ANALYSIS OF GROWTH OF INDIA MOBILE TELECOM SECTOR PLAN FROM A PRODUCT LIFE CYCLE PERSPECTIVE

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Abstract— **Product Life Cycle (PLC) is an important concept in marketing which Explains the Evolution of a product category, product form, product or a Brand as passing through distinctive stages during its existence. These stages are namely Introduction, Growth, Maturity and Decline. This paper traces and analyses the birth and evolution of Mobile Telephony or Cellphone Sector in India from the PLC Perspective Theoretical concepts and juxtaposed with Numerical Data and evaluated from a Statistical Viewpoint. The Question whether Mobile Telephone Sector has reached the Maturity Stage is answered after deliberating n its journey through the Introductory and Growth Stages. The Role of Regulatory Bodies such as Telecom Regulatory Authority of India (TRAI) and the Impact of Specific Governmental Policies in Telecom Sector on the Growth of Mobile Telephone Segment are elaborately clarified.**

Index Terms— **Product Life Cycle, Mobile Telecom Sector.**

I. INTRODUCTION

The concept of Product Life Cycle took its origin from an Economic Theory developed by Raymond Vernon to explain International trade in Products and Services as passing through various stages of evolution. Later Day Marketing experts adopted this concept to develop the product life cycle theory as a marketing strategy.

Marketing literature states that a company's marketing strategies must change in tune with the changes in the Life of a Product as it passes through various stages in the Product Life Cycle (PLC). The basic postulates of PLC theory are:

- All products have a Limited Life.
- Product sales pass through distinct stages in time and these stages can be demarcated.
- Each stage requires different set of marketing strategies by the company.
- Not only marketing but Financial, manufacturing HR and other strategies must be changed by the company as and when the product undergoes changes in its PLC Stage.
- Not only sales, but profits of the company also rise and fall with changes in PLC stages of the product.

This most authors have identified 4 stages in the Product Life Cycle (PLC). They are:

1. Introduction Stage

Product is just introduced in the market with Heavy Advertising and Publicity expenses. Consumes hesitates to buy the unfamiliar product and hence sales and profits of the company are low.

2. Growth Stage

Consumers learn about the product and its features and are tempted to buy it because of the demonstration effect, novelty factor and ennui with existing products. Hence, sales growth of the company shoots up along with profits of the company producing the product.

3. Maturity Stage

With majority of the consumers having bought the product, sales growth shows a declining trend. Profit of manufacturers stabilize or decline.

4. Decline Stage

There is a rapid fall in the sales of the product and profits of manufacturers Erode. Customers tastes and preferences change away from the product.

Some authors have identified an additional stage namely saturation stage which follows the maturity stage. This stage denotes a stop in sales growth and a precursor to the decline stage.

The PLC is a comprehensive concept which can be used to describe a product category, A product form a product or a brand. In the real world all products may not exhibit an exact PLC in the theory mould. Further duration of the stages may vary for different products and the same. Product or brand may experience different durations in the different stages of the PLC. It said that even after decades products/brands such Kellog Corn Flakes, Coca-Cola, Pepsi-Cola, Mercedez Benz have not yet reached the decline stage of PLC, while products such as video, recorders, transistors and radio have already reached the decline stage and are fading away. Further while in the Drug Industry, the introduction and growth stage may take a long duration of many years/decades these stages occur rapidly within a few years for electronics and telecom products.

Sometimes for some products a rise in sales or a fall in sales may be a short aberration and may not mean growth or decline stage of PLC. Hence, it is difficult to gauge and detect the exact PLC Stage in which presently a product is placed or predict the duration of the stage.

Marketing theory has identified various consumer adoption groups during PLC such as innovators, early adopters, early majority, lates majority and laggards. Marketing strategies

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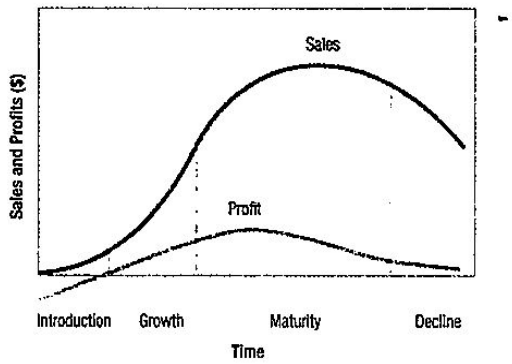
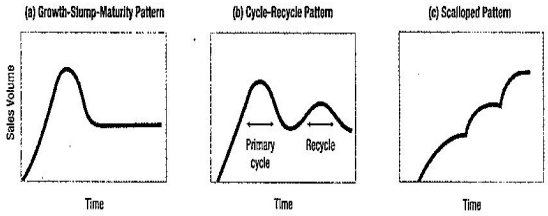
such as skimming, penetration, brand-eq uity/brand building, product differentiation, segmentation, targeting and positioning (STP), cost – cutting and so on have been put forth for implementation by companies in various stages of PLC.

The PLC curves are normally depicted as Bell-shaped as shown below:



Some products may be described by the following figures which shows variants of the core PLC.



There are also certain special categories of product life cycles such as styles, fashions and fads for which the PLC depends on consumer tastes, preferences and culture.

II. Evolution of the Indian Telecom Sector

Introduction

Telecommunications pivotal to a country's socio-economic growth and development. It promotes information dissemination, voice and data communication, thereby improving productivity connectivity and decision making in primary, secondary, tertiary and service sectors. It helps in faster movement of Goods and People, and improves governance, business management, security of the nation and response to emergencies, Job creation, rural development, social development and gender equality are fostered by the telecom sector. It helps in Banking productivity, financial inclusion and disease prevention. The Telecom sector has thus become ubiquitous and synonymous with transformation of an underdeveloped economy to a developed one. According to world bank 10% increase in teledensity is known to boast GDP growth by 0.6 points. In other words a 1% increase in mobile subscribers is estimated to increase percapita GDP by US $200. According to ICRIER (Indian Council for Research in International Economic Relations) states in India with Higher Teledensity have grown faster than states with lower teledensity. For instance Bihar could have witnessed a 4% faster growth if it had enjoyed the same teledensity as Punjab. The converse is also true. Higher GDP growth heads to Higher per capita incomes which lead to the purchase of telecom products and hence growth of the Telecom sector.

Thus there is a two way relationship between economic growth and telecom sector growth.

III. Evolution of the Indian Telecom Sector

The Indian Post and Telecom sector is one of the oldest in the world. In 1850 the first elective telegraph line was started between calcutta and diamond harbour. The Oriented telephone company was the first telephone company which opened telephone exchanges and started telephone service in the country. In 1947 all foreign telecom companies were nationalized post independence. In 1950, the Govt. of India took over all telephone exchanges from princely states, thus enabling total ownership of telecom sector by the Government. In 1960, the first STD route was commissioned between Lucknow and Kanpur. In 1976 and 1979, the first digital microwave junction and optical fibre system were commissioned. In 1980 the First satellite Earth Station was set up in U.P. In 1981, Indian Telephone Industries (171) was set up to produce 5 million fixed lines per year. In 1984 CDOT was established for indigenous production of digital exchanges.

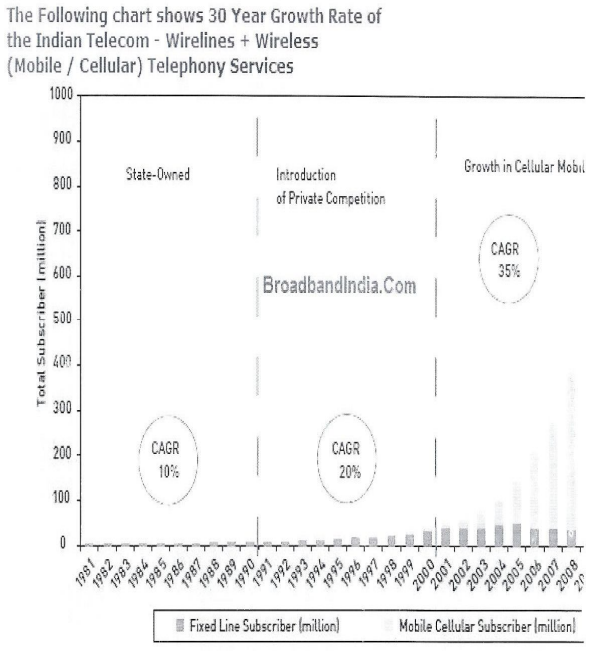
In 1985, Dept. of Telecommunications (DOT) was established to oversee and promote the growth of Telecom sector. In 1986, MTNL (Mahanagar Telephone Nigam Ltd.,) and VSNL (Videsh Sanchar Nigam Ltd.,) were carved out of DOT to run Telecom Services in Metro cities and International Long Distance Operations respectively. The Telecom commission was set up in 1989. 1991 was a landmark year in the Indian Economy. This was the year in which the then Narasimha Roa Government introduced the so called LPG Policies (Liberalization, privitalization and Globalization policies) in all sectors of the economy. The telecom sector was nso exception to this. Telecom equipment manufacturing was totally deregulated VAS was opened to the private sector. This year marked the beginning of the End of State Manopoly in Telecom and emergence of competition. The National Telecom Policy (NTP) was announced in 1994. The policy laid the foundation for privatization in Telecom Sector. Foreign collaboration was allowed for state owned companies. Foreign Direct Investment (FDI) upto 49% was allowed in Telecom sector. For the first time the company was divided into 20 telecom circles for basic telephony and 18 circles for mobile services. The circles were divided into A, B and C categories, depending on Revenue potential for the circle. The Govt. opened bid for one private company per circle along with state owned DOT. For cellular service providers 2 private companies were permitted per circle and fifteen years license was given to each provider. These were revolutionary policies which were applauded throughout the world as a calibrated move to develop the Telecom Sector through well thought policies which promoted competition as well as developed the Industry without throttling the growth process. Subsequent to the NTP (National Telecom Policy) of 1994, the First Mobile Telephone Service was started on a non-commercial basis. In Aug. 1995, the first mobile call was made by Mr.Jothi Basu, the then West Bengal Chief Minister to Mr.Sukhram then Minister for Telecommunication. In 1997, the Govt. of India took a momentous step. It established the TRAI (Telecom Regulatory Authority of India) as an Independent Regulatory Body to supervise Telecom

Development in India. TRAI has several notable achievements to its credit, TRAI has made crucial recommendations on almost all areas of fundamental importance to Telecom Sector such as unified licensing, mergers & acquisitions, spectrum allocation, Broad Band Policy 2004, VAS (value added services), Consumer Protection, Billing, Tariffs, Quality of Service, Infrastructure Sharing among Service Providers, Optical Networks, Fixed, Mobile Convergence, NGN (Next generation Networks), USOF (Universal Service Obligation Fund) and other areas.
TRAI's Telecom Tariff Order (TTO) Led to the cellular call rates in India emerging as one of the cheapest in the world and the Indian Cellphone Market transformed into one of the most competitive and fastest growing markets in the world. Long distance charges have fallen dramatically and roaming charges have been rationalized. TRAI has succeeded partially in protecting customers from unwanted Pesky calls and unwanted VAS. Quality of Service has improved due to TRAI regulations and TRAI has successfully promoted infrastructure sharing and USOF among service providers. Another milestone. In Indian Telecom story was the announcement of the National Telecom Policy (NTP) in 1999 by the Govt. NTP 1999 had lofty objectives such as affordable telecom for all, development of telecom infrastructure in rural areas, convergence, more competition and level playing field in Telecom sector, efficient spectrum management, globalization of Indian Telecom Sectors and so on. NTP 1999 can be labelled as a Remarkable success. Telecom tariffs fell to rock bottom levels and spectrum and license fees decreased. As a result private players like Vodafone, Airtel, Aircel etc. stabilized themselves and grow to eclipse the state owned giants like BSNL and MTNL. Telecom subscriber base grew exponentially. Thousands of jobs were created in sales, customer care, R & D etc., in the Telecom sector. Business Ecosystems emerged. Telecom exports shot up. It would not be an exaggeration to say that the Telecom growth story was scripted by NTP 1999 and the momentum created than is still continuing to influence the Telecom sector today. After 1999, the other developments in Telecom Sector Included. UAS (Unified Access Service) License in 2003. Broad band policy in 2004, Further liberalization of licenses in 2007 and 2008, 3G Auction in 2010, MNP (mobile number portability) Launched Pan India in 2011, and the New National Telecom Policy announced in 2012. The trust in all the above policies is towards further Privatization of Telcom Sector, convergence, and Easy accessibility of all Telecom Services including broad band for all Indian Consumers, including Rural consumers. The result of the above policies has surpassed all expectations and consequently Indian Telecom Networks has emerged as the Second largest in the world with the market being the fastest growing and most competitive. The sector has grown Phenomenally. Twenty times in Ten Years (2001-2011). The sector is technology most advanced with digital exchanges, gateways, fibre optics supported by Satellite system, and on par with advanced nations. The call rates are one of the lowest in the world and telecom services have been made affordable to the vast lower middle class. Nearly 5 million telephone subscribers are added every month and near 227 million subscribers were added during the years 2010 and 2011. The private players in Telecom Sector Like Bharati Airtel, Aircel, Vodafone and other offer all these services available in advanced nations like video conferencing, intelligent networks, EDI, leased circuits, packed switched data network, email, VSAT, ISDN and others. Telecom Exports have also picked up and the Indian Private sector has been slowly spreading its tentacles to embrace the global market.

IV. Product Life Cycle in the Indian Mobile Telecom / Cellphone Industry

The first mobile call was made in the year 1995. This year can be taken as the year of birth of mobile telephone/cell phone industry in the country. At that time, the voice segment was dominated by the Fixed Phones also called Lsandlines. This sector was fully under the Monopoly of State owned giants BSNL (Bharat Sanchar Nigam Ltd.,) and MTNL (Mahanagar Telephone Nigam) Ltd.
The Landline sector was growing sluggishly. The main reason was the low GDP Growth and Per Capita Income Growth in the country during the early post-independence decades. The three decades 1947-1977 was a period in which the country experienced what was jokingly referred by western economists "The Hindu Rate of Growth". Thus the Landline Telephones were barely 80000 in 1948 rose very slowly and crossed the million mark by 1981. The CAGR (Cumulative Annual Growth Rate) during these 3 decades was less than 5% p.a. But growth picked up due to economic growth, rises in GDP (Gross Domestic Product) and per capita Income experienced by the country in the 1980's. Hence, the growth rate of landline segment increased upto a CAGR (Cumulative Annual Growth Rate) of 10% in Decade 1981-1991. Thus one can say that the landline segment which experienced a long introduction phase of more than 3 decades mainly due to low per capita incomes, was slowly entering the growth phase in the 1980's due to rise in Income levels in the country. By 1992 the total number of landline. Subscribers was nearly 6 million and the Annual Growth Rate was hearing 15%. This rose to more than 17% in 1993, 18% in 1994 and 22% by 1995. The CAGR (Cumulative Annual Growth Rate) of Landlines in fact doubled from 10% in the decade 1980 – 1990 to 20% in the decade 1999-2000. This given in Graph 1

GRAPH 1



This the landline sector was experiencing a scenario of Growth Phase and rising Annual growth rates when the Mobile phones started making their presence felt in 1995.

V. MOBILE TELECOM (WIRELESS SECTOR/CELLPHONE)

Introduction Stage : 1995 – 2001

When Cellphones were introduced in India in 1995, the Landline / Fixed or Wire line Segment was experiencing a growth phase after decades of Negligible Growth. Contrary to expectations the entry of cell phones did not immediately affect the landline sector. This was due to many factors. Firstly the Cellphones was novelty in India and its introduction did not gain immediate acceptance due to the unfamiliarity and skepticism factors. In tune with marketing theory the Cellphones Industry in its early years was patronized by the innovators and later by early adapters. These consumers were the opinion leaders or the elitist segments of the Indian Population who were miniscule in number. There was also the policy log jam in the Telecom Sector with the Govt. of India giving more priority to the established landline sector as opposed to the fledgling Cellphone industry. The concept of Cellphones or wireless mobile phones was new and most of the consumers in the Indian Market could not bring themselves to the view that it offered an alternative to landline or fixed phones. Landline were considered more basic and Cellphones were viewed as fringe. Consumers were not clear about its versatile uses and did not consider it as a superior concept to landlines. In fact in introductory years, the advertising campaigns by the Cellphone manufacturers emphasized the uses of the Product Generically rather than Brand superiority. Further in the absence of smart features and add ons, the sizeable young consumers were not taking a liking to it in a big way.

Thus the introduction of Cellphones did not make a Dent in the Growth of Landlines in the initial years. But it served to arrest the acceleration of growth rates in the land line segment. In other words, rapid acceleration in Growth Rates which is an expected feature in the Growth Phase of PLC (Product Life Cycle) did not happen in the case of Landline phones. Thus the Annual Growth Rates of Landline which was 22.04% in 1995, hovered around the same level till 2001. The growth rates for landlines were 22.24% in 1996, 21.37% in 1997, 22.42%, in 1998, 21.29% in 1999, 22.79% in 2000 and 22.37 in 2001. The arrival of Cellphones served to include cautiousness among potential consumers of landline many of whom postponed the buying of landlines because of the availability of Cellphones. Still most consumers who postponed landline purchases did not immediately switch over to Cellphones due to the various factors operating in the introductory staged discussed earlier.

Mobile services were slow to pickup in the country. In the year of its introduction, which is the year 1995, the total no of mobile subscribers reached a paltry 77000 which was less than 0.0001 percent of the country's population. In the next 6 years, the average monthly subscriber additions were between 50000 to 100000 only. In other words the monthly additions to subscriber base in Cellphones industry were less than 0.0001 percent of the country population. The Annual additions to Cellphone subscribers were around 500000 (5 Lakhs) to 600000 (6 Lakhs) per year upto the year 2000. The Annual subscribers additions were far less than the subscribers added to the landline or fixed line sector. Thus in terms of total subscribers added, the mobile or Cellphones sector was faring poorly in comparison to the landline or fixed phone sector during its introduction stage in PLC in the years 1995-2001. The ratio of mobile or Cellphones subscribers to fixed or landline subscribers was less than 0.1. percent during this period. This is shown in Table 1

Table 1 : Trends in the number of telecom subscribers and in tele density, 1991-2007 (Numbers in Millions, Tele Density is number of telephones per 100 people)

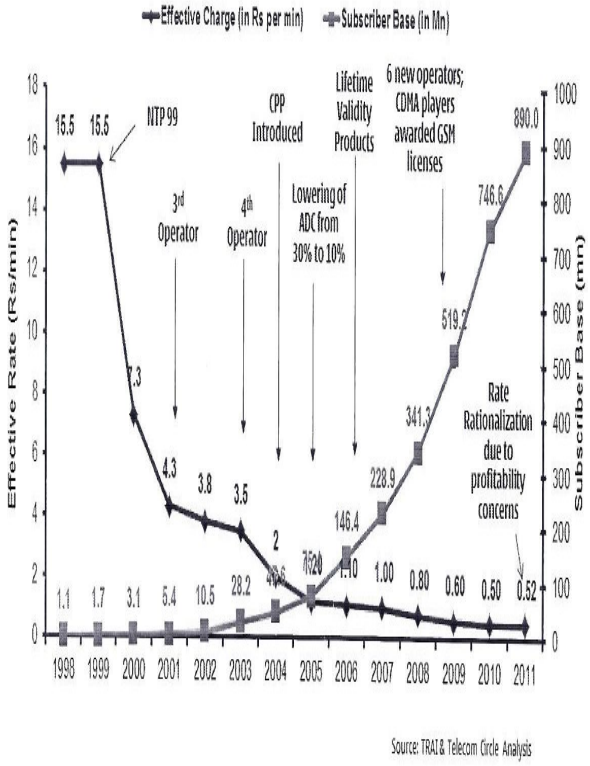
Columns	Fixed	G.Rate	Mobile	G.Rate	Total	G.Rate	Tele Density	Ratio of Mobile to fixed
1991	5.07				5.07		0.6	
1992	5.81	14.60			5.81	14.60	0.67	
1993	6.8	17.04			6.8	17.04	0.77	
1994	8.03	18.09			8.03	18.09	0.89	
1995	9.8	22.04	0.077	-	9.8	22.04	1.07	-
1996	11.98	22.24	0.22	185.71	11.98	22.24	1.26	
1997	14.58	21.37	0.34	54.54	14.88	24.21	1.56	0.02
1998	17.8	22.42	0.88	158.82	18.68	25.54	1.94	0.05
1999	21.59	21.29	1.2	36.36	22.79	22.00	2.33	0.06
2000	26.51	22.79	1.88	56.67	28.39	24.57	2.86	0.07
2001	32.44	22.37	4.58	90.43	36.02	26.88	3.58	0.11
2002	41.84	27.87	13	263.13	54.48	51.25	4.3	0.31
2003	42.58	2.65	33.58	158.31	76.16	39.79	5.1	0.79
2004	45	5.68	50	48.90	95	24.74	7.04	1.11
2005	49	8.89	76	52.00	125	31.58	10.66	1.55
2006	40.43	-17.49	149.5	96.71	198.93	51.94	17.16	3.70
2007	39.25	-2.92	233.63	56.27	272.28		25	5.28
2008*	38.92		277.92		325.78		28.33	7.14

*as on June 30 2008

Source : DOT (2005) and TRAI

A curious fact may be gleamed from the table. During the introduction stage 1995-2001. the Cellphones or mobile telecom industry has shown healthy growth percentages. For ex the industry has grown by more than 158 percent in 1998, 56% in year 2000 and more than 90 percent in 2001). But there growth rates must be seen in the context of previous year's low subscriber base because of which the growth rates are inflated. Thus in the year 1997, the total no.of mobile subscribers was around 3,40,000 which grew to 8,80,000 in 1998 thus showing a growth rate of 158.82 percent. But the growth in subscribers was less than 6,00,000 which was less than 0.001 percent of the country's population. In the year 1999 while the Cellphones industry. Show a growth of more than 36 percent only about 3,40,000 subscribers were added which was less than 0.005 percent of the country's population. The actual growth in subscribers base to shown in the graph 2

GRAPH - 2

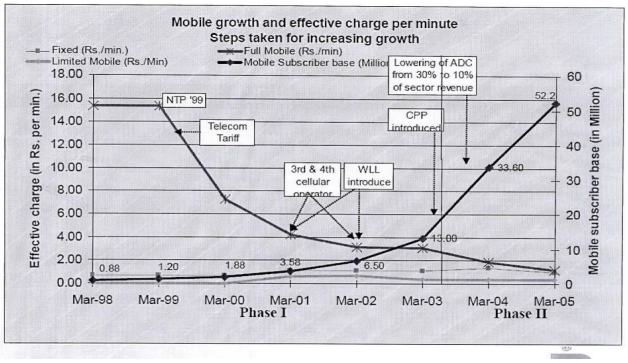


Source: TRAI & Telecom Circle Analysis

From the shape of the curve in the graph it is evident that the flat shape of the curve till 2001 reveals the sluggish growth of introductory stage, while the steep climb of the curve from the year 2002 onwards tell the growth story of the cellphone industry. The curve also shows the continuous decline in effective rate of calla charges from 1998 onwards due to various developments and how it has manifested itself into makiang cellphone charges in India one of the cheapest in the world. The role of various policies in lowering call rates and increasing subscribers base making Indian cellphone industry the fastest growing with the lowest call charges in the world is also shown in Graph 3.

From Graph 3 it is evident that cellphone growth is moving towards an eventual bell shaped pattern as described in PLC theory.

GRAPH – 3



The Graph clearly reveals that growth stage for Cellphones started in the year 2002 as evidenced by the climb up in the shape of the subscriber line. But the main question is whether the mobile/Cellphones sector has reached the plateau in the growth stage and entered the maturity stage. This is discussed below.

Growth Stage 2002

The growth stage for the mobile sector began in the year 2002, after six years of Introduction phase. Certain developments laid the foundation for this. The national telecom policy (NTP) of 1999 freed the Telecom sector from growth impediments. Spectrum fees were reduced based on Adjusted Gross Revenue (AGR). This led to mobile telecom tariffs falling to rock bottom levels. Introduction of calling party pays pays (CPP) regime, rationalization of roaming charges, affordable connectivity for the common man, injection of competition and level playing field, development of modern telecom infrastructure based on convergence have been crucial factors which led to the mobile/cellphone sector entering the growth stage and experiencing the highest growth rates in the world. Macro factors like high annual GNP Growth experienced by Indian Economy in the decade 2000-10 and rising per capita incomes also contributed to growing cellphone subscribers among the population. On the consumer side, the demonstration effect converted the cellphone into a prestige product and its possession a matter of pride. The sophistication in brands because of technological upgradation and addition of smart features and from the producer side also led to growing sales. The entry of mobile sector into the growth stage of PLC is buttressed by a few interesting numbers.

The mobile subscriber base has multiplied and grown by a factor of more than 225 times from 4 million subscribers in 2001 to 929 million subscribers by may 2012. A growth unparalleled in the world. In the year 2010 alone more than 227 million subscribers were added. A world record.

The Annual additions to mobile subscribers which was less than 1 million till the year 2000 suddenly started to grow exponentially. The annual additions to mobile subscriber base was more than 5 million in 2002, more than 17million in 2003, more than 64 million in 2006, more than 113 million in 2008, more than 178 million in 2009, culminating in more than 227 million Cellphones subscribers added in the year 2010, the highest in world history. IN fact in the year 2002 alone more mobile subscribers were added than all the subscribers put together added during the introductory stage years 1995-2000.

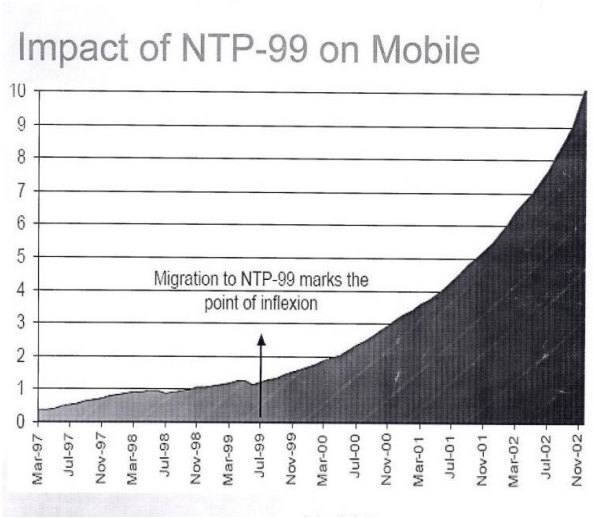
Mobile subscribers added every month between the years 2002-2013 and the Annual Growth rates are given in Table 2

Table 2
Monthly and Annual Mobile Subscriber Additions in India 2002-2013 (Millions)

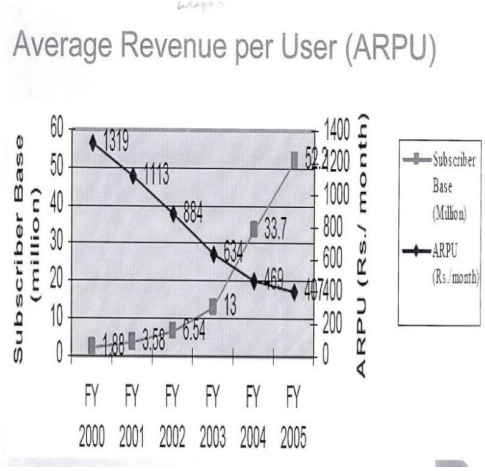
Year	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep.	Oct.	Nov.	Dec.	Total	Annual Growth Rate
2002	0.28	0.35	0.41	0.28	0.29	0.36	0.36	0.49	0.37	0.53	0.72	0.8	5.23	146
2003	0.64	0.60	0.96	0.64	2.26	1.42	2.31	1.79	1.61	1.67	1.9	1.69	17.49	199
2004	1.58	1.60	1.91	1.37	1.33	1.43	1.74	1.67	1.84	1.51	1.56	1.95	19.49	75
2005	1.76	1.67	0.73	1.46	1.72	1.98	2.45	2.74	2.48	2.9	3.51	4.46	27.86	61
2006	4.69	4.28	5.03	3.88	4.25	4.78	5.26	5.9	6.07	6.71	6.79	6.48	64.14	88
2007	6.81	6.21	3.53	6.11	6.57	7.34	8.06	8.31	7.79	8.05	8.32	8.17	85.27	67
2008	8.77	8.53	10.16	8.21	8.62	8.94	9.22	9.16	10.07	10.42	10.35	10.81	113.26	51
2009	15.41	13.82	15.64	11.90	11.58	12.04	14.38	15.08	14.98	16.67	17.65	19.10	178.25	53
2010	19.90	18.76	20.59	16.90	16.31	17.96	16.90	21.21	17.10	18.98	22.88	22.62	227.12	44
2011	18.99	20.20	20.21	15.34	13.35	11.41	6.67	9.34	9.90	9.79	2.97	9.47	148.32	20
2012	9.88	7.44	8.00	-1.85	8.35	4.73	-20.61	-5.13	-1.74	-2.39	-13.63	-25.88	-69.13	-7.43
2013	0.4	-.197	5.36	6.33	8.95	12.12	9.90	11.42	7.99	5.78	20.47	18.11	104.86	12.09

When the these figures are plotted in the form of graph 2, graph 5 and graph 4 it is clear that the mobile sector experienced an introductory stage in the years 1995-2001 with the curve showing a flats shape during the period. The year 1999 in which a New National Telecom policy was announced marks the point of inflexion. The effect of the policies and other macro economic policies began to be felt in 2002 in which the growth stage started as evidenced by the shape of the curve (no. of subscribers) in the graphs, wherein it starts to climb steeply. While the subscribers base is growing the ARPU (Average Revenue Per User) for the Service Providers have been continuously falling as shown in Graph 5 below.

GRAPH - 4



GRAPH - 5



During the decade 2001-2010, the mobile industry grew at a CAGR (cumulative Annual Growth Rate) of 35% which 150% more than the CAGR in the Decade 1999-2000. This shown in Graph 1.

Thus it is clear that the growth stage is being sustained by continuously falling call charges, growing per capita incomes, more competition and better quality of service, improving Telecom infrastructure and positive government policies which favour both producers and consumers and faster growth.

A few statistical indicators on the growth of wireless/mobile subscribers in the present growth stage of PLC are discussed below.

According to TRAI (Telecom Regulatory Authority of India) Data Total wireless subscribers reached 862.62 million

by Jan 2013. With urban subscribers at 61.3% and rural subscribers at 38.6%.

The Mobile subscribers further grew to over 927 million by Oct. 2013. According to COAI (Cellular Operator Association of India) an Association of Telecom producers, the Total mobile subscribers or Cellphone subscribers reached 998 million by the end of year 2013. The active subscribers were 788 million while the rest were passive. Urban subscribers constituted 64% of total and rural subscribers 36%. 90% subscribers came under GSM (Global System of Mobile Communications) regime while 10% of subscribers came under CDMA (Code Digital Multiple Access) Regime. Presently it is reported that mobile subscribers has crossed 1000 million and India is the fastest growing market in the world set to overtake China for the No.1 position. In Sep.2004 the number of mobile subscribers crossed the landline subscribers and presently dwarfs it by a ratio of 30:1 by 2006, the landline sector was growing at around 8% while mobile industry registered a growth of more than 80%. The landline segment declined from 37.06 million Dec. 2009 to 36.76 million in Jan 2010 and 30.52 million by Jan 2013 clearly revealing that landline segment in decline stage of PLC.

MAJOR ACHIEVEMENTS 1997 – 2007

	1997	**2007**
Mobile subscribers	0.34 million	16.5 11 million
Teledensity %	1.56%	18.23%
Minutes of use per month	215	471
Average Revenue per user per month (Rs.)	811	298
Local Call charges (Per minute)	16.80	1.0
STD (per minute Rs.)	30.00	2.4
ISD (per minute Rs.)	75.00	6.40

An International comparison of cellphone call charges across various countries in 2010 reveals clearly that call charges are the lowest in India. This is given in Table below:

Country	**Prepaid Plan Call charges**
Canada	$ 0.38
USA	$0.25
Denmark	$0.17
Finland	$0.10
Hong Kong	$0.02
India	$0.01
Japan	$1.00
South Korea	$0.09
Sweden	$0.04
Taiwan	$0.12
USA	$0.25
UK	$0.38

Source : New America Foundation, Oct 14, 2010.

Cellphones Industry, Growth or Maturity?

The big question is whether the Mobile/cellphone industry has entered the maturity stage or whether it still enjoys the growth phase when we refer back to table 2, we find that the Industry has been continuously growing and adding subscribers till the year 2011. There was a net decline in subscribers in 2012. But this was mainly due to removal of Inactive mobile phone connection by service providers as a one time measure,. Hence, this cannot be taken as a declining trend, Cellphone Industry bounced back in 2013, an year in which more than 104 million subscribers were added.

While growth is continuous we must note that the growth rates have been falling year after year, especially since 2006. From Annual Growth Rate of 88% in 2006, the rate has been falling steadily to 12% in 2013. But this must be viewed against a background of a growing subscribers base. The subscriber base has increased vastly year, after year. Thus while more than 104 million subscribers were added in 2013, this growth is calculated on a subscriber more than 860 million in 2012. Hence, the growth rate is just 12% on the other hand in the year1996. only around, 1,50,000/- or less than quarter million customers were added, but on the previous year's low base, the growth rate works out to 185%. Thus post 2013, even a small annual growth rate of 5% in the industry may mean addition of more than 50 million subscribers translating into huge revenues and profits for service providers.

Thus we have to look for other parameters other than annual growth rates to Judge what stage of PLC the cellphone industry is in at present.

From various parameters it appears that the industry is poised to grow and confer profits for the service providers for another five to six years. In support of the above argument the look at the following factors.

First, teledensity, especially rural teledensity has not reached saturation point in India. Wireless teledensity which was less than 1% till 1999, has been growing rapidly. Till the year 2005 Rural Teledensity stood of less than 2% while urban teledensity was less than 30%. In a single year mobile teledensity increased by 18.4% (2010-2011). Still according to TRAI, wireless teledensity was only around 70% in Jan 2013. Urban teledensity was nearing stauration at 142% while rural teledensity was only around 39%. Further as per Table 3.

Table 3
Teledensity : May 2012

Sl.No.	**Telecom Circle**	**Wireline Subscribers (Million)**	**Wireless Subscribers (Million)**	**Teledensity Percentage (%)**
1.	Andra Pradesh	2.33	66.66	80.4
2.	Assam	0.20	14.6	47.70
3.	Bihar and Jharkhand	0.56	62.97	48.37
4.	Delhi	2.9	42.95	239.91
5.	Gujarat, Dieu	1.82	54.32	72.56

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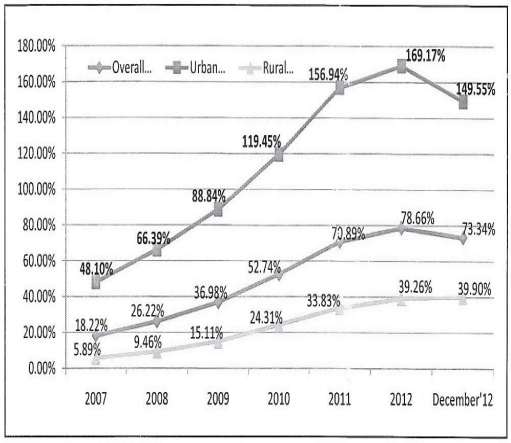
6.	Haryana	0.59	23.00	90.86
7.	Himachalapradesh	0.30	7.41	112.29
8.	Jammu & Kashmir	0.20	6.57	56.92
9.	Karnataka	2.48	56.63	98.22
10.	Kerala & Lakshwadeep	1.18	25.25	107.85
11.	MP & Chattisgarh	1.13	53.30	55.38
12.	Maharashtra	2.64	71.00	96.71
13.	North East	0.25	8.76	64.74
14.	Orissa	0.40	26.27	64.73
15.	Punjab	1.44	31.17	110.22
16.	Rajasthan	1.14	49.52	73.26
17.	TN	3.16	78.,96	118.26
18.	UP (East)	1.20	77.74	62.65
19.	UP (West)	0.79	55.12	62.65
20.	WB	0.62	46.79	80.56

Source : TRAI

there is a lot of scope for further increase in teledensity in states like, Bihar, Jammu & Kashmir, Assam, Madhya Pradesh and Chattisgarh, North Eastern States, Orissa, Rajasthan, UP and West Bengal. Given the fact that growth in mobile telecom industry is now occurring in rural areas at 1.42% increase in teledensity per annum by 2012 vs 051% for urban areas, it is clear that growth will continue to occur in Mobile Telecom Industry in the rural segment for atleast 6 years till 2020 or tell the rural teledensity reaches 90%. In most developed countries, maturity stage is being reached at a teledensity saturation of 150% but in India, the total teledensity (Rural & Urban) is around 75%. So we can expct the growth phase to continue till teledensity reaches saturation point. Graph 6 below.

GRAPH - 6



Composition of telephones

With landline sector clearly on the decline stage of PLC, the Rural Teledensity is bound to increase through the wireless or mobile route only. Hence, the above factor clearly precludes the mobile telecom sector entering the maturity stage within another five to six years.

The second factor is the economic Growth occurring in India. As per World Bank Estimates Average Annual GDP Growth Rate in India in the period 2000-2008 was nearly 8%. According to Dun & Bradstreet, India's GDP is expected to cross $5 trillion by 2020 with a GDP growth rate of 9.2% P.A. till 2020. RAND Corporation predicts India's GDP to grow at 5.6% P.A. mean rate till 2025. IMF has predicted India's GDP to increase by 75% from 4425642 billion dollars in 2011 to7717562 billion dollars in 2018, making India the 3rd largest economy in the world by 2020, next only U.S.A. and China. Table 4 shows that India's GDP growth rate and cellphone subscribers from the years 2002 to 2011. The Pearson's product moment correlation coefficient for this data was .7304. Hence, it is clear that there is an correlation between Economic growth and Cellphone Industry Growth. Thus the predictions by IMF, RAND Corporation, Dun & Bradstreet and others on India's Future Economic Growth will mean a definite extension of the growth phase of cellphone / mobile telecom industry till 2020 as a consequence. Further India's population is expected to grow at more than 1% P.A. till 2020. RAND Corporation predicts that India's population will reach 1.656 billion by 2025, surpassing China. This means that cellphone Industry may not reach maturity period in the near future.

Table 4
India : Annual GDP Growth Rate & Total Cellphone Subscribers 2002-2011

Year	Annual GDP Growth Rate %	Mobile/Cellphone Subscribers In Crores
2002	4.3	.88
2003	8.3	2.63
2004	6.2	4.57
2005	8.4	7.36
2006	9.2	13.77
2007	9.0	22.30
2008	7.4	33.63
2009	7.4	51.45
2010	10.1	74.16
2011	6.8	89.00

Source : World Bank & TRAI Reports

Thirdly the ubiquitous emergence of the mobile phone as a platform for various M-Commerce uses like Banking Service, money transfer, billing services, utility payments and potential use of tourism, mobile phone for telemedicine, teleeducation teletrading in stock market and others have fuelled great expectation among Indian consumers. The

upgradation by service providers of the mobile technology with sophisticated features, and values added service has made the mobile phone an indispensable lifestyle device for the urban users and the M generation. with rising per capita incomes among this segment, there is a possibility of multiple devicess bought by the same customer for multiple uses or applications. Ex. one for office presentations, one for home communication, another for utility services, another for pure entertainment and so on. This growth phase may lead to demand for advanced devices with add on features.

The farsighted Govt. policies announced for the mobile sector like permission to service providers to Operate Global Mobile Personal Communication by Satellite (GMPCS), Public Mobile Radio Trunked Service (PMRTS) Voicemail/Audiotext unified messaging service, community phone service, national optic fibre network for brandband is bound to help the mobile service providers adopt NGN (Next Generation Networks) which allows "Convergence". This enables users to subscriber simultaneously to many service providers offering telephony, internet and Entertainment services. Wide adoption of Broadband Technology will hasten this process and ensure continuous growth of the mobile telecom sector.

The adoption of mobile devices for internet search and other internet based uses is fast catching up in India. With wide diffusion of 3G technologies, this segment is bound to grow into a big market for service providers in the very near future. The manufacture of dedicated devices is bound to extend the growth phase of mobile telecom sector.

The announcement of National Telecom Policy 2012 with Intentions of one nation one license, full MNP (Mobile Number Portability) Nationwide, one-nation free roaming, "Right to broadband" for citizens increase in rural teledensity will definitely spur the growth process and prolong the growth phase of the industry.

Deregulation has encouraged voice-data integration and has erased the artificial boundaries between "Mobile", "fixed " "Broadband", "Long distance" "Internet" and so on.

The optimism about mobile sector growth is best exemplified in the recent spectrum auction for 900 Mhz and 1800 mhz band in which all service providers enthusiastically participated and made record bids for more than Rs.63000 crores.

While it is definitely true that state owned BSNL and a few service providers are in the red, this is attributed by experts to the low tariffs and ARU (Average Revenue Per User), with proper pricing and marketing/segmentation policies, it is hoped that the service providers will wipe out the losses and take advantage of the exciting growth phase which the mobile/cellphone sector would experience for the next five to six years.

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