EXECUTIVE SUMMARY

Second-largest subscriber base
• With a subscriber base of nearly 1074.23 million, as of September 2016, India accounted for the 2nd largest telecom network in the world

Third-highest number of internet users
• With 367.48 million internet subscriber, as of September 2016, India stood 3rd highest in terms of total internet users in 2016.

Most of the Internet accessed through mobile phones
• Mobile based Internet is a key component of Indian Internet usage, with 7 out of 8 users accessing internet from their mobile phones
  • Since 2012, the share of time spent on watching videos on mobile devices has grown by 200 hours a year

Rising penetration rate
• As of September 2016, urban tele-density stood at 156.24 per cent and rural tele-density at 51.24 per cent

Affordability and lower rates
• Availability of affordable smartphones and lower rates are expected to drive growth in the Indian telecom industry

Source: Telecom Regulatory Authority of India, TechSci Research
TELECOMMUNICATION

ADVANTAGE INDIA
Robust demand

- India is the world’s 2nd largest telecommunications market, with 1.058 billion subscribers as of March, 2016
- With 70 per cent of the population staying in rural areas, the rural market would be a key growth driver in the coming years

Attractive opportunities

- Telecom penetration in the nation’s rural market is expected to increase to 70 per cent by 2017 from 51.37 per cent, as of March 2016
- India became the 2nd largest internet market in December 2014
- The government of India has introduced Digital India programme under which all the sectors such as healthcare, retail, etc. will be connected through internet

High ratings

- The country has a strong telecommunication infrastructure
- In terms of telecommunication ratings, India ranks ahead of its peers in the West and Asia

Policy support

- The government has been proactive in its efforts to transform India into a global telecommunication hub; prudent regulatory support has also helped
- National Telecom Policy 2012 calls for unified licensing, full MNP and free roaming

Source: BMI (Business Monitor International) Report, TechSci Research, Internet Mobile Association of India (IAMAI)
Notes: MNP - Mobile Number Portability

For updated information, please visit www.ibef.org
THE TELECOM MARKET SPLIT INTO THREE SEGMENTS

Telecom

Mobile (wireless)
- Comprises establishments operating and maintaining switching and transmission facilities to provide direct communications via airwaves

Fixed-line (wireline)
- Consists of companies that operate and maintain switching and transmission facilities to provide direct communications through landlines, microwave or a combination of landlines and satellite link-ups

Internet services
- Includes Internet Service Providers (ISPs) that offer broadband internet connections through consumer and corporate channels

Source: TechSci Research
India is currently the 2nd largest telecommunication market and has the 3rd highest number of internet users in the world.

India’s telephone subscriber base expanded at a CAGR of 18.28 per cent, reaching 1102.94 million during FY07–17.

Tele-density (defined as the number of telephone connections for every 100 individuals) in India, increased from 17.9 in FY07 to 86.25 in FY17.

In October 2016, total telephone subscription stood at 1102.94 million, while tele-density was at 86.25 percent.

Source: Telecom Regulatory Authority of India, TechSci Research
Notes: CAGR - Compound Annual Growth Rate
  1Data till October 2016
Indian telecom sector’s revenue grew at a CAGR of 7.17 per cent to USD39.2 billion in FY16 as compared to USD19.6 billion in FY06.

Revenues from the telecom equipment is estimated at USD20 billion in FY16.

Source: Telecom Regulatory Authority of India, TechSci Research
Note: CAGR - Compound Annual Growth Rate; FY – Indian Financial Year (April – March);
Figures mentioned are as per latest data available
In March 2016, India’s telephone subscriber base reached 1058.86 million.

In March 2016, the wireless segment (97.60 per cent of total telephone subscriptions) dominated the market, with the wireline segment accounting for an overall share of 2.4 per cent.

Urban regions accounted for 57.29 per cent share in the overall telecom subscriptions in the country, while rural areas accounted for the remaining share.

_source: Telecom Regulatory Authority of India, TechSci Research_
WIRELESS SUBSCRIPTIONS WITNESS ROBUST GROWTH OVER THE YEARS

* During FY07-16, wireless subscriptions in the country increased at a CAGR of 22.94 per cent, with the number of subscribers reaching to 1,058.85 million in FY16

* In FY16, urban wireless teledensity stood at 148.73 while rural wireless teledensity stood at 50.88

* India is the world’s 2\textsuperscript{nd} largest smartphone market & is expected to have almost 1 billion unique mobile subscribers by 2020

Source: Telecom Regulatory Authority of India, TechSci Research
Notes: CAGR - Compound Annual Growth Rate
WIRELESS TELEDENSITY GROWS OVER THE YEARS

• The mobile segment’s teledensity surged from 14.6 per cent in FY07 to 86.25 per cent in FY17

• GSM services continue to dominate the wireless market with a 90.96 per cent share (as of October 2016); while CDMA services accounted for the remaining 9.04 per cent share.

Growth in wireless teledensity

<table>
<thead>
<tr>
<th>Year</th>
<th>Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY07</td>
<td>14.60%</td>
</tr>
<tr>
<td>FY08</td>
<td>22.80%</td>
</tr>
<tr>
<td>FY09</td>
<td>33.70%</td>
</tr>
<tr>
<td>FY10</td>
<td>49.70%</td>
</tr>
<tr>
<td>FY11</td>
<td>68%</td>
</tr>
<tr>
<td>FY12</td>
<td>76%</td>
</tr>
<tr>
<td>FY13</td>
<td>70.90%</td>
</tr>
<tr>
<td>FY14</td>
<td>75.43%</td>
</tr>
<tr>
<td>FY15</td>
<td>77.27%</td>
</tr>
<tr>
<td>FY16</td>
<td>81.38%</td>
</tr>
<tr>
<td>FY17</td>
<td>86.25%</td>
</tr>
</tbody>
</table>

Source: Telecom Regulatory Authority of India, TechSci Research
Notes: Teledensity - The number of telephone lines for every 100 people in a country,
GSM - Global System for Mobile Communications,
CDMA - Code Division Multiple Access
¹Data till October 2016
As of October 2016, Bharti Airtel was the market leader, with a 24.32 per cent share in the wireless subscription, followed by Vodafone (18.72 per cent share).

The top 5 players in the sector include - Bharti Airtel, Vodafone, Idea, Reliance and BSNL – accounting for 77.39 per cent of the wireless subscribers in the country.
BSNL DOMINATES FIXED-LINE SEGMENT

* Total fixed-line subscription stood at 24.52 million, while teledensity reached 1.92 per cent due to wide usability of the wireless segment in FY17

* In FY17, BSNL is the market leader with a 56.60 per cent share, followed by Bharti Airtel (15.53 per cent)

* BSNL, MTNL & Bharti together account for 86.35 per cent of the total fixed-line market in FY17.

Source: Telecom Regulatory Authority of India, TechSci Research
Notes: BSNL - Bharat Sanchar Nigam Limited
¹Data till October 2016
The number of Internet subscribers in the country increased at a CAGR of 44.55 per cent, with the number reaching 342.65 million in March, 2016 from 8.6 million in 2006.

Including Internet Access by Wireless Phone Subscribers,
CAGR - Compound Annual Growth Rate;
BSNL - Bharat Sanchar Nigam Ltd,
Internet live stats
Broadband subscription in the country witnessed an increase at a CAGR of 19.18 per cent during FY07–17.1.

Source: Telecom Regulatory Authority of India, TechSci Research
Notes: CAGR - Compound Annual Growth Rate
1Data till October 2016
BHARTI ACCOUNTS FOR MAJOR SHARE IN BROADBAND SUBSCRIPTIONS

* As of October 2017, Bharti Airtel accounted for the largest share of 22.05 per cent in the total broadband market (wired and wireless) of India

* Vodafone accounted for the 2nd largest share of 18.40 per cent in the country’s broadband market (wired and wireless), during the same period

**Market break-up by broadband subscriptions (wired and wireless) (FY17\(^1\))**

- Bharti Airtel: 22.05%
- Vodafone: 18.40%
- Idea: 16.45%
- BSNL: 16.63%
- Reliance Jio: 19.64%
- Others: 9.83%

**Source:** Telecom Regulatory Authority of India, TechSci Research

Notes: BSNL - Bharat Sanchar Nigam Ltd,
\(^1\)Data till October 2016
### Key Companies in the Market

<table>
<thead>
<tr>
<th>Company</th>
<th>Ownership</th>
<th>Presence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mahanagar Telephone Nigam Ltd (MTNL)</td>
<td>Government (56.3 per cent), Life Insurance Corporation (18.8 per cent)</td>
<td>Fixed-line &amp; mobile telephony (in Delhi &amp; Mumbai), data and Internet</td>
</tr>
<tr>
<td>Bharat Sanchar Nigam Ltd (BSNL)</td>
<td>Government (100 per cent)</td>
<td>Fixed-line and mobile telephony (GSM – outside Delhi &amp; Mumbai), data and Internet in 22 circles</td>
</tr>
<tr>
<td>Reliance Communications</td>
<td>ADAG Group (approximately 59.70 per cent)</td>
<td>Mobile (CDMA) and broadband</td>
</tr>
<tr>
<td>Bharti Airtel</td>
<td>Bharti Group (43.72 per cent), Pastel Ltd (14.79 per cent), Indian Continent Investment (6.65 per cent)</td>
<td>Broadband and mobile (GSM) in 22 circles</td>
</tr>
<tr>
<td>Vodafone India</td>
<td>Vodafone (84.5 per cent), Piramal Enterprises (11.0 per cent)</td>
<td>Broadband and mobile (GSM) in 22 circles</td>
</tr>
</tbody>
</table>

*Source: Companies’ websites, Bloomberg, TechSci Research*
NOTABLE TRENDS IN THE INDIAN TELECOM SECTOR … (1/2)

Green Telecom
- The green telecom concept is aimed at reducing carbon footprint of the telecom industry through lower energy consumption
- Tata has invested around USD16.38 million to convert its 10,000 base stations from indoor to outdoor to reduce energy consumption and carbon footprint across its 20 telecom circles in India so far

Expansion to Rural Markets
- There are over 62,443 uncovered villages in India; these would be provided with village telephone facility with subsidy support from the government’s Universal Service Obligation Fund (thereby increasing rural teledensity)
- In March 2016, the rural subscriber base accounted for 42.42 per cent of the total subscriber base, thereby fuelling growth across the sector

Emergence of BWA Technologies
- The most significant recent developments in wireless communication include BWA technologies such as WiMAX and LTE
- In 2015, Airtel launched its 4G services in 296 cities across the India
- In 2015, BSNL started its 1st 4G Wireless Broadband Internet Service- WiMax
- Reliance Jio, has launched 4G services across pan-India as on December 2015

Internet Of Things (IOT)
- IoT is the concept of electronically interconnected and integrated machines, which can help in gathering and sharing data. The Indian Government is planning to develop 100 smart city projects, where IoT would play a vital role in development of those cities.

Source: TechSci Research
Notes: BWA - Broadband Wireless Access, TRAI - Telecom Regulatory Authority of India
### Telecom Finance Commission
- Department of Telecommunication is planning to issue a global tender for inviting applications for setting up a Telecom Finance Corporation (TFC). The government has fixed a deadline according to which TFC is expected to be operational by March 31, 2017.

### Rising investments
- Vodafone, one of the leading players in the telecom sector in India, has disclosed its plans to invest USD1310 million to upgrade & expand Vodafone India network coverage & USD655 million to upgrade its technology centre.
- In February 2017, Japanese Telecom company - Docomo, re-invested USD 1.18 billion in Tata Telecom, to gather a stake of 26.5 per cent in the company.

### Outsourcing non-core activities
- As part of the recent outsourcing trend, operators have outsourced functions such as network maintenance, IT operations & customer service.

### Mobile banking
- Availability of affordable smartphones, along with a rise in the security level of mobile transactions, is expected to boost growth of transactions conducted via phones, with the overall transaction value being tripled in 2014. In December 2016, 39.5 million mobile banking transactions were done, as compared to 16.8 million in December 2015.
- In May 2016, about 37 lakh mobile banking transaction attempts were able to reach NPCI’s platform.
- In March 2017, the government set a target of achieving 25 billion digital transactions for banks with the help of PoS machines, transactions enabled & merchants, which have been added in firms.
- In March 2017, Samsung launched its mobile payment service, Samsung Pay, to facilitate smooth payment at retail outlets, instead of using mobile wallets, credit or debit cards.

Source: ‘Searching for New Frontiers of growth: Indian Banks’ - PwC, TechSci Research, Reserve Bank of India
Note: NPCI - National Payment Corporation of India

For updated information, please visit www.ibef.org
A surge in the subscriber base has necessitated network expansion covering a wider area, thereby creating a need for significant investment in telecom infrastructure.

To curb costs and focus on core operations, telecom companies have been segregating their tower assets into separate companies. For example: Reliance Communications has decided to finalise a deal to sell its stake in Reliance Infratel. The value of the deal is around USD3.68 billion.

Creating separate tower companies has helped telecom companies lower operating cost and improve capital structure; this has also provided an additional revenue stream.

Inspired by the success seen by Indian players in towers business, most of the operators around the world are replicating the model.

To reduce the carbon footprint for telecom infrastructure, including mobile towers, on 1st January, 2017, TRAI (The Telecom Regulatory Authority of India), announced to bring consultation paper, that will review the issues related to carbon footprint.

Emergence of tower industry

- Rising competition
- Higher operating cost and debt burden
- Focus on tower sharing to reduce costs
- Segregation of towers into separate companies

Source: TechSci Research
TELECOMMUNICATION

PORTER FIVE FORCES ANALYSIS
**TELECOMMUNICATION**

### PORTER’S FIVE FORCES ANALYSIS

<table>
<thead>
<tr>
<th>Competitive Rivalry</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Customers’ low switching cost and price sensitivity are increasing competition among players</td>
</tr>
<tr>
<td>• High exit barriers are also intensifying competition</td>
</tr>
<tr>
<td>• There are around 6 to 7 players in each region, leading to intense competition</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Threat of New Entrants</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Strict government regulations</td>
</tr>
<tr>
<td>• Extremely high infrastructure setup cost</td>
</tr>
<tr>
<td>• Difficulty in achieving economies of scale</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Substitute Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Hardly any threat of substitute products as there is no substitute available in the market</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Bargaining Power of Suppliers</th>
</tr>
</thead>
<tbody>
<tr>
<td>• High bargaining power of suppliers as there are just a few suppliers in the sector</td>
</tr>
<tr>
<td>• High cost of switching suppliers</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Bargaining Power of Customers</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Low switching cost and mobile number portability give customers high bargaining power</td>
</tr>
<tr>
<td>• Customers are price sensitive</td>
</tr>
</tbody>
</table>

Source: TechSci Research
Note: VoIP – Voice Over Internet Protocol
TELECOMMUNICATION

STRATEGIES ADOPTED
TELECOMMUNICATION

STRATEGIES ADOPTED

Marketing strategy

• Players are using innovative marketing strategies to succeed in this sector. For example,
  • In August 2015, Idea Cellular launched new campaign “Get idea & dance”
  • Airtel launched new ad campaign “Airtel myPlan Family”

Differentiation

• Players differentiate themselves by providing different services to customers. For example,
  • In 2015, Airtel India launched a mobile app “Wynk Movies”, it is a library that includes videos and movies
  • In November 2015, Vodafone launched “Choose Your Number” facility where pre paid & post paid customers get numbers of their own choice

Pricing strategy

• Players price their products very carefully due to the price sensitive nature of customers & high competition in the sector. Players generally go for price war. For example,
  • In December 2016, Micromax launched low cost 4G Volte Smartphones, with a pre-activated Reliance Jio Sim offer of free voice calls & data. These smartphones are launched in the range of USD67.21 to USD114.57
  • In September 2016, Reliance Jio 4G network plans have been launched by the company’s chairman Mr. Mukesh Ambani. Free domestic voice calls have been offered by Jio. No charge or deduction of data would be done for making voice calls to any network across the country. Also, the company has offered cheaper data plans & tariff plans ranging from USD2.28 to USD76.37 per month. As of October 2016, the company’s subscriber base had crossed 16 million customers
  • In March 2017, CAT S60 smartphone was launched in India for US$ 966.81. The phone is loaded with a thermal camera that can see through smoke and can be used in extreme temperatures.

Source: Company websites, TechSci Research
Notes: CDMA – Code Division Multiple Access, GSM - Global System for Mobile Communication

For updated information, please visit www.ibef.org
TELECOMMUNICATION

GROWTH DRIVERS
TELECOMMUNICATION

SECTOR BENEFITS FROM RISING INCOME, GROWING YOUNG POPULATION

Growing demand

- Higher real income and changing lifestyles
- Growing young population
- Increasing MOU and data usage

Policy support

- Inviting
- Reduction in license fee
- Relaxed FDI Norms
- Encourages firms to expand to rural areas

Increasing investments

- Resulting in
- Higher FDI inflows
- Increasing M&A activity

Notes: FDI - Foreign Direct Investment, MOU - Minutes of Use per month and per subscriber, M&A - Mergers and Acquisitions
Incomes have risen at a brisk pace in India and will continue rising given the country’s strong economic growth prospects.

Nominal per capita income have recorded a CAGR of 8.87 per cent over 2000–15

Increasing income has been a key determinant of demand growth in the telecommunication sector in India

The IMF estimates nominal per capita income in India to expand at a CAGR of 4.94 per cent during FY10–FY19

Per capita income in the country is expected to grow at a CAGR of 8.1 per cent during FY15–FY19

Per capita income in the country is estimated at USD1,747.5 in FY16
The emergence of an affluent middle class is triggering demand for the mobile and internet segments.

A young, growing population is aiding this trend (especially demand for smart phones).

Note: Mobile Users Come of Age’ February 2011
The Mobile Value Added Services (MVAS) industry has expanded at a CAGR of 31.74 per cent to USD9.98 billion by 2015 from USD1.1 billion in 2007.

The share of non-voice revenues, which currently stands at around 10 per cent of telecom operators’ revenues, is estimated to rise to more than 30 per cent in the next 5 to 7 years.

A decline in the prices of smartphones & data subscription rates is likely to drive demand for MVAS.

Source: Wipro Technologies, IAMAI – Internet And Mobile Association of India
The Internet and Mobile Association of India, TechSci Research
Notes: CAGR - Compound Annual Growth Rate, MVAS - Mobile Value-Added Services, E - Estimate, F - Forecast
In October 2015, Telecom Regulatory Authority of India announced an amendment for Telecom Consumer Protection Regulations 2012 according to which mobile service operators have to provide compensation to the users in case of call drop.

- The formulated regulation would be effective from January, 2016.

In 2015, Telecom Regulatory Authority of India made regulations to amend the Standards of quality of wireline (telephone service) & cellular mobile telephone services. These regulations has been laid down to ensure better & effective compliance with the quality of service regulations & to protect the interest of the customers.

FDI cap in the telecom sector has been increased to 100 per cent from 74 per cent; out of 100 per cent, 49 per cent will be done through automatic route & the rest will be done through the FIPB approval route.

- FDI of up to 100 per cent is permitted for infrastructure providers offering dark fibre, electronic mail and voice mail.
In 2015, TRAI passed the telecommunication tariff (16th amendment) order, according to which, every service provider should offer a special roaming tariff plan to its prepaid & post-paid customers & on payment of fixed charge for special roaming tariff plan national roaming should be free.

The Department of Information Technology intends to set up over 1 million internet-enabled common service centres across India as per the National e-Governance Plan.

On 8th August 2016, the Telecom Regulatory Authority of India (Trai) made the 10th amendment to the TCPR (Telecom Consumers Protection Regulations) permitting telecom companies to offer data packs having maximum validity of 365 days.

In January 2015, the Government of India recommended reduction in license fees of telecom operators by 6 per cent, telecom operators currently pay 8 per cent of adjusted gross revenue as licence fee.

The issuance of several international & national long-distance licenses has created opportunities & attracted new companies into the market.

Notes: USOF - Universal Service Obligation Fund; OFC - Optical Fibre Cable, WiMAX - Worldwide Interoperability for Microwave Access Telecommunications
Source: TRAI, TechSci Research
The USOF is expected to extend financial support to operators providing services in rural areas & encourage active infrastructure sharing among operators.

TRAI has recommended that USO levy component to be reduced from 5 per cent to 3 per cent of annual revenues for all the licenses from April 2015.

The prescribed limit on spectrum would be increased from 6.2 MHz to 2x8 MHz (paired spectrum) for GSM technology in all areas other than Delhi & Mumbai, where it will be 2x10 MHz (paired spectrum).

Telecom players can, however, obtain additional frequency; there will be an auction of spectrum subject to the limits prescribed for the merger of licenses.

As of October 2016, telecom operators like Vodafone & Tata Teleservices purchased spectrum worth USD 1.51 billion & USD 0.34 billion, respectively, from the government.

In 2015, telecom authority issued this order mandating every DTH operator to specify the tariff for supply & installation of the customer premises equipment. DTH operator should specify the refundable security deposit, installation charges, monthly rental charge & activation.

Source: TRAI, TechSci Research

Notes: USOF - Universal Service Obligation Fund; OFC - Optical Fibre Cable.
TELECOMMUNICATION

NATIONAL TELECOM POLICY - 2012

- ‘Broadband for all’ with a minimum download speed of 2Mbps
- Increase rural teledensity from 39 to 70 per cent by 2017, & 100 per cent by 2020
- Liberalisation of spectrum & convergence of network, services & devices
- Aims at a ‘One Nation-One license’ regime with no roaming charges & nation wide number portability
- Unified licensing, delinking of spectrum from license, online real-time submission & processing


For updated information, please visit www.ibef.org
Process of M2M Roadmap Formulation

- **Draft roadmap & open consultation through web**
- **Firming up of issues & viewpoints through Questionnaire to Stakeholders**
- **Consultation with Industry bodies (COAL, FICCI, AUSPI, ASSOCHAM) /Other Stakeholders**
- **Seminars & Workshops on M2M**
- **Input from consultative committee & working groups**
- **Input from various TEC committees on different issues**
- **Inputs from DeitY & Industry stakeholders on draft documents**

**Policy & Regulatory Committee**

**National Telecom M2M Roadmap**

*Source: Digital Dawn, KPMG Report 2013, TechSci Research*
FOREIGN INVESTMENTS FLOWING IN … (1/2)

* Cumulative FDI inflows into the telecom sector over April 2000–December 2016, totalled to USD23.92 billion.

* During this period, FDI into the sector accounted for a share of 7 per cent of total FDI inflows into the country, till December 2016.

* Between April 2014 to December 2016, Telecommunication sector attracted FDI inflows of around USD 9.6 billion.

**Cumulative FDI inflows into telecommunication (USD million)**

<table>
<thead>
<tr>
<th>FY10</th>
<th>FY11</th>
<th>FY12</th>
<th>FY13</th>
<th>FY14</th>
<th>FY15</th>
<th>FY16</th>
<th>FY17</th>
</tr>
</thead>
<tbody>
<tr>
<td>9872.49</td>
<td>10,589.27</td>
<td>12,552.19</td>
<td>12,856.06</td>
<td>14,163.01</td>
<td>17,058.03</td>
<td>18,382.00</td>
<td>23,921.00</td>
</tr>
</tbody>
</table>

*Source: Department of Industrial Policy & Promotion, TechSci Research*

*Note: FY16 - Data mentioned is from April 2000 – September 2016
*April,16 – December, 16*
### TELECOMMUNICATION

**FOREIGN INVESTMENTS FLOWING IN … (2/2)**

#### Foreign investment in India

<table>
<thead>
<tr>
<th>Target</th>
<th>Acquirer</th>
<th>Acquisition price (USD million)</th>
<th>Division acquired</th>
</tr>
</thead>
<tbody>
<tr>
<td>Videocon Telecommunications Ltd-1800 MHz spectrum in 6 circles</td>
<td>Bharti Airtel (2016)</td>
<td>660</td>
<td>100% stake</td>
</tr>
<tr>
<td>Bharti Airtel's operations in Burkina Faso &amp; Sierra Leone</td>
<td>Orange SA (2016)</td>
<td>900</td>
<td>100% stake</td>
</tr>
<tr>
<td>MTS</td>
<td>Reliance Communication (2015)</td>
<td>736.98</td>
<td>8 – 10% stake</td>
</tr>
<tr>
<td>Augere Wireless</td>
<td>Bharti Airtel (2015)</td>
<td>21.3 million</td>
<td>100% stake</td>
</tr>
<tr>
<td>Bharti Airtel</td>
<td>SingTel (2013)</td>
<td>302</td>
<td>Increases stakes to 32.34%</td>
</tr>
<tr>
<td>Bharti Airtel</td>
<td>Qatar Foundation Endowment (2014)</td>
<td>1,260</td>
<td>PE deal – 5% stake</td>
</tr>
<tr>
<td>Vodafone India Ltd</td>
<td>Vodafone International Holdings (2014)</td>
<td>1,641</td>
<td>Increases stakes to 100%</td>
</tr>
<tr>
<td>Ascend Telecom</td>
<td>Ascend Telecom Infrastructure Pvt. Ltd</td>
<td>54.29</td>
<td>33 per cent stake</td>
</tr>
</tbody>
</table>

- In February 2017, Bharti Airtel announced its plans to acquire Norway based – Telenor, for a no cash deal by also taking over Telenor’s infrastructure & contracts for tower lease.
- In March 2017, Vodafone announced its merger with Idea Cellular to become India’s biggest telecom operator. The merger will result in a customer base of 400 million, nearly 35 per cent market share.
- In April 2017, IDFC Alternatives bought 33 per cent stakes worth US$54.29 million in Ascend Telecom Infrastructure Pvt. Ltd. As a part of the deal, IDFC has agreed to re-finance Ascend Telecom’s loans of US$92.22 million.
- NTT Communications has acquired a Virtual Network Operator – International Long Distance (VNO-ILD) license in India. This license will allow NTT Com to add Arcstar Universal One International Network Services in its brand. The company will be using their ICT solutions to help enterprise customers build its ICT environment for business expansion in India.

*Source: Thomson Banker, Deal Tracker, Grant Thornton, TechSci Research
Notes: M&A - Merger and Acquisition, PE - Private Equity*

For updated information, please visit [www.ibef.org](http://www.ibef.org)
EXPANSION AND GROWTH STRATEGIES OF LEADING PLAYERS

New Call Telecom
Investment decision

• In 2015, New Call Telecom has announced to invest USD300 million in India within next 12-18 months. The company has decided to invest in India to increase its presence. Along with investments, New Call Telecom has already acquired Nimbuzz (global mobile technology brand) & New Delhi based Ozone networks.

Vodafone India 4G launch, Reliance Jio 4G launch

• In January 2016, Vodafone India launched its 4G network services in Kolkata & Kozhikode (Kerala) following its successful implementation in other parts of Kerala such as Kochi & Thiruvananthapuram.

• In September 2016, Reliance Jio launched 4G services across India, at comparatively cheaper rates. The company has targeted to acquire 100 million customers by March 2017. In addition to the existing plan India 2300 MHz spectrum & 1800 MHz in 14 circles, during the auction in 2016, Jio invested over USD1,527.7 million to acquire 1800 MHz spectrum in 6 circles & 800 MHz spectrum in 10 circles.

Mobile wallet by Vodafone

• Vodafone India has entered into an agreement with Walmart India to make payments using M-Pesa mobile wallet services. Under this agreement, Vodafone M-Pesa will offer safe, secure & convenient transactions & on placing an order with Walmart India, Vodafone M-Pesa agent will reach out to customer & cash in into his M-Pesa account.

New Entrant in the Smartphone Market

• In January 2017, gaming accessories & console manufacturer - Razer acquired Nextbit, to foray into the smartphone market of India. China based companies such as Xiaomi, One Plus, OPPO, Huawei, etc. have also launched their smartphones in India.

• Domestic Players such as Micromax, Karbonn & Lava are the top 3 budget smartphone companies in India.

Source: Thomson Banker, Deal Tracker, TechSci Research
Note: M&A - Merger and Acquisition
OPPORTUNITIES

TELECOMMUNICATION
TELECOMMUNICATION

OPPORTUNITIES ACROSS SEGMENTS IN THE INDUSTRY … (1/2)

Increasing mobile subscribers

- The number of wireless subscribers in India reached 1.033 billion, by March 2016
- Of the total 1033.63 million subscribers in 2016, around 56.96 per cent subscribers are likely to be from urban areas & the rest (43.04 per cent), from rural areas

Untapped rural markets

- By 2017, rural tele-density is expected to reach 70 per cent & 100 per cent by 2020, growing from 43.05 per cent as of March 2016
- By March 2016, rural wireless tele-density in the country increased to 50.88, while, the urban wireless tele-density reached to 148.73 during the same period

Rising internet penetration

- Internet penetration is expected to grow steadily & is likely to be bolstered by government policy
- Number of broadband subscribers reached 149.75 million at the end of March 2016
- To encourage cash economy, Indian government announced to provide free Wi-fi to more than 1000 gram panchayats

Source: KPMG, TRAI, TechSci Research
### Development of telecom infrastructure

- Telecom infrastructure was expected to increase at a CAGR of 20 per cent to 571,000 towers during 2008–15
- TRAI has made several recommendations for the development of telecom infrastructure, including tax benefits & recognising telecom infrastructure as essential infrastructure

### Growth in MVAS and cloud computing

- The Indian Mobile Value-Added Services (MVAS) industry is expected to reach USD9.5 billion by 2015 from USD4.9 billion in 2012
- Public cloud services in India generated USD1,316 million by in 2016. Indian public cloud services market is expected to reach USD1.9 billion by 2019.

### Telecom equipment market

- Telecom equipment market was estimated to be USD20 billion in 2015-16
- It is anticipated to reach USD30 billion by 2020
- Under Digital India programme, ‘every Indian has a smartphone by 2019’ programme implemented

### Growing Cashless Transactions

- In order to overcome the cash related problems being faced by people, due to demonetisation, Paytm launched a service through which consumers & merchants can pay & receive money instantly, without an internet connection
- This has enabled non-smartphone users to go cashless

---

**Source:** Press Information Bureau, Government of India, TechSci Research

**Notes:** VAS - Value-Added Services, NTP - National Telecom Policy

For updated information, please visit [www.ibef.org](http://www.ibef.org)
The mobile application (app) market is expected to expand at a CAGR of 49.62 per cent to USD330 million during 2014–16.

The mobile app market is estimated around USD245.6 million in 2015.

The segment’s growth is expected to be driven by increasing mobile connections & availability of low-range smartphones.

Over 100 million apps are downloaded every month across different platforms such as iOS, Blackberry, Nokia & Android.

Source: Gartner, Deloitte, Assorted News Articles, TechSci Research

Notes: CAGR - Compounded Annual Growth Rate, *CAGR is calculated in USD million terms, F - Forecast
**BHARTI AIRTEL: AN INSPIRING SUCCESS STORY … (1/2)**

- Set up in 1995, Bharti Airtel is world’s leading mobile operator with presence in 20 countries
- It is the country’s leading mobile operator, with a customer base of 357.4 million as of March 2016 & the world’s 3rd largest telecom operator
- Revenues increased at a CAGR of 11.2 per cent during FY08-FY16 from USD6.3 billion in FY08 to USD14.7 billion in FY16

**Major segments**

<table>
<thead>
<tr>
<th>FY08</th>
<th>FY09</th>
<th>FY10</th>
<th>FY11</th>
<th>FY12</th>
<th>FY13</th>
<th>FY14</th>
<th>FY15</th>
<th>FY16</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.3</td>
<td>7.6</td>
<td>8.3</td>
<td>12.3</td>
<td>14.3</td>
<td>14.2</td>
<td>14.2</td>
<td>15.1</td>
<td>14.7</td>
</tr>
</tbody>
</table>

**Source:** Company website, TechSci Research  
**Notes:** CAGR - Compound Annual Growth Rate  
**Note:** (1) - Revenue is including eliminations
Bharti Airtel had over 251.2 million subscribers, as of March 2016

The company's overall subscriber base in the country expanded at a CAGR of 19.10 per cent, reaching 251.2 million from 62 million over FY08–FY16

Bharti Airtel has a mobile subscriber base of 200 million in India

Bharti Airtel bought optical network gear from Ciena Communications Inc. in 2014 to expand capacity of its i2i undersea cable network that connects India to Singapore

The company had expansion plans in Africa to tap the huge growth potential

It became the 1st Indian telecom company to offer 4G service on mobile phones

On 8th April, 2016, Bharti Airtel Ltd acquired 4G TD spectrum for 8 circles namely Bihar, J&K, Tamil Nadu, West Bengal, Assam, North East, Andhra Pradesh & Orissa from Aircel Ltd.

As of November 2016, the company signed a USD 60 million deal with Finnish gear maker 'Nokia' to implement voice-over-LTE (VoLTE) calling technology
Established in 1994, Vodafone is one of India’s leading mobile operators, with more than 197.9 million customers as of FY2016.

Vodafone’s revenues from India increased at a CAGR of 5.31 per cent to USD65.9 billion during FY08–16.

Source: Company website, TechSci Research
Notes: CAGR - Compounded Annual Growth Rate
Vodafone’s customer subscription increased at a CAGR of 15.12 per cent to 188.2 million during FY08–FY16\(^{(1)}\)

Gujarat, Uttar Pradesh, Maharashtra & West Bengal together account for over 45 per cent of the total customer base.

Vodafone Group plans to invest heavily in the establishment of a fibre-optic network in India.

Vodafone has launched 4G services in Delhi, Kolkata, Karnataka & Kerala in February 2016. In May 2016, the company also planned to cover 4 circles of Gujarat, Haryana, UP (East) & West Bengal.

Source: Company website, TechSci Research

Notes: FY16\(^{(1)}\) represents data till Sep 2015, CAGR - Compounded Annual Growth Rate
MOBILE NUMBER PORTABILITY: A PARADIGM SHIFT IN INDIAN TELECOM

- Mobile Number Portability (MNP) in India was introduced in November 2010
- MNP allows subscribers to change their mobile service provider while retaining their old mobile number
- The portability service was made available for both postpaid & prepaid customers as well as on both GSM & CDMA platforms
- The implementation of MNP has brought a slew of benefits for customers in terms of better plans & offers
- MNP requests in India increased to 209.13 million at the end of March, 2016

Number of MNP requests (in million)

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of MNP Requests</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY14</td>
<td>117.01</td>
</tr>
<tr>
<td>FY15</td>
<td>153.85</td>
</tr>
<tr>
<td>FY16</td>
<td>209.13</td>
</tr>
</tbody>
</table>

Source: TRAI Report, TechSci Research
Association of Unified Telecom Service Providers of India (AUSPI)
B-601, Gauri Sadan 5, Hailey Road, New Delhi – 110 001, India
Tel: 91 11 23358585
Fax: 91 11 23327397
Website: http://www.auspi.in/

Association of Competitive Telecom Operators (ACTO)
601, Nirmal Tower, 26, Barakhamba Road, Connaught Place, New Delhi – 110 001, India
Tel.: 91 11 43565353 / 43575353
Fax: 91 11 43515353
E-mail: info@acto.in
Website: www.acto.in

Internet & Mobile Association of India (IAMAI)
F-36, Basement, East of Kailash, New Delhi – 110 065, India
Tel: 91 11 46570328
E-mail: kalyan@iamai.in
Website: www.iamai.in

Cellular Operators Association of India
14, Bhai Vir Singh Marg, Sector 4, Gole Market, New Delhi – 110001, India
Tel: 91 11  2334 9275
E-mail: contact@coai.in
Website: www.coai.com
BMI telecoms business environment ratings

* Industry rewards: it considers average revenue per users, number of subscribers, subscriber growth, and number of operators

* Country rewards: it considers urban/rural split, age range, GDP per capita, USD

* Industry risks: it considers regulatory independence

* Country risk: it rates the country on short-term external risk, policy continuity, legal framework corruption

* Telecom ratings: overall rating of the above indicators
GLOSSARY — (1/2)

* **BWA:** Broadband Wireless Access
* **CAGR:** Compound Annual growth rate
* **DoT:** Department of Telecommunication
* **FDI:** Foreign Direct Investment
* **FTTH:** Fibre To The Home
* **FY:** Indian Financial Year (April to March)
* **IMF:** International Monetary Fund
* **INR:** Indian Rupee
* **IPTV:** Internet Protocol Television
* **M&A:** Mergers and Acquisitions
* **MoU:** Minutes of Use per month and per subscriber
* **MPEG:** Moving Picture Experts Group

For updated information, please visit www.ibef.org
OFC: Optical Fibre Cable

TRAI: Telecom Regulatory Authority of India

USOF: Universal Service Obligation Fund

USD: US Dollar

VAS: Value-Added Services

WiMAX: Worldwide Interoperability for Microwave access telecommunications

Wherever applicable, numbers have been rounded off to the nearest whole number
### Exchange Rates

#### Exchange rates (Fiscal Year)

<table>
<thead>
<tr>
<th>Year</th>
<th>INR equivalent of one USD</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004–05</td>
<td>44.81</td>
</tr>
<tr>
<td>2005–06</td>
<td>44.14</td>
</tr>
<tr>
<td>2006–07</td>
<td>45.14</td>
</tr>
<tr>
<td>2007–08</td>
<td>40.27</td>
</tr>
<tr>
<td>2008–09</td>
<td>46.14</td>
</tr>
<tr>
<td>2009–10</td>
<td>47.42</td>
</tr>
<tr>
<td>2010–11</td>
<td>45.62</td>
</tr>
<tr>
<td>2011–12</td>
<td>46.88</td>
</tr>
<tr>
<td>2012–13</td>
<td>54.31</td>
</tr>
<tr>
<td>2013–14</td>
<td>60.28</td>
</tr>
<tr>
<td>2014–15</td>
<td>61.06</td>
</tr>
<tr>
<td>2015–16</td>
<td>65.46</td>
</tr>
<tr>
<td>2016–2017E</td>
<td>66.95</td>
</tr>
</tbody>
</table>

#### Exchange rates (Calendar Year)

<table>
<thead>
<tr>
<th>Year</th>
<th>INR equivalent of one USD</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>43.98</td>
</tr>
<tr>
<td>2006</td>
<td>45.18</td>
</tr>
<tr>
<td>2007</td>
<td>41.34</td>
</tr>
<tr>
<td>2008</td>
<td>43.62</td>
</tr>
<tr>
<td>2009</td>
<td>48.42</td>
</tr>
<tr>
<td>2010</td>
<td>45.72</td>
</tr>
<tr>
<td>2011</td>
<td>46.85</td>
</tr>
<tr>
<td>2012</td>
<td>53.46</td>
</tr>
<tr>
<td>2013</td>
<td>58.44</td>
</tr>
<tr>
<td>2014</td>
<td>61.03</td>
</tr>
<tr>
<td>2015</td>
<td>64.15</td>
</tr>
<tr>
<td>2016 (Expected)</td>
<td>67.22</td>
</tr>
</tbody>
</table>

Source: Reserve Bank of India, Average for the year

For updated information, please visit [www.ibef.org](http://www.ibef.org)
India Brand Equity Foundation (“IBEF”) engaged TechSci to prepare this presentation and the same has been prepared by TechSci in consultation with IBEF.

All rights reserved. All copyright in this presentation and related works is solely and exclusively owned by IBEF. The same may not be reproduced, wholly or in part in any material form (including photocopying or storing it in any medium by electronic means and whether or not transiently or incidentally to some other use of this presentation), modified or in any manner communicated to any third party except with the written approval of IBEF.

This presentation is for information purposes only. While due care has been taken during the compilation of this presentation to ensure that the information is accurate to the best of TechSci and IBEF’s knowledge and belief, the content is not to be construed in any manner whatsoever as a substitute for professional advice.

TechSci and IBEF neither recommend nor endorse any specific products or services that may have been mentioned in this presentation and nor do they assume any liability or responsibility for the outcome of decisions taken as a result of any reliance placed on this presentation.

Neither TechSci nor IBEF shall be liable for any direct or indirect damages that may arise due to any act or omission on the part of the user due to any reliance placed or guidance taken from any portion of this presentation.