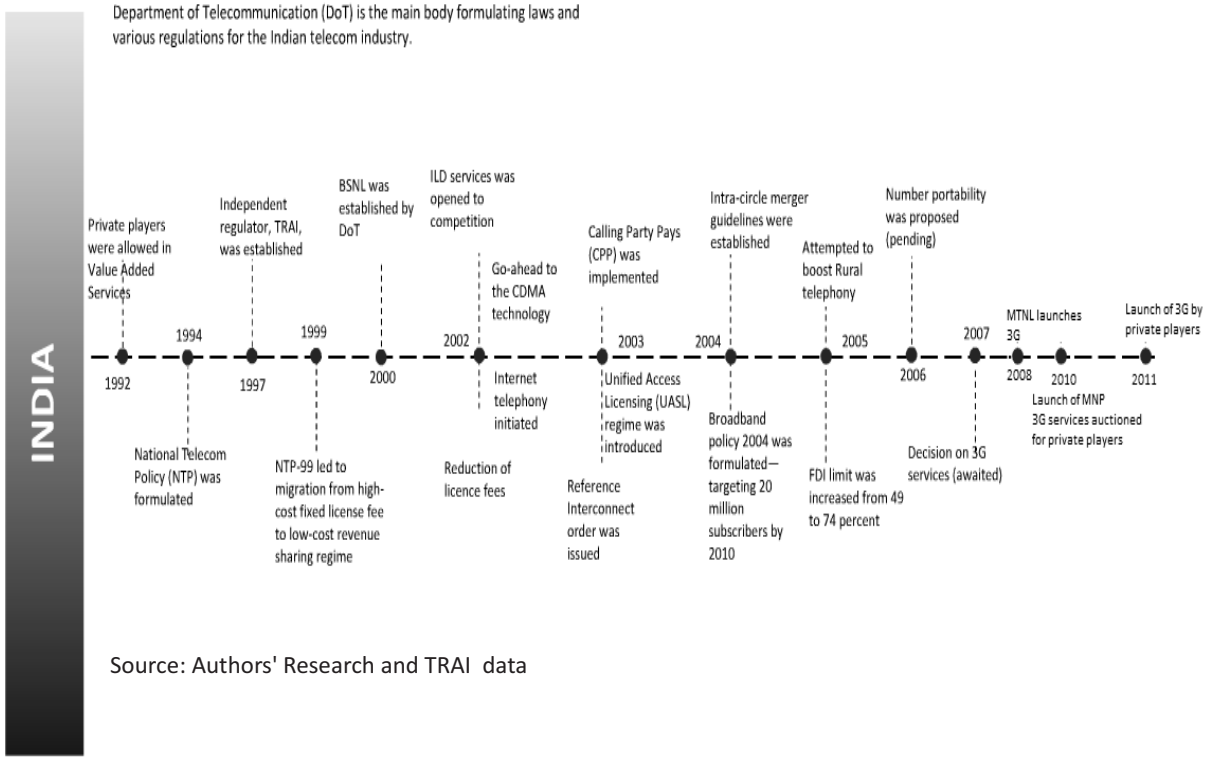


Integrated Incumbents	Incumbent ILD	Integrated Pan India Private Players	Wireless Pure plays
BSNL	VSNL	Bharti	Vodafone
MTNL		Reliance Communications	Idea
		Tata Group	Spice
			Aircel
			Uninor
			Loop

Note :VSNL subsequently became Tata Communications after take over by the Tata Group and is currently known by that name .

Source : http://www.tatacommunications.com/ accessed on December 5, 2012 and other occasions

Figure 2 : Timeline of Evolution of the Telecom Industry in India



Source: Authors' Research and TRAI data

REVIEW OF LITERATURE

India is the second largest telecom market after China. However, the ARPU (Average revenue per user) of Indian subscribers is not anywhere near to the ones earned by foreign firms. For example, Docomo in Japan earns about USD 60 (NTT Docomo, 2012) per customer in comparison with the Indian ARPU of USD 4. This is primarily because of very low usage rates, low Indian tariffs and very low data usage. While companies like Nokia have recognized the long term importance of the Indian market, others have chosen to keep a close watch and supply from the outside. Nokia has been particularly hit hard by its inability to recognize current developments like the use of dual SIM cards and 'value for money' purchasing habits of the Indian subscribers (Shetty, 2011). Joshi (2011) clearly brought out the fact that customers in India value good network connectivity above everything else. No wonder then that in recent advertisements, Tata Docomo is emphasizing on this aspect to the exclusion of any other. This is all the more important because the telecom market is fast becoming commoditized (Subakaran, 2012) . Subakaran (2012) made an interesting study of the profitability in the telecom industry, and the conclusion of his study supported the commoditization theory of Sharma and Borah (2011) . He suggested a 'Low involvement model' for the telecom industry and an emphasis on 'Customer Lifetime Value' , a concept which is not being currently practiced by the industry . A recent report by FICCI /AT Kearney /DoT concluded that the ARPU has fallen by upto 24 % CAGR between 2008 and 2011 (" Telecom companies' average revenue per user down by 24% in 2008-11: Study", 2012), and that the percentage share of data ARPU was only 14 % in 2011 .

SCOPE OF THE STUDY

As discussed previously, the objective of the present paper is to study the telecom industry using modern tools of analyses and derive strategic insights using the authors' experience. It is felt that the insights provided in this paper can be used by the incumbent telecom operators as well as any new ones planning to foray into India . Telecom strategists may wish to update their views based on the opinions and research findings in this paper to fine tune , improve , bring focus to their strategies . The paper can also form a basis for classroom discussions on the Indian telecom industry .

METHODOLOGY

The present paper is exploratory and descriptive in nature. The TRAI website, which provides periodic updates on the status of the subscriber base, additions and deletions, total volume of traffic, etc. was followed closely . The authors of the present paper possessed a rich industry experience of working in the telecom sector. They acted - not only as the observers - but were also the participants in the various developments of this industry . The authors between them have more than 12 years of industry experience in the Indian and MNC telecom industry, and also have been studying the various aspects of the industry continuously for the past several years. The authors worked with a Sr VP of a reputed telecom company who was involved in strategy formulation and product development / management in this company for many years and was a key functionary in the company's growth and planning. He provided not only relevant data, but also shared his insights on the marketplace happenings, competition activity, major product innovations, 3G products and the telecom network build-up.

THE INDIAN TELECOM INDUSTRY : AN OVERVIEW

India has the world's second-largest mobile phone users with over 903 million as of January 2012 (Highlights on Telecom Subscription Data, 2012). With this, the overall teledensity in India reached 77.57 percent at the end of January 2012 from 76.86 percent in the previous month. India has the world's third-largest Internet users, with over 121 million as of December 2011 (Internet Users in Asia, 2012). India has become the world's most competitive and one of the fastest growing telecom markets (Communications in India, Wikipedia, 2012). The Figure 1 presents a snapshot of how the Telecom Industry is organized along with the major players.

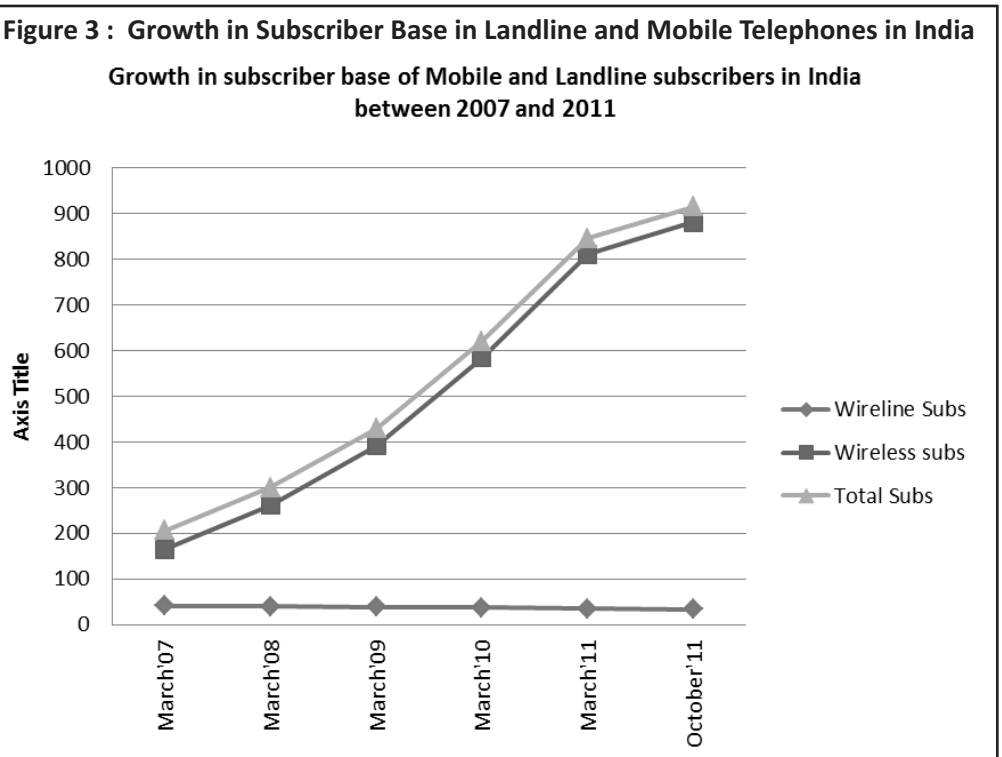
The Figure 2 summarizes the timeline of the evolution of the Telecom Industry in India. Mobile telecom services were introduced in India towards the end of 1995. The era of modern telecom industry in India dawned with the move by the Government of India to privatize VSNL in 2001 / 2002, the then monopoly ILD operator owned by the Government . During the initial years, mobile tariffs were high as a consequence of the large license fee commitments and capital expenditure requirements of service providers. On the other hand, demand during this period was low. In

March 1998, only 0.88 million mobile subscribers existed throughout the country. More than half of these were from the Delhi and Mumbai circles.

The National Telecom Policy (NTP) 1999, which was the first such document to be drawn up by the Government of India (GOI), transformed the telecom scenario in India. It led to an accelerated growth in telecom density and telecom subscriber numbers between 1999 and 2003. The NTP 1999 changed the scenario, with the industry shifting from a fixed license fee regime to a revenue share regime, thus encouraging more players to enter the market.

In 1999-2000, the mobile services industry gathered pace, adding 0.7 million customers to its base. In 2003-04, one key event - making incoming calls free, brought a revolution in the industry. By the end of 2004-05, the total mobile subscriber base outnumbered the total fixed subscriber base. The mobile subscriber base witnessed a surge in 2008-09 and 131 million subscribers were added in 2008-09, to reach 392 million subscribers at the end of 2008-09, registering a growth of 50 per cent over 2007-08. Price wars drove subscriber growth in 2009-10 and 2010-11. The year 2009-10 witnessed a spurt in subscriber additions, driven majorly by cheap tariffs and ever-increasing cell-phone affordability. The cellular subscriber base swelled to 584 million, a growth of 49 per cent y-o-y. In a bid to overcome competition, operators launched lucrative schemes, which led to a drastic reduction in cell-phone tariffs. Tata Teleservices launched its GSM services in mid 2009. It caused an upheaval in the telecom industry by offering its unique per-second billing plan compelling others to follow suit. With tariffs hitting rock-bottom and operators expanding their rural reach, another 230 million customers were added in 2010-11, taking the outstanding subscriber base to 811 million at the end of March 2011 (Figure 3). BhartiAirtel is the number-one company in terms of subscriber base today.

Figure 3 : Growth in Subscriber Base in Landline and Mobile Telephones in India



Source : http://pib.nic.in/newsite/erelease.aspx?relid=79183 : data from the Press Information Bureau , Government of India accessed on December 12, 2012

❖ **A Pestel Analysis of the Indian Telecom Industry :** The Figure 4 depicts the understanding of the macroscopic environment in India for Telecom through the PESTLE analysis.

Looking at the telecom industry and its development in India, it is evident that government policy plays a critical role. It has been so in all developed countries, especially in the initial stages. Political interventions in the policies of the Indian telecom industry have been significant and fairly frequent. The industry itself is quite capital intensive and is of a long gestation period nature. Profits are seen in the long run and after some serious efforts in laying the network,

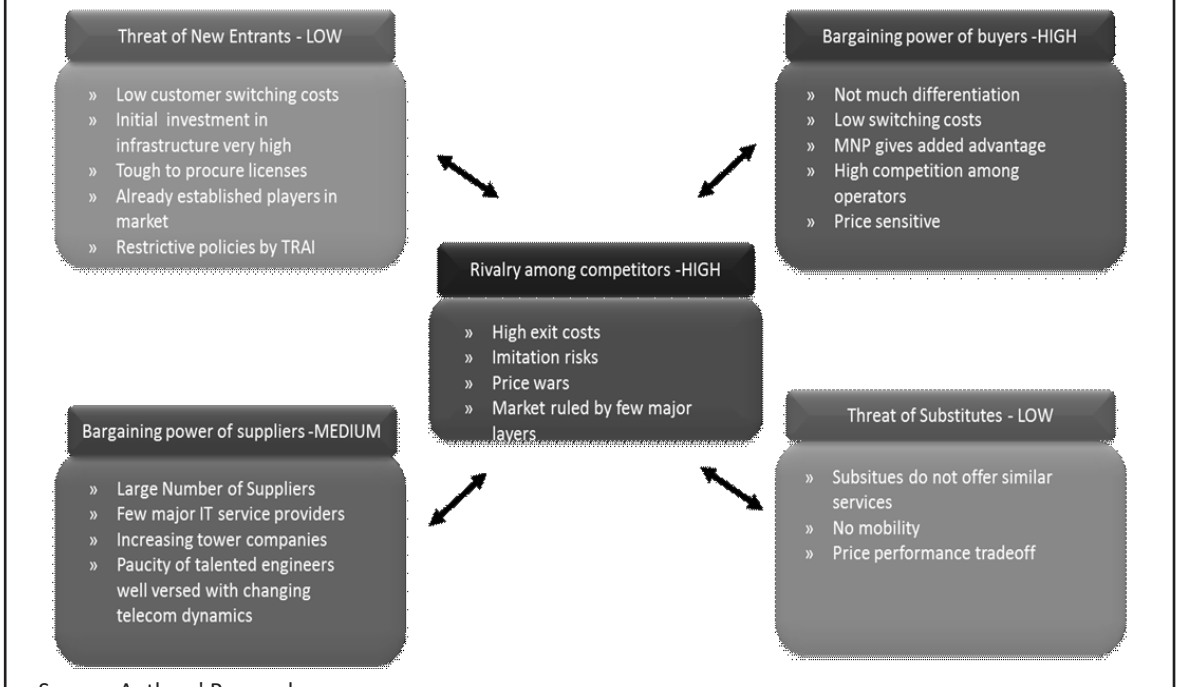
Figure 4 : A PESTEL Analysis of the Telecom Industry in India

Political	Economical	Social	Technological	Legal	Environment
•Stability of government • Anti-trust regulations •Protection laws •Tax laws • Foreign trade regulations •Laws on hiring •Special incentives •Attitude towards foreign companies	•Resource allocation cost •Business cycles •GDP trends •Interest rates •Money supply •Inflation •Price control •Disposable income •Unemployment	•Market demographics •Lifestyle changes •Growth rate of population •Level of education •Income distribution •Consumerism •Life expectation •Birth rates	•Patent protection •Industry spending on R&D •Govt. spending on R&D •Development of new products •Duration of obsolescence of technology •Speed of technology transfer	•Labor laws •Industry regulations •Health and safety regulations •Monopolies and restrictive trade practises commission	•Go green initiatives •Pollution levels •Waste management •Resource management such as water, electricity etc

Source: Authors' Research

establishing a network of retail and other outlets for distributing products. Product development is one area which is of significant importance and Indian telecom providers have had to obtain technologies from abroad. Key equipment is purchased from abroad, and of late, since the last few years, Chinese companies have come to dominate the markets. Technology changes in the industry are driven by several players, mostly from the US and Europe, and technology transfers are speedy. In the last ten years, the developed countries' markets have seen growth slowing down, while the opposite has been true in developing countries. India and China have been the growth drivers and given the large size of these markets, the transfer of technology has been fast. Legal issues predominate the Indian telecom industry,

Figure 5 : Porter's Five Forces Model To Study the Indian Telecom Industry



Source: Authors' Research

naturally so as many players want to take advantage of the growing pie of the subscriber base. Mobile telephony has come of age in India, and the PESTEL analysis will continue to remain a key tool in the analysis and understanding the underpinnings of the industry dynamics.

❖ **Porter's Five Forces Model :** Studying the Indian telecom industry from Porter's Five Forces Model (Porter, 1990, pp. 34 - 37) can be quite revealing as shown in the Figure 5.

1) Bargaining Power of Suppliers : MEDIUM

❖ There are a large number of telecom equipment and network suppliers in India. There is immense competition among the major players. The arrival of Chinese suppliers like Haier and ZTE put immense pressure on the incumbents to reduce prices . Also, the switching costs for telecom operators from one supplier to other are moderate to high, apart from technology mismatch / incompatibility issues .

❖ IT service providers for Telecom Operators is dominated by a few major players like TCS, IBM, Cognizant.

❖ With the ever changing technologies in the telecom industry, there is a dearth of talented engineers and managers at all levels in the value chain.

❖ The supply of the spectrum is heavily regulated and is in short supply. This increases the input cost of all telecom service providers. This has now become a critical variable in providing services. The lack of spectrum and the rapid growth in the number of handsets has led to deterioration in the quality of service. Dropped calls, high latency, interruptions during talks, high disturbance and background noise are all on the increase, thus adversely impacting the customer experience. If not addressed, customers could go back to the landline. The low growth of the broadband sector – with the exception of those services which are dongle based, and the copper supported ones, like that of BSNL - is an example of what can happen if the wireless signal quality is poor.

2) Threat of New Entrants – LOW

❖ Any customer who wants to switch service providers has very low switching costs. With Mobile Number Portability coming into play, things have become even easier .

❖ For a new player seeking to enter the telecom segment, initial capital investment is very high. Towers, network, equipment make bulk of the cost. Also, spectrum license costs are high . Creating and operating a network takes a lot of time .

❖ Telecom towers - which include the base equipment and the transmission / receiving antenna as well as the electronics - are capital intensive to build and own. Beginning with land acquisition in many parts of the country - for example, Bharti has about 200,000 plus towers across all states in India - installation of civil and structural works to house the electronics is a tedious and time-consuming job. Various regulatory clearances take their own time. Construction activities in remote areas have to be controlled and supervised. In some states of India, law and order issues can play a major role, leading to higher costs and delays in commissioning of equipment. In the early years, all telecom operators set up their own towers. However, the reducing tariff trends meant that the high capital and operating costs could not be recovered by most companies. Hence, operators were forced to change their business models to a 'Tower Sharing' Model. This called for a paradigm shift in the thinking of operators. Sharing of primary production resources meant a loss of proprietary control, sharing of benefits and losses in the operations, loss of competitive cost and efficiency improvement advantages and so on. This phenomenon brought into vogue the 'Value Unlocking' by many telecom operators – Bharti, Tata, Idea, Vodafone – to spin off telecom towers into separate companies. Examples are Indus Towers, Viom Networks, Bharti Infra, GTL. All this has resulted in increased competition amongst the operators.

❖ There are already incumbent players who enjoy the major market share and it will be tough for a new entrant to overtake them.

❖ Restrictive policies of the government and TRAI discourage foreign players from entering the market. Recent Vodafone case - of additional taxes to be paid with backdated effect - adds fuel to the cause.

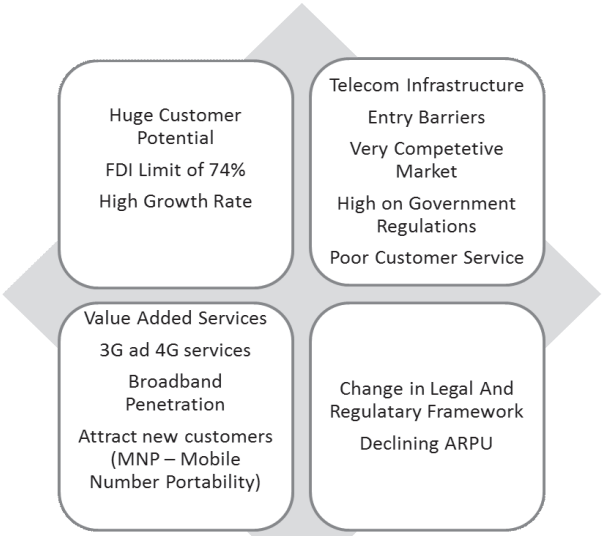
3) Power of the Buyer - HIGH

❖ There is not much differentiation in the end services offered.
❖ Low Switching Costs.
❖ Easy switching due to Mobile Number Portability.
❖ Cut throat competition among different operators.
❖ Very price sensitive customers.

4) Rivalry Among Existing Competitors - HIGH

❖ High exit costs for an operator which discourages any player from moving out.
❖ High imitation risks – very short time for innovative ideas as they are quickly launched by other operators.
❖ Price wars – if one operator offers low prices, the trend follows which may result in lower margins overall.

Figure 6 : A SWOT Analysis of the Indian Telecom Industry



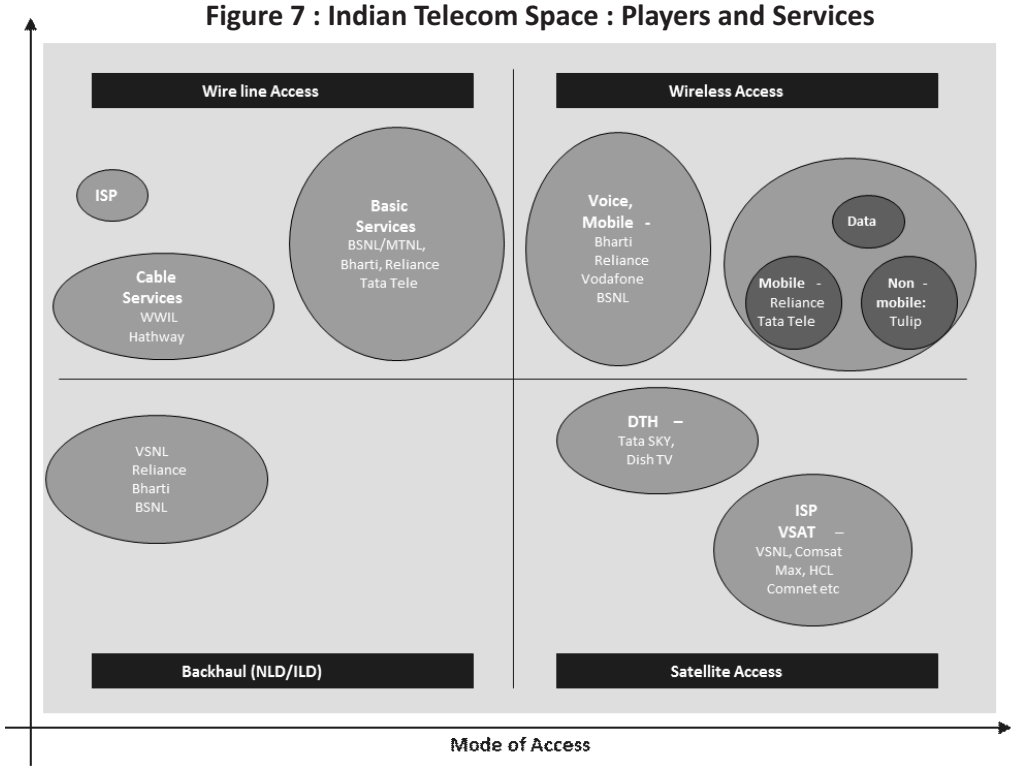
Source: Authors' Research

Box 1 : SWOT Analysis of the Indian Telecom Industry

Strengths	**Weaknesses**
Huge Customer potential ❖ Tele-density still being 73.97. Rural tele-density 35.6. Urban tele-density is 163.13. (Tele- density : No. of connections per 100 users). ❖ The broadband subscribers grew from about 7.98 million at the end of December 2009 to 12.35 million by June 2011. **Allowed FDI limit of 74%** ❖ The total FDI equity inflows in the telecom sector have been US$ 2558 million during 2009-10 and US$ 1665 million in 2010-11. **High Growth Rate** ❖ With tariffs hitting rock-bottom and operators expanding their rural reach, another 230 million customers were added in 2010-11, taking the outstanding subscriber base to 811 million at the end of March 2011. Growth rates have been in the region of 40 to 60 % in the last three years .	**Telecommunication Infrastructure** ❖ Result : Large number of call drops. **Late adopters of New Technology** ❖ India is among the last countries in the world to get access to 3G technology. **Most Competitive Market** ❖ 10 to 12 companies offer mobile services in most parts of India, globally, the average is 4. ❖ A market strongly regulated by the Government. Government scams threatening the viability of the business . Constantly changing rules and regulatory requirements lead to uncertainty as well as cost of doing business . ❖ Slowdown in addition of subscribers.

OPPORTUNITIES	WEAKNESSES
3G Telecom services and 4G services **More Quality Services** ❖ Mobile Number Portability has forced the service providers to improve their quality to avoid losing subscribers. **Value Added Services (VAS)** ❖ The mobile value added services include, text or SMS, menu based services, downloading of music, mobile TV, sophisticated m-commerce applications etc. **Industry Revenues :** ❖ The Indian telecom industry was expected to reach a size of ₹ 3,44,921 crore by 2012 at a growth rate of over 26 per cent. **Horizontal Integration** ❖ Entry Into other consumer segments leveraging the present channels. ❖ E.g. DTH service like Reliance BIG TV, Tata Sky, Airtel Digital TV by telecom majors like Reliance, Tata and Airtel respectively. ❖ Providing fiber connectivity to all 2,50,000 gram panchayats by Dec, 2012 { Ref. National Broadband Plan 2010 (NBP) }.	**Difficult to enter because of requirement of huge financial resources.** ❖ e.g. Auction of 3G license was awarded for ₹ 68,000 crores. ❖ **Need for deep pockets :** Low profitability of almost all operators, leading to financial difficulties in running day to day operations, poor quality and maintenance of networks , cash flow problems, lack for funds for continuous investment to increase coverage. Hence, survival of the fittest , especially those with deep pockets. Need for continuous infusion of capital. **THREATS** ❖ TRAI's 2G direction affecting new players. ❖ Renewal of 2G license on the basis of market rates of 3G auctions. ❖ TRAI intentions of rolling out 4G or the fourth-generation technology, known as the ultra-broadband soon, raising fears that 3G services would become somewhat obsolete. ❖ Declining ARPU (Average Revenue per user). ❖ Price wars like per-second billing which is deflating revenues and making sure the 'survival of the fittest'. ❖ A market strongly regulated by the Government. ❖ Slowdown in addition of subscribers. ❖Difficult to enter because of requirement of huge financial resources.

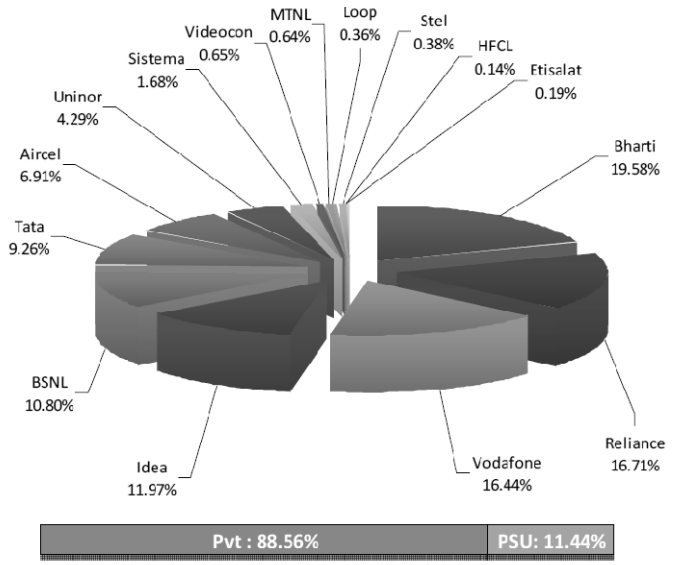
Figure 7 : Indian Telecom Space : Players and Services



Source: Authors' Research

Note : VSNL was taken over by the Tata Group , and has been since renamed as Tata Communications

Figure 8 : Service Provider Market Share as on January 31,2012



Source: TRAI website : http://www.trai.gov.in/WriteReadData/PressRealease/Document/PR accessed on December 5, 2012

❖ Major market ruled by about 4-5 players.

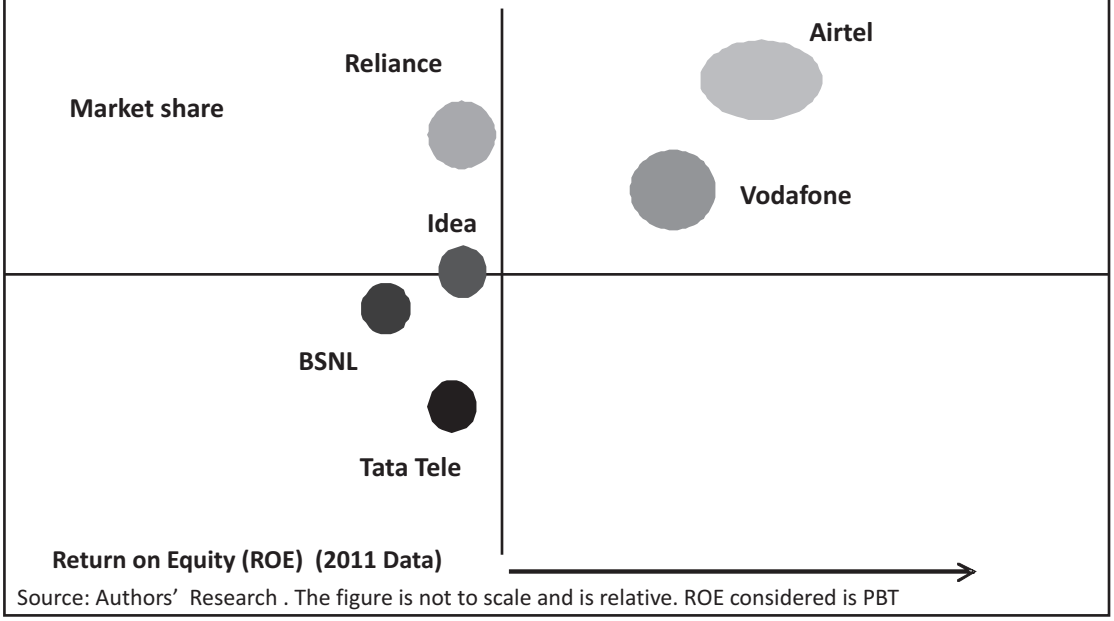
5) Threat of Substitutes – LOW

❖ Internet offers various substitutes such as VOIP, Skype, online messengers, but none is comparable to the telecom facility.

❖ No substitute offers the luxury of mobility.

❖ Price-performance trade off is very high.

Figure 9 : Relative Positioning of the Telecom Players (Market Share Vs ROE, 2011 Data)



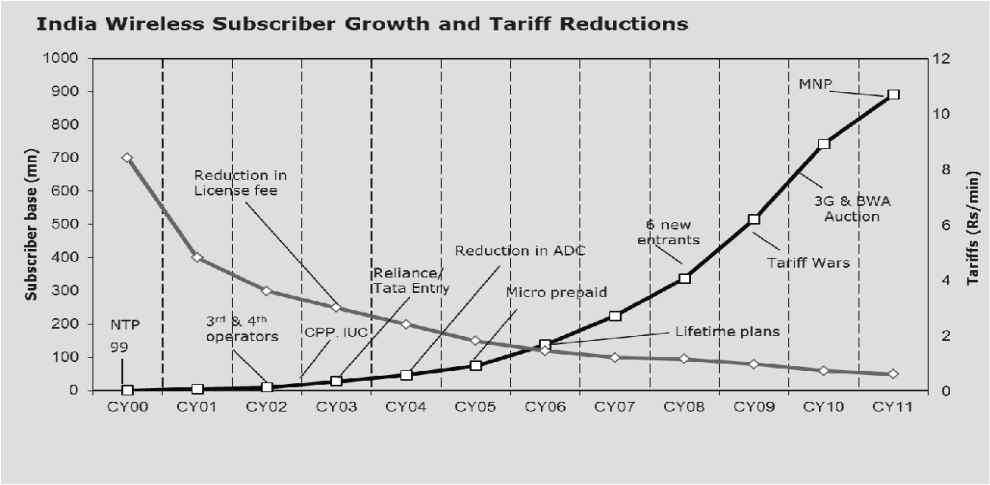
Source: Authors' Research . The figure is not to scale and is relative. ROE considered is PBT

Summarizing the conclusions that can be drawn using Porter's analysis, the Indian telecom industry is capital intensive and calls for large investments. It is unlikely that new entrants will emerge, over and above the current players. Suppliers will keep prices low, and the buyers will have an upper hand in purchases of equipment, cables, and fuel. Since it is unlikely that any substitute will threaten the telecom industry in the long term, the players that would be able to sustain themselves for at least ten to fifteen years will reap the benefits, all others will fall by the wayside. In conjunction with the PESTEL analysis conclusions, it appears that the telecom industry will be dominated by large players in the long run, consolidation will happen sooner than later, and Government policies will continue to have a major impact on the industry. In fact, if 3G applications pick up, then the spectrum will become a severe issue, and the government may have to give in to the higher demand.

PLAYERS AND SERVICES

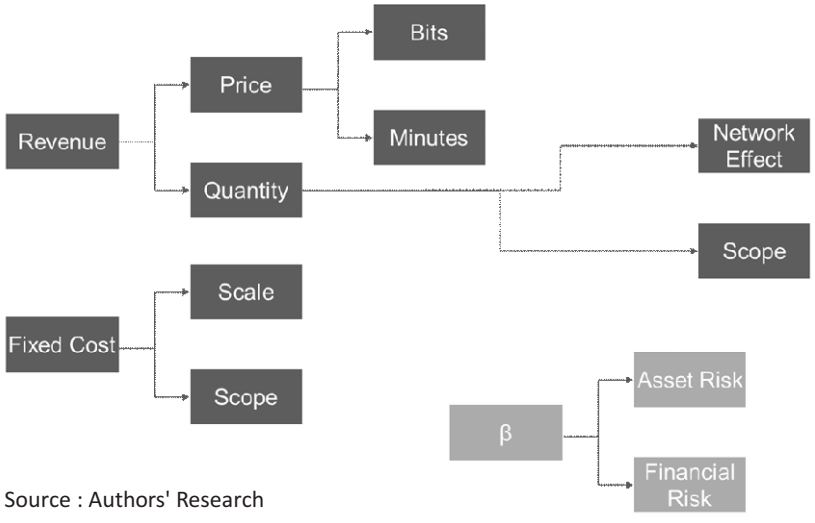
The SWOT analysis (Figure 6 and Box1) confirms the findings of Porter's Model. The Indian telecom space is divided between larger players such as Reliance, Bharti, Vodafone, BSNL and the Tata group, which have a pan India footprint and have a presence across all major service categories and pure plays with limited geographic scope, such as Aircel,

Figure 10: Indian Telecom Industry – Subscriber Growth Fuelled by Tariff Reduction



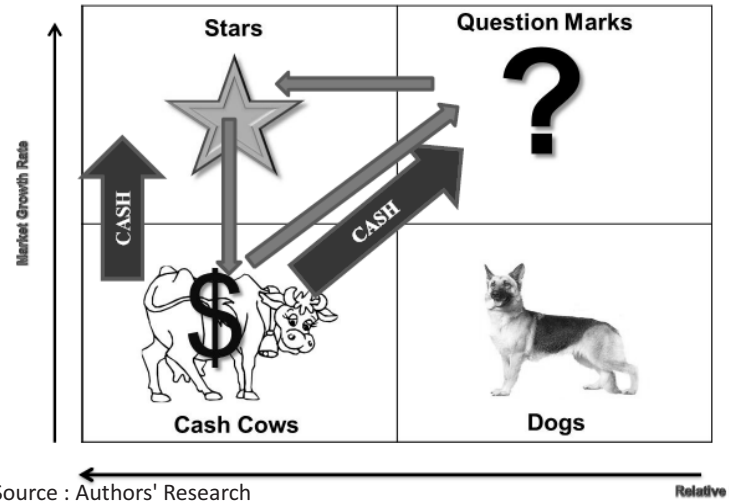
Source : TRAI

Figure 11 : Value Drivers in a Telecom Business



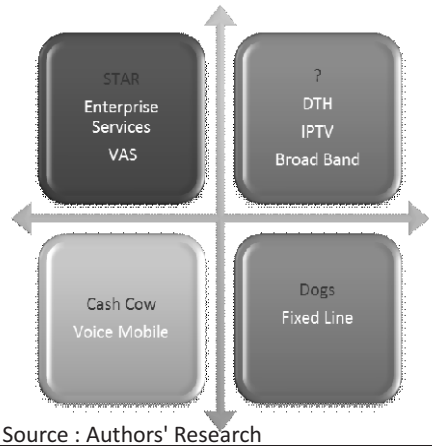
Source : Authors' Research

Figure 12 : The BCG Matrix for Determining the Business Product Mix



Source : Authors' Research

Figure 13 : The BCG Matrix As Applied to the Indian telecom Industry Operators



Source : Authors' Research

Table 1 : Summarized Product - Market View for the Indian Telecom Industry

	Existing Products	New Products
Existing Markets	**Market Penetration** Incentivized Tariff Plans Services such as bill payment	**Product Development** 3G service , 4G service,VAS
New Markets	**Market Development** Tapping new markets across the globe	**Diversification** Moving into other businesses in or outside of telecom

Source: Authors' Research

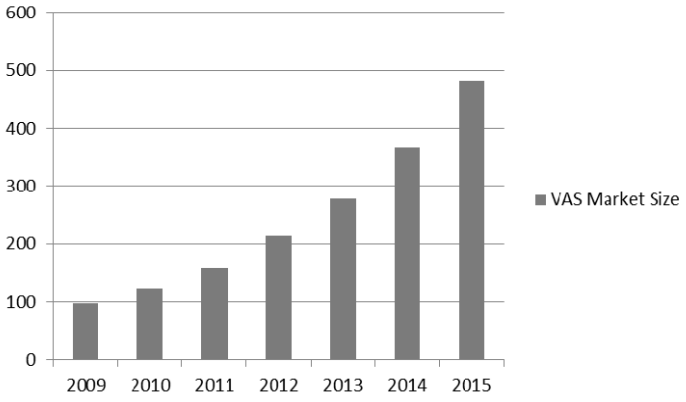
BPL , Sistema/Shyam . Integrated offering and pricing power is emerging as the key, and smaller players are struggling to compete and make money (Highlights on Telecom Subscription Data as on January 31, 2012) . The current snapshot of the Indian Telecom Industry based on the access to communication is shown in Figure 7 and Figure 8. A relative position of the various service providers in the Indian telecom landscape is given in the Figure 9.
The Figures 8 and 9 clearly indicate that the industry if highly fragmented, with most of the players not yet in the green fully. A few – Bharti, Vodafone, Reliance, Idea and Tata Tele hold more than 85% of the market share (Table 1.5, p. 26, TRAI Report, The Indian Telecom Services Performance Indicators April – June 2012, dated October 11, 2012, New Delhi). The rest of the players – more than 15 – fight for the balance market. Many of these are not all India providers. This picture is only to be expected based on Porter's Five Forces analysis as well as the SWOT analysis. These indicate that only a few will be able to survive and thrive in the highly capital intensive, all India coverage, management control intensive daily tower operating conditions, which determine the success or failure of the provider. India being a cost sensitive market with a lot of big players around, the margin for each service provider is decreasing rapidly. The Figure 10 depicts the trend of the decreasing ARPU (Average revenue per user) across all service providers.
The spectrum size being high and the teledensity also being high; the challenge for the service provider is to find alternate ways to increase the ARPU to sustain in a tough competitive market. The value drivers of the telecommunication business are diagrammatically represented in the Figure 11.

GROWTH STRATEGIES ADOPTED BY THE TELECOM SERVICE PROVIDERS

The researchers applied the BCG Matrix to the current Service Offerings (Figures 12 and 13). The BCG growth share matrix was developed by Henderson of the BCG group in the 1970s. The matrix classifies businesses / SBU's by :

1) Relative Market Share : The market share of the business/ SBU/ Product in the market as compared to its

Figure 14 : VAS Market In India



Source: KPMG

competitors and overall product / category.

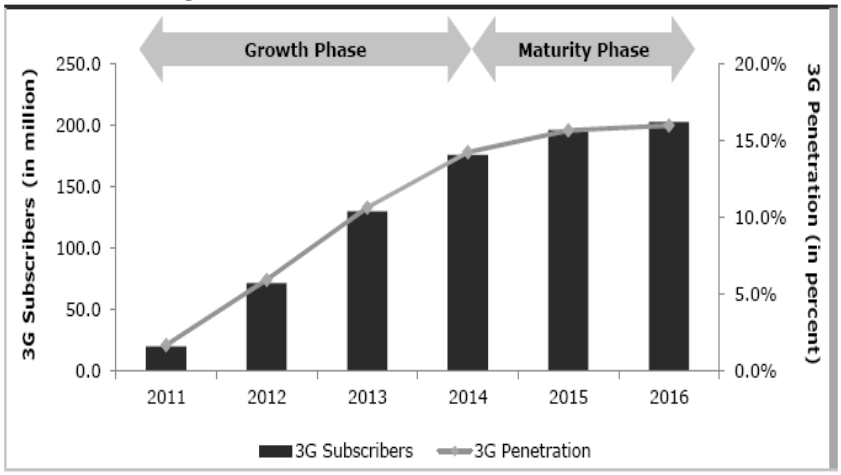
2) Market Growth Rate : The growth rate of the industry as a whole is taken into consideration from which the growth rate of the product is extrapolated.

Another approach to telecom products and markets is shown in the Table 1. The telecom industry players in India have chosen the following strategies so far :

❖ **Market Penetration:** This strategy seeks to increase the market share for the present telecom products and services in the present market through greater marketing efforts. One of the ways to enhance market penetration is to improve the ARPU (Average revenue per user). The telecom companies in India are constantly launching new incentivized tariff plans and providing services such as bill payment service, car rental service to attract the users to increase the usage.

❖ **Product Development:** This strategy seeks increased sales by launching new products in the existing markets. Product development usually entails large research and development costs. In context to the telecom companies in

Figure 15 : Growth of 3G Services in India



Source : Evalueserve; http://evalueserve.com/ accessed on December 12, 2012

India, launch of 3G services in India is an example of product development. The major telecom companies in India such as Airtel, Vodafone, Idea have launched 3G services in India. Telecom companies providing broadband solutions in India is another example of product development.

❖ **Market Development:** This strategy involves introducing existing products and services in new markets or new geographic locales. A classic example of this strategy is Airtel venturing into the telecom space in African markets. The company is using its existing telecom capabilities to tap new markets beyond India.

❖ **Diversification:** This strategy involves launching a new product or service in an entirely new market. This strategy is a combination of product and market development. Diversification is related when the businesses have a value chain that possesses competitively valuable cross-business strategic fit. An example of related diversification is Bharti Airtel, Tata Communication launching the Direct-To-Home service. Diversification is unrelated when businesses have value chains that are so different that no competitively valuable cross-business relationships exists. An example of unrelated diversification is Bharti operating in the field of real estate and retail chains in India.
The VAS services needed for each category vary from a caller tune service to mobile banking. According to KPMG, Mobile Value-Added Services (MVAS) are expected to increase to ₹ 482 billion by 2015, driven by the uptake of 3G services in urban as well as in rural areas (Figure 14). Currently, VAS contributes to 10-12 percent of the revenues of telecom operators. This is expected to rise to 20 percent by 2013, especially after the uptake of 3G services.

❖ **The Present and Future of 3G Market in India :** Evalueserve forecasted that 3G subscribers will to grow to 200 million in India by 2016 (Figure 15). With this forecast, 3G offers a huge potential for telecom operators to grow and increase ARPU in the Indian Market.

❖ **Mobile Advertising :** Mobile advertising is a major source of revenue for a service provider. Currently, the focus is on SMS and IVR based advertising on mobile, however, there could be a shift in the future towards using video as the primary mode of advertising on mobile.

❖ **Enterprise Solutions :** Service providers have started to focus on Enterprise solutions that aid the service providers in delivering complete solutions to Small and Medium Enterprises (SMEs). It would be beneficial to SMEs as well, as it provides them with better tariffs and increased value added services.

❖ **Mobile Application Stores :** The latest trend among operators is to have their own mobile application stores, owing to their revenue generating potential. These app stores not only provide a secure single point for customers to get all the latest mobile applications, but also an opportunity for 3PP content providers, aggregators and mobile handset vendors to co-exist.

MANAGERIAL IMPLICATIONS

Given the plethora of choices available for setting directions for telecom companies, every company has to examine thoroughly these options using specific simulation, modelling and financial tools to study the effect of different strategies on the future of the company in an industry which is subject to quantum technological advancements once every three years or so . The future is surely full of the Internet - large data transfers, business analytics, cloud computing, mobility driven devices, E- Commerce and computers driven trade and business transactions. Telecom will be in the middle of an unprecedented revolution in business practices. Modern tools like lean and agile manufacturing, addressing the bottom of the pyramid, business excellence practices based on Baldrige or other models, highly skilled and trained workforces working across time zones and national boundaries would be required by the telecom industry. To handle these business imperatives, telecom companies need to be nimble, multi talented, knowledgeable about business processes in related and non-related industries (this is needed to form tie-ups, JVs with banks, FIIs , hospitals, auto companies, and the rest) , have the ability to operate several business centres catering to the needs of varied businesses, but all under the umbrella of the company.
It would seem that the future will see large telecom companies evolving into conglomerates united under the roof of information and knowledge sharing, distribution, analyses and business usage for diverse industries.

CONCLUSION

The telecom industry is coming of age. In the last fifteen years, it has transformed itself into a fleet footed, efficient and ever spreading engine of growth serving a population of almost 900 million + . The PESTEL analysis showed that the industry is susceptible to government policy as well as to technological advancements. Policy for spectrum, for example, will be greatly affected by the demand stimulated through 3G and 4G services. Porter's Five Field Forces analysis revealed the contours of the industry. It shows that in the immediate future, there won't be any more new entrants, and consolidation is likely to happen soon. The SWOT analysis showed the areas where telecom operators can find opportunities and where they need to strengthen themselves. The BCG matrix showed that there is only one product stream, which can be considered as the Cash Cow – Voice. However, the STARS are VAS and 3G. While VAS has grown, to some extent, 3G is still new and has to go some way before it starts contributing significantly to the revenues. Finally, the Figure 9 shows that the industry is still in the red. Only two companies were ROE positive till 2011, and that is a cause for concern. How long can companies fund their losses through recapitalization ? This remains to be seen. In international markets, the experience of telecom companies has not been greatly different. It will do Indian companies good to study the approaches taken by international companies in making 3G a useful tool for businesses.

With the advent of cloud computing, there is greater scope for data flow across continents, and more bandwidth will be needed to transmit large masses of data. 3G and 4G will surely come in handy in the speedy and secure handling of such data. Developments of networked applications – that is, where companies in different industries collaborate to develop applications using the mobile telephones – will have to be done in a big way in India, whereas in foreign countries, this has happened to a much greater extent. E- Commerce , Home shopping are other applications, which will use 3G / 4G. Thereby, the Indian telecom industry is in for some very exciting times, indeed.

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