



Symbiosis Institute of Telecom Management, Pune
Constituent of Symbiosis International (Deemed University)

Report on Research Project (RP)

Risk Postures of Selected Telecom Companies in India

Towards partial fulfilment of requirements for award of
MBA in Telecom Management

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Certificate

This is to certify that the research project titled

Risk Postures of Selected Telecom Companies in India

Is a bonafide work carried out by within-named & within-signed students of 2016-18batch

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ABSTRACT

The Telecommunications Industry of India is one of the vast and leading industries in the world connecting different parts of the country through various modes like telephone, radio, television, satellite, and internet. The Telecom Regulatory Authority of India governs this industry by providing a regulatory framework and favorable environment for its efficient operation. The Indian telecom industry stands as the second- largest in the world due to its rapid advancement and is in cut-throat competition with the telecom industries of the other developed countries. The telecommunication services offered by this industry are easily accessible at affordable prices to the customers of urban and rural areas of India. India's telecom network encompasses a highly developed and unique technology in the world. The present study has therefore been undertaken to analyze the history and evolution of Indian Telecom Industry while emphasizing upon its major segments, the Government Telecom policies followed for its systematic functioning and its growth and development in the present scenario along with the future opportunities for advancement.

OBJECTIVES

- Competitor analysis of selected telcos, thereby defining the risks associated with them.
- To understand the changing requirements of the customers and analyze them to arrive at potential risks to the telcos.
- To focus on emerging threats and the growth prospects of the telecom industry.
- To understand the marketing and operation strategies implemented by the TSPs.

METHODOLOGY

The report is prepared based on the following methodology: -

- Primary Research conducted by means of an online survey on the target population. Analytical tools used to infer results from the survey.
- Secondary Research did for obtaining data mainly from the corporate reports, journals, websites, etc. Comparative study method is done on these to form conclusions.
- Numerous white papers and research reports from industry stalwarts were referred to while preparing this report
- Analyzing the latest trends in telecommunication industry from the latest news, and identifying the competition amidst various latest technological trends.
- The illustrative data pertain to the images of various statistical data calculated through the popular market research tool. The data were gathered from a random sample representing the Indian customers. The majority respondents were based in Pune, Mumbai, Delhi, Bengaluru & Hyderabad.
- Questionnaires were circulated
 1. **Consumer responses:** Sample size = 123; Majority respondents = Working Professionals and Post Graduate Students.
 2. **Corporate responses:** Sample size = 17
- It is anticipated that this report will be valuable to the professional market researcher who is looking for a detailed reference source for determining the risks pertaining to the telcos.
- This would help the management of the telcos to create strategies and action plans to retain their current customers and to attract new customers hence, this report shall help to underscore valuable parameters.

FINDINGS

Telecom Industry - Introduction

The word "telecommunication" is a compound of the Greek prefix "tele" meaning 'far off, and the Latin "communicare", meaning 'to share'. In its current usage, it refers to the transmission of signals over a distance for the purpose of communication. In early days, communication between persons took place by means of drums, smoke signals, flags, etc. Emerging from such humble beginnings, the means now involve sophisticated high-speed, submarine optical cables laid on ocean floors and artificial satellites circling the Earth in space. As the demand for signal transmission has increased, the speed of transmission has also increased. Recently, scientists at Karlsruhe Institute of Technology in Germany have succeeded in transmitting 26 terabits (equal to about 700 DVDs or about 4 million average paperback books) of data per second at the distance of 50 kilometers. The telecommunications industry has an impact on every aspect of our lives, from the simple reality of enabling telephonic communication between people in different locations to enabling supply-chains to work seamlessly across continents to create products and fulfill demands. Telecommunication services are now recognized as a key to the rapid growth and modernization of the economy and an important tool for socio-economic development for a nation. Telecommunications in India can be traced back to the 19th century when the British East India Company introduced telegraph services in India. The past two decades have been considered as the golden period for the telecommunications industry in India with exponential growth and development in terms of technology, penetration, as well as policy. All this has paralleled with the liberalization in this sector and huge investment by both domestic and foreign investors. In today's information age, the telecommunication industry has a vital role to play. Considered as the backbone of industrial and economic development, the industry has been aiding delivery of voice and data services at rapidly increasing speeds, and thus, has been revolutionizing human communication.

The modern system of communications in India started with the establishment of telegraph network. In order to ensure telegraph network's exclusivity and establish government control over electronic communications, various telegraph statutes were enacted by the Government of India which laid the foundation of the present regulatory framework governing telecommunications (both wired and wireless). In early days, India witnessed increasing number of wired telephone connections. Even when wireless communication was introduced in the form of cellular phones, it was not immediately accepted by the Indian masses, mainly on account of the high price of cellular phones as well as high tariff structure prevalent at that point in time. Gradually, with the price of cellular handset as well as mobile (wireless) tariff-reducing there was increasing adoption of wireless communications. Today the Indian telecom industry is already witnessing the lowest telecom tariff globally.

Like elsewhere, telecommunications in India started as a state monopoly. In the 1980s, telephone services and postal services came under the Department of Posts and Telegraphs. In 1985, the government separated the Department of Post and created the Department of Telecommunications ("DoT"). As part of early reforms, the government set up two new public sector undertakings: Mahanagar Telephone Nigam Limited ("MTNL") and Videsh Sanchar Nigam Limited ("VSNL"). MTNL looked after telecommunications operations in two megacities, Delhi and Mumbai. VSNL provided international telecom services in India. DoT continued to provide telecommunications operations in all regions other than Delhi and Mumbai. It is important to note that

under this regime, telecommunication services were not treated to be a necessity that should be made available to all people but rather a luxury possible for select few.

In the early 1990s the Indian telecom sector, which was owned and controlled by the Indian government, was liberalized and private sector participation was permitted through a gradual process. First, the telecom equipment manufacturing sector was completely deregulated. The government then allowed private players to provide value-added services ("VAS") such as paging services. In 1994, the government unveiled the National Telecom Policy 1994 ("NTP 1994"). NTP 1994 recognized that existing government resources would not be sufficient to achieve telecom growth and hence private investment should be allowed to bridge the resource gap especially in areas such as basic services. As markets and telecom technologies started converging and the differences between voice (both fixed and wireless) and data networks started blurring, the need for developing the modern telecom network became an immediate necessity. Accordingly, private sector participation was allowed in basic services. The government anticipated that a major part of the growth of the country's GDP would be reliant on direct and indirect contributions of the telecom sector and accordingly the need for a comprehensive and forward-looking telecommunications policy was felt. This then paved way for New telecom Policy 1999 ("NTP 1999") which largely focused on creating an environment for attracting continuous investment in the telecom sector and allowed the creation of communication infrastructure by leveraging on technological development. The main objectives and targets of NTP 1999 were as follows:

- Availability of affordable and effective communications for citizens;
- Strive to provide a balance between the provision of universal service to all uncovered areas, including the rural areas and the provision of high-level services capable of meeting the needs of the country's economy;
- Create a modern and efficient telecommunications infrastructure taking into account the convergence of IT, media, telecom and consumer;
- Protect the defense and security interests of the country.

NTP 1999 allowed private operators providing cellular and basic services to migrate from a fixed license fee regime to a revenue sharing regime which made it financially viable for such operators to function in the market. Most importantly, the government recognized the necessity to separate the government's policy wing from its operations wing so as to create a level playing field for private operators. Accordingly, the NTP 1999 directed the separation of the policy and licensing functions of DoT from the service provision functions. The Government corporatized the operations wing of DoT in October 2000 and named it as Bharat Sanchar Nigam Limited ("BSNL") which operates as a public sector undertaking. Thereafter in 2002, the monopoly of VSNL also came to an end.

Telecom Services & Infrastructure in India

There have been some important regulatory changes which were introduced post liberalization which has provided an immense boost to the development of this sector. These regulatory changes by and large trace their roots to the objectives and vision set out by the Government in NTP 99.

Universal Service Obligations: It is an accepted fact that improved rural penetration is a key priority area for most developing countries. The concept of Universal Service Obligation ("USO") has been mooted by many

developing countries and is grounded on the principle that effective means of communication is a must for economic and social development. NTP 99 envisaged the provision of basic telecommunications services to all at affordable rates. Keeping in line with NTP 99 and the recommendations of the Telecom Regulatory Authority of India on the issues relating to the Universal Service Obligation the Universal Service Support Policy was framed and came into effect from April 2002. The Indian Telegraph (Amendment) Act, 2003 gave statutory status to the Universal Service Obligation Fund ("USOF"). OSOF is used to subsidize developments in the telecom sector in the rural areas such as: Increasing wireless network; providing public access through public or community phones; providing individual household telephones.

The resources for meeting the USOF are to be generated through a Universal Service Levy ("USL"), which would be a percentage of the revenue earned by the operators under various licenses. The USL presently is 5% of the Adjusted Gross Revenue earned by all operators except pure value-added services providers like voice mail and e-mail.

Unified Access Regime: Prior to the introduction of Unified Access Regime, basic and cellular operators were issued separate licenses to operate and provide basic and cellular services in different telecom circles in the country. The terms of the license agreement for a basic and cellular provider were distinct from one another with respect to the entry fee, spectrum allocation, and interconnection charges. Given the central aim of NTP 99 to ensure rapid expansion of teledensity, which coupled with various other factors such as the advances made in technologies and the reduction in the costs of providing telecommunications services made it imperative for the Government to introduce a regime wherein the provision of telecom services are made technology neutral. The Government issued Guidelines for Unified Access License in November 2003. Under unified licensing, a service provider can offer both fixed and mobile services under one license. Thus, while cellular operators can offer basic services, basic operators can offer cellular services all under the same license. Further, under unified licensing, the Government has no control over technology which is left to market forces. Unified licensing has greatly benefitted the consumers in terms of lower prices due to the economies of scale and affordable telecommunication services. Further unified licensing also simplifies the procedure of licensing in the telecom sector and ensures flexibility and efficient utilization of resources keeping in mind technological developments.

It should be noted that TRAI in its January 2005 Recommendations on Unified Licensing has rooted for a new licensing regime where there shall be no restrictions on usage of Internet Telephony or other IP enabled services provided that they are offered by operators with Unified License who have duly paid the prescribed registration charges and who will be subjected to license fees.

Interconnection: India today has a plurality of service providers and service networks. In such a situation, the efficient interconnection between a variety of access networks (such as fixed, mobile, national long distance and international long distance) has to interconnect to make national and international connectivity possible. In 2003 TRAI implemented the Telecommunications Interconnection Usage Charges Regulation to fix terms and conditions of interconnectivity between service providers and to regulate arrangements among service providers for sharing their revenue derived from the provision of telecommunication services.

The Government of India has the exclusive right to own and operate telecommunication devices and services and the manner in which the government can grant a license to third parties to carry out these functions. In this

respect, a license is a pivot on which this industry operates. A telecom license is an agreement between the Government of India i.e. the Department of Telecommunications (licensor) and the operator/service provider (licensee) and is only entered into upon the fulfillment of various conditions by the service provider. The provision of any telecommunication service in India without a valid license/registration is not permitted.

It should be noted that the government is bound to ensure that its licensing decisions are rational, transparent and free from arbitrariness. The courts have time and again upheld this principle of transparency. In the case of *Delhi Science Forum v Union of India*, the decision of the government to invite tenders from non-governmental and private entities for license to provide telecommunications services was challenged in a writ petition wherein it was contended that the sensitive nature of telecommunications mandated that it should not be placed in the hands of the private sector and any step in this direction would not only endanger the national security of the country but would not serve the economic interest of the country. The Supreme Court dismissed the writ and categorically held that the privatization policy adopted by the government is a necessary consequence of liberalization and the grant of telecommunications licenses to non-governmental organizations would greatly improve telecom services. However, the Supreme Court also emphasized the procedures adopted for such grant should be "reasonable, rational and in conformity with the conditions which have been announced."

The telecommunication services can be categorized into following main categories which are as under:

1. Unified Access Services ("UAS") and Cellular-Mobile Telephone Services ("CMTS")

The country is divided into 23 service areas consisting of 19 telecom circle service areas and 4 metro service areas for providing UAS and CMTS.

- **UAS:** UAS operators can provide, within their area of operation, wireline (basic) as well as wireless (cellular) services in a service area. Wireless services include Full Mobile, Limited Mobile, and Fixed Wireless services. Further, UAS operators can also provide voice mail, audiotex services, video conferencing, videotex, e-mail, Closed User Group (CUG) as Value Added Services over its network to the subscribers falling within its service area on a non-discriminatory basis. No service can be provided by the UAS operator for which a separate license is required. However, intimation before providing any other VAS has to be sent to the DoT and TRAI. Basic and Cellular Services Licensees are permitted to migrate to UAS License regime. The service providers migrating to UAS License will continue to provide wireless services in already allocated/contracted spectrum and no additional spectrum will be allotted under the migration process.
- **CMTS:** CMTS operators are free to provide, within their area of operation, all types of mobile services including voice and non-voice messages, data services and Public Call Offices (PCOs) utilizing any type of network equipment, including circuit and/or package switches that meet the relevant International Telecommunication Union (ITU) /Telecom Engineering Centre (TEC) standards. The UAS and CMTS operators are required to pay a certain percentage of Adjusted Gross Revenue ("AGR") as license fee apart from paying spectrum charges. Frequencies are assigned by the WPC wing of the DoT from the frequency bands earmarked in the applicable National Frequency Allocation Plan and in coordination with various users. Consequent upon the announcement of guidelines for Unified Access (Basic &

Cellular) Services licenses in November 2003, some of the CMTS operators have been permitted to migrate from CMTS license to UAS License.

2. National Long Distance ("NLD") and International Long Distance ("ILD")

- **NLD:** NLD service refers to the carriage of switched bearer telecommunications service over a long distance and NLD service licensee have the right to carry inter-circle traffic excluding intra-circle traffic except where such carriage is with mutual agreement with originating service provider. NLD service licensees can make a mutually agreed arrangement with the Basic Service Providers for picking up the traffic for the leg between Long Distance Charging Centre (LDCC) and Short Distance Charging Centers (SDCCs).
- **ILD:** ILD Service is defined as a network carriage (also called Bearer) service, providing the NLD operators in the country International connectivity to network facilities operated by foreign carriers in other countries. ILD service providers can provide bearer services so that end-to-end teleservices such as voice, data, fax, video, and multi-media can be provided by Access Providers to the customers.

3. Internet Service Licenses (ISP)

ISP licensees are primarily allowed to provide services such as internet access (through any method including IPTV) and internet telephony (which is a service to process and carry voice signals offered through the internet by the use of personal computers ("PC") or internet protocol based equipment). Currently, the ISP license allows limited internet telephony by permitting connections between the following:

- PC to PC (within or outside India).
- PC / a device / Adapter conforming to the standard of any international agencies like ITU or IETF etc in India to PSTN/PLMN abroad.
- Any device / Adapter conforming to standards of International agencies like ITU, IETF etc. connected to ISP node with static IP address to similar device / Adapter within or outside India.

4. Mobile Number Portability ("MNP")

MNP allows mobile subscribers to retain their existing telephone numbers when they switch from one telecom operator to another irrespective of mobile technology. India has long felt the need for MNP. In September 2009 TRAI introduced the Telecommunications Mobile Number Portability Regulations, 2009. As per the regulations, the subscribers would be allowed to retain their mobile number while moving from (within the same service circle):

- One access provider to another irrespective of the mobile technology / platform; or
- One cellular mobile technology to another of the same access provider.

Thus effectively a subscriber can move from a CDMA service provider to a GSM service provider in a seamless manner.

For the purpose of implementing MNP, the country has been divided into two geographical zones and MNP license has been issued to one operator in each zone provide centralized database, query response, and clearinghouse to enable correct routing and termination of calls by access-service providers and International Long Distance operators post MNP implementation. The DoT has issued a

license to two players for implementation of MNP services in the country in Zone 1 and Zone 2 respectively.

These developments have been implemented by the government in order to further the objective of creating and maintaining a level playing field in the industry and increasing completion. The implementation of MNP which was stated to have taken place by December 31, 2009, had been postponed to March 31, 2010, for all circles in order to enable the MNP operators and the service providers to be better prepared to implement MNP in an effective manner.

India is one of the world's fastest growing telecom markets and it continues to be amongst the world's lowest telecom tariff destinations. As such the implementation of MNP will ensure that every telecom mobile service provider offers mobile number portability to all its subscribers both postpaid and pre-paid on a non-discriminatory basis. The telecom operators on their part would have to incur huge expenses by way of capital expenditure and operational expenses in order to effectuate and operationalize MNP. With the Indian tariff structure already at the lowest in the world, the revenues of the telecom operators are likely to be affected with the implementation of MNP with subscribers having the freedom to migrate to better service providers. This, in turn, is likely to compel the telecom service providers to improve the quality of their service to avoid losing subscribers. This can be seen as maturing element of the Indian telecom industry and a natural step for the industry to go forward.

5. Other Services

There are certain telecommunication services where no specific license is required; however, a registration is required subject to fulfilling certain criteria. These include:

- **Infrastructure Provider Category-I ("IP-I"):** Under IP-I registration, a company can provide assets such as Dark Fibre, Right of way, duct space, tower, etc to licensed telecom service providers. This category was opened to the private sector only from August 13, 2000. There is no restriction on foreign equity, number of entrants, no entry fee and no bank guarantee requirement for providing such registration. Earlier, apart from IP-I, there was another category of infrastructure provider, Infrastructure Provider Category-II ("IP-II"). A license was issued to provide infrastructure services by way of IP-II. Under the IP-II license, the service provider could lease/rent out/sell end to end bandwidth i.e. digital transmission capacity capable to carry a message. This was opened to the private sector with effect from August 13, 2000. Although there was no entry fee and a number of players for IP-II there were certain restrictions on the foreign investment front. However, issuance of IP-II licenses has been discontinued since December 14, 2005.
- **Other Service Provider (OSP):** Call centers (international and domestic), BPOs, Network Operation Centres, Vehicle Tracking Systems, services with respect to telebanking, telemedicine, tele-education are allowed to operate (with 100% FDI) upon registration as "Other Service Provider" or "OSP" with the DoT. These OSP's operate the service using the telecom infrastructure provided by licensed telecom service providers. There is various security-related obligations imposed on various telecom licensees (as discussed later in this paper). As security-related conditions are applicable to all licensed telecom service providers, the security conditions shall not be separately enforced on OSPs. An interesting development in the OSP registration policy is the amendment that was announced on August 5, 2008, which

officially recognized the "work from home" provided certain financial guarantees are provided.

6. Telecom Infrastructure

The telecom sector is a very capital intensive sector and involves high-value investments. The telecom licenses permit the telecom operators to share passive infrastructure such as building, tower, dark fiber, etc. However, the procurement and maintenance of active infrastructure prove to be a very expensive affair for operators. With the robust growth in the telecom sector, the government recognized that infrastructure sharing would greatly reduce costs for the operators. The DoT accepted TRAI's recommendations and issued Guidelines on Active Infrastructure Sharing in April 2008. Active Infrastructure consists of antennas, cables, radio access networks, transmission systems and other technical equipment which are required to transmit mobile calls. We discuss some of the salient features of the guidelines:

- Service Providers can share active infrastructure based on mutual contractual arrangements.
- Sharing of allocated spectrum is not permitted.
- Infrastructure Providers Category-I (IP-I) are allowed to seek clearance for erecting towers with or without an agreement with licensed service providers.
- No subsidy shall be paid if the newly erected tower is not shared with existing service providers.
- Reduction in the timeframe for the SACFA to clear applications for setting up of towers and other related infrastructure from 90 days to 45 days.
- Infrastructure Providers will have to set up the infrastructure site(s) within one year from the date of signing of the agreement with Universal Services Obligation Fund ("USOF") if the subsidies under USOP need to be availed. Further, Infrastructure Providers and telecom service providers can jointly bid for projects undertaken by USOF.

As a result of this policy, new entrants who are allotted spectrum by the WPC can easily launch their telecom services within a short period by taking the assistance of the existing active infrastructure of other telecom service providers will not have to incur huge infrastructural costs.

Over the years, Bharti Airtel has made huge investments to create the cellular infrastructure across the country. Soon it hived off its mobile tower business into a separate subsidiary to become a major player in the tower sharing business. Another major player, Reliance Communication (RCom), has already hived off its tower business into a separate subsidiary. With increasing operational and infrastructure costs, many telcos are now joining hands to share their existing infrastructure. Some of the deals include the following:

- In December 2007, Quippo Telecom acquired 1000 towers from Spice Telecom.
- In January 2009, Quippo Telecom and Tata Teleservices Limited merged its passive infrastructure businesses to create one of India's largest Independent Telecom Infrastructure Company.
- In February 2009, Quippo Telecom and Tata Teleservices Limited's Wireless TT Info Services Limited (WTTIL) signed up a tower sharing agreement with Unitech Wireless. Under this agreement, Unitech Wireless will lease tower infrastructure from WTTIL and Quippo

Telecom across India. Etisalat DB, which has acquired a 45% stake in Swan Telecom has signed a 10-year tower sharing deal with the hived off infrastructure arm of RCom.

Operators In Telecom Industry

Table 1 Operators In Telecom Industry Analysis

Srl No.	Companies	Subscriber	Market Share
1	Airtel	28,20,47,469	29.80%
2	Vodafone	20,74,44,014	21.91%
3	Idea	19,01,55,164	20.09%
4	Jio	12,85,80,607	13.58%
5	BSNL	4,36,18,091	4.86%
6	RCom	8,87,51,978	9.38%
7	TTSL	60,12,447	0.38%

What is Risk?

Risk implies future uncertainty about deviation from expected earnings or expected outcome. Risk measures the uncertainty that an investor is willing to take to realize a gain from an investment.

Risk in Telecom Industry

As the increasingly diffuse yet interdependent ecosystem of telecoms, technology, and media continues to evolve, the risk universe for communications operators is changing rapidly. As they formulate and execute their strategies to target and occupy parts of this ecosystem, operators have to ensure that their understanding and management of the risk to their business keeps pace.

The evolving industry ecosystem presents many major opportunities for operators. However, each individual company's ability to understand and manage the corresponding risks will be critical to identifying and seizing those opportunities. Unless an operator's growth strategy has a solid underpinning of risk management, it will never be robust or sustainable. This publication aims to help operators build and reinforce that sound platform.

The top 10 business risks in an industry sector by dividing risks into four quadrants that correspond to Risk Universe model. These quadrants are:

- **Compliance threats** - originating in politics, law, regulation or corporate governance
- **Operational threats** - impacting the processes, systems, people and overall value chain of a business
- **Strategic threats** - related to customers, competitors, and investors
- **Financial threats** - stemming from volatility in the markets and in the real economy

1. Failure to shift the business model from minutes to bytes

As value shifts from minutes of usage to volumes of data, operators need to move away from their legacy strategies focused on customer retention, which has had the effect of commoditizing the value of minutes

and bandwidth in customers' eyes. Instead of concentrating on fighting churn, operators need to target revenues from new services that tap into rising demand and master a wider array of charging models to monetize their services.

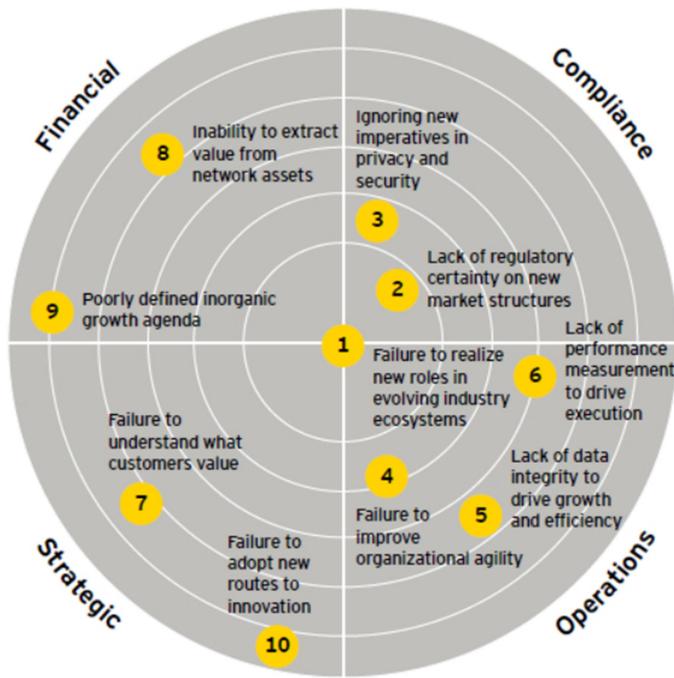


Figure 1 Risk Quadrant

2. Disengagement from the changing customer mindset

With global technology brands now top of mind for consumers and technology cycles quickening, operators need to understand and respond to fast-changing customer expectations and behaviors if they are to fight off the competitive threat from OTT providers. This will require operators to communicate the underlying value of the network and the sources of added value to differentiate their offerings in new service areas. Innovation in the service model could also be used to build brand loyalty in the same way technology players have done.

3. Lack of confidence in return on investment

While operators have proved adept at managing capital investment and balancing it flexible with free cash flow and dividends, it is increasingly clear that tight capex control can limit their ability to grow new services quickly. So they need to maintain their commitment to investing in growth opportunities while tracking technology and consumer developments closely to ensure they target their financial investments in the right areas at the right time.

4. Insufficient information to turn demand into value

To drive profitable customer propositions and improve their time to market for new services, operators need accurate, timely and comprehensive business intelligence and customer analytics, underpinned by aligned and integrated operational support and billing systems. These elements pave the way for efficient growth by enabling operators to improve decision-making, helping them understand customer changes before competitors and allowing them to reuse network data in collaborative partnerships.

5. Lack of regulatory certainty on new market structures

Uncertainty over regulators' approaches to new market structures is undermining operators' willingness to invest. It is increasingly crucial for governments and regulators to adopt investment policies to sustain the sector's momentum and for operators to form workable stances on a range of issues, including the increasing interrelationship between fixed and mobile policies. At the same time, all these groups must work together to achieve greater clarity over regulatory approaches.

6. Failure to capitalize on new forms of connectivity

New types of communication such as M2M are redefining the concept of connectivity, requiring operators to adopt new strategies. Instead of continuing to think of connections in human terms, operators need to develop new understandings of connectivity and target new growth areas. This will mean identifying core competencies for use in composite value chains and delineating clearly between the need to build capability and the need to partner or outsource.

7. Poorly formulated M&A and partnership strategy

Although M&A activity has accelerated recently, its nature and risks have changed. Footprint control increasingly takes precedence over footprint growth, while political, macroeconomic and regulatory risks are increasing. But acquisitions and partnerships are essential for success in emerging market segments such as mobile advertising and cloud computing. Operators need to discriminate clearly between when they need to acquire and when they should partner. The ability to sustain partnerships will emerge as a strategic differentiator. Effective management and implementation of M&A and partnerships offer significant operational upside to telecommunications players.

8. Failure to define new business metrics

The metrics and key performance indicators that operators use to manage their operations internally and communicate their performance and prospects externally have not kept pace with the shift in business models from minutes to bytes. Many internal metrics are still service- and network-oriented and do not provide enough granularity to improve the customer experience. Also, commonly used external metrics such as ARPU fail to give investors the full picture. Operators urgently need to define a new set of metrics that put the customer first and enhances communication of financial performance.

9. Lack of privacy, security, and resilience

Customers place more trust in operators than in social networks, regarding operators as security guarantors across a range of services. Yet they still hold operators responsible for threats from third parties, even for mobile malware attacks and rogue apps. Operators should work closely with governments to clarify their responsibilities in areas such as anti-terrorism and content for children, and collaborate with suppliers and partners to tackle privacy and security issues in new service areas such as cloud security and mobile apps.

10. Lack of organizational flexibility

With their organizational structures subject to forces such as the shift to data services, the rise of partnering and the imperative for speed to market, operators have already made significant changes to their organizations. But more is needed. Operators now need to align their business units to maximize the economies of scale and scope in their geographic footprints while reconciling the competing forces of geographic sensitivity and global strength.

Industrial Analysis

According to the industry experts and a few employees of the telcos that were chosen for the research, the following data were analyzed and were considered. The analysis made is from the data we collected from the interviews that were conducted.

Enhancing customer experience, and an end to end customer relationship management are two most prominent challenges that are faced by today's operators. Operators are facing this as the customers have n numbers of options. The customer can easily change the operator if dissatisfied with the services given to them. According to the interviews, it is very difficult to sustain prepaid customers when compared to the post-paid customers. Thus, it is difficult to sustain the fierce competition in the market, adding on to this because of the price war also enhancing the customer experience has become a problem. Therefore, the operators need to improve their customer relationship management processes to enhance the customer experience according to their customer's usage.

Churn reduction is the major factor that the operators are focusing on to improve the margins. The number of customers defines the future of operators, as they decide whether the Telecom service provider would sustain in this market or not. After Jio entering the market, this has become more evident and the fight to gain customers has become massive. Thus, the focusing on customer retention has become important. While the telcos focus on the customer retention, the agenda is to increase the revenue. Winning profitable customers from competitors is also an important factor that the operators are looking into for improving the margins.

"Knowing which customer to engage with and when" is the most important factor. Customers decide the future of the telcos, thus the operators should understand the needs of them. CRM systems are placed in an organization to understand what, when and then when does the customer need a service. To do so they need to target the customer and understand the needs carefully. There are so many channels to provide services, the telcos must understand which one to use when and how the services can be provided to a customer.

Consolidation, it takes place due to competition, regulatory uncertainty, and CRM as the three biggest risks in Telecom industry. Consolidation may cut down the number of jobs thus affecting the QoS. Jio has created a price-war that has brought this telecom industry under pressure. The reduced price has attracted a lot of customers today them, making the customer retention even difficult job for the operators. With the usage of data increasing tremendously, data security and privacy have become an important factor. The regulatory uncertainties do exist due to the prevailing regulatory scenario in the country.

Most of the corporates replied that Consolidation that is taking place due to the intense competition, Customer Relationship Management (CRM) and Monetization of Big Data as the three biggest risks the Telecom Industry is facing today. While consolidation might lead to many job cuts in the industry, its impact can be seen on the QoS. The new entrant has created an intense price war which stressed the industry that was already reeling under debts. The price war triggered also made the customers get attracted to other operators and customer retention has become tougher than ever before. With the exponential growth in the usage of data, the monetization of data that is being generated without violating the privacy and security of the users is another huge challenge before the industry. The existing technologies also face the risk of getting obsolete before they

turn profitable as the hyper-competition can lead any company to gain the first mover advantage of the new technology. The regulatory uncertainties do exist due to the prevailing regulatory scenario in the country.

Most of the corporate felt that enhancing customer experience is the most significant business challenge in the industry today. This is because the customers today have numerous options available, both in the operators and the services offered by them. A customer can switch between operators at ease if he/she is dissatisfied. So, to reduce the churn, the operators have to enhance the customer experience so that the customer stays with them. This also helps them to sustain the fierce competition in the market as it is the market share that is going to help the operators at the later stages of the price war. So, the operators are improving their CRM processes to enhance the customer experience based on his/her service usage patterns. With the decrease in revenues due to the price war, the telcos are also looking to reduce their costs, which is another huge challenge for them. The reduction in costs can boost the telcos, especially at a time when the revenues are falling drastically.

As evident from the price war, churn reduction is the major factor that the corporate is focusing on to improve the margins. The total number of customers with an operator is the critical factor that determines the future of the operator at the end of the price war. So, the telcos are focusing on customer retention. While retaining the customers is critical, it is also important that the existing customers are sold additional services as it helps in enhancing customer experience and also improving the revenue. Winning profitable customers from competitors and minimizing the frauds are also important factors that the corporations are looking for to improve the margins.

Most of the corporate considered that “knowing which customer to engage with and when” is the crucial thing in their efforts to deliver. As the customers are the ones who decide the fortunes of the telcos, the operators are very careful in knowing their customers. Efficient CRM systems are in place to know which customers to target and also at what time. This can be determined by analyzing their usage patterns. The CRM systems are efficient only if they capture the right data for each customer group. Hence capturing right data is also crucial in delivering according to the corporate. With the availability of different platforms, customers prefer a few more than others. So, the right channels, which are relevant must be chosen to provide services to a customer.

Airtel

1. Financial risks:

- As it is clearly visible on the balance sheet of Airtel India that the increase in revenue is 1% from Rs. 21938.7 crores to Rs 22773 crores which is very less despite increase in market share which shows a decline in ARPU.
- In the year 2106-17 there is a loss of 8509 crores compares to profit of 10254.4 crores which are because of increase in exceptional items in the P&L statement. This loss can be an indicator of problems coming in future.
- In last two years, there is an increase in long-term debts which results in increased cost of financing and can be a significant factor for hampering the growth of the organization.
- Decreasing ARPU and churning of customers is also a matter of concern which will eventually slow down financial growth.
- Decrease in IUC from 14 paise to 6 paise will result in a decrease in revenue.

- Increase in cost structure (capex/operating expenditure) ahead of revenues (Operational) impacting liquidity.

2. Operational Risks:

- Gaps in internal controls (financial and nonfinancial) Airtel serves to over 372 Mn customers globally with a monthly average of 156 Bn minutes of voice and 90 Bn MBs of data, on wireless networks located at more than 182,000 sites. Gaps in internal controls and process compliances not only lead to wastage, frauds, and losses but can also adversely impact the brand value.
- Non-compliance with subscriber verification and KYC regulations . Regulators are introducing more stringent subscriber verification and KYC guidelines, including verification processes capturing biometrics, such as retina scan, fingerprints, among others. The quality of KYC documents is also being stringently scrutinized. Noncompliance with these guidelines entails severe penalties, which is reflected by instances of such actions by regulators on other operators.
- Inadequate quality of customer lifecycle management from acquisition to churn.
- Poor quality of networks and Information Technology including redundancies and disaster recoveries.

3. Strategic Controls:

- Issues arising out of emerging businesses and new technologies. Evolving technologies result in a change in customer value propositions. The quality of internet experience, especially in a seamless manner and indoor environment has emerged as a key competitive parameter. In coming future which will be the key distributor for service providers.
- Entry of a new operator in India into an already crowded telecom market is a potential risk. Disruptive pricing 102 Bharti Airtel Limited Annual Report 2016–17 through ‘free offers’ in the short term and creation of surplus capacities will lead to pricing pressures in the industry; and at the same time accelerate customer migration from legacy 2G/3G networks. This may put pressure on margins/cash for the Company in the short term.

4. Legal & Compliance Risks:

- Adverse regulatory taxation or fiscal taxation developments including risks related to tax positions.
- Regulatory and political uncertainties Such conditions tend to affect the overall business scenario. In addition, regulatory uncertainties like escalating spectrum prices, call drops/EMF penalties, among others, are potential risks the business faces.

5. Technical Risks:

- Not providing VOIP technology will have an adverse effect on the balance sheet and also provides an edge to the competitors.
- Delay in up-gradation of the network will result into bad QOS and can also result into churning.

Vodafone

1. Financial Risks:

- *Declining revenue*
- Service revenue in FY 2015-16: €6,135 million
 - Service revenue in FY 2016-17: €5,853 million

- Service revenue in Q1, 2016-17: €1,510 million
- Service revenue in Q1, 2017-18: €1,385 million

Vodafone India's service revenues have decreased significantly in the FY 2016-17 and continue to decline even in Q1, 2017-18. The price war and competition in Indian Telecom industry have driven Vodafone India's revenues to decline by €282 million Y-o-Y. But even more risky is the fact that Vodafone India's revenue in the first quarter of 2017-18 slipped by €125 million. Vodafone India's higher dependency on mobile services may prove costly if the prices of the cellular services continue to decline. The company might have to diverge into other sources of revenue like IoT and cloud services as it has been doing in Europe.

➤ *Impairment loss of €4,515 million in FY 2016-17*

The technical definition of the impairment loss is a decrease in net carrying value, the acquisition cost minus depreciation, of an asset that is greater than the future undisclosed cash flow of the same asset. An impairment occurs when assets are sold or abandoned because the company no longer expects them to benefit long-run operations (Investopedia). Year ended 31 March 2017 includes a gross impairment charge of €4.5 billion (2016: €nil) recorded in respect of the Group's investment in India, which together with the recognition of an associated €0.8 billion deferred tax asset, led to an overall €3.7 billion reduction in the carrying value of Vodafone India (Vodafone Annual Report, 2017). Vodafone group's estimate that assets worth €4,515 million in India might be no longer beneficial in the long run is very costly and pushed the group into an operating loss of €4,171 million.

➤ *22% decline in Y-o-Y voice revenue:*

Vodafone India's voice revenue fell 13% in the fourth quarter as the benefit of higher incoming volumes and a larger customer base was offset by a 22% year-on-year decline in voice prices as the market moved to unlimited voice propositions (Economic Times, May 2017).

➤ *Net Debt of €8,114 million*

According to the Vodafone Group's 2017 Annual report, Vodafone India's debt was a staggering €8,114 million. The company, just like other operators in India, is reeling under the financial stress. The declining revenues, possible reduction in Interconnect Usage Charges (IUC), and 3% increase in indirect taxes due to the implementation of GST are also seen as risks that might strain the company further.

2. Market Risks:

➤ *Declining Market Share:*

Vodafone India's market share was 17.87% in March 2017 with a decline of 0.83% compared to the same time last year. The decline is attributed mainly to the new entrant that gave away freebies to increase its market share. Vodafone India's customer base grew from 198.04 million in March 2016 to 209.06 million in March 2017. Though the company added 11 million new subscribers, its market share reduction of 0.83% depicts the pace at which Reliance Jio has increased its customer base in a short span. The company showed signs of recovery in the Quarter ending June 30, 2017, by adding 2.3 million data connections, taking the total to 69.2 million connections.

➤ *Increased data usage but declining ARPU:*

The total amount of mobile data usage for the quarter increased to 237,855 Terabytes (TB) in Q1FY18, which is a whopping 83% Q-o-Q growth when compared to 129,424 TB usage in the previous quarter. In the same quarter last year, data usage touched 100,541 TB and has been growing at a significant rate since then (Medianama, 2017). Vodafone India's ARPU in Q1, 2017-18 was ₹141. The ARPU was ₹182 during Q1, 2016-17. ARPU has been declining continuously ever since the launch of Reliance Jio despite the increase in data usage. The trend has been the same with other operators as well.

3. Operational Risks:

Vodafone India is carrying out organizational changes at the top. Suresh Sethi, who worked as the head of Vodafone M-Pesa, has already left Vodafone. He is to be followed by a few other people. Many top-level executives have been replaced or relocated for business purposes. The merger with Idea has triggered a panic in the middle-level employees of both the companies about the possible layoffs, differing working styles of both companies, and how they will have to adapt to different cultures (Niharika Banerjee and Devina Sengupta, 2017). The Vodafone Group's plan to take the Indian assets off its books would likely increase its EBITDA margin, as its Indian operations are likely to fall below the company average with pressure from Reliance Jio (Allan C Nichols, 2017).

4. Compliance Risks:

- Spectrum worth more than 60 billion rupees could be at stake due to the Vodafone – Idea merger (Credit Suisse Group, 2017). The two carriers would probably sell the spectrum at a lower price than originally purchased (Sunil Tirumalai and Viral Shah, 2017).
- The combined entity would have to surrender excess spectrum in as many as five circles in Gujarat and Maharashtra in 2500MHz band and in Gujarat, Kerala, Maharashtra, Haryana, and UP (West) in 900MHz band. The department of telecommunications' guidelines to merger states, "No refund or set-off of money paid and/or payable for excess spectrum shall be made" by the government." In such a scenario, the only option to generate funds is by selling the excess spectrum to competitors, in turn strengthening their spectrum portfolio. Also, in absence of choice, the merged entity will be unable to command spectrum sale prices.
- For Vodafone India and Idea Cellular Ltd combined, the subscriber base share will exceed the set limit of 50% in as many as nine circles and the revenue market share will surpass the 50% threshold in at least five circles, which are key circles. Credit Suisse in a note issued on 30 January estimates the revenue loss due to these guidelines to be worth ₹6,000 crore or more in 900 MHz band alone.
- The possible reduction in IUC charges is also a risk for the combined entity as it will benefit the operators with lower market shares and leads to a decline in revenue of larger operators.
- Provisioning claim for withholding tax – there continues to be uncertainty regarding the resolution of the legal claim from the Indian authorities in respect of withholding tax on the acquisition of Hutchison Essar Limited.

5. Technology risks:

- Reliance Jio's content focused ecosystem is an important reason for its success. It has its own content delivery platforms which made the users spend more time on the network. Bharti Airtel is also in plans to increase the content over its network. It's bidding for IPL Auction is also conveyed

the same. Vodafone India has to increase the content if it has to keep its customers engaged and reduce the churn.

- Bharti Airtel has signed a pact with Korea's SK Telecom for standardizing 5G and also providing IoT services to Indian customers. Reliance Jio also has its Jio fence system which makes use of IoT for restricting the automobiles within a specific geographic location. Vodafone is already providing IoT and Cloud services in Europe. It might have to extend the services to India to improve its business.
- Vodafone India provides 4G services in 18 circles of India. This was made possible due to the spectrum purchased in the auctions held last year. It can now provide 4G services in 9 new circles. The company has to speed up the process of 4G service provisioning in as many circles as possible for a PAN India presence.
- While Jio is providing completely VoLTE services, Airtel has already started implementing the VoLTE in Mumbai Circle and is planning to make VoLTE services PAN India. As VoLTE services are completely IP based and the voice calls over VoLTE networks are comparatively cheaper, implementation of this technology enables both Jio and Airtel to provide cheaper services. Vodafone India is still lagging in implementing these new technologies.

Idea Cellular

1. Financial risk:

- Declining revenues

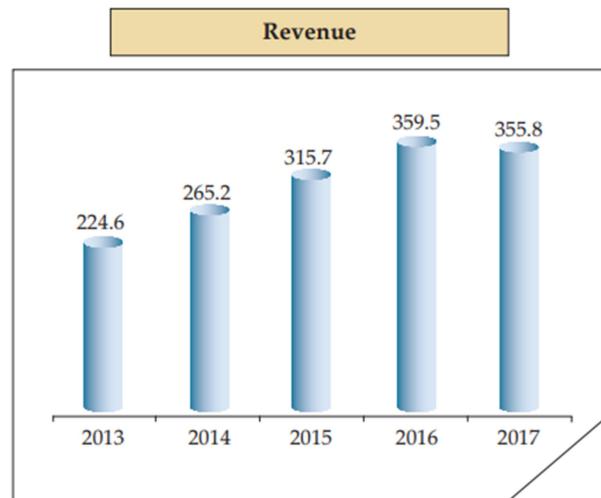


Figure 2 Revenue Idea

- FY17 ₹94,866 bn
- FY16 ₹87,915 bn
- YoY Change: 7.9%

Idea's service revenues have decreased significantly in the FY 2016-17 and have increased in Q1, 2017-18. The price war and competition in Indian Telecom industry have driven Idea's revenues

to decline by 3.69% Y-o-Y. The company might have to diverge into other sources of revenue like IoT and cloud services like other companies are coming up with.

➤ *Net debt ₹49,138.2 crore*

According to the Idea's 2017 Annual report, the debt was a staggering ₹36,401.3 crore. The company, just like other operators in India, is reeling under the financial stress. The declining revenues, reduction in Interconnect Usage Charges (IUC), and 3% increase in indirect taxes due to the implementation of GST are also seen as risks that might strain the company further.

2. Market risk:

➤ *Declining Market Share*

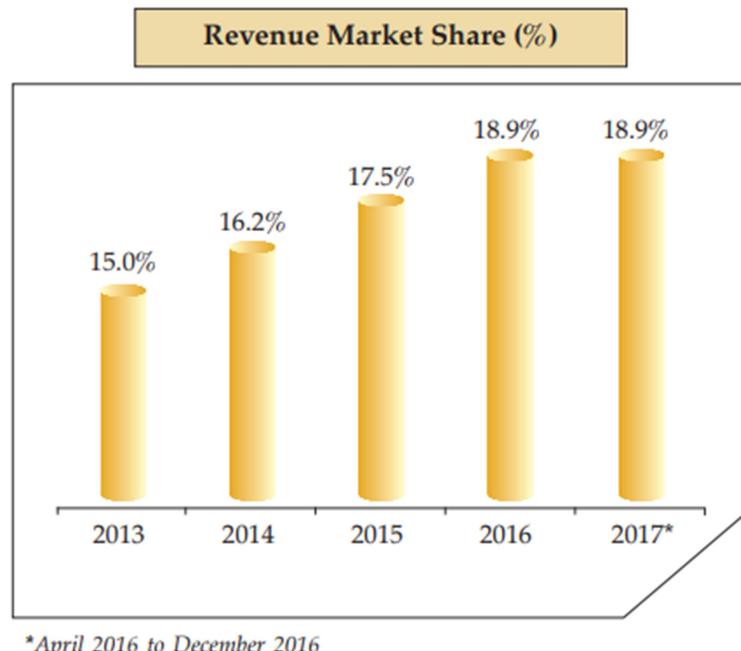


Figure 3 Revenue Market Share - Idea

Idea's market share was 18.9% in March 2017 which was constant when compared to the last year. This was constant since many users opted Jio as secondary SIM card, but constant is also a threat as it may decrease due to the new entrant that gave away freebies to increase its market share.

3. Operational risks:

The idea is carrying out organizational changes at the top. Many top-level executives have been replaced or relocated for business purposes. The merger with Vodafone has triggered a panic in the middle-level employees of both the companies about the possible layoffs, differing working styles of both companies, and how they will have to adapt to different cultures.

4. Technical risks:

The entire industry is getting 5G ready by implementing IMS systems, whereas Idea has not yet announced or started with the use of the same. While Jio is providing completely VoLTE services, Airtel has already started implementing the VoLTE in Mumbai Circle and is planning to make VoLTE

services PAN India. As VoLTE services are completely IP based and the voice calls over VoLTE networks are comparatively cheaper, implementation of this technology enables both Jio and Airtel to provide cheaper services. The idea is still lagging in implementing these new technologies.

5. Compliance risks:

The regulatory and compliance burden facing operators is changing rapidly. Regulatory attitudes toward consolidation remain a key factor as operators consider more rational market structures that can support long-term network investment. At the same time, regulatory frameworks themselves are shifting as convergence and disruption undermine traditional market and service provider definitions. Wider policy initiatives in data protection and the digital society contain both opportunities and challenges for operators. Also “regulations between TRAI and COAI organizations aren't mutual due to which the indifference is more and the tussle will continue” (Sangeetha Kotian, KPMG). These issues have complexed the regulatory usage pattern in the telcos.

BSNL:

1. Financial Risks:

- State-owned telco BSNL posted losses of Rs 1,721 crore during the first half of 2016 (up till 30th June 2016), telecom minister Manoj Sinha informed the Parliament last week. In the same period, BSNL posted overall revenues of Rs 7,331 crore. Comparatively, in the previous financial year (FY 2015-16), it posted a net loss of Rs 3,880 core, and overall revenues of Rs 32,919 crore, up 14% year-on-year.
- BSNL is an outperformer with only a 2.5 percent lower AGR in Q4 FY17 as compared to Q2 FY17. The company, in fact, grew its reported AGR in 11 out of 22 circles during this timeframe. This is surely due to the BSNL's extremely aggressive response to Jio in the form of high-ARPU bundles that perhaps were accretive to BSNL given its low ARPU base.
- BSNL is all set to invest Rs. 6,000 crore for network expansion in the next two years. The operator will install 40,000 Base Transceiver Stations (BTS) to expand its mobile network. The company has officially confirmed to be in the process of awarding contracts to telecom equipment vendors. Nokia and Chinese brand ZTE Corporation emerged as top bidders for the network expansion project.

2. Market Risks:

- Telecom minister set the target of achieving 11 percent market share for the state-owned BSNL within 12 months.
- The market share of BSNL has increased to 9.35% from 9.05% a year ago. In percentage terms, the growth works out to 3.3 percent.

3. Operational Risks:

- The government considered a plan to privatize BSNL and its subsidiaries, joint ventures and units and laying off 100,000 of the 200,000 workforces. The firm spends 55 percent of its earnings on wages compared with 5 percent to 7 percent for private operators.

The telecoms union went on strike for a day in July to protest the stake-sale plan and P. Abhimanyu, national convenor of the BSNL Employees' Union, said he would launch an indefinite strike if the government tried to privatize the company. BSNL is battling for survival, he said.

- Once India's largest telecoms company, the number of BSNL landline subscribers has fallen by 8 million in the last five years to 25 million. Its market share in broadband services fell to 10 percent this year from near 30 percent in 2013.
- BSNL's outstanding debt was just over \$1.2 billion at the end of March 2016, its latest public financial data shows. The debt has been capped in part by the use of cash reserves of \$5 billion.
- BSNL ramps up broadband capacity rolls out new 3G offers: Facing competition from private players like Jio, Airtel, Idea, and Vodafone, BSNL said in October that it will be expanding mobile broadband capacity up to 600 TB in its south circles, and up to 450 TB in other circles. The decision came after the telco witnessed an increasing demand from the recently launched unlimited 3G internet pack for Rs 1099. Note that BSNL does not have any 4G airwaves. The hyper-competitive cellular market has forced the PSU to introduce unlimited voice plans, and many other 3G data promo packs in order to retain its users.
- Due to the lack of 4G, the company has been concentrating on broadband and WiFi service expansion. In October, it upped its Fair Usage Policy (FUP) speed limits in all postpaid broadband connections to 1 Mbps, from the previous 512 kbps limit.
- In the same month, both BSNL and MTNL signed a deal with Union Tourism Ministry to equip 100 tourist destinations across the country with high-speed public WiFi hotspots.
- Roaming agreements with private players: To put its underutilized spectrum to use, BSNL signed 2G intra-circle roaming (ICR) agreement Vodafone to use each other's network assets and expand 2G connectivity across the country in all of their circles. Bharti Airtel also finalized a pan-India 2G ICR deal in April.
- WiFi hotspots: Under an agreement signed between BSNL and the Universal Service Obligation Fund, a corpus for rural telecom services, the company will install 25,000 wi-fi hotspots in rural areas with an outlay of Rs 942 crore within four months.
- BTS Expansion: At the moment, BSNL has 1,30,000 BTS, and after the expansion, the number will become 1,70,000. Furthermore, the new BTS will be a combination of 2G, 3G, and 4G network, which will even replace the existing 2G network.

4. Compliance Risks:

- BSNL entered into an agreement with Coriant to chart path 5G and IoT in India. The Memorandum of Understanding was signed between BSNL and Coriant for laying the foundation for Innovation in Network Architectures and Services Leveraging 5G, IoT, SDN/NFV, and Mobile Edge Computing Technologies. Under the terms of the MoU, Coriant and BSNL will cooperate to accelerate network architecture and service innovation leveraging 5G, Internet of Things (IoT), SDN/NFV, and Mobile Edge Computing (MEC) technologies.
- As part of its strategic collaboration, BSNL and Coriant will work together to develop 5G and IoT use cases such as rural connectivity, connected healthcare, industrial automation, public safety, video surveillance, energy, and agriculture. In addition, the agreement encompasses research programs, knowledge sharing, and workshops focused on the latest networking trends and hyper scale architectures designed to support the scalable, ultra-low latency, ultra-efficient, and reliable delivery of commercial 5G services and applications

5. Technology risks:

- Bharat Sanchar Nigam Ltd. (BSNL) is looking to partner with domestic mobile brands such as Micromax and Lava to launch a co-branded feature phone around Rs. 2,000. This rumored feature phone will come with attractive bundled tariff plans, and the launch might happen in October.
- BSNL is considering this move to counter the Mukesh Ambani-led Reliance Jio which recently launched the affordable 4G VoLTE feature phone, the JioPhone. However, BSNL's feature phone will not be a 4G supported one because the telecom operator is yet to offer 4G services in the Indian market.

Reliance Jio

1. Market Risk:

New telecom entrant Reliance Jio is likely to gain market share from existing telecom operators, rating agency India Ratings and Research said while revising its outlook on India's telecom services sector outlook from 'stable' to 'negative'. Poor profitability for incumbent telecom players such as Bharti Airtel, Idea Cellular, Vodafone and Reliance Communications will continue in the financial year 2017-18, India Ratings further said in its report. "The existing telcos would lose market share to RJio and suffer from poor profitability while their debt burden will increase due to spectrum and network related capex," it said. India Ratings also said that the data tariffs are likely to come down further in the current financial year. "Decline in data tariffs will pull down average revenue per user (ARPU), despite higher volumes, while voice revenue remains at risk due to Reliance Jio's declared voice pricing strategy," said Indian Ratings, or In-Ra. India Ratings also highlighted in its report that the data usage was likely to increase by 35-40 percent in the current financial year to 1,250 MB. "RJio's data-centric business strategy, the proliferation of cheaper smartphones and accelerated adoption of 4G are catalysts for higher data usage," said the Indian arm of global rating agency Fitch Ratings. Revised its outlook on the telecommunications services sector for FY18 to 'negative', Ind-Ra said, "The negative outlook reflects Ind-Ra's expectation of longer and deeper than expected deterioration in the credit profile of telcos following the free services extended by Reliance Jio Infocomm." Ind-Ra expects data to form 30 percent share of the telecom revenue in FY18 while data revenues would grow 15-20 percent. Higher data volumes would not lead to a commensurate increase in revenues as data realization would decline 20-30 percent. Data price decline is driven by highly price elastic data demand as well as operating leverage, it added. Jio - the telecom arm of billionaire Mukesh Ambani-led conglomerate Reliance Industries - recorded the highest average speed in 4G in March, according to telecom regulator TRAI. Data from the Telecom Regulatory Authority of India had shown Jio's average speed to be at 18.487 Mbps till 12.30 a.m, April 1 - the highest among other players like Bharti Airtel, Idea Cellular, and Vodafone India. Ind-Ra also pointed out that going ahead, there could only be four telecom companies in India as the telecom operators may go in for consolidation of market share and spectrum. "Not only are the smaller telcos highly likely to get acquired by the larger telcos, but also consolidation among the top telcos is possible, subject to spectrum and market share caps under the telecom merger & acquisition regulations." Another rating agency Crisil has also said that telecom companies will continue to face difficulties in the fiscal year 2018. Two of the top three telecom firms are set to "bleed" due to intense competition triggered after the launch of Reliance Jio, Crisil had said in a report

last month. Meanwhile, Jio has become the largest network globally with more than 110 crore GB of data traffic per month and 220 crore voice and video minutes a day, Reliance Industries had earlier said while reporting the group's earnings for the financial year 2016-17.

2. Technological Risks:

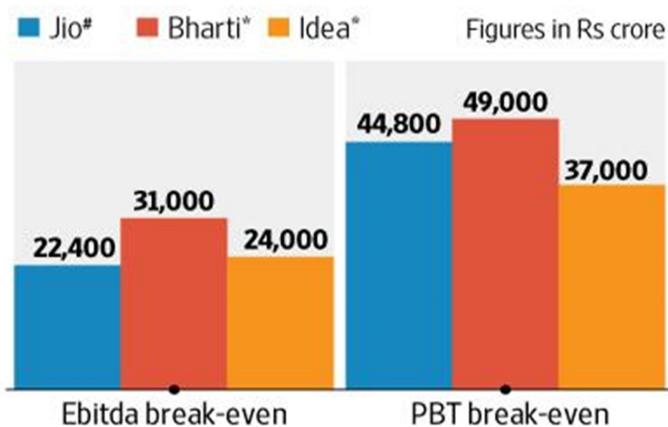
Telcos usually have to protect a number of fronts where customer data resides. For example, one has to protect the channel itself, the network, and the infrastructure, which is the billing and customer care systems. The telcos are at the forefront of security, primarily because they are heavily regulated since customer's private information is involved. Going forward, they are going to offer more products as close to the customer as possible with the help of virtualization. For instance, Jio offers most of the content using Content Delivery Network (CDN) which is very close to the customer. Similarly, going forward, we will be in a position to offer security controls to our customers as close as possible and from the network area.

3. Financing Risks:

The giant Rs2 trillion telecom subsidiary is funded by the equity of Rs70,864 crore, the debt of Rs1.24 trillion, and a few other liabilities, resulting in a debt-equity ratio of 1.75 times. The equity component includes optionally convertible preference shares worth Rs33,785 crore issued to the parent company, and the debt is inclusive of deferred spectrum liabilities and credit is taken from suppliers for capital expenditure. Analysts at Kotak Institutional Equities point out in a note to clients that Jio's gross cash invested (GCI) in fixed assets and spectrum, excluding capitalized expenses, stood at Rs1.53 trillion at the end of March. In comparison, market leader Bharti Airtel Ltd's GCI stood at Rs1.86 trillion, despite having started operations years before. Not surprisingly, Kotak's analysts call it the mega project. Thus far, Jio has capitalized expenses worth Rs38,182 crore, about 56% of which were incurred in FY17. About two-thirds of the expenses that were capitalized last year was on account of operating expenses (Rs14,532 crore), with the rest being made up of interest costs. How does this compare to competitors such as Bharti Airtel Ltd and Idea Cellular Ltd? Before we get into comparisons, it's important to normalize Jio's expenses. Since it launched operations only in September 2016, annual costs aren't reflected in some areas. Besides, because it didn't charge customers, it was spared regulatory costs such as license and spectrum usage fees which add up to around 11% of revenues for competitors. Adjusted for these and other peculiarities, Kotak's analysts estimate Jio would need to garner around Rs22,400 crore in revenues to break-even at the Ebitda-level. Ebitda stands for earnings before interest, tax, depreciation, and amortization. It's important to note here this number has been arrived at after making a number of assumptions. "We must emphasize that Jio's annual report is still that of a 'project under development'. Any analysis we present should be viewed against that backdrop; there are several unknowns we worked with, especially in the construction of the break-even analyses," the broker's analysts say in a note to clients. Having said that, the number ties in broadly with some other estimates floating around on the Street. Jio's operating costs compare well with Airtel, whose Ebitda break-even for the India wireless business is roughly Rs31,000 crore, and Idea, whose break-even is around Rs24,000 crore at the Ebitda level. This is based on expenses reported by the companies for FY17 and adjusts regulatory fees downward to account for the drop in revenues vis-a-vis reported revenues. Jio's lower operating costs fit well with the narrative that it enjoys a low-cost structure and can hence provide its services at a price that's lower than the competition. But given Jio's huge debt and high

asset base, it makes more sense to look at break-even numbers after accounting for interest and depreciation charges. The picture here is starkly different. Again, based on Kotak's estimates, Jio would need revenues of Rs44,800 crore to break-even at the PBT (profit before tax) level. Interestingly, Idea could have achieved break-even at the PBT level with revenues of around Rs37,000 crore, based on its FY17 numbers and after adjusting for regulatory fees upward. In the case of Bharti's India wireless business, its break-even at the PBT level stood at roughly Rs49,000 crore. In short, when all costs are accounted for, Jio's business model is anything but low cost. In fact, Jio is a rare startup, whose costs are nearly as much the market leader in the industry, long before it has reached similar scale in terms of subscribers and revenues.

**After accounting for interest and depreciation charges,
Jio's break-even point may be nearly as high as market
leader Bharti Airtel**



*Kotak estimates are based on the following assumptions: a) Jio's FY17 interconnect costs are annualised as well as adjusted to account for a higher proportion of on-net calls in the future; b) regulatory fees of 11% of revenues (ex interconnect costs); c) network operating cost 1.5-1.6 times FY17 levels; d) a 10% increase in employee expenses; e) SG&A expenses of 5-6% of revenues in addition to reported FY17 expenses; f) depreciation at 8% of fixed assets; amortisation at 5% of intangibles, besides assuming a Rs10,000 crore addition to fixed assets; and g) a 5% increase in interest costs compared to FY17

*Mint estimates based on FY17 expenses, with adjustments made for regulatory fees which are linked to revenues

Source: Company data, Kotak Institutional Equities, Mint research

Figure 4 Low-cost structure comparison

Reliance Communication

1. Market risk

The Company also operates internationally and hence, a portion of the business is transacted in several currencies. Consequently, the Company is exposed to foreign exchange risk to the extent that there is a

mismatch between the currencies in which its sales and services, purchases from overseas suppliers and borrowings in various foreign currencies. Market Risk is the risk that changes in market prices such as foreign exchange rates, interest rates will affect income or value of its holding financial assets/instruments. The exchange rate between the rupee and foreign currencies has changed substantially in recent years and may fluctuate significantly in the future. As result operations of the Company are adversely affected as rupee appreciates/ depreciates against US Dollar.

2. Interest Risk

Interest rate risk can be either fair value interest rate risk or cash flow interest rate risk. The fair value interest rate risk is the risk of changes in fair values of fixed interest-bearing investments because of fluctuations in the interest rates, in cases where the borrowings are measured at fair value through profit or loss. The cash flow interest rate risk is the risk that the future cash flows of floating interest-bearing investments will fluctuate because of fluctuations in the interest rates.

3. Credit risk

Credit risk refers to the risk of default on its obligation by the customer/ counterparty resulting in a financial loss. The maximum exposure to the credit risk at the reporting date is carrying a value of respective financial assets. Trade receivables and unbilled revenue are typically unsecured and are derived from revenue earned from the customers. Credit risk has always been managed by each business segment through credit approvals, establishing credit limits and continuously monitoring the creditworthiness of customers to which the Company grants credit terms in the normal course of business. On account of the adoption of Ind AS 109, the Company uses expected credit loss (ECL) model to assess the impairment loss or gain. ECL methodology depends on whether there is any significant increase in credit risk. In case of a significant increase in credit risk, lifetime ECL is used; otherwise twelve months ECL is used. The Company uses a provision matrix to compute the expected credit loss allowance for trade receivables and unbilled revenues. The provision matrix takes into accounts available external and internal credit risk factors such as default risk of industry, credit default swap quotes, credit ratings from international credit rating agencies and historical experience for the customers.

Credit risk on cash and cash equivalents is limited as the Company generally invests in deposits with banks and financial institutions with high credit ratings assigned by international and/or domestic credit rating agencies. Investments primarily include investment in liquid mutual fund units, quoted bonds issued by Government and Quasi-Government organizations and certificates of deposit which are funds deposited at a bank for a specified time period.

4. Liquidity risk

The Company's principal sources of liquidity are cash and cash equivalents and the cash flow that is generated from operations. Competitive intensity has adversely impacted revenue and consequent cash accruals during the year. This, coupled with the current level of debt and imminent repayment obligations, has to lead to stress on liquidity profile. The Company closely monitors its liquidity position and is attempting to enhance its sources of funding by increasing cash flow generated from its operations and realizations from other proposed measures. Liquidity risk is the financial risk that is encountered due to uncertainty resulting in difficulty in meeting its obligations. An entity is exposed to liquidity risk if markets on which it depends are subject to loss of liquidity for any reason; extraneous

or intrinsic to its business operations, affecting its credit rating or unexpected cash outflows. A position can be hedged against market risk but still entail liquidity risk. Prudence requires liquidity risk to be managed in addition to market, credit and other risks as it has a tendency to compound other risks. It entails management of the asset, liabilities focused on a medium to long-term perspective and future net cash flows on a day-by-day basis in order to assess liquidity risk. Current and prospective liquidity risk is encountered when the Company is required to meet its obligations. The Company's approach to managing liquidity, that it will have sufficient cash and financial assets to meet its obligations and collateral needs, both expected and unexpected, under normal and stressed conditions, without incurring unacceptable losses. Dynamic nature of the underlying businesses necessitates that the treasury function ensures flexibility in funding by maintaining adequate working capital and availability under committed credit lines, for uninterrupted business operations. Existing operations of the Company are primarily funded through long-term loans and advances. The Company is seeking to maintain/ enhance the level of working capital credit lines, so that operation is performed at an optimum level. Periodic budgets and rolling forecasts are prepared at the level of operating subsidiaries as a regular practice and in accordance with limits specified by the Company. 49% of the total debt will be payable in less than one year i.e. during the financial year ended as at March 31, 2018. Apart from this, there is an outstanding principal of ` 18,738 crores and interest as applicable thereon payable to the lenders. The Company believes that working capital credit lines need significant enhancement pending infusion of funds from the proposed strategic transactions/ sale of assets and rolling over of loans with existing lenders.

TATA Teleservices Limited

1. Market Risk:

In the last 20 years, the growth in mobile services has been driven largely by voice. The driver of growth for the future is expected to be data services. The gap to the competition in terms of the spectrum and network infrastructure investments that would be required for the company to be able to compete on a comparable footing is vast and growing. The Company would not be able to make those level of investments given its current position and consequently would be weaker than other players in the market especially as data becomes more and more the engine for growth.

2. Spectrum Renewal Risk:

The licenses of the Company and the associated administered spectrum allocated in the past in Mumbai and Maharashtra are coming up for renewal in September 2017. In order to be able to continue its mobile services in Mumbai & Maharashtra in an effective manner, it is imperative that the Company wins back enough spectrum in key bands in both circles. Winning back enough spectrum at an affordable price is key to continuing mobile operations in any circle.

3. Regulatory Risks:

Telecom Policies in areas of a dual technology license, allocation of spectrum, EMF radiation, green technology issues, security guidelines and the decision to charge OTSC within contracted quantum of spectrum etc. have led to litigation and these issues are now pending before various courts. The Company's licenses and spectrum allocations are for fixed periods and are renewable for additional terms subject to approvals and successful bidding in future auctions.

4. Technological Risks:

The technological landscape within the telecom industry continues to change rapidly. New services offerings such as 4G are being launched by competition and these products would compete with the existing voice and data offerings of the Company and could impact its current market share and pricing. CDMA technology has continued to witness a gradual decline globally. Such changes in technology may require the Company to invest in newer technologies – both spectrum and capex which would demand significant capital investments.

5. Financing Risks:

The Company may not be able to raise adequate capital to meet its spectrum and capital expenditure requirements or the terms of raising fresh capital may not be in line with past terms and conditions and/or may be subject to such covenants which may be challenging for the Company to adhere to thereby impacting the costs of not only incremental capital but also existing debt adversely. The Company has experienced difficulties in its borrowing programs in the past when the telecom sector was faced with uncertainties and continued uncertainty around various business and regulatory parameters may continue to affect the ability of the Company to raise additional funds from Banks and Financial Institutions. The Company does not meet the financing covenants set under various loan agreements.

6. Competition Risks:

The Indian telecommunication industry continues to witness intense competition. Over the past year, the focus of the telecom companies has shifted from voice to the high growth domain of data services. Efforts by operators both existing and new penetrate 3G services further and 4G services offerings could further intensify competition in data services. The competition also creates the need for continued significant expenditure on marketing and advertising to ensure sustainability and growth of the Company's revenues. The increasing popularity of the same frequencies of 2G for providing 4G services (e.g. 1800 MHz) is further adding to the intensity of demand for that band and at a time when operators like ourselves have to renew that spectrum to sustain even our 2G customers. While the Company will ensure all efforts to sustain and grow its revenues, due to factors beyond the control of the Company, the Company may not be successful or fall short of its targets.

CONCLUSION

The telecom companies are facing several risks owing to the competition in the industry. The revenues of the telcos are declining with Airtel being the only company that is making low profits and all other companies making losses. Reliance Jio is expected to make profits soon but other telecom companies might take time before they earn profits again. Only a few companies are surviving this financial stress which is evident from loss-making companies like Tata Teleservices, Aircel etc. which are ready to be acquired by bigger telcos.

Reliance Jio and Airtel have already invested in the VoLTE technology while Vodafone and Idea are in the midst of a merger that will take another few months for completion. BSNL is yet to make investments in 4G. Reliance Jio has already invested in IoT solutions and Airtel also has already made deals with foreign telcos like SK Telecom to bolster their IoT services and work on standardizing the 5G services. Vodafone is also coming up with IoT solutions in the B2B domain. The companies are investing heavily in new technologies while simultaneously adding new risks to themselves as well as to their competitors. The telcos are also competing for content as it is what brings in revenues. Reliance Jio and Airtel are leading the content race while other telcos still need to work on improving the content on their networks.

The reduction in IUC charges at both domestic and international levels is also affecting the telcos finances adversely. The compliance issues in the merger of Vodafone and Idea are proving costly to both the companies as they will have to forfeit Spectrum in several circles for a lower price than what they are paying for it. The market share of the merged entity is also exceeding the permissible limits in nine circles which adds to the risks of the merged entity.

Reliance Jio's entry with low tariffs and newer technology has changed the dynamics of the Indian telecom industry. With declining revenues and increasing debts, the telcos are looking beyond providing calls and internet services. Telcos are looking towards newer services like Content, IoT and Cloud etc. to improve their revenues.

FUTURE SCOPE

India is currently the world's second-largest telecommunications market with a subscriber base of 1.05 billion and has registered strong growth in the past decade and a half. The Indian mobile economy is growing rapidly and will contribute substantially to India's Gross Domestic Product (GDP), according to report prepared by GSM Association (GSMA) in collaboration with the Boston Consulting Group (BCG). The country is the fourth largest app economy in the world. The liberal and reformist policies of the Government of India have been instrumental along with strong consumer demand in the rapid growth in the Indian telecom sector. The government has enabled easy market access to telecom equipment and a fair and proactive regulatory framework that has ensured availability of telecom services to the consumer at affordable prices. The deregulation of Foreign Direct Investment (FDI) norms has made the sector one of the fastest growing and a top five employment opportunity generator in the country. The Indian telecom sector is expected to generate four million direct and indirect jobs over the next five years according to estimates by Randstad India. The employment opportunities are expected to be created due to a combination of government's efforts to increase penetration in rural areas and the rapid increase in smartphone sales and rising internet usage.

Market Size: The mobile industry is expected to create a total economic value of Rs 14 trillion (US\$ 217.37 billion) by the year 2020. It would generate around 3 million direct job opportunities and 2 million indirect jobs during this period. India has become the second largest smartphone market in the world as shipments increased 23 percent year-on-year in Q3 2017, to reach more than 40 million units. The rise in mobile-phone penetration and decline in data costs will add 500 million new internet users in India over the next five years creating opportunities for new businesses. The monthly data usage per smartphone in India is expected to increase from 3.9 GB in 2017 to 18 GB by 2023. Data usage on Indian telecom operators' networks (excluding Reliance Jio), doubled in six months to 359 petabytes or 3.7 million gigabytes per month as 4G data usage share increased to 34 percent by the end of June 2017\$. According to a report by leading research firm Market Research Store, the Indian telecommunication services market will likely grow by 10.3 percent year-on-year to reach US\$ 103.9 billion by 2020.

Investment/Major development: With daily increasing subscriber base, there have been a lot of investments and developments in the sector. The industry has attracted FDI worth US\$ 30.03 billion during the period April 2000 to September 2017, according to the data released by Department of Industrial Policy and Promotion (DIPP). Some of the developments in the recent past are:

- Finnish telecommunication company Nokia is going to collaborate with Indian telecom companies Bharti Airtel and BSNL to work on the roadmap for the development of 5G technology and creating a conducive ecosystem for 5G in India.
- The Government of India is working to digitally connect the rural and remote regions in the country and has decided a new affordable tariff structure with the principle of more you use, less you pay. The changes will soon be reflected in tariff changes by service providers in the country.

- India telecommunication companies will be investing US\$ 20 billion over the next two years for the expansion of network and operations, stated Mr. Akhil Gupta, Vice Chairman, Bharti Enterprise.

Government Initiatives: The government has fast-tracked reforms in the telecom sector and continues to be proactive in providing room for growth for telecom companies. Some of the other major initiatives taken by the government are as follows:

- The Government of India is working to digitally connect the rural and remote regions in the country and has decided a new affordable tariff structure with the principle of more you use, less you pay. The changes will soon be reflected in tariff changes by service providers in the country.
- The Government of Telangana is targeting to provide broadband connection to every household in the state by 2018, which is expected to lead to revolutionary changes in the education and health sectors.
- Mr. Manoj Sinha, Union Minister of Communications, Government of India, stated that the government will provide the required support for achieving the dream of a fully connected and truly empowered India soon while inaugurating a national conference on 'BharatNet and its utilization with states'.

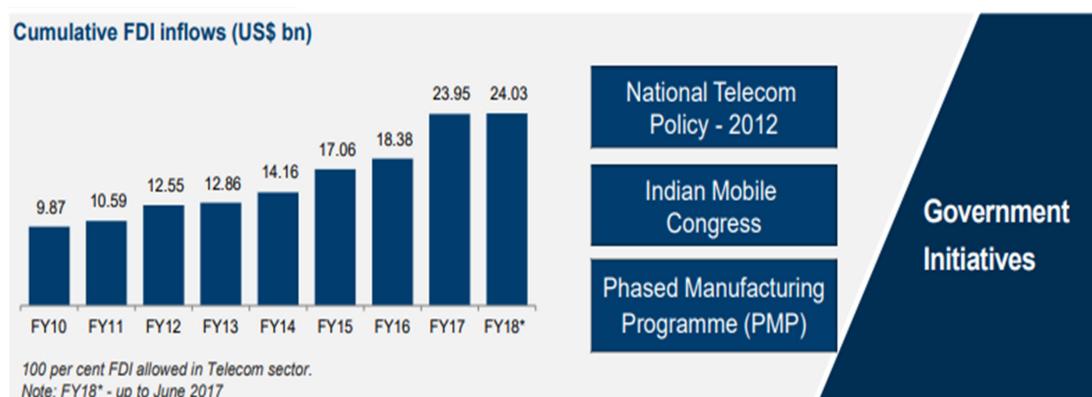


Figure 5 Cumulative FDI inflows (US\$ bn)

Road Ahead: India will emerge as a leading player in the virtual world by having 700 million internet users of the 4.7 billion global users by 2025, as per a Microsoft report. Internet economy expected to touch Rs 10 trillion (US\$ 155 billion) by 2018, contributing around 5 percent to the country's GDP. With the government's favorable regulation policies and 4G services hitting the market, the Indian telecommunication sector is expected to witness fast growth in the next few years. The Government of India also plans to auction the 5G spectrum in bands like 3,300 MHz and 3,400 MHz to promote initiatives like the Internet of Things (IoT), machine-to-machine communications, instant high definition video transfer as well as its Smart Cities initiative. The Indian mobile phone industry expects that the Government of India's boost to production of battery chargers will result in setting up of 365 factories, thereby generating 800,000 jobs by 2025.

Airtel

Airtel is into diverse portfolios such as voice, data, video, network integration, data centers, managed services, enterprise mobility applications and digital media. It has a global network running across 250,000 RKms covering 50 countries and 5. With growing data traffic Airtel sees itself at the peak. With a brand name and the market share, it does not see itself going down anytime soon. even when the industry is undergoing consolidation, it is considered to be amongst top 3 operators accounting more than 75% RMS, according to TRAI.

The following are the opportunities of Airtel in the current situation:

1. Emerging opportunities for scale: Scaling up payments bank, and non-mobile businesses to capitalize on emerging opportunities.
2. Large-scale investments: Spectrum Bank Successful re-farming of sub-GHz spectrum for 3G Pan-India coverage of 3G/4G Highest spectrum market share Largest data capacity per site
3. Largest network of towers and base stations: Over 95.3% voice population coverage Mobile broadband sites up 61% over the last year
4. Largest network of optic fiber: Global and national long-distance fiber of over 479,856 RKms We will consolidate on our spectrum bank, towers & base stations and optic fiber network to drive future growth sustainably
5. Diversified portfolio with significant scale: Profitability and scale across diversified segments Dominant position to capitalize on bulk investments in place Only operator with a diversified portfolio Generating significant organic free cash
6. Leadership across geographies: Leader in India, #1 or #2 in 12 African countries leading market shares. Highest revenue market share and subscriber market share in India
7. Data Usage Growth: Data explosion at its cusp with the proliferation of affordable smartphones; and the Government of India's digital drive
8. Digital Payments: Total payments conducted via digital payments instruments to be in the range of USD 500 Bn by 2020 (Source: BCG-Google Digital Payments 2020)
9. Consolidation: Consolidation in the industry leading to better industry dynamics and higher market shares
10. Active Infra Sharing: Active infra sharing to lead to reduced expenditures

Vodafone

Importance and speed of change in the telecommunications industry Telecommunications is an essential service used by over seven billion mobile customers and 0.9 billion broadband users across the globe. The global mobile industry generates around €1.65 trillion of revenue. 52% of revenue arises from traditional voice calls and messaging services. On average, a customer consumes 203 outgoing minutes per month, which has been largely stable over the last couple of years. The demand for mobile data services to watch videos, browse the internet and use various “apps” has accelerated rapidly, and today 48% of global revenue comes from data, compared to only 22% five years ago. The number of smartphone users continues to grow rapidly. Today 45% of mobile handsets are smartphones, compared to 11% five years ago. This is being driven by rising living

standards and population growth, combined with lower airtime and device costs. The fixed telecommunications market includes calls, broadband and TV packages, generating €0.7 trillion of revenue annually. The number of voice-only users continues to decline as customers disconnect their landlines in favor of mobile phones, however, the take-up of broadband and pay TV services offsets this. According to Ovum, fixed broadband will be the fastest-growing market, with revenues increasing at a compound annual rate of 3.1% from 2016 to 2021, ahead of pay TV at 2.5% and mobile at 1.9%. In broadband markets, an increasing proportion of customers are upgrading from copper-based ADSL with speeds up to 24 Mbps to high-speed fiber and cable with speeds up to 1,000 Mbps. We believe that Gigabit networks direct to homes and businesses form the bedrock of modern digital communications infrastructure.

Growing demand for data and high-speed networks The telecommunications industry has transformed significantly in the last 30 years. In the 1990s, mobile phones were mostly used for calls on 2G networks, and basic picture messages could be sent at very low speeds of 50–200 Kbps. Today users can enjoy 4G speeds of up to 800 Mbps for rapid video downloads, with 1 Gbps speeds already demonstrated. This network technology innovation has been accompanied by the growing demand for smartphones, which are now used by 63% of Vodafone's European customers. Fixed network development has been equally rapid. In the 1990s most fixed connections were for landline calls, today the greatest use is broadband internet usage. Average download speeds have progressed rapidly from around 8–16 Mbps using copper-based technology in 2007 to 1 Gbps using cable or fiber today. These developments bring significant opportunities to drive further revenue from increased data usage, but also require investment to keep up with technology. These developments are collectively leading to substantial growth in data traffic. Between 2011 and 2016 mobile data traffic increased by an average of 75% p.a. and today 95% of total traffic on mobile networks across the globe is data. 5G, the next major step in mobile technology, is expected to launch commercially by 2020, most likely only in dense urban areas in Europe and will enable speeds of up to 1 Gbps combined with extremely quick reaction times. This will support the development of new applications, including in the areas of augmented and virtual reality.

Increasing demand for converged solutions Today, consumers are increasingly taking bundles of mobile, landline, broadband and TV services. For the consumer, this provides the benefit of simplicity – one provider for multiple services – and better value. For operators, this provides higher customer loyalty as well as operational efficiencies. The same motivations apply to businesses, which are increasingly taking advantage of converged services that bring together communications tools that work across all fixed and mobile endpoints.

Idea

With the rising rate of literacy, high smartphone penetration and the pursuit of being ‘online’ on social media platforms - the Indian across all ethnicity, all class of Income and all generation have started demanding for High speeds of wireless Internet. The demand for high-speed internet seems to grow by leaps and bounds in next few years. To monetize this opportunity all large. Mobile operators have deployed Broadband Services across the country and further expanding the coverage to provide Mobile Broadband in the deep hinterland of the country. During Financial Year 2016-17, the introduction of unprecedented large scale free services severely impacted the realization of both, voice and data. This has impacted the industry revenue growth negatively at a time when large investments have been made in expectation of significant revenue growth, as volumes are less than sufficient to compensate for the rate decline. The financials of the industry are stretched as all the telecom

operators are highly leveraged due to high commitment in spectrum auctions and extensive network rollout in past 2-3 years.

The negative revenue growth coupled with the need for large capital investments has driven focus towards cooperation by way of spectrum trading, spectrum sharing or combining operations. The state of many operators is clearly drawing to an end and wireless Industry in India is moving towards global norms of consolidating to around 5 large operators. The telecom operators in long run are expected to see a return to growth in revenue and hence an uplift in profitability while providing world-class mobility services to more than 1.3 billion Indians spread across vast geography of India. Your company is fully equipped to reap benefits out of these changing trends as it has pan India Broadband Spectrum and is aggressively expanding its Broadband network across the length and breadth of the country.

Jio

With more than 110 crore gigabyte of data traffic per month and 220 crore voice and video minutes a day, "Jio has become the largest network globally" in terms of data carried and contributed to India becoming the leading country in the world for mobile data usage. "Jio users are today consuming nearly as much data as on all the mobile networks in the US and 50 percent more data than mobile networks in China in a clear indication that India will adopt digitization and Digital Life faster than anyone else in the world," the statement said.

The Mukesh Ambani-led telecom firm said that it has built a future-ready network which can easily deploy 5G. "As per TRAI MySpeed Portal, Jio's average download speed at 15.0 Mbps in March 2017 is almost twice of any other operator...Jio has the world's largest greenfield 4G LTE wireless broadband network, with over 100,000 mobile towers. And it will add another 100,000 towers to the network in the coming months," the statement said. Besides, Jio has been expanding its fiber-to-the-home (FTTH) business offering with beta trials initiated in a few locations.

"It would expand the scope of the beta trials over the next few months," the statement said. The company launched its 4G service commercially on September 5, 2016, for free and crossed 50 million subscribers in just 83 days, and 100 million in 170 days, adding at an average rate of 6 lakh subscribers per day. The company started charging for mobile services from April 1 where it is also offering a scheme, Jio Prime'.

"In the medium term, Reliance Jio will ensure the likes of Aircel, Telenor India, Tata Teleservices and RComBSE 1.61 % will exit," said a UBS note. This position was seconded by brokerage BNP Paribas, which said Jio's big bang entry is likely to "expedite exit of weaker operators dependent on cheap voice and not invested in data networks. These (weaker operators) still account for 25% of industry revenue and a likely 35%-40% volume share, given their low pricing." Deutsche Bank said weaker players with constrained financials will not be able to replicate Jio's aggressive offers, and hence would eventually cede revenue-share to the new 4G entrant. It expects the telecom arm of Reliance Industries to corner 10% revenue share of the mobile market in five years.

- Data capacity:** Jio believes data capacity would be the key driver for revenue market share, and that the company is targeting 50 percent revenue market share with EBITDA margins (operating margins)

in excess of 50 percent. About 60 percent of Jio's sites have fiberised backhaul portions, giving it a 3-4 year head start over the competition.

2. **Market size:** Reliance Jio expects the Indian telecom market to expand from Rs. 2 lakh crore to Rs. 3 lakh crore by 2020-2021, of which data would constitute a major portion. Jio currently carries 1 billion GB/month of data traffic and believes the Indian market has the potential to carry 5-6 billion GB/month of data traffic over the next 4-5 years.
3. **Digital services line-up:** Jio showcased an impressive line-up of current digital services (online TV, cinema, music, and payments) and a few upcoming ones such as the 'connected car'. Based on the company's research, 400 million subscribers have the potential to spend Rs. 500 on digital services.
4. **Handset prices:** Jio believes handset prices are a good proxy to potential ARPUs (average revenue per user). The company indicated that the average handset price on its network is more than Rs. 10,000 and it enjoys a 40 percent market share in handsets priced above Rs.20,000.
5. **ARPU (average revenue per user) focus:** Jio sees significant elasticity in data (greater than voice) due to limited supply. The company intends to offer high-speed data access to customers while keeping overall pricing ARPU-oriented. RJio pointed that the current smartphone ARPUs (adjusted) for the industry hover around Rs. 329.
6. **Religare View:** Religare analysts Rumit Dugar and Saumya Shrivastava believe the market could remain competitive for an extended period considering Jio's aggressive revenue market share expectations. "While telecom stocks have seen a sharp rally owing to a potential consolidation in the sector, we think that price competition would remain intense and earnings recovery would hinge on data-led recovery in industry growth," they said.

BSNL

Indian Telecom Broadband market poised for healthy growth. NTP 2012 emphasizes for affordable and reliable broadband on demand by 2015, achievement of 175 Mn connections by 2017 and 600 Mns connections by 2020. Ever increasing demand for wireless connections across the urban and rural areas, together with increasing market for VAS and multimedia contents will build up a strong business case.

BSNL is an Integrated Telecom Player with countrywide footprint and diverse services portfolio in Fixed Line, Cellular, Broadband and Enterprise Services. The Company has significant infrastructure assets spread across the nation with an Extensive network of optical fiber (7.6 lakhs Route KM) and copper cable network. More than 80,492 towers (GSM) catering to voice and data. Over 31,738 3G Node B's. Owns significant spectrum across bands and circles (excluding Mumbai and Delhi). Holds spectrum across frequency bands of 800 MHz, 900 MHz, 1800 MHz, 2100 MHz and 2500 MHz. With a strong value for money to the customers, it has a potential appeal to the vast population of the country.

Traditionally being a wireline company with the majority of the assets forming part of this vertical and high manpower cost and economically unviable rural operations, there is a gap in customer service fulfillment and assurance.

RCom

Though RCom is under huge losses and is in consideration of merger and acquisition, leading to consolidation of the industry, they still consider the following parameters to be an opportunity for them.

- Low rural penetration
- Low broadband users
- Data usage per user picking up
- Adoption of 4G increasing faster than 3G
- Devices becoming affordable Rapid growth in data services
- Consumer demand for internet services such as online videos and social media
- Proliferation of affordable data services
- New business models are driven by startups which depend on good connectivity and cloud services
- Stability and clarity in telecom policies allow for long-term planning and efficient capital deployment
- Digital India initiatives
- Government initiatives to improve broadband connectivity across the country
- Incentives to manufacture smartphones and telecom equipment in India under the “Make in India” initiative
- Pan India coverage
- Subsea and terrestrial connectivity to major telecommunications hubs Ample, long validity spectrum portfolio
- Sub 1 GHz spectrum portfolio allows for better 4G services
- Limited spectrum portfolio coming up for renewal in the short term - lower regulatory future cash outflow
- Online and offline channels across the country effectively covering rural and urban India
- Efficient billing and distribution channels in place
- Strong industry partnerships in place
- Helps to consolidate dominant data position across businesses - Rjio for infrastructure, IBM/Hitachi/Panasonic

TATA Teleservices Limited

In the long run, the opportunity in telecom with its growth in data and other services continues to be attractive. In the immediate term, the intensity of competition and the capability gap in both spectrum and network vis-à-vis other players have created a challenging environment for the Company. While the Company continues to try and grow revenue profitably, it is constantly evaluating alternate options for creating a more sustainable longer-term story for the business. The broad operating strategy of the Company would revolve around:

1) Focus on Enterprise Business Segment

The Company has been striving for the last few years to expand its operating profit margins and various initiatives have already started bearing fruits of the same. Although efforts are being taken to revive the mobility

segment that has been severely affected due to market turbulence, the Company shall focus on the wireline and broadband business segments for growth opportunities and continue delivering innovative and best in class services to its customers. The Company's wireline operations have been a growth driver in the current year. TTSL estimates the revenue to grow at healthy rate led by a specific focus on asset sweating, cross-selling, retention and upgrade opportunities, product innovation, and marketing.

2) Customer centricity and process improvements

The Company is plowing a two-pronged approach. On one end it is improving the customer's experience with everyday services such as billing, collections, call centers as well as improving the overall experience at all critical touch points with the customer. On the other end, the Company is also concentrating on providing superior services to its best customers which include retention tools and schemes, special help desks at retail stores and empowered employees for faster resolution of any concerns.

3) Cost Optimization

The current financial year has been hard hitting on overall industry's profitability, due to a significant drop in voice and data realization. Due to the continuity of discounted products in the market in the following fiscal year as well, the profitability of the company shall primarily rest on its cost optimization initiatives. The Company has undertaken certain measures to reduce both its operating and non-operating costs in the current financial year and will continue to do so in the year ahead

The company also sees opportunities in the following areas:

- The Indian telecom market underwent some turbulence in terms of revenue with the launch of free services by a new Greenfield 4G operator. However, there is an increased enthusiasm shown by the operators with huge inflows into industry which indicates potential to diversify service offerings and increased infrastructure to support the emerging technologies in the market.
- The increasing focus given by the Government of India on digitalization platforms has given a thrust to the IT companies to develop products and features in the digital world. The backbone of the digital world is the data services offered by telecommunication industry.
- The advanced spectrum offering in terms of 3G & 4G bandwidths has enabled seamless communication which has further enabled multiple devices communicating with each other popularly titled the "Internet Of Things". With the steady increase in the higher bandwidths, IOT will soon be a reality in the electronic appliances and the automobile markets.
- The launch of e-KYC norms enables the online sale of network connections, this will result in having a customer base who are genuine and authenticated vide their Aadhaar ID, thus bringing scalability and speed inactivations as well as efficiency in operations.
- The increase in data volumes and the availability of new applications and services coupled with the increasing penetration of smartphones is expected to be the key growth enablers in the near future.

Idea-Vodafone Merger

Vodafone India and Idea: benefits for all stakeholder's A new champion of 'Digital India'

- Accelerate 4G/4G+/5G services across India
- Sustained and efficient investment to create a world-class Indian telecom infrastructure

- Stronger financial inclusion through mobile payments
- Improved mass-market digital services in urban and rural areas Creating shareholder value
- Stronger, listed asset in India, with a deep spectrum position to deliver the capacity to compete
- Improved returns on capital from higher scale and substantial opex and capex synergies
- De-leveraging of the combined company's and Vodafone Group's balance sheets
- Improved returns to all shareholders of both companies' Clear customer benefits
- Complementary footprint creates leading network coverage and capacity
- Scale ensures attractive prices and long-term, sustainable consumer choice
- Improved offerings for large enterprises, small businesses, and the public sector
- Best-in-class customer experience across all segments

Vodafone and Idea: the largest Indian telco

1. Revenue market share based on Q3 FY 2017 gross revenue
2. Based on current footprint; 2G site numbers likely to fall post-completion due to rationalization
3. Spectrum holdings are shown on a pro-forma combined basis and may need to be reduced to comply with M&A guidelines
4. NPV of cost and capex synergies after integration costs and spectrum liberalization fees; run-rate savings on an annual basis before integration costs in the fourth full year after completion Largest telecom operator: #1/#2 RMS in 21 out of 22 circles¹ Highly complementary footprint and coverage • Metro, urban and rural markets

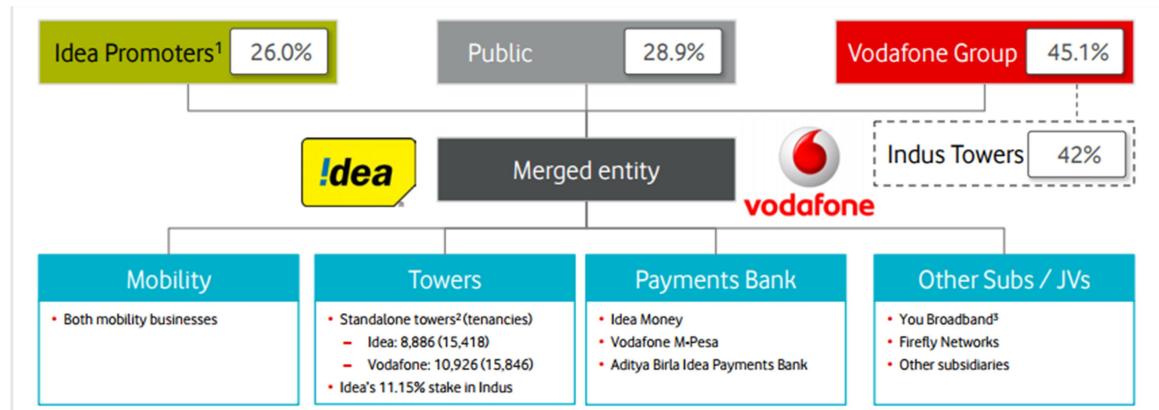


Figure 6 Vodafone-Idea Merger

- Vodafone will own 45.1% of the combined company after transferring a 4.9% stake to the Aditya Birla Group for US\$579 million in cash, concurrent with the completion of the merger. The Aditya Birla Group will then own 26.0% of the combined company
- Aditya Birla Group has a right to acquire up to a 9.5% additional shareholding from Vodafone
- Standalone towers and Idea's 11.15% stake in Indus Towers to be monetized

Partnership with international expertise and telecoms scale

1. Technology

- Key shaper of technology standards, key GSMA decisions, chairmanship of the NGMN Alliance.

- Innovator in mobile payments (M-Pesa in 10 countries)

2. Enterprise

- Leader in enterprise mobility internationally, PoPs in 73 countries
- Global leader in IoT
- 49 partner markets

3. Procurement

- Best-in-class purchasing capability reflecting leading multi-country scale
- Leading conglomerate
- One of India's most respected and largest conglomerates with over 150 years of heritage
- Aggregate revenues of US\$41bn

4. Diversified profile

- Proven track record of building leading businesses across diverse industries and geographies

5. Global presence

- Operations across 30+ countries
- Over 120,000 employees belonging to 42 different nationalities

6. Joint Management Team & Governance

- Each Party to have 3 director appointment rights, 6 independent directors
- K. M. Birla to be Chairman as one of 12 Board members
- Vodafone to appoint the CFO
- CEO and COO selected jointly on a 'best person for the role' principle, shortly before closing

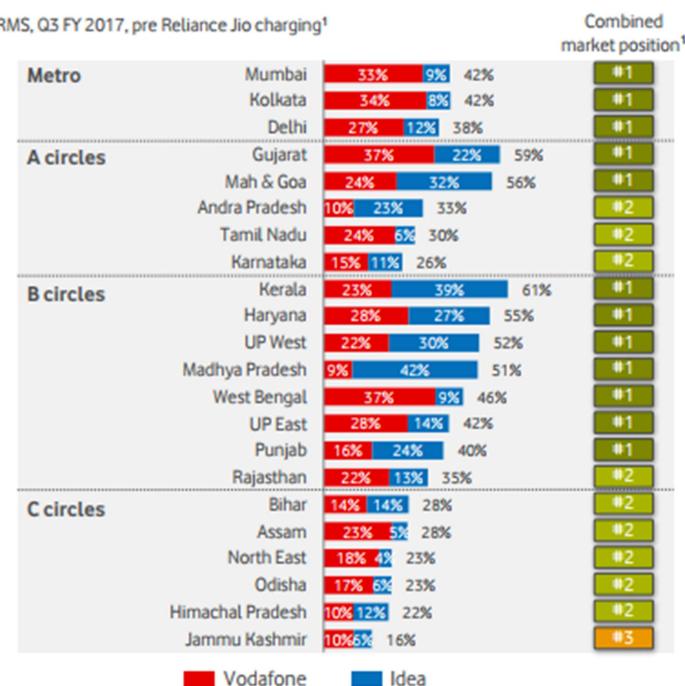


Figure 7 Vodafone and Idea are highly complementary assets

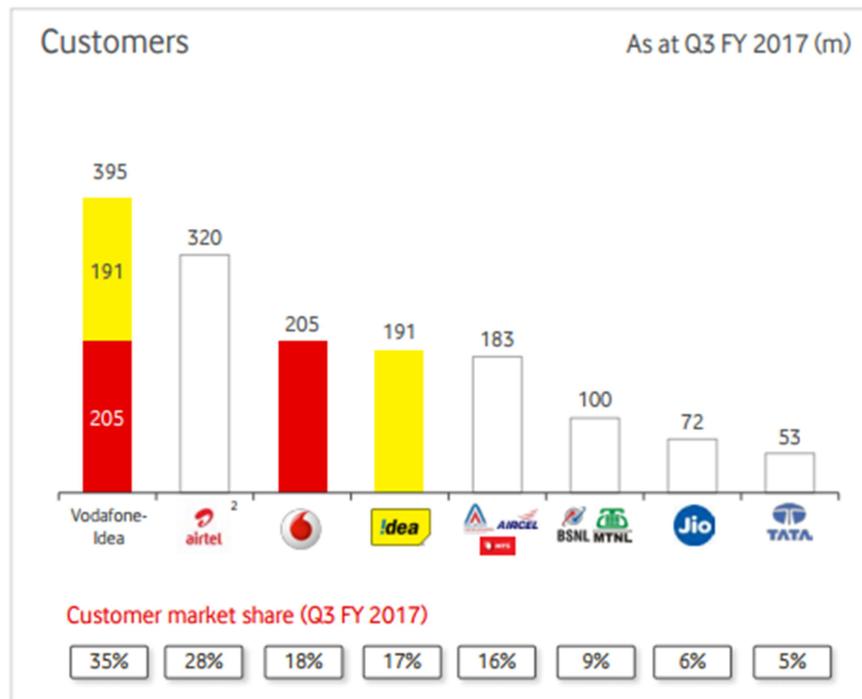


Figure 8 Largest customer base with a competitive spectrum portfolio

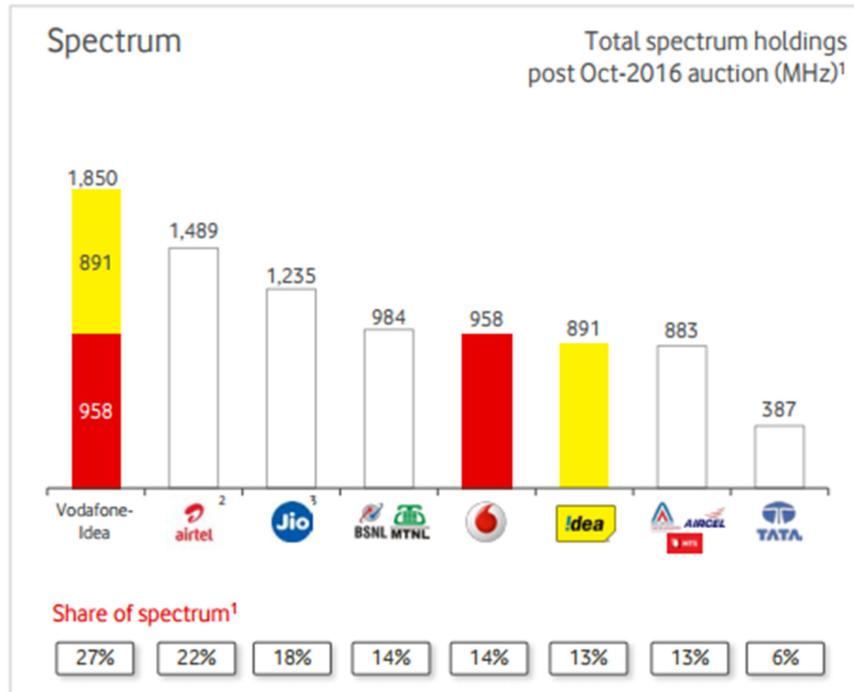


Figure 9 Market leader in revenue and EBITDA

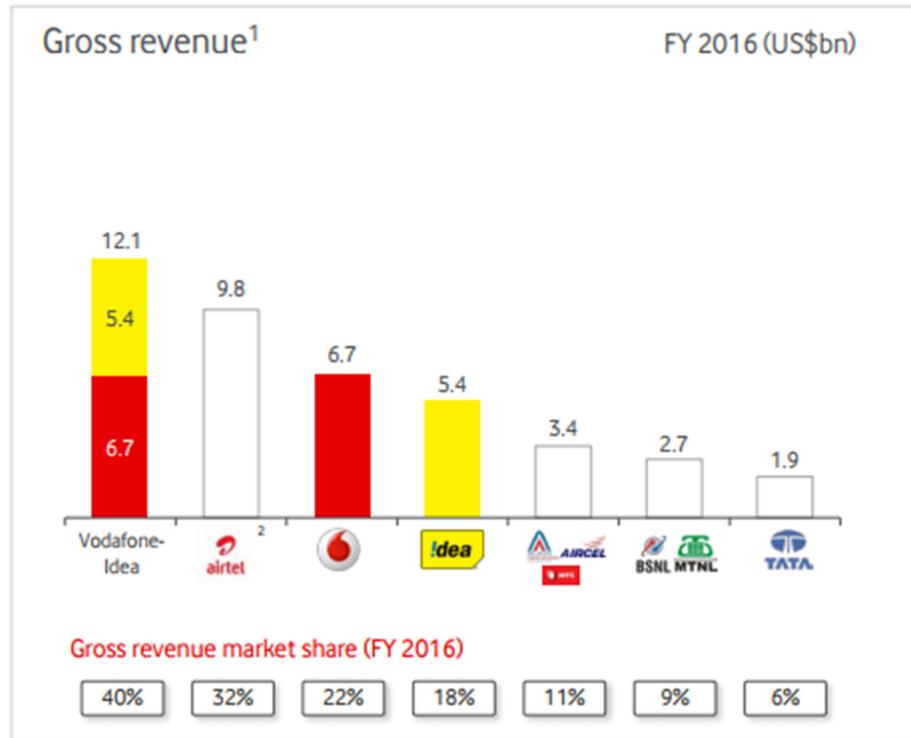


Figure 10 Gross Revenue – Vodafone-Idea

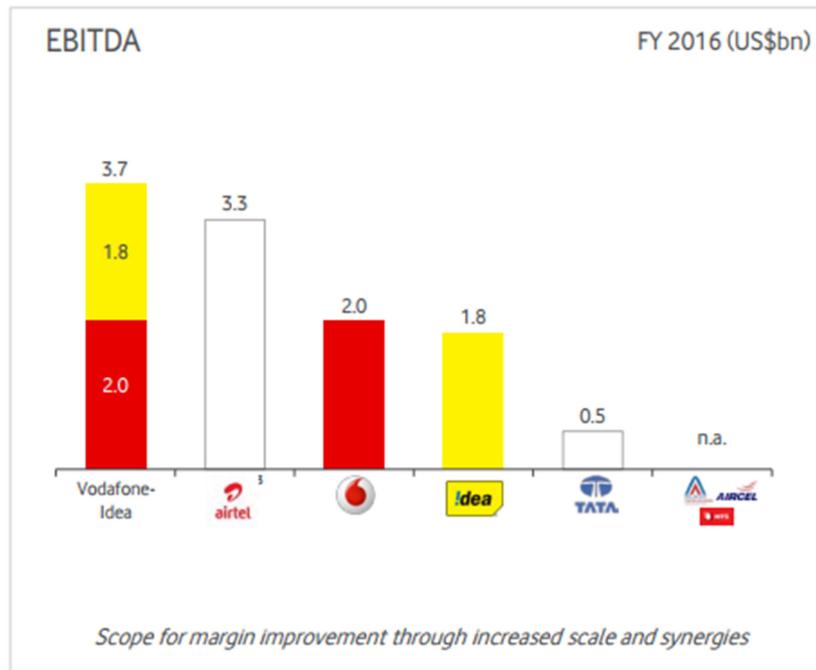


Figure 11 EBITDA Vodafone-Idea

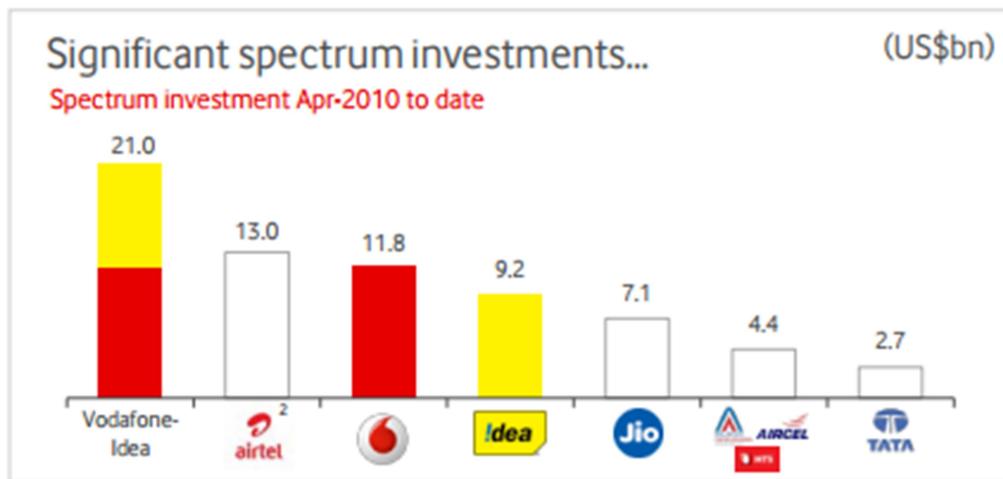


Figure 12 Significant spectrum investments Vodafone-Idea

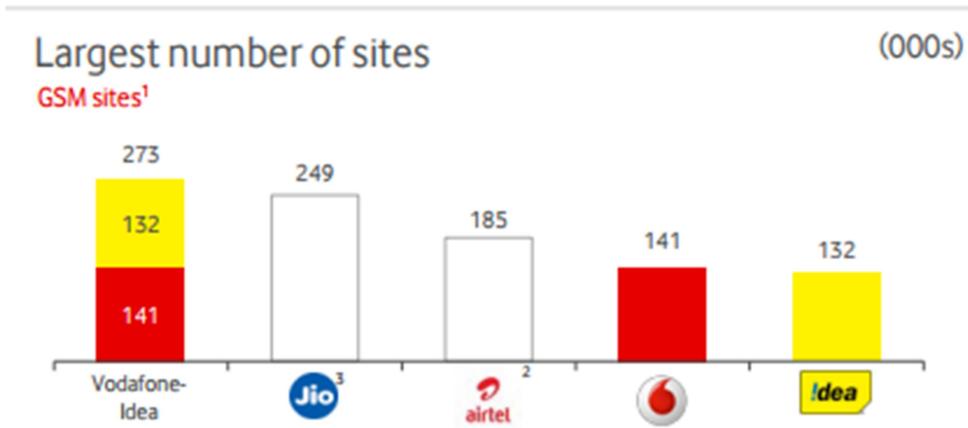


Figure 13 Largest Number of sites Vodafone-Idea

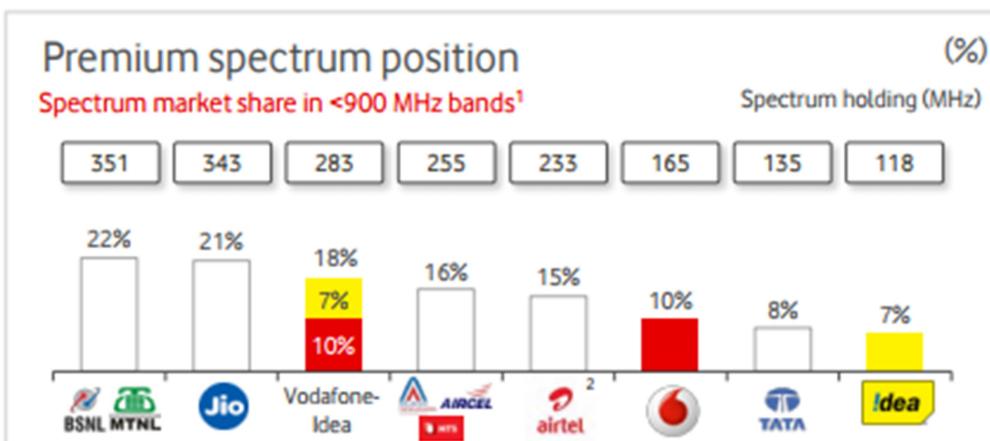


Figure 14 Premium Spectrum Position- Vodafone-Idea

Number of broadband carriers (3G + 4G)¹

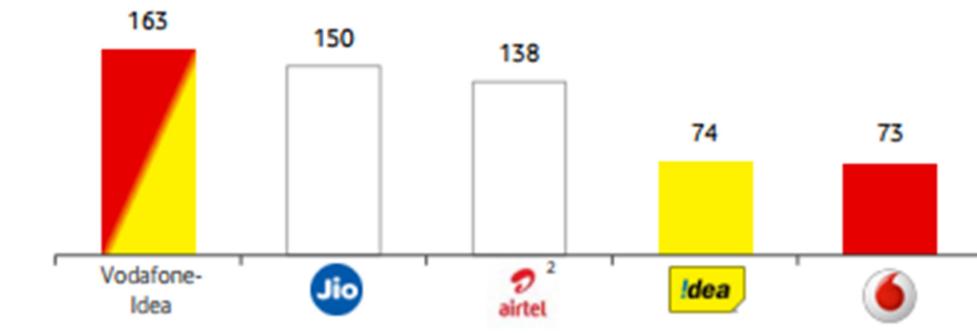


Figure 15 Enabling leading spectrum- Vodafone-Idea

Table 2 Substantial cost and capex synergies

Synergy Area	Description
Network & IT	<ul style="list-style-type: none"> Rationalisation of combined site requirements (more than 20%) following network consolidation Avoidance of duplicative 4G network expansion and upgrades, re-deployment of over-lapping equipment Material longer-term IT savings due to scale benefits, infrastructure sharing, and system combination
Customer service & customer acquisition	<ul style="list-style-type: none"> Service centers, back office, and distribution efficiencies Scale efficiencies with channel and service partners
G&A and other	<ul style="list-style-type: none"> Rationalisation of combined marketing costs Streamlining of overlapping activities

*US\$2.1 billion run rate cost and capex synergies in 4th year

Table 3 Limited regulatory dis-synergies

Dis-synergy areas	Description	NPV (US\$m)
Liberalisation of spectrum	<ul style="list-style-type: none"> Liberalisation cost on Vodafone India spectrum in 13 circles 	500
Breach of spectrum caps	<ul style="list-style-type: none"> Need for spectrum surrender or sale where spectrum caps are breached Opportunity to sell excess 	<0

	spectrum or hand it back to the government	
Potential breach of revenue market share caps	<ul style="list-style-type: none"> Potential revenue loss as a result of breaches in revenue market share caps (Less than 50% compliance test, to be measured 12 months post-closing) 	Unknown
Potential breach of customer market share caps	<ul style="list-style-type: none"> Potential revenue loss as a result of breaches of customer market share caps (Less than 50% compliance test, to be measured 12 months post-closing) 	Unknown

Table 4 Transaction overview

Proposed transaction	<ul style="list-style-type: none"> Vodafone to combine its subsidiary Vodafone India (excluding its 42% stake in Indus Towers) with Idea Cellular Immediately post-merger, Vodafone to receive a 50% stake in Vodafone-Idea (approximately 3,630m1 shares) Concurrent with completion, Vodafone will transfer a 4.9% stake in the combined company to Aditya Birla Group for US\$579m in cash
Value equation	<ul style="list-style-type: none"> Vodafone India valued at an enterprise value of US\$12.4bn² – Implied 6.4x LTM EBITDA³ – Based on Idea market capitalization of US\$3.9bn (6.3x LTM EBITDA excluding Idea's Indus Towers stake) – Vodafone to contribute \$369 million more net debt than Idea at closing (approximately \$8.2 billion as at 31 December 2016)
Ownership split	<ul style="list-style-type: none"> Vodafone: 45.1% Aditya Birla Group: 26.0% Idea's minority shareholders: 28.9% Equalisation mechanism to align the shareholdings of Vodafone and the Aditya Birla Group over time
Timeline	<ul style="list-style-type: none"> Transaction subject to prior regulatory approval and Idea shareholder approval

	<ul style="list-style-type: none"> Completion anticipated during calendar 2018
Tower monetization options	<ul style="list-style-type: none"> Vodafone India's standalone towers to be part of transaction, with the aim of selling them before closing Vodafone to retain its 42% stake in Indus Towers Exploring strategic options including a full or partial sale of Vodafone's stake in Indus Towers

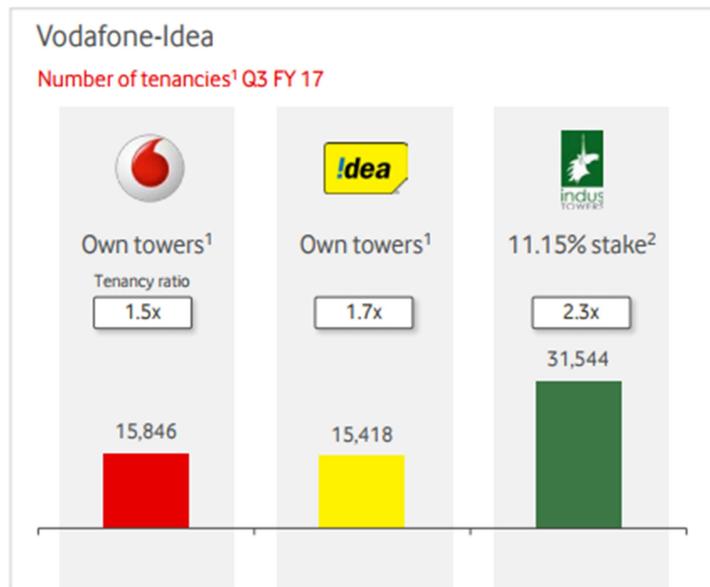


Figure 16 Unlocking value through tower assets

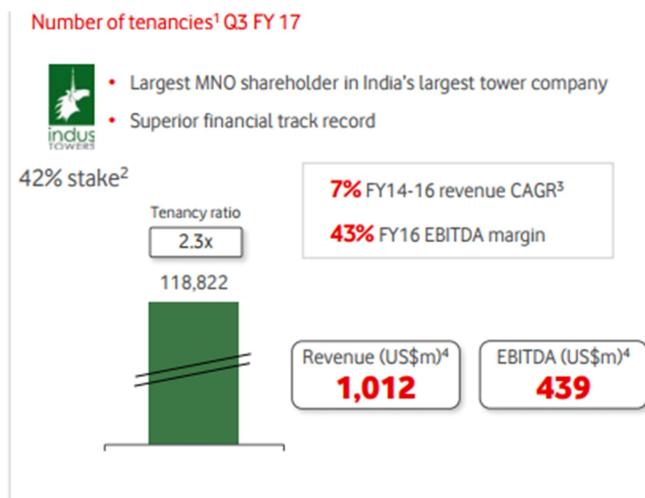


Figure 17 Vodafone Group Indus Towers Stakeholders

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