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An Analytical Study of Telecom Infra Industry of India

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Abstract

The rationale of this paper is to study the growth and future prospects of the recent business model of infrastructure sharing in Indian telecom industry. It discusses the various forms of infrastructure sharing which include active, passive and backhaul sharing. A study of the various passive infrastructure sharing companies in India is done. The various parameters of these industries in terms of tenancy ratio etc. are compared. A study of the various mergers and acquisitions taking place amongst the tower companies in India in past years is taken to understand the progressive trends and expected growth. The valuation of the deals over the years has been explored and the reasons for growth and slowdown are being evaluated. Conclusively various benefits of infrastructure sharing are discussed.

Keywords *– Passive infrastructure sharing, OPCOS, Telecom Industry, Solution Ltd.*

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1. INTRODUCTION

Mobile telephony in developing countries like India plays a pivotal role in not only connecting most corners of the map, but also spurting economic activity and development across the society. Its fast paced penetration in India is a story remarkably ready to be replicated across other continents and geographies untapped of telecom benefits. Whilst the growth for the Indian telecom sector has been rapid, the evolution of its business models has been equally dynamic. The mobile operator companies' (OpCos) instinctive priority was increasing subscriber base and, thus, the spotlight was more towards marketing their services. Speedy network expansion was the next point of focus, and active equipment service providers, the next natural partners of OpCos. This is when the eco-system needed another key partner to manage its backbone. Tower Cos brought in optimal utilization of infrastructure, and significant Capex saving opportunities for OpCos to help focus on increasing reach to their end-users.

Functioning of a Tower Infrastructure Company: A tower infrastructure company provides passive infrastructure on a sharing basis to telecom operators.

The role of a tower infrastructure company may be summarised as follows:

- Site planning, keeping in view the network rollout plans of prospective customers.
- Site acquisition, including entering into long-term agreements with land owners.
- Obtaining of necessary regulatory approvals.
- Erection and commissioning of tower and allied equipment.
- Provision of support services such as back-up power, air-conditioning and security.
- Provision of turnkey solutions to telecom companies such as sourcing of equipment, testing and maintenance.

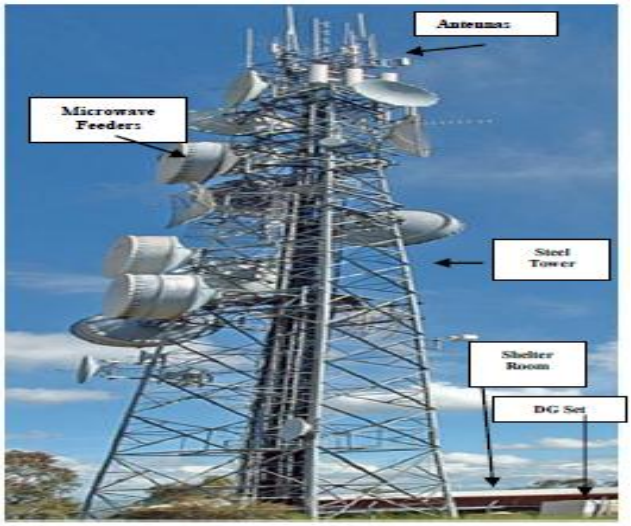


Fig. 1: Telecom Tower Structure with Key Components

- **Types of Towers:** Telecom towers are broadly classified on the basis of their placement as Ground-based and Roof-top.

(i) Ground-Based Tower: Erected on the ground, ground-based towers (GBTs) are taller (typically 200 to 400 feet) and are mostly used in rural and semi-urban areas because of the

easy availability of real-estate space there. GBTs involve a capital expenditure in the range of Rs. 2.4 to 2.8 million, depending on the height of the tower.

(ii) Roof-Top Tower (RTT): Roof-top towers (RTTs), which are generally placed on the roofs of high-rise buildings, are shorter (than GBTs) and more common in urban and highly populated areas, where there is paucity of real-estate space. Typically, these involve a capital expenditure of Rs. 1.5 to 2 million.

It is the height of a telecom tower that determines the number of antennas that can be accommodated, which in turn determines the capacity of the towers, apart from factors such as location and geographical conditions (wind speeds, type of terrain, etc.). Hence, typically, while GBTs can accommodate up to six tenants, RTTs can accommodate two to three tenants.

Economics of the Model—Tower Infrastructure Companies

The key points relating to the working of tower infrastructure companies are discussed in following bullet list.

- **High initial capital investments:** On an average, while a roof-top tower involves a capital expenditure of Rs. 1.5 to 2 million; a ground-based tower requires a capital expenditure of Rs. 2.4 to 2.8 million. Given the high capital investments required in the business, tower companies are generally highly leveraged.
- **Stable and predictable cash flow business**: Once a tower asset is rented out, it usually generates a stable and predictable cash flow in the form of tower rentals from occupants over the term of the MSA between the two parties.
- **Low working capital requirement**: The tower business is also characterised by low working capital requirements, as most of the operating expenses (such as electricity and fuel and other variable operating expenses) are reimbursable by the tenants on actual basis. Moreover, the larger companies with a bigger and geographically spread out portfolio of networks may be able to get rentals for the towers in advance and also obtain better credit terms from their suppliers, thus further improving their working capital cycle.

High incremental profitability: The costs of operating a tower, particularly the ones borne by the tower company such as security and maintenance and ground rent, are largely fixed in nature. Thus each increment in tenancy is accompanied by a minimal increase in costs. This leads to a more than proportionate increase in profits for every increase in occupancy.

1.1 Telecom Infra Industry

India's 425,000 telecom towers require about 16.5 billion units of electrical energy and contribute upto 70 percent to the total operating costs in rural areas and 25 percent to the total operating costs in urban areas.

1.2 Initiatives

The need of adequate electric grid infrastructure in India is restricting other infrastructural developments like telecom, real estate, and transport among others. In excess of 2.6 billion liters of diesel is consumed by diesel generators at telecom towers annually to meet the energy demand-supply gap, emitting 7 million metric tonnes of carbon dioxide.

With the growing 3G and forthcoming LTE networks, the subscriber base is expected to grow to over 1.2 billion by the end of 2017. This growth will require 100,000 more towers to ensure network availability. The number of towers required to launch 4G services because of frequency band of 2300 MHz will be more than that required for 2G services.

Telecom infrastructure companies are turning to green power management solutions comprising demand management, supply management, and renewable energy adoption.

Activities like passive infrastructure sharing, replacement of old Base Transceiver Stations (BTS) with new generation BTS, usage of outdoor BTS, optimized cooling at shelter, usage of intelligent transceivers (TRXs), reduction of air conditioner load by using cold ambient air for shelter cooling and operating air conditioners using stored energy in the batteries to reduce diesel consumption, and carbon emission are some of the initiatives that have been implemented so far.
Technologies like Integrated Power Management Systems (IPMS), variable speed DC diesel generators (DC-DG) and fuel catalysts are few of the solutions that have been implemented to increase power source efficiency. Solar photovoltaic, wind power, fuel cell, and other renewable energy sources have been deployed in about 4,021 telecom sites in India.

1.3 Market Dynamics

The Indian telecom tower market is estimated at Rs. 20,000 crore for the year 2012-13, witnessing a growth of 20 percent over the last year.
Viom Networks operates a total of 40,000 towers as of March 2013. Disruptive solutions like lite-anchor sites will likely play an important role in the success of this IP-1 player as it will create compelling business propositions for the telecom operators.
Reliance Infratel is in discussions with three telecom players for a large infrastructure sharing deal. Currently, the company has about 50,000 towers.
Reliance Industries is the only pan-India 4G spectrum owner. The service rollout is reported to be in 2013 and its best option remains to lease towers from Reliance Infratel.
GTL is now focusing on improving the efficiency and tenancy of operations. The company is looking forward to the developments in the industry and the growth plans of operators, in terms of the much expected rollouts of the 4G-LTE and BWA roll outs.
Bharat Sanchar Nigam Ltd is planning to set up a new company to manage its more than 70,000 telecom towers. The company plans to give towers on lease to the private telecom service providers. The company has initiated the process of appointing a consultant for hiving off tower assets into a new company.

1.4 Growth Drivers

As smartphones, laptops, and other devices increasingly become integral to consumer's mobile experiences, mobile data demand is expected to grow between 25 and 50 times current levels within 5 years The Indian market is likely to mimic the trends in the mature markets of the United States and Europe, where the increase in the data usage has led to growth in the telecom towers that are required for maintaining the quality of experience.
Using 4G and BWA technology, operators can provide high speed data services to subscribers. With Internet penetration the growth of data services is expected to ride on easy availability of smartphones in India. The launch of these networks is expected to give further fillip to the requirement of telecom towers.

1.5 Infrastructure Status

Grant of infrastructure status to the telecom tower industry is expected to attract investments, access low cost funds, and draw tax benefits. The Cabinet Committee on Infrastructure has included telecom towers along with fixed line in the harmonized list of sub-sectors and an implementation committee consisting of representatives from RBI, SEBI, IRDA, and the Planning Commission has been formed. TAIPA will work with the implementation committee to bring commonality of interest to ensure rapid progression.

The telecom towers will be instrumental in driving broadband penetration to reach the rural hinterlands. While data will be the key driver in urban market, voice will still dominate the upcountry markets. Low rural tele-density of merely 39 percent is an indication of the scope that lies ahead.

2. COMPANY PROFILE

ACME Cleantech Solutions Ltd. formally known as ACME Telepower Ltd. (ATPL) provides comprehensive passive infrastructure solutions to wireless telecom players both in India as well as overseas. Focusing on innovation and R&D, ATPL has developed a range of innovative products that help to provide cost-effectiveness, energy-efficiency, integrated, passive infrastructure solutions etc., to telecom companies.

- ACME started its operations in 2003 as infrastructure supplier to Bharti Airtel with a 15 core member team.
- ACME has emerged as a leader in providing passive infrastructure solution in the telecom industry and is associated with almost all the prestigious players.
- Today the company is having a global presence with total on roll employee strength of about 900 and off roll strength of about 1200.
- ACME is also pursuing solar energy generation and is in process of establishing some of Asia's largest solar thermal power plants in Gujarat, Rajasthan, Odisha and Maharashtra.
- Other services being provided by the company include alternate energy and wastewater treatment and environmental impact solutions, which are geared towards energy.
- optimization and cost efficiency.
- The Global Energy Management Centre (GEMC) has been developed by ACME Tele Power Ltd. to help companies monitor energy consumption patterns from multiple sources. These patterns are analysed for usage, cost, carbon footprint in a number of ways that help to understand the energy optimization method.

2.1 About ACME

At ACME, the philosophy is to envision and develop technologies that not make great economic sense in terms of acceptability, efficiencies and return on investment, but also have a lasting impact on social well-being. The company firmly believe that any technology it develop has to be socially rewarding, through augmenting and enriching the environment. The principal idea is to make the 'green approach' financially rewarding.

2.2 Vision

Being the global benchmark for green energy solution.

2.3 Mission

Making the 'Green Approach' profitable.

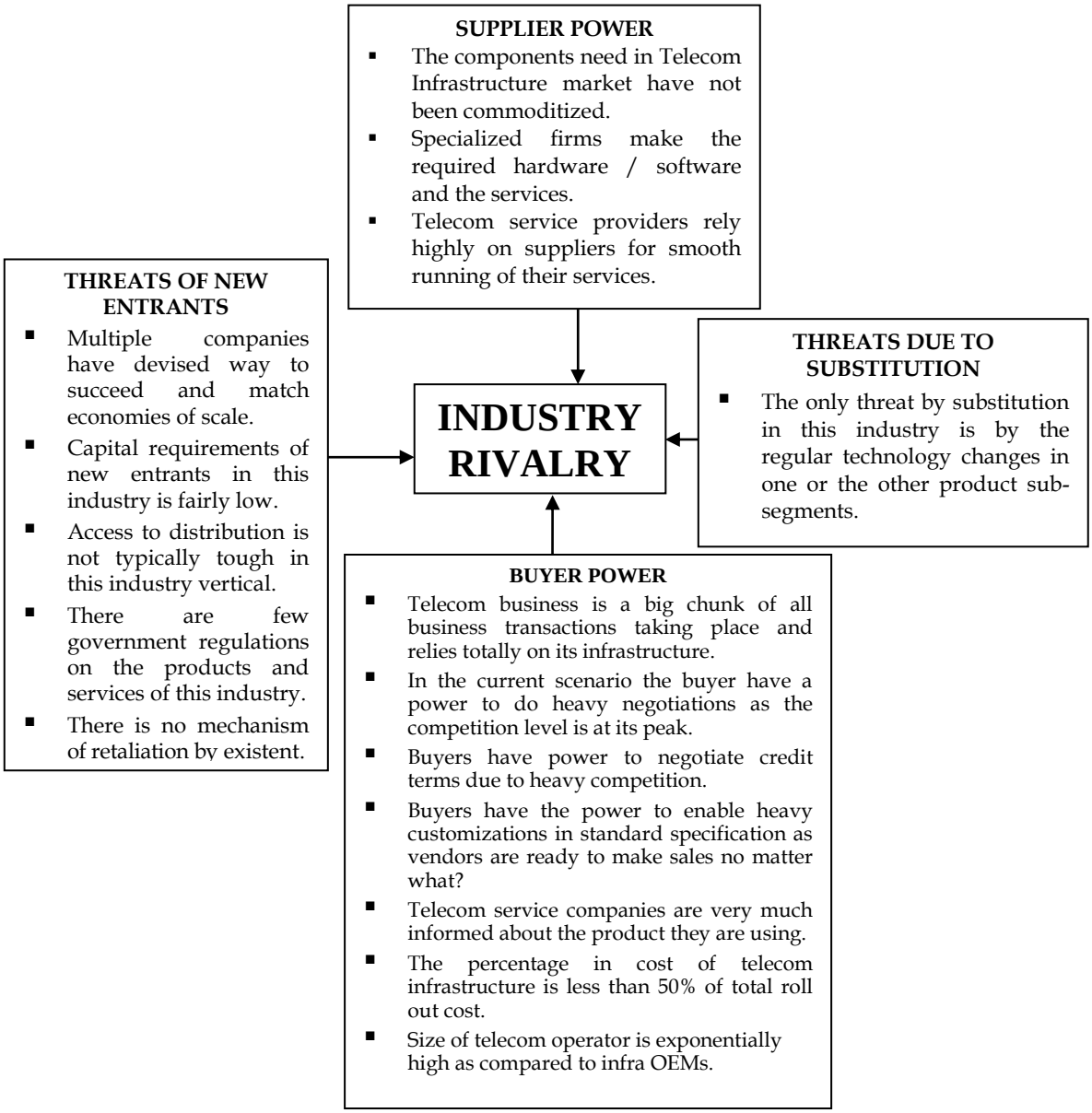
3. OBJECTIVES OF STUDY

- To get exposed to the industrial environment.
- To get a basic understanding of the culture, work ethics and trade related work practices at the Organization, i.e. ACME Cleantech Solutions Ltd., with which I was associated for a period of two months.
- To understand the processes, procedures and standards that the industry uses to ensure delivery to market, pricing and market positioning of the products or services that it undertakes.

- To refine my skills in conducting entry level industry analysis of a competent product/services industry.
- To experiment the skills required with identifying strengths and weaknesses of the particular organization.

4. INDUSTRY ANALYSIS

Porter's Model



5. SWOT ANALYSIS OF ACME

STRENGTHS	WEAKNESSES
▪ Good Integrated Manufacturing Facility ▪ Sustained / survived the Telecom downslide ▪ Country-wide Good Service Network ▪ IP understanding & IP organization ▪ Positive & Energetic Team ▪ Better placed for the integrated Solution selling ▪ Encouraging activities done on monthly basis like Employee of the month ▪ Customer care centre in ACME provides our customers a 24x7 availability for service in field ▪ Reach- A total of 34 offices of ACME across Globe ▪ Innovative Approach; products like PIU, DCDG, FCU, EMU have proved their existence in Market	▪ Weak & unstructured information of Market / Customer/Competition ▪ Inadequate Sales & Marketing structure for Telecom Domestic / International and Non-Telecom ▪ Quality inconsistency particularly in new products ▪ Lack of Subject Matter Experts (SMEs) ▪ Interdepartmental alignment is not up to the mark ▪ Ownership acceptance issues ▪ Lack of focused approach towards filling the gaps/issues in collective manner ▪ Compromise with Product Quality ▪ Customer response on poor after sales service support ▪ Poor training sessions for ground level staff ▪ Structural realignment needs to be initiated and implemented ▪ No concrete investment in R&D ▪ Need to focus on product feasibility and scalability (Customer point of view) ▪ Dependency on only 2 customers only ▪ Under utilization of factory/space, No long term approach & consistency in biz plan

OPPORTUNITIES	THREATS
▪ Probability of gaining business / market share by strengthening the relationship at all levels at Customers ▪ Business opportunities in upcoming Telecom International markets such as Africa, Latin America, Asia / ASEAN countries ▪ Opportunities to do in-house Fabrication of all sheet metal enclosures by adding little more investments in machineries. It will result in cut in development time,	▪ Consolidation of Operators / Tower companies will put more pressure on our Sales prices ▪ Loosing / falling reputation as front runner innovations / solutions providing companies ▪ Uncertainty of revival phase in Telecom ▪ Cheaper similar product range as of ACME from competitors like Mahindra makes it difficult to survive in market ▪ International Players with complete

cost delivery time and also quality of products ▪ Capturing the markets in Bangladesh ▪ External Expansion other than Africa ▪ To introduce New products in the market and phase out Old and obsolete products (Product Innovation)	telecom solutions; like Hawaii, ZTE ▪ Loss of Current Market Share and negative growth ▪ Low morale employee ▪ Price war with competitors ▪ Loss of existing manpower to competition (Technical and Non Technical)

6. INFRASTRUCTURE SHARING IN TELECOM INDUSTRY

The telecom industry is following the trend of infrastructure sharing as a business process so as to keep their investments low and to compete for the economy of scale. There are mainly three kinds of infrastructure sharing possible and deployed worldwide.

- *Passive Infrastructure* sharing is sharing non-electronic infrastructure at cell site. Passive Infrastructure is becoming popular in telecom industry worldwide. It includes the sharing of: Steel tower, BTS shelter, Power supply, Generators, Batteries, Air-conditioners, Fire extinguishers
- *Active Infrastructure sharing* is sharing electronic infrastructure. This includes: Spectrum, Switches, Antenna, Transceivers, Microwave equipment
- *Spectrum*-sharing concept is based on a lease model and is often termed spectrum trading. An operator can lease a part of its spectrum to another operator on commercial terms.
- *Frequency* Sharing *Base station* sharing is prospective while each operator maintains control over logical Node B so that it will be able to operate the frequencies assigned to the carrier, fully independent from the partner operator and retains control over active base station equipment.
- *Radio Network Controller (RNC)* sharing represents maintaining logical control over the RNC of each operator independently.
- *MSC and Routers* sharing or *backbone* sharing includes sharing switches (MSC) and routers (SGSN) on the operator's fixed network.
- *Network Sharing* where a network infrastructure is created expressly for the purpose of sharing resources.

Geographical Splitting

3. Backhaul Infrastructure Sharing Core network elements such as switching centers, GPRS service nodes, transmission equipment and all links connecting elements of the core network.

Different Passive Infrastructure Sharing Model

To bring to your notice Indian telecom operators primarily use the passive infrastructure sharing. Thus in the following section shows the various models of passive infrastructure sharing deployed in telecom industry.

- *Telcos owned Tower Companies:* This category consists of companies created by hiving off the tower portfolios of telcos into subsidiaries. Among operator-owned companies, while most are owned by a single telco, Exp: Reliance Infratel and Bharti infratel
- *Independent Telecom Tower Companies jointly owned:* This category consists of companies that are not owned or managed by telcos. These companies build, own and lease telecom towers to telcos. This is a fragmented segment with a large number of players. Exp: the joint venture, Indus

Towers Limited (ITL), the shareholding in which is held by three telcos: Bharti Airtel Limited, the Vodafone group, and the Idea Cellular group.

- *Inter-operator tower sharing:* Operators generally use bilateral arrangements to execute Inter-operator sharing of passive infrastructure. Typically, bilateral agreements are on an 'in-kind' basis, with no payments made between the parties. The two parties agree to install BTSs on each other's towers.
- *Third-party tower companies:* Independent companies assume responsibility for tower deployment and maintenance, entering agreements with operators that allow them to install their BTSs on the towers. In this model, the ownership of passive infrastructure equipment lies with the tower company. The decision to outsource tower operations to third-party tower companies typically involves a strategic shift to focus on service innovation and improving customer experiences. This aspect becomes critical in highly competitive telecom markets.
  - *Contract approach:* Infrastructure built in accordance to the requirements of the company as signed in the contract
  - *Anticipatory approach:* Tower companies build infrastructure and then lease it.

Exp GTL, QTIL, Essar telecom

Suitability These business models have shown varying degrees of success. Regional operators need to evaluate their strategic direction to determine which of the two suits them best.

7. TOWER COMPANIES IN INDIA

The major passive infrastructure sharing tower companies in India are:

- *Viom Networks* is a joint venture between Tata Teleservices, which owns 54 percent, and a consortium led by the Srei group.

It has over 40,000 mobile tower sites in India and a per tower tenancy ratio of 2 : 4,

- *GTL Infrastructure,* after acquiring Aircel's towers, had 32,650 towers and 41,700 tenants as on March 31, 2011. But it also has a debt of Rs 10,000 crore on its books. A merger will ensure scale and higher tenancies.
- *Indus Towers,* a joint venture among Bharti Airtel, Vodafone Essar and Idea Cellular, is the market leader with about 110,000 towers.

American Tower Corp. (ATC) ATC India owns or operates over 10,000 tower sites throughout the country, with an average of 1.8 tenants per tower. We have established relationships with major wireless service providers in India and now have a presence in all telecom circles in India.

Tower Company	Tenancy Ratio
GTL Infrastructure	1.2
Indus Towers	1.71
Bharti Infratel	1.5
Reliance Infratel	1.7
BSNL/MTNL	1.07
VIOM	2.4
ATC	1.8
ETIPL	1.9
Others	1.47
Total	1.63

Fig: 1

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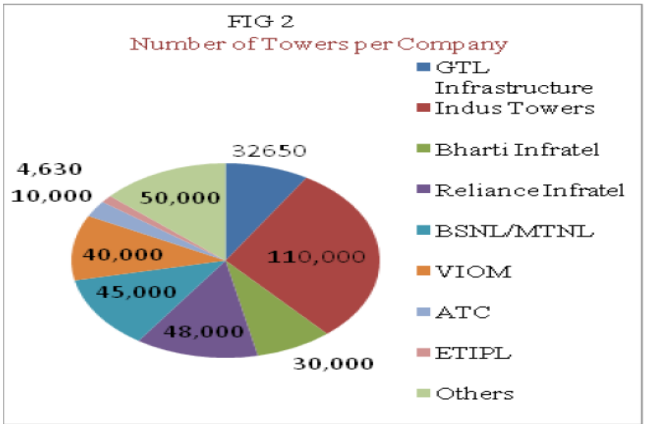
In the near future, we are also looking to provide customized collocation solutions through Distributed Antenna Systems (DAS), which support seamless in-building and outdoor wireless coverage. Globally, American Tower is a leading passive infrastructure provider in the Americas.

- *ETIPL* has a portfolio of 4,630 wireless communications tower sites, including a number of towers under construction. It has operations across 14 of the 23 telecom circles in India and has an industry leading tenancy ratio of TIL is an indirect wholly owned Indian subsidiary of American Tower Corporation, a leading independent owner and operator of more than 27,800 wireless and broadcast communication sites and distributed antenna systems globally.
- *Reliance Infratel*
- *Bharti Infratel*
- *Quippo Telecom Infrastructure Ltd*
- *Tower Vision*
- *Aster Infrastructure Ltd*
- *Indian Telecom Infrastructure Ltd*
- *KEC International*

FIG 2



8. MERGERS AND ACQUISITIONS AMONG THE TOWER COMPANIES

The robust development of the telecom and mobile services in India has lead to the occurrence of various deals in the industry. Although the passive infrastructure sharing in India is very recent nevertheless there have been a significant number of deals taking place amongst the tower companies. There have been a wide variety of deals in infrastructure industry which include deals of tower companies with other telecom operators, telecom solution providers, capital investment firms or banks etc. The following table fig. 3 enlists all the major deals of tower companies amongst them or with telecom operators the below table entries show that a significant number of mergers and acquisition have taken place in India even during the recessionary period. This indicates the high returns are availed by the telecom operators as a result of sharing due to which there have been M & A in this sector for years now. The number of deals was large during the years 2006 to 2010 but thereafter a slowdown has been observed in the mergers and acquisitions. The type of deal has been indicated showing a greater percentage of

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sales of infrastructure assets amongst the tower companies and operators. The deal between BSNL and Swan telecom was a roaming agreement.

M & A Among the Telecom Infrastructure Sharing Companies in India

Year	Target/ seller	Merger/ acquirer	Type of deal
2012	Indian Telecom Infrastructure Ltd	Ascend telecom Infrastructure Ltd	Merger
2010	Chennai Network Infrastructure Ltd	GTL Infrastructure Ltd	Merger
2010	Aircel Ltd	GTL Infrastructure Ltd	Sale of Assets
2009	Idea Cellular	Idea Cellular Infrastructure ltd	Sale of Assets
2009	Xcel telecom Private Ltd	ATC	Sale of Assets
2009	Reliance Communication	Reliance Infratel	Sale of Assets
2009	Viom Network	QTIL	Merger
2008	Tata Teleservices	21st Century Infratel Ltd	Sale of Assets
2008	Swan Telecom	BSNL	Agreement
2007	Idea Cellular Ltd	Vodafone Essar Tower Ltd	Sale of Assets
2007	GTL Ltd	France Telecom	Sale of Assets
2006	Reliance Communication	Reliance Infratel	Sale of Assets
2006	GTL Ltd	GTL Infrastructure Ltd	Sale of Assets

9. KEY FINDINGS

As the number of deals in the Indian infrastructure companies have varied over the years so have the deal amount of these mergers and takeovers.

The bar graph below shows the variations in the deal amount over last five years in the infrastructure sharing industry in India. The time from when these companies prevailed consistent deals have taken place.

Taking an overlook:

In 2012 the merger between Chennai network infrastructure and GTL infrastructure was a non cash merger followed by an investment of 400 crores. There have been no significant deals in 2011 however. In 2010 there had been a boom in the deals and their amounts when GTL bought the towers of Aircel for 8400 crores.

In 2010, ATC bought the assets of Xcel telecom for 800 to 850 crores. Another big deal in the year 2009 was the merger of QTIL and Tata tele services which closed at 2367 crores.

From 2006 to 2008 there had been significant deals such as that between Idea cellular and Vodafone Essar Towers Ltd.

It has to be observed that only the deals amongst the tower companies and between telecom operators and tower companies have been considered.

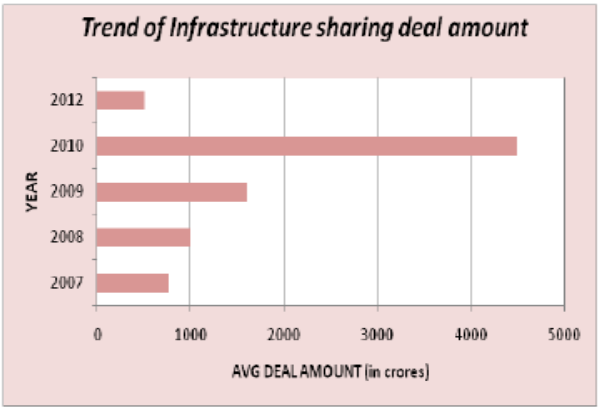

Fig. 4 : Comparison of the average amount of passive infrastructure sharing deals (only tower companies) over last five years

Benefits of Passive Infrastructure Sharing

- *Reduced Capex:* Telecom business is heavy on Capex, and as much as 40-60% of the Capex is utilized for setting up and managing the Telecom infrastructure By sharing infrastructure, Operators can optimize their Capex, and focus on providing new and innovative services to their subscribers.
- *Reduced Opex:* By outsourcing the day-to-day management of your Telecom infrastructure to Infratel, your Opex costs are hugely reduced. The cost-savings can be used to provide innovative services, and improve customer satisfaction.
- *Reduced Time to Market:* By leveraging existing Infrastructure that are deployed in active Telecom circles, a new operator can drastically cut down the time taken to begin operations. The resulting savings in Capex can then be diverted towards Marketing and promotional activities which are crucial in the initial months.
- *Increased Connectivity:* Deployed tower infrastructure in rural and remote locations which are characterized by erratic power supply, poor access, difficult terrain and lack of adequate backup saved the hassle of operating in such conditions, and enables increase in penetration.
- *Highest uptime:* The use of efficient processes and superior monitoring ensures minimum downtime for operators.
- *Cost and energy efficiencies:* One of the most significant implications of towers sharing is that the reduced number of towers reduces the emissions and hence the diesel consumption. The concept of *green tower* has also come into existence.

10. CONCLUSION

The paper clearly reflects the various kinds of infrastructure sharing in India. Due to cost benefits attained by telecos due to sharing has lead to various mergers and acquisitions even during recession period. The *slowdown* in the growth of this sector after 2010 can be attributed to the 2G scam in the Indian telecom sector due to the licences of the various telecom operators were cancelled by SC and many operators were facing trials. In spite of these hurdles the Indian

telecom industry is yet to see many more such deals between the tower companies and also to avail the benefits of active infrastructure sharing which is only in nascent form in India today.

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