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**EXECUTIVE SUMMARY**

<table>
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<tr>
<th>Second-largest subscriber base</th>
<th>With a subscriber base of nearly 1,185.88 million, as of November 2017, India accounted for the 2nd largest telecom network in the world</th>
</tr>
</thead>
<tbody>
<tr>
<td>Third-highest number of internet users</td>
<td>With 429.23 million internet subscriber, as of September 2017, India stands 2nd highest in terms of total internet users.</td>
</tr>
</tbody>
</table>
| 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 November 2017, urban tele-density stood at 167.72 per cent and rural tele-density at 56.54 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, Aranca Research*
ADVANTAGE INDIA
India is the world’s 2nd largest telecommunications market, with 1.186 billion subscribers as of November 2017.

With 70 per cent of the population staying in rural areas, the rural market would be a key growth driver in the coming years.

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

Telecom penetration in the nation’s rural market reached 56.54 per cent, as of November 2017.

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.

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.

Notes: MNP - Mobile Number Portability
Source: BMI (Business Monitor International) Report, Internet Mobile Association of India (IAMAI)
MARKET OVERVIEW
THE TELECOM MARKET SPLIT INTO THREE SEGMENTS

Source: Aranca Research

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
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 19.22 per cent, reaching 1,194.58 million during FY07–17.

Tele-density (defined as the number of telephone connections for every 100 individuals) in India, increased from 17.9 per cent in FY07 to 91.61 per cent in FY18*.

Note: CAGR - Compound Annual Growth Rate; *Data till November 2017
Source: Telecom Regulatory Authority of India
Indian telecom sector’s revenue grew at a CAGR of 7.31 per cent from US$ 19.6 billion in FY06 to US$ 42.6 billion in FY17. During the first half of FY18, gross revenues of telecom sector in India reached US$ 20.4 billion.

Revenues from the telecom equipment are expected to grow to US$ 26.38 billion by 2020.

As per Union Budget 2018-19, Government of India is expecting a 58 per cent increase to Rs 48,661.42 crore (US$ 7.52 billion) in telecom sector revenue.
WIRELESS SEGMENT DOMINATES THE MARKET

- In November 2017, India’s telephone subscriber base reached 1,185.88 million.
- In November 2017, the wireless segment (98.03 per cent of total telephone subscriptions) dominated the market.
- Urban regions accounted for 57.20 per cent share in the wireless telecom subscriptions in the country, while rural areas accounted for the remaining share.

Source: Telecom Regulatory Authority of India; *Data till November 2017
During FY07-17, wireless subscriptions in the country increased at a CAGR of 21.64 per cent, with the number of subscribers reaching to 1,170.2 million in FY17.

Wireless subscribers stood at 1,162.5 million in November 2017.

As of November 2017, urban wireless teledensity stood at 162.84 while rural wireless teledensity stood at 56.15 per cent.

India is the world’s second largest smartphone market and is expected to have almost 1 billion unique mobile subscribers by 2020.
WIRELESS TELEDENSITY GROWS OVER THE YEARS

- The mobile segment’s teledensity surged from 14.6 per cent in FY07 to 91.61 per cent in FY18*.
- GSM services continue to dominate the wireless market with a 98.92 per cent share (as of March 2017); while CDMA services accounted for the remaining 1.08 per cent share.

*Data till November 2017

Note: Teledensity - The number of telephone lines for every 100 people in a country, GSM - Global System for Mobile Communications, CDMA - Code Division Multiple Access
Source: Telecom Regulatory Authority of India
WHILE BHARTI AIRTEL DOMINATES WIRELESS SEGMENT

- As of November 2017, Bharti Airtel was the market leader, with a 24.91 per cent share in the wireless subscription, followed by Vodafone (18.15 per cent share).

- The top 5 players in the sector include - Bharti Airtel, Vodafone, Idea, Reliance Jio and BSNL – accounting for 82.08 per cent of the wireless subscribers in the country.

Note: BSNL - Bharat Sanchar Nigam Limited, FY18¹ - Data till November 2017
Source: Telecom Regulatory Authority of India
BSNL DOMINATES FIXED-LINE SEGMENT

- Total fixed-line subscription stood at 23.41 million, while teledensity reached 1.81 per cent due to wide usability of the wireless segment as of November 2017.
- In FY18*, BSNL is the market leader with a 53.64 per cent share, followed by Bharti Airtel (16.69 per cent).
- BSNL, MTNL and Bharti together account for 84.79 per cent of the total fixed-line market in FY18*.

**Fixed-line segment subscription and teledensity FY18**

**Fixed-line market share (FY18*)**

Note: BSNL - Bharat Sanchar Nigam Limited *Data till November 2017, ^1In terms of number of subscribers
Source: Telecom Regulatory Authority of India
NUMBER OF INTERNET SUBSCRIBERS INCREASING AT A FAST PACE

- The number of Internet subscribers in the country increased at a CAGR of 41.62 per cent, with the number reaching 429.23* million in September, 2017 from 8.6 million in 2006.

- The number of internet subscribers in the country is expected to double by 2021 to 829 million. Overall IP traffic is expected to grow 4-fold at a CAGR of 30 per cent by 2021.

Note: CAGR - Compound Annual Growth Rate; BSNL - Bharat Sanchar Nigam Ltd, Internet live stats, \(^1\)As of September 2017, \(^2\)CAGR is till FY17, * As per latest available data
Source: Telecom Regulatory Authority of India, Business Monitor International, Aranca Research Including Internet Access by Wireless Phone Subscribers,
STRONG GROWTH IN BROADBAND DRIVES INTERNET ACCESS REVENUES

- Broadband subscription in the country witnessed an increase at a CAGR of 17.48 per cent during FY07–17.

Wired broadband subscriptions (in million)

<table>
<thead>
<tr>
<th>Year</th>
<th>Subscriptions (in million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY07</td>
<td>3.1</td>
</tr>
<tr>
<td>FY08</td>
<td>5.5</td>
</tr>
<tr>
<td>FY09</td>
<td>7.8</td>
</tr>
<tr>
<td>FY10</td>
<td>10.9</td>
</tr>
<tr>
<td>FY11</td>
<td>13.4</td>
</tr>
<tr>
<td>FY12</td>
<td>15.0</td>
</tr>
<tr>
<td>FY13</td>
<td>15.1</td>
</tr>
<tr>
<td>FY14</td>
<td>14.9</td>
</tr>
<tr>
<td>FY15</td>
<td>15.5</td>
</tr>
<tr>
<td>FY16</td>
<td>20.4</td>
</tr>
<tr>
<td>FY17</td>
<td>18.2</td>
</tr>
<tr>
<td>FY18</td>
<td>17.9</td>
</tr>
</tbody>
</table>

\(^1\)CAGR 17.48%  
\(^2\)CAGR 17.48%

**Note:** CAGR - Compound Annual Growth Rate, \(^1\)Data till October 2017, \(^2\)CAGR is till FY17  
**Source:** Telecom Regulatory Authority of India;
BHARTI ACCOUNTS FOR MAJOR SHARE IN BROADBAND SUBSCRIPTIONS

- As of November 2017, Reliance Jio accounted for the largest share of 43.36 per cent in the total broadband market (wired and wireless) of India.
- Bharti Airtel accounted for the 2nd largest share of 19.78 per cent in the country’s broadband market (wired and wireless), during the same period.

Notes: BSNL - Bharat Sanchar Nigam Ltd, ¹Data till November 2017
Source: Telecom Regulatory Authority of India
<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 and mobile telephony (in Delhi and 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 and Mumbai), data and Internet in 22 circles</td>
</tr>
<tr>
<td>Reliance Communications</td>
<td>ADAG Group (approximately 59.00 per cent)</td>
<td>Mobile (CDMA) and broadband</td>
</tr>
<tr>
<td>Bharti Airtel</td>
<td>Bharti Group (45.48 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
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 US$3.68 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: Aranca Research*
# PORTER’S FIVE FORCES FRAMEWORK ANALYSIS

## Threat of Substitutes
- Hardly any threat of substitute products as there is no substitute available in the market

## Bargaining Power of Suppliers
- High bargaining power of suppliers as there are just a few suppliers in the sector
- High cost of switching suppliers

## Competitive Rivalry
- Customers’ low switching cost and price sensitivity are increasing competition among players
- High exit barriers are also intensifying competition
- There are around 6 to 7 players in each region, leading to intense competition

## Threat of New Entrants
- Strict government regulations
- Extremely high infrastructure setup cost
- Difficulty in achieving economies of scale

## Bargaining Power of Buyers
- Low switching cost and mobile number portability give customers high bargaining power
- Customers are price sensitive

---

**Notes:** VoIP – Voice Over Internet Protocol  
**Source:** Aranca Research
RECENT TRENDS AND STRATEGIES
Green Telecom
- The green telecom concept is aimed at reducing carbon footprint of the telecom industry through lower energy consumption
- Tata has invested around US$16.38 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 November 2017, the rural subscriber base accounted for 42.25 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.

Notes: BWA - Broadband Wireless Access, TRAI - Telecom Regulatory Authority of India
Source: Aranca Research
### Consolidation
- Vodafone and Idea, India's second and third largest operators have decided to merge.
- Airtel’s acquisition of Tata Teleservices’ mobile business was given approval in November 2017.

### Rising investments
- In 2017, Vodafone disclosed its plans to invest US$1,310 million to upgrade and expand Vodafone India network coverage and US$655 million to upgrade its technology centre.
- In February 2017, Japanese Telecom company - Docomo, re-invested US$ 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 and customer service.

### Mobile banking
- Digital transactions reached an all-time high of 1.11 billion in January 2018 with mobile banking transactions reaching 102.6 million.
- In March 2017, the government set a target of achieving 25 billion digital transactions for banks with the help of PoS machines, transactions enabled and 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.

**Notes:** NPCI - National Payment Corporation of India  
**Source:** 'Searching for New Frontiers of growth: Indian Banks' - PwC, Aranca Research, Reserve Bank of India
### STRATEGIES ADOPTED

<table>
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<tr>
<th>Marketing strategy</th>
<th>Differentiation</th>
<th>Pricing strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Players are using innovative marketing strategies to succeed in this sector. For example,</td>
<td>• Players differentiate themselves by providing different services to customers. For example,</td>
<td>• Players price their products very carefully due to the price sensitive nature of customers and high competition in the sector. Players generally go for price war. For example,</td>
</tr>
<tr>
<td>• In August 2015, Idea Cellular launched new campaign “Get idea and dance”</td>
<td>• In 2015, Airtel India launched a mobile app “Wynk Movies”, it is a library that includes videos and movies</td>
<td>• In December 2016, Micromax launched low cost 4G Volte Smartphones, with a pre-activated Reliance Jio Sim offer of free voice calls and data. These smartphones are launched in the range of US$67.21 to US$114.57</td>
</tr>
<tr>
<td>• Airtel launched new ad campaign “Airtel myPlan Family”</td>
<td>• In November 2015, Vodafone launched “Choose Your Number” facility where prepaid and post paid customers get numbers of their own choice</td>
<td>• In September 2016, Reliance Jio 4G network plans have been launched. 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 and tariff plans ranging from US$2.28 to US$76.37 per month. As of October 2016, the company’s subscriber base had crossed 16 million customers</td>
</tr>
</tbody>
</table>

**Notes:** CDMA – Code Division Multiple Access, GSM - Global System for Mobile Communication  
**Source:** Company websites, Aranca Research
GROWTH DRIVERS
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
- Reduction in license fee
- Relaxed FDI Norms
- Encourages firms to expand to rural areas

Increasing investments
- Higher FDI inflows
- Increasing M and A activity

Note: FDI - Foreign Direct Investment, MOU - Minutes of Use per month and per subscriber, M&A - Mergers and Acquisitions

For updated information, please visit www.ibef.org
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 recorded a CAGR of 4.36 per cent from 2011-12 to 2016-17.
- 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 estimated at US$1,611.40 in FY17.

Notes: CAGR - Compound Annual Growth Rate, F – Forecast, E - Estimate
Source: IMF
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).

Notes: Income distribution is calculated in constant 2015 dollars; $1=65. Because of rounding, not all percentages add up to 100. F – Forecast, Mobile Users Come of Age’ February 2011
Source: BCG
The Mobile Value Added Services (MVAS) industry has expanded at a CAGR of 29.26 per cent to US$11.08 billion by 2016 from US$1.1 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 and data subscription rates is likely to drive demand for MVAS.

**Notes:** CAGR - Compound Annual Growth Rate, MVAS - Mobile Value-Added Services, E - Estimate, F - Forecast

**Source:** Wipro Technologies, IAMAI – Internet And Mobile Association of India, Aranca Research
STRONG POLICY SUPPORT CRUCIAL TO THE SECTOR’S DEVELOPMENT … (1/3)

To compensate the consumers in case of call drop

- 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.

Standards of quality wireline and wireless services

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

Relaxed FDI norms

- 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 and 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.

Skill Development

- In May 2017, Microsoft India signed a Memorandum of Understanding with the Telcom Sector Skill Council (TSSC) to encourage skill development through “Project Sangam”.
- In a major push for Prime Minister Narendra Modi's 'Skill India' mission, Microsoft's Indian-born CEO Satya Nadella launched a Cloud hosted platform named as “Project Sangam” to help the government not only train but also assist people get jobs via professional networking website LinkedIn, which was acquired by the company last year.

Notes: FDI - Foreign Direct Investment, FIPB - Foreign Investment Promotion Board
Source: TRAI, Aranca Research
Telecommunication

Tariff Order

- 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 and post-paid customers and on payment of fixed charge for special roaming tariff plan national roaming should be free.

Set up internet connections

- 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.

Reduction in license fees

- 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 and national long-distance licenses has created opportunities and attracted new companies into the market.

Make in India

- In May 2017, the central government announced the Phased Manufacturing Programme (PMP) to promote domestic production of mobile handsets. This initiative will help in building a robust indigenous mobile manufacturing ecosystem in India, and incentivise large scale manufacturing.

Notes: USOF - Universal Service Obligation Fund; OFC - Optical Fibre Cable, WiMAX - Worldwide Interoperability for Microwave Access Telecommunications
Source: TRAI, Aranca Research
STRONG POLICY SUPPORT CRUCIAL TO THE SECTOR’S DEVELOPMENT … (3/3)

<table>
<thead>
<tr>
<th>Financial support</th>
<th>The USOF is expected to extend financial support to operators providing services in rural areas and encourage active infrastructure sharing among operators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enhanced spectrum limit</td>
<td>The prescribed limit on spectrum would be increased from 6.2MHz to 2x8 MHz (paired spectrum) for GSM technology in all areas other than Delhi and Mumbai, where it will be 2x10MHz (paired spectrum)</td>
</tr>
<tr>
<td></td>
<td>Telecom players can, however, obtain additional frequency; there will be an auction of spectrum subject to the limits prescribed for the merger of licenses</td>
</tr>
<tr>
<td></td>
<td>As of October 2016, telecom operators like Vodafone and Tata Teleservices purchased spectrum worth US$ 1.51 billion and US$ 0.34 billion, respectively, from the government</td>
</tr>
<tr>
<td>Telecommunication amendment order for broadcasting and cable services</td>
<td>In 2015, telecom authority issued this order mandating every DTH operator to specify the tariff for supply and installation of the customer premises equipment. DTH operator should specify the refundable security deposit, installation charges, monthly rental charge and activation</td>
</tr>
<tr>
<td>Indian Mobile Congress</td>
<td>In May 2017, the Ministry of Telecommunication launched the Indian Mobile Congress 2017 (IMC 2017), the first and biggest platform in the country to bring all the stakeholders together from Telecom, Internet and Mobility ecosystem along with ICT players, app developers, innovators and start-ups. The three-day IMC will be held on 27-29 September 2017.</td>
</tr>
</tbody>
</table>

Notes: USOF - Universal Service Obligation Fund; OFC - Optical Fibre Cable  
Source: TRAI, Aranca Research
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, and 100 per cent by 2020
- Aims at a ‘One Nation-One license’ regime with no roaming charges and nation wide number portability
- Liberalisation of spectrum and convergence of network, services and devices
- Unified licensing, delinking of spectrum from license, online real-time submission and processing

Source: Digital Dawn, KPMG Report 2013
Process of M2M Roadmap Formulation

Firming up of issues and viewpoints through Questionnaire to Stakeholders

Seminars and Workshops on M2M

Input from consultative committee and working groups

Consultation with Industry bodies (COAL, FICCI, AUSPI, ASSOCHAM) /Other Stakeholders

Input from various TEC committees on different issues

Draft roadmap and open consultation through web

Inputs from DeitY and Industry stakeholders on draft documents

Policy and Regulatory Committee

National Telecom M2M Roadmap

Source: Digital Dawn, KPMG Report 2013
Cumulative FDI inflows into the telecom sector over April 2000 – September 2017, totalled to US$ 30.03 billion.

During this period, FDI into the sector accounted for a share of 8.40 per cent of total FDI inflows into the country, till September 2017.

Source: Department of Industrial Policy and Promotion (DIPP); * Data as of September 2017
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 and is expected to complete in 2018.

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.

**Foreign investment in India**

<table>
<thead>
<tr>
<th>Target</th>
<th>Acquirer</th>
<th>Acquisition price (US$ million)</th>
<th>Division acquired</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ascend Telecom Infrastructure Pvt. Ltd.</td>
<td>IDFC Alternatives (2017)</td>
<td>54.29</td>
<td>33 per cent stake</td>
</tr>
<tr>
<td>Telenor</td>
<td>Bharti Airtel (2017)</td>
<td>N/A</td>
<td>Infrastructure and Contracts</td>
</tr>
<tr>
<td>Videocon Telecommunications Ltd-1800 MHz spectrum in 6 circles</td>
<td>Bharti Airtel (2016)</td>
<td>660</td>
<td>100 per cent stake</td>
</tr>
<tr>
<td>Bharti Airtel's operations in Burkina Faso and Sierra Leone</td>
<td>Orange SA (2016)</td>
<td>900</td>
<td>100 per cent stake</td>
</tr>
<tr>
<td>MTS</td>
<td>Reliance Communication (2015)</td>
<td>736.98</td>
<td>8 – 10 per cent stake</td>
</tr>
<tr>
<td>Augere Wireless</td>
<td>Bharti Airtel (2015)</td>
<td>21.3</td>
<td>100 per cent stake</td>
</tr>
<tr>
<td>Bharti Airtel</td>
<td>SingTel(2013)</td>
<td>302</td>
<td>Increases stakes to 32.34 per cent</td>
</tr>
<tr>
<td>Bharti Airtel</td>
<td>Qatar Foundation Endowment(2014)</td>
<td>1,260</td>
<td>PE deal – 5 per cent stake</td>
</tr>
<tr>
<td>Vodafone India Ltd</td>
<td>Vodafone International Holdings (2014)</td>
<td>1,641</td>
<td>Increases stakes to 100 per cent</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>

*Notes: M&A - Merger and Acquisition, PE - Private Equity*  
*Source: Thomson Banker, Deal Tracker, Grant Thornton, Aranca Research*
## EXPANSION AND GROWTH STRATEGIES OF LEADING PLAYERS

### Bharti Airtel and Tikona Digital Networks
- Bharti Airtel Ltd, India’s largest telecom operator, has decided to buy Tikona Digital Networks Pvt Ltd’s 4G business for approximately Rs 1,600 crore (US$ 248.43 million), which includes its broadband wireless access spectrum as well as 350 cellular sites in five telecom circles.

### Vodafone India 4G launch, Reliance Jio 4G launch
- In January 2016, Vodafone India launched its 4G network services in Kolkata and Kozhikode (Kerala) following its successful implementation in other parts of Kerala such as Kochi and Thiruvananthapuram.
- In September 2016, Reliance Jio launched 4G services across India, at comparatively cheaper rates. The company had targeted to acquire 100 million customers by March 2017. In addition to the existing plan India 2300 MHz spectrum and 1800 MHz in 14 circles, during the auction in 2016, Jio invested over US$1,527.7 million to acquire 1800 MHz spectrum in 6 circles and 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 and convenient transactions and on placing an order with Walmart India, Vodafone M-Pesa agent will reach out to customer and cash in into his M-Pesa account.

### New Entrant in the Smartphone Market
- In January 2017, gaming accessories and 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 and Lava are the top 3 budget smartphone companies in India.

**Notes:** M&A - Merger and Acquisition  
**Source:** Thomson Banker, Deal Tracker, Aranca Research
OPPORTUNITIES
### Increasing mobile subscribers

- The number of wireless subscribers in India reached 1.162 billion, by November 2017.
- Of the total 1,185.88 million subscribers as of November 2017, around 57.20 per cent subscribers are from urban areas and the rest (42.80 per cent), from rural areas.

### Untapped rural markets

- By November 2017, rural tele-density reached 56.94 per cent, growing from 43.05 per cent as of March 2016.
- By November 2017, rural wireless tele-density in the country increased to 56.54 per cent, while, the urban wireless tele-density reached to 167.72 per cent during the same period.

### Rising internet penetration

- Internet penetration is expected to grow steadily and is likely to be bolstered by government policy.
- Number of broadband subscribers reached 350.70 million at the end of November 2017.
- To encourage cash economy, Indian government announced to provide free Wi-fi to more than 1000 gram panchayats.

*Source: KPMG, TRAI, Aranca Research*
### Development of telecom infrastructure
- TRAI has made several recommendations for the development of telecom infrastructure, including tax benefits and recognising telecom infrastructure as essential infrastructure.

### Growth in MVAS and cloud computing
- The Indian Mobile Value-Added Services (MVAS) industry is expected to grow at a CAGR of 18.3 per cent during the forecast period 2015–2020 and reach US$23.8 billion by 2020.
- Public cloud services in India generated US$1,316 million in 2016. Indian public cloud services market is expected to reach US$1.9 billion by 2019.

### Telecom equipment market
- Telecom equipment market was estimated to be US$20 billion in FY16*.
- It is anticipated to reach US$30 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 and merchants can pay and receive money instantly, without an internet connection.
- This has enabled non-smartphone users to go cashless.

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**Notes:** VAS - Value-Added Services, NTP - National Telecom Policy, FY16* - as per latest data available  
**Source:** Press Information Bureau, Government of India, Aranca Research
The mobile app market is estimated around US$ 245.6 million in 2015.

India’s downloads of apps grew nearly 215 per cent between 2015 and 2017.

India overtook USA to reach the second position in terms of number of app downloads in 2017.

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

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

As of May 2017, Whatsapp users in the country spend 50 million minutes on chatting through WhatsApp video call feature each day. The app is available in 10 Indian languages, and more than 50 different languages globally.

Notes: E – estimated, F – Forecast, *As per latest data available
Source: Gartner, Deloitte, Assorted News Articles, Aranca Research
SUCCESS STORIES
Established in 1994, Vodafone is one of India’s leading mobile operators, with more than 209 million customers as of FY17.

Vodafone’s revenues from India increased at a CAGR of 5.84 per cent to US$75.4 billion during FY08–17.

Notes: CAGR - Compounded Annual Growth Rate
Source: Company website
VODAFONE: INDIA’S THIRD-LARGEST MOBILE OPERATOR … (2/2)

- Vodafone’s customer subscription increased at a CAGR of 14.66 per cent to 209 million during FY08–FY17. The total wireless subscriber base of Vodafone stood at 209.06 million in March 2017.
- Wireless subscriber base of Vodafone rose 1.3 per cent month-on-month to 211.03 million in November 2017 from 208.32 million in October 2017.
- Gujarat, Uttar Pradesh, Maharashtra and 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 and Kerala in February 2016. In May 2016, the company also planned to cover four circles of Gujarat, Haryana, UP (East) and West Bengal.

\[\text{Total subscribers (million)}\]

\[\begin{align*}
\text{FY08} & : 61.0 \\
\text{FY09} & : 91.0 \\
\text{FY10} & : 124.0 \\
\text{FY11} & : 148.0 \\
\text{FY12} & : 147.0 \\
\text{FY13} & : 153.0 \\
\text{FY14} & : 167.0 \\
\text{FY15} & : 183.0 \\
\text{FY16} & : 204.6 \\
\text{FY17} & : 209.0 \\
\text{FY18} & : 211.0
\end{align*}\]

CAGR 14.66%

\[\text{Note:} \quad ^1\text{Up to November 2017,} \quad ^2\text{CAGR is up to FY17}\]

Source: Company website; 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 and prepaid customers as well as on both GSM and CDMA platforms
- The implementation of MNP has brought a slew of benefits for customers in terms of better plans and offers
- MNP requests in India increased to 330.98 million at the end of November 2017

Source: TRAI Report, *Data till November 2017
KEY INDUSTRY ORGANISATIONS
## INDUSTRY ORGANISATIONS

### Association of Unified Telecom Service Providers of India (AUSPI)

Address: 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/](http://www.auspi.in/)

### Association of Competitive Telecom Operators (ACTO)

Address: 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](http://www.acto.in)

### Internet and Mobile Association of India (IAMAI)

Address: F-36, Basement, East of Kailash, New Delhi – 110 065, India  
Tel: 91 11 46570328  
E-mail: kalyan@iamai.in  
Website: [www.iwww.iamai.in](http://www.iwww.iamai.in)

### Cellular Operators Association of India

Address: 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](http://www.coai.com)
USEFUL INFORMATION
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, US$
- 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

- **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
- **OFC**: Optical Fibre Cable
- **TRAI**: Telecom Regulatory Authority of India
- **USOF**: Universal Service Obligation Fund
- **US$**: 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.
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Source: Reserve bank of India, Average for the year
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