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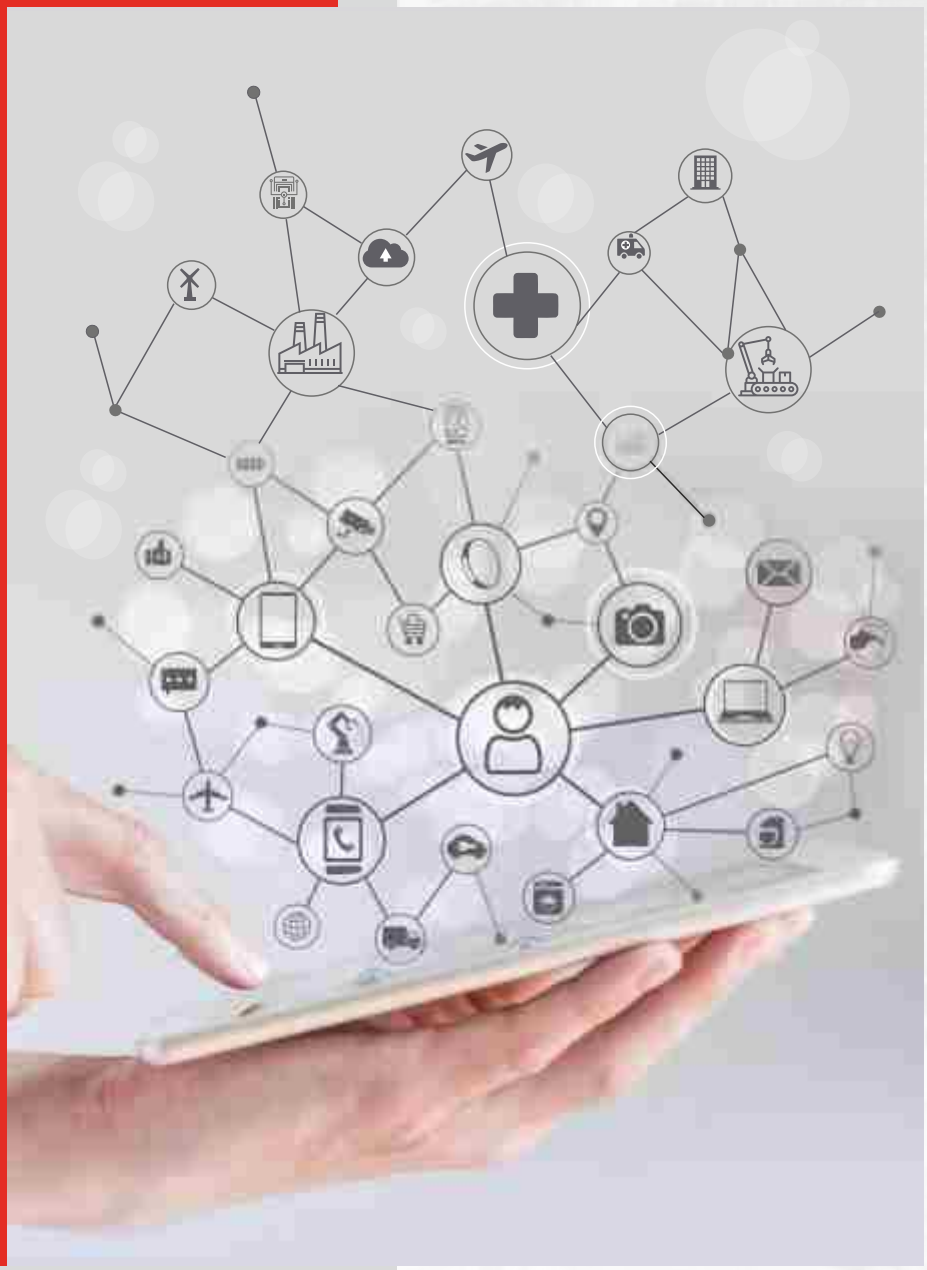
Indian Mobile Phone Market:

Emerging Opportunities for fulfilling India's digital economy dream



A Joint report by IAMAI & Enixta Innovations

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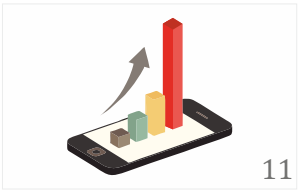

11


14


22


29


39


44


45


48

49

Content

Glossary

BCD	Basic Customs Duty
BoM	Bill of Materials
BTS	Base Transceiver Station
CAPEX	Capital Expenditures
CBU	Completely Built Unit
CDMA	Code Division Multiple Access
CENVAT	Central Value Added Tax
CKD	Completely Knocked Down
CST	Central Sales Tax
CVD	Countervailing Duty
DTA	Domestic Tariff Area
EMS	Electronic Manufacturing Services
est.	Estimated
FY	Financial Year
GB	Giga Byte
GDP	Gross Domestic Product
Ghz	Gigahertz
Gms	Grams
GNI	Gross National Income
GSMA	GSM Association

GSN	Gigabit System Network
GST	Goods & Services Tax
ICA	Indian Cellular Association
IAMAI	Internet & Mobile Association of India
IIM	Indian Institute of Management
INR	Indian Rupees
IoT	Internet Of Things
IP	Intellectual Property
IPR	Intellectual Property Rights
IT	Information Technology
ITA	International Trade Administration
ITI	Industrial Training Institute
LTE	Long Term Evolution
mAh	Milliampere-Hour
MB	Mega Byte
MEIS	Merchandise Exports from India Scheme
MeitY	Ministry of Electronics & Information Technology
MP	Mega Pixe
lMRP	Maximum Retail Price
MSIPS	Modified Special Incentive Package Scheme
Nos.	Numbers
ODM	Original Design Manufacturer
OEM	Original Equipment Manufacturer
OS	Operating System
PCB	Printed Circuit Board
PCBA	Printed Circuit Board Assembly
PMP	Phased Manufacturing Programme
POS	Point of Sale
PPI	Pixel Per Inch
Q1	Quarter of January, February & March
Q3	Quarter of July, August & September
R&D	Research & Development
RAM	Random Access Memory
Rs.	Rupee
SAD	Special Additional Duty
SEZ	Special Economic Zone
SGST	State Good & Services Tax
SKD	Semi Knocked Down
SMB	Small & Medium Businesses
SMT	Surface Mount Technology
UI	User Interfaces
US	United States
USD	United States Dollar
VAT	Value Added Tax
VNI	Visual Network Index
Wimax	Worldwide Interoperability for Microwave Access
YoY	Year over Year
4G	Fourth Generation
10K	Ten Thousand

Executive Summary

In today's world, smartphone is a growth enabler, positively influencing various spheres of life of an individual and therefore impacting the evolving knowledge economy. Currently, smartphones connect more than 292 million people in India, making it the second largest smartphone market in the world. Smartphone adoption will get further boost enabled by expansion of 4G/ LTE networks as well as from the impetus provided by Government of India initiatives like Digital India, e-Wallets, Make in India, Smart Cities and Aadhaar projects. The recent consultation between the Ministry of Electronics & Information Technology (MeitY) and the industry leaders on the roadmap for One Trillion Dollar Digital economy proposes building on momentum in electronics manufacturing under Electronics Policy v2.0. This policy initiative has domestic mobile phone manufacturing as one of the key areas for achieving India's vision to become a global design and manufacturing hub.

The Indian smartphone market is characterized by the dominance of budget smartphone (defined as smartphone priced below ₹10,000) segment as consumers seek value at affordable prices. Given that Indian is a nascent market for internet, these budget smartphones offer inferior quality performance and poor user experience. While the online usage needs of Indian internet consumers are evolving at a rapid pace, its usage by the masses is woefully inadequate. In order to grow the internet ecosystem, there is a need to enable further development of consumer internet services such as communication, social networking, entertainment, online research and online transactions.

In such a context, smartphone's inability of managing the growing needs of a consumer can be a major impediment to smartphone adoption.

Minimum technical specifications for smart phones in India

Currently available 4G smartphones, especially those priced below ₹4,500, are plagued by inferior technical specifications leading to poor user experience. The aspect of 'performance' is the most talked aspect of a smartphone in the online consumer reviews and has the highest negative sentiment.

On the basis of the technical evaluation of 1600+ smartphones released on e-commerce portals from 2013 to 2016 and the satisfaction expressed by consumers in using these smartphones, the recommended minimum technical specifications of a smartphone capable of managing consumer expectations is suggested below.

Today, the price of a smartphone with above recommended configuration is expected to be around ₹8,500, which is unaffordable for majority of the Indians. Thus, there is a challenge for the marketers to balance the performance aspect of a smartphone with the affordability factor in their offerings to woo the consumers. The focus on improving localization rate in the domestic manufacturing of smartphones in India can play a significant role in the reduction of the smartphone prices and provide good quality, 'affordable' smartphones for the masses.

Minimum Technical Specifications

Android Version: Marshmallow	**RAM: 2GB**	**Processor (# of Cores): Quard Core**	**Processor Speed: 1.3 GHz**
Primary Camera Resolution: 8 MP	**Secondary Camera Resolution: 5 MP**	**Pixel Density: 285 PPI**	**Battery Capacity: 2,900 mAh**
Internal Storage: 16 GB	**Screen Size: 5 Inch**	**Weight: 160 Gms**	**Network: 4G**

Domestic smart phone manufacturing in India

The demand for the mobile phones in India is largely met through import of mobile phones. As for domestic manufacturing, the overall localization rate for smartphones in 2016 stood at a low of 6.1%, far below the localization rate in China and Vietnam. The low level of local value addition is due to weak manufacturing eco-system which stems from limited capabilities across various processes of manufacturing value chain and resulting primarily in last mile assembly.

The Government of India has initiated several initiatives for encouraging domestic mobile phone manufacturing under 'Make in India' programme and has recently announced a Phased Manufacturing Programme (PMP) for promoting handset manufacturing in India. PMP is expected to play a vital role in encouraging domestic mobile phone manufacturing and neutralizing the effect of local disabilities, thereby positioning India as a major global manufacturing hub to cater to both domestic and export demands.

By 2019, it is possible to achieve an overall local value addition of 25.8% for smartphones, which translates into ₹31,000 crore generated through local sourcing and assembly. Battery pack, non-electronic parts, accessories, packaging etc. have high local sourcing possibilities, while the main electronic components have low local sourcing capabilities.

Domestic Value Addition Scenario for Smartphones – 2016 vs. 2019

Components	Main Electronic Assemblies^	Display/ Touchscreen	Camera (Primary & Secondary)	Battery Pack	Others*
Contribution to Total Bill of Materials Value in 2016	57.7%	18.9%	6.8%	4.3%	12.3%
Local Sourcing Possibilities	Low	Medium	Medium	High	High
Local Value Addition in 2016	2.6%	0.0%	0.0%	10.2%	33.6%
Local Value Addition in 2019	6.2%	41.8%	49.6%	63.7%	66.9%

^ Main Electronic Assemblies include main board & sensor flex
* Others include non-electronic components, accessories & assembly and testing

The way forward

In order for India to emerge as a global mobile phone manufacturing hub, the key stakeholders have to build on the impetus provided by the 'Make in India' program and the road map laid by the Phased Manufacturing Programme (PMP).

- Ending or providing exemptions on inverted duty structure to encourage domestic production
- Introduction of 8-10 years tax holiday to manufacturers investing at least USD 1 billion and creating 15,000 jobs or more

The Road Map

There is a need for specific policy measures and incentives for creating a sustainable domestic manufacturing ecosystem for mobile phones to cater to both local and export demands. Some of the major expectations from the industry are as follows:

- Clarity on the continuation of incentives under pre-GST regime in the GST regime of 12% on the mobile phones
- Inclusion of additional components of a mobile phone under differential excise duty scheme
- Improvement in procedural, regulatory and custom approvals, refunds and clearances in terms of ease of doing business
- Focus on improving the employability of the workforce through improved practical skill training
- Increased investment in the areas of research and design

India has an immense potential to develop as a global mobile phone manufacturing hub provided right steps in the right direction are made.

Objectives of the Study

The study addresses the two critical aspects relevant in the context of accelerating smartphone penetration in India as well as increasing contribution of localization in the domestic mobile phone manufacturing. The two aspects in focus are:

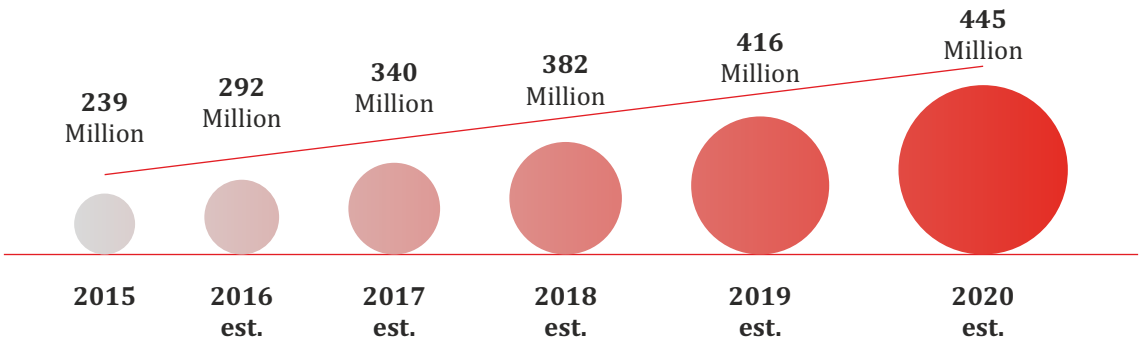
1. Smartphones are a crucial tool for internet penetration in India, especially in the rural sector. While the availability of 'budget smartphones' category makes smartphones available at 'affordable' rates, a minimum technical specification also needs to be guaranteed to ensure an acceptable smartphone experience. The challenge is to provide smartphones with minimum critical technical specifications at affordable prices to expedite the smartphone adoption among consumers especially in the bottom of pyramid. The key questions are: what is the minimum critical technical specification to ensure a decent smartphone experience? and what is the tipping price point to trigger an exponential growth in smartphones adoption?

2. Despite recent growth in domestic manufacturing of mobile phones and encouraging policy initiatives, much of Indian mobile phone production is limited to assembling/ packaging of SKD (semi knocked down) units, which resulted in local value addition of only 6.1% for smartphones in 2016. The need of the hour is to develop India as a global mobile phone manufacturing hub in the next 3-5 years. The key question is what are the opportunities and challenges to transform India into a global mobile phone manufacturing hub?

1.0 Introduction

India, who recently surpassed US to become the world's second largest smartphone market in terms of users[1], is projected to be the biggest market driver for smartphone sales in the next few years. Today, smartphone connects more than 292 million people in India. The adoption of smartphone is happening at a much more rapid pace In India as compared to developed economies and even many developing economies. India's growing economy, with large young population and increasing urban consumer base, offers strong growth potential for smartphone adoption. The smartphone ownership base is expected to increase from 292 million in 2016 to 445 million by 2020.

Smartphone users in India



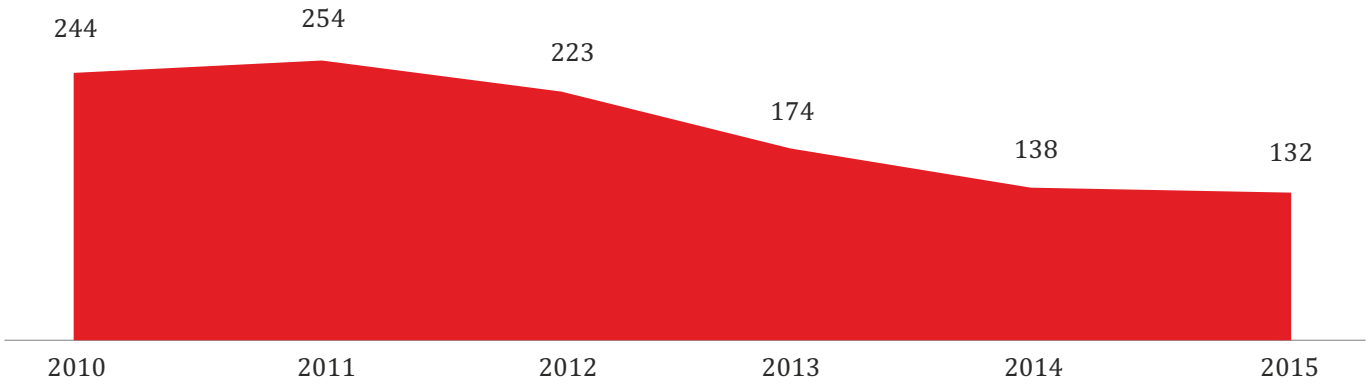
Source: Statista

The smartphone shipments in India grew by 15% YoY in Q1'2017 in comparison to 11% growth in the global smartphone market[2]. A milestone was achieved when smartphone shipments in India crossed the 30 million units for the first time ever in a quarter in Q3'2016[3].

One of the primary drivers of smartphone growth in India is falling prices of smartphones. The average selling price of a smartphone has reduced significantly from USD 244 in 2010 to USD 132 in 2015. However, more than 75% of the Indian population still doesn't carry a smartphone. This scenario offers a vast opportunity for all the stakeholders in the ecosystem to cash on the growing prominence of smartphones in the people's lives.

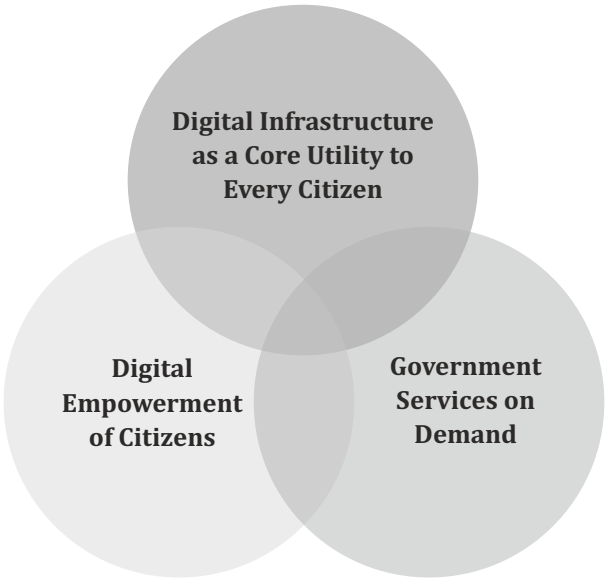
[1]Source: Counterpoint Research
[2]Source: Counterpoint Research
[3]Source: IDC India

Average Selling Price of a Smartphone (in USD)



In the recent times, the Government of India has initiated the 'Digital India' programme that envisages increasing mobile penetration as a tool for social and economic development in India, where the government aims to deliver digital inclusion, financial inclusion and government services through various mobile apps to the population of the India. The 'Digital India' plan has mainly three vision areas:

Vision & Vision Areas of 'Digital India' Plan



Source: Ministry of Electronics & Information Technology, Government of India

These visions can be fulfilled only by high penetration of mobile networks and low cost availability of mobile phones especially smartphones. It is expected that the domestic mobile phone manufacturing will play an important role in the success of these initiatives.

Electronic Systems, which includes mobile phone industry, is one of the 25 sectors covered under the 'Make in India' campaign, another flagship program of the Government of India that plans to transform India into a global design and manufacturing hub. Given the initial positive response to the Make in India campaign, the government in Union Budget 2015-16 announced differential excise duty structure for mobile phones, which gave domestic manufacturers cost benefit of about 11% over imported phones. Further, the Government of India imposed a Special Additional Duty (SAD) levy of 2% on populated printed circuit boards (PCBs) in the Union budget for 2017-18 to drive long-term commitment from mobile phone manufacturers. In addition, a Fast Track Task Force panel has been formed to achieve a manufacturing target of 500 million handsets and generation of 15 lakh jobs by 2019. It also lays thrust on increasing exports to 120 million units by 2019.

The Ministry of Electronics & Information Technology (MeitY) recently organized a consultation with the industry leaders to develop a roadmap for the One Trillion Dollar Digital economy in India. As envisaged by the Government of India, India is aiming to increase the turnover of its digital and Information Technology (IT) industry to USD 1 Trillion by FY 2024-25 from a value of USD 413 billion in FY 2016-17. There was a general consensus among the stakeholders that the Electronics industry would be one of the top contributors to the goal of achieving One Trillion Dollar Digital economy. MeitY has proposed to further build on the initial momentum achieved in electronics manufacturing under Electronics Policy v2.0, with special focus on domestic mobile phone manufacturing. Going forward, the mobile phone manufacturing especially smartphones in India is poised for a major growth, thereby driving India to become a global manufacturing hub.

The recent statistics suggest that the number of vendors manufacturing smartphones locally in India is more than 25. Also, 2 out of 3 smartphones shipped in 2016 were assembled within the country[4]. Given the encouraging support from central and state governments, few vendors who are currently assembling smartphones in India have shown positive intent to locally manufacture components like batteries, chargers and data cables in near future. However, even then, the level of localization in domestic smartphone manufacturing remains woefully low as the contribution to total bill of materials value.

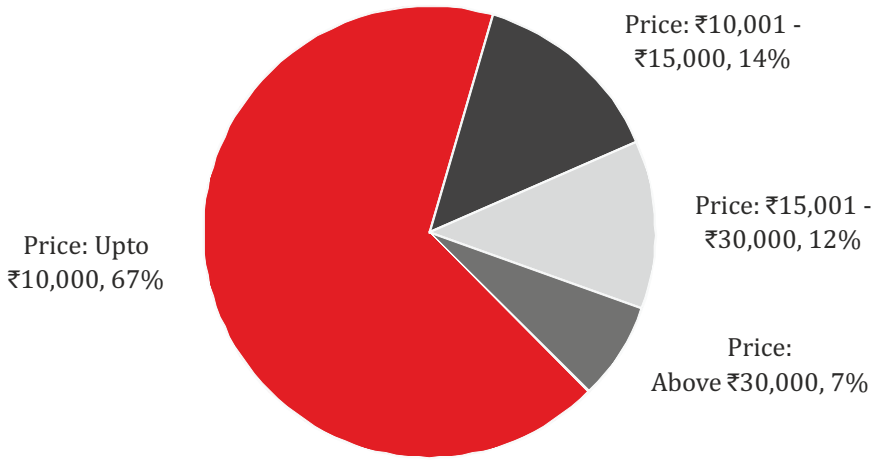
This report studies the smartphone market in India from the perspective of consumer's needs and usages and then delves into areas for improving the local value addition in the domestic manufacturing, so as to live up to the vision of the One Trillion Dollar Digital economy.

[4]Source: Counterpoint Research

2.0 Smartphone: The Consumer's Perspective

The flourishing smartphone market in India is largely made up of low-cost or entry level 'budget' smartphones (defined as smartphone priced below ₹10,000/-), depicting the price sensitive characteristic of the Indian market. As per Enixta Innovations, 2 out of 3 smartphones launched on the top 3 e-commerce portals (Flipkart, Snapdeal & Amazon India) in 2015 and 2016 were priced below ₹10,000/-.

Smartphones launched on Top 3 e-commerce portals in 2015 and 2016 – By Price Segments

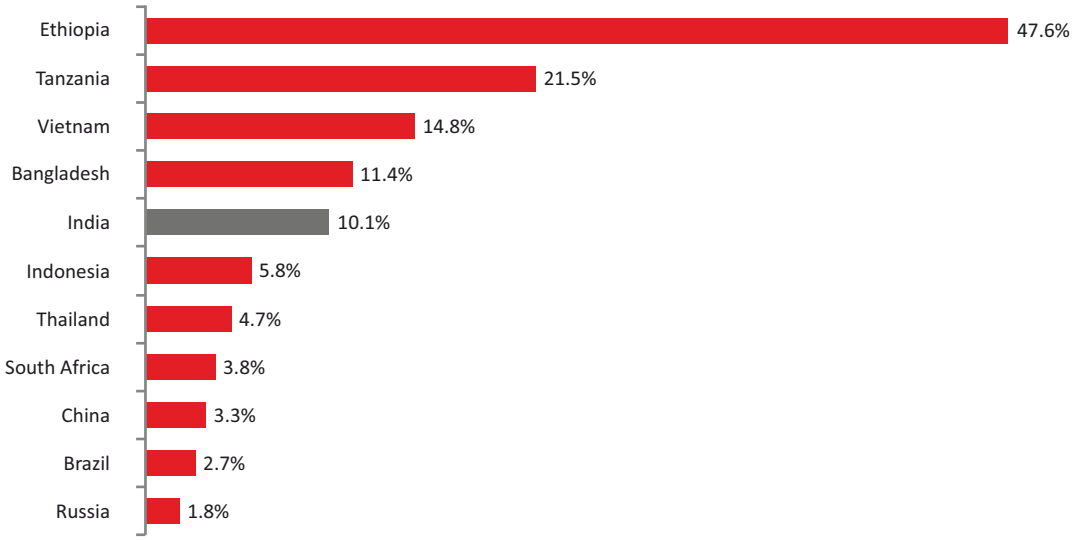


Source: Enixta Analysis

In 2015, the average selling price of a smartphone was approximately ₹8,500[5] in India, one of the lowest across countries. Yet, for the average Indian, these devices aren't exactly affordable. The issue of affordability can be revealed by calculating the average cost of devices as a percentage of gross national income (GNI) per capita at 2014 levels. GNI is country's GDP combined with its international income. In India, the purchase of smartphone is observed to be a relatively costlier affair for a consumer in comparison to other economies such as Russia, Brazil, South Africa etc.

[5]According to Statista, the average selling price of a smartphone in 2015 = USD 132; Converted to Indian Rupees; Exchange rate - USD 1 = ₹65

Smartphone Price as percentage of GNI per capita (2014)



Source: Kleiner Perkins Caufield Byers Internet Trends 2016

In addition, the sub ₹10K price segment has smartphones with relatively inferior technical specifications. The biggest difference between such budget smartphones and overall smartphone offerings in the market is in 'Performance' and 'Camera' features.

Key Technical Specifications (as a % of new models)

Technical Specification	2016 – Overall (383)	2016 – Sub Rs. 10K (245)
Performance – RAM (GB): For better multitasking		
1 GB or less	27%	50%
B/w 1 GB – 2 GB	36%	40%
More than 2 GB	36%	10%
Camera – Primary Resolution (MP): For superior picture quality		
5 MP or less	17%	34%
8 MP	22%	37%
More than 8 MP	62%	29%
Display – Screen Size (Inches): For better viewing experience		
Less than 5 inches	13%	20%
5 inches	51%	62%
More than 5 inches	36%	18%
Battery – Capacity (mAh): For longer battery life		
Below 2,000 mAh	8%	11%
B/w 2,000 mAh – 3,000 mAh	47%	60%
More than 3,000 mAh	45%	29%

Source: Enixta Analysis
Figure in the bracket denotes the number of new smartphones model launched in 2016

The feedback from consumers[6] too raises the concerns related to inferior smartphone specifications in the most dominant price segment. In 2016, 'Performance' was the most talked feature of a smartphone on the online platform. However, in terms of sentiment polarity, Performance (-14%) and Camera (-6%) were recognized as the major pain points for the consumers.

User Review Analysis for Price Band of Sub Rs. 10K - 2016

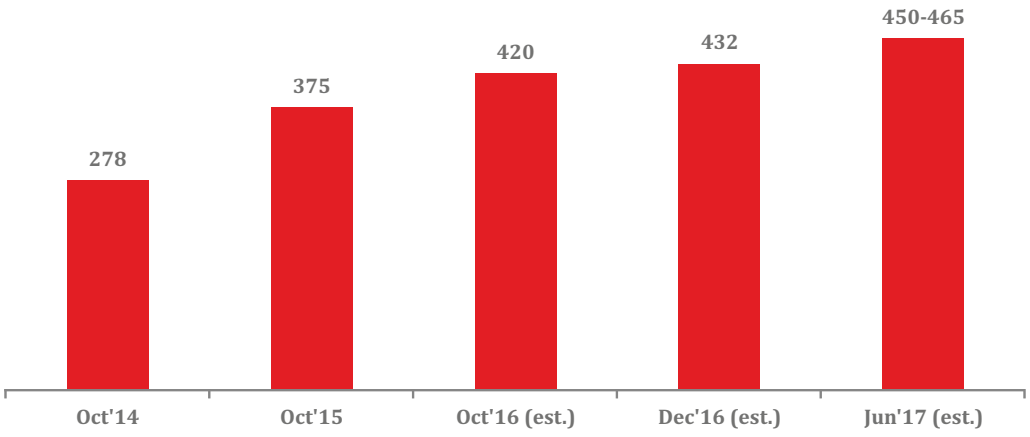
Feature	% Contribution to Total No. of User Reviews	% of Positive User Reviews	% of Negative User Reviews	% Difference (Positive – Negative)
Performance	36%	43%	57%	-14%
Battery	22%	63%	37%	26%
Camera	17%	47%	53%	-6%
Display	13%	78%	22%	56%
Others (Design, Storage etc.)	12%	85%	15%	70%

Source: Enixta Analysis

2.1 Growing Needs of Indian Internet Consumers

Today, India constitutes more than 12% of the global internet user population[7], with an internet user base of 450-465 million[8]. Also, India has become the second-largest internet user base in the world, only behind China.

Internet Users in India (in million)



Source: IMRB i-Cube, All India estimates
Dec'16 estimates does not account the impact of demonetization

[6]Enixta's proprietary artificial intelligence software used to analyze user reviews of the top 3 e-commerce portals – Flipkart, Snapdeal & Amazon India with 82% fine grain accuracy. The time period covered for the analysis was first half of 2016. In total, 18,463 user reviews were analyzed. Out of which, 60% of the user reviews were from the price band of sub ₹10K

[7]Source: Enixta Analysis on Internet Live Stats data

[8]Source: IAMAI Internet in India 2016 (estimated as of June 2017)

The rapid adoption of internet is being driven by phenomenal growth of mobile internet users. India is expected to have 420 million mobile Internet users by June 2017[9]. The mobile internet user base in India is expected to increase by more than 2 times in the last 3 years from 137 million users in June 2014 to 420 million users in June 2017.

If the trend continues, more than half of India's population in the next 3-4 years will likely to be mobile-only subscribers who will use Internet-enabled devices such as smartphones. Consumers are shifting to mobile apps for most of their activities. There is an increasing demand for sophisticated services such as communication, social networking, entertainment, research and digital transactions via mobiles. In today's context, the consumer demands a smartphone capable of managing the growing usage needs as well as offering a great user experience.

Indian Mobile Internet Usage Statistics – Few Highlights

- **Top 3 Mobile Internet Usages: Entertainment, Social Media & Communications** (Source: IAMAI)
- **Monthly Mobile Data Traffic generated by average smartphone: 559 MB in 2016 vs. 430 MB in 2015** (Source: Cisco Mobile Visual Network Index (VNI) Global Mobile Data Traffic Forecast)
- **On an average, a smartphone user spends 3 hours per day on their smartphones (an increase of 55% from 2015)** (Source: Mobile Marketing Association)
- **Mobile App downloads from Google Play in 2016: India ranked number one in terms of Google Play downloads with 6 billion downloaded, up from 3.5 billion in 2015** (Source: Google)
- **Total Time Spent on Android Apps in 2016: 150 billion hours were spent by Indians, capturing the top rank** (Source: Google)
- **Top 3 App Growth Categories in 2016: Music, Media and Entertainment followed by Business and Finance apps, and Utilities and Productivity apps** (Source: Flurry Analytics)

[9]Source: IAMAI Internet in India 2016 (estimated as of June 2017)

In today's world, the smartphones are expected to perform considerably well in the following areas:

Applications of a Smartphone

Typical smartphone users will demand 'high-quality' smartphones that can offer multi-tasking, long battery life, better UI experience and superior picture quality. Inferior smartphones will have a negative impact on the user experience.

2.2 Minimum Technical Requirements of a Smartphone

The minimum technical specifications for a smartphone were derived using a regression model, in which 40 technical parameters like operating system, processor speed, weight, screen size, primary camera resolution, secondary camera resolution, battery capacity, RAM etc. were considered for the analysis. These technical specification parameters were input to the regression model as independent variables. The dependent variable in the model was Buysmaart score[10]. More than 1,600 smartphones released on the e-commerce portals from 2013 to 2016 were analyzed to derive the minimum technical specifications of a smartphone.

Based on this analysis, the minimum technical specifications for a smartphone to deliver on consumer's expectations were as follows:

Specs Advantages of Enixta Recommended Smartphone

Feature	Enixta Recommended Smartphone – Tech Specs	Impact
Android Version	Marshmallow	Marshmallow has an array of new features, visual changes, fingerprint support, better control over how our phones can be used, battery saving tools or optimization
Primary Camera Resolution	8 MP	Offers improved picture size and image resolution for pictures and better video quality
Secondary Camera Resolution	5 MP	Results in better image quality for selfie pics
RAM	2 GB	Provides better multi-tasking and running heavy mobile apps capabilities
Processor Speed	1.3 Ghz	Results into speedier operations such as openings of mobile apps, the speed with which a click responds etc.
Battery Capacity	2,900 mAh	For longer battery life
Pixel Density	285 PPI	Produces smoother image with rounded edges
Internal Storage	16 GB	Offers greater storage space for OS, pre-installed apps, system software and external storage for pics and videos

Source: Enixta Analysis

Also, the pace at which all the major mobile network providers are increasing their footprints of 4G network indicates the growing demand for 4G services in India. Hence, 4G enabled smartphones are expected to drive internet penetration in India.

[10]Buysmaart score is a single score provided by Buysmaart.com on the basis of technical specifications of a smartphone and what people are saying about the smartphone (user reviews). The score is designed to help you find the best smartphones at a glance. It doesn't take into consideration the price of the smartphone

Technical Specification Comparison

Feature	Enixta Recommended Smartphone	Cheapest 4G Smartphone (Price: ` INR 3,400)	4G Smartphones (Price Range: INR 3,400 – 4,500) – Common Tech Specs
Android Version	Marshmallow	Lollipop	Lollipop
Primary Camera Resolution	8 MP	5 MP	5 MP
Secondary Camera Resolution	5 MP	2 MP	2 MP
RAM	2 GB	512 MB	1 GB
Processor (# of Cores)	Quad Core	Quad Core	Quad Core
Processor Speed	1.3 Ghz	1.5 Ghz	1 – 1.1 Ghz
Battery Capacity	2,900 mAh	2,000 mAh	Upto 2,000 mAh
Screen Size	5 inch	5 inch	4 – 5 inch
Pixel Density	285 PPI	196 PPI	Between 196 – 285 PPI
Internal Storage	16 GB	4 GB	8 GB

Source: Enixta Analysis & Buysmaart.com

A simple comparison of features reveal that the present day 'budget smartphones' in India are of inferior quality which are incapable of fulfilling the usage needs of a typical modern smartphone user. Such smartphones have an adverse impact on the consumer sentiment and are actually an impediment to the smartphone adoption in the long run.

2.3 Price of an Ideal Smartphone

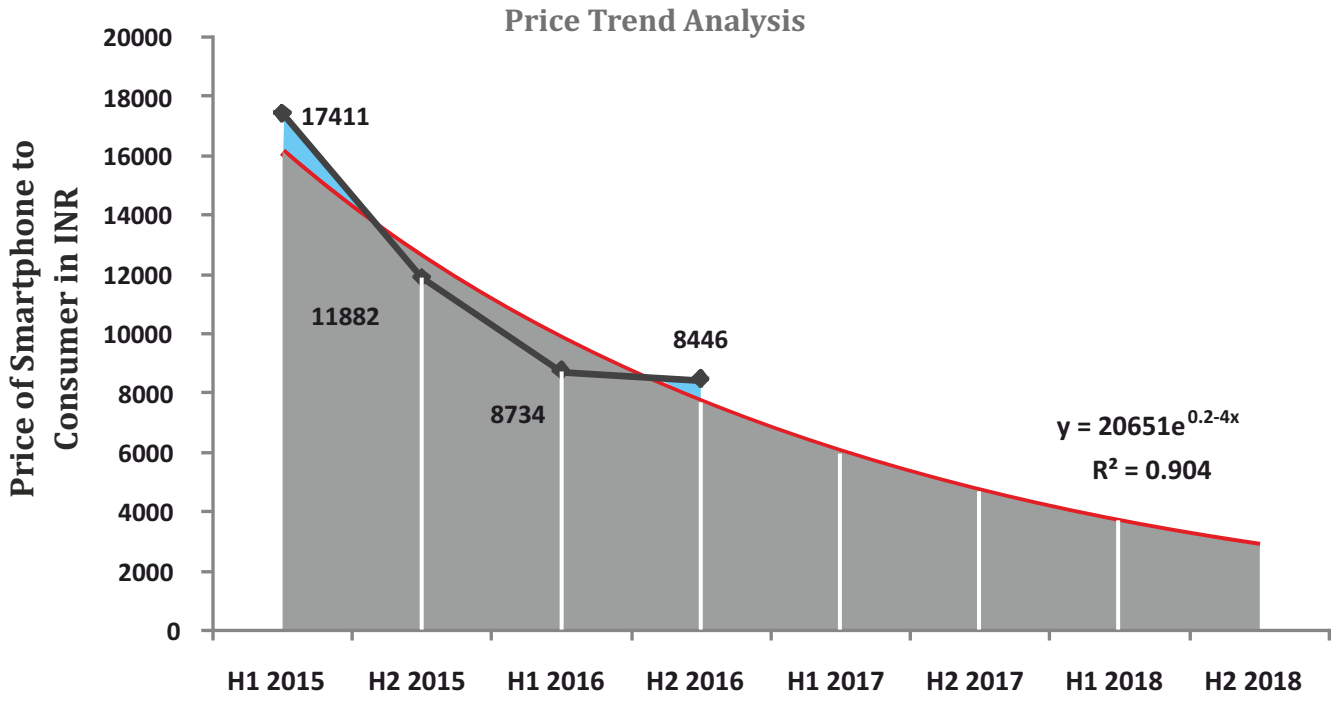
The predicted price for an ideal smartphone (a smartphone with Enixta recommended technical specification) was derived using Random Decision Forests model[11], where technical parameters like operating system, processor speed, weight, screen size, primary camera resolution, secondary camera resolution, battery capacity, RAM etc. were taken as input variable and the dependent variable was the average price of the smartphones. The average price was taken into consideration to factor the seasonality and fluctuations in price. The new smartphone models released from March 2015 to December 2016 on the e-commerce portals were considered for the analysis.

In order to drive the adoption of smartphones capable of delivering on consumers' expectation, Indian market requires smartphones with configuration recommended by Enixta at a much affordable price. Let us assume ₹3,000 as the tipping point for the exponential growth in the smartphone adoption, given the cheapest 4G smartphone available in the market is around ₹3,400.

[11]Random forests or random decision forests are an ensemble learning method for classification, regression and other tasks, that operate by constructing a multitude of decision trees at training time and outputting the class that is the mode of the classes (classification) or mean prediction (regression) of the individual trees. Random decision forests correct for decision tree's habit of overfitting to their training set

Given the current pattern, the trend analysis[12] of the price of Enixta recommended smartphone suggests that the ideal smartphone will cost us around `3,000 by end of year 2018.

A domestic smartphone manufacturing ecosystem focused on increasing the local value addition along with government support through incentives and tax benefits will play a major role in expediting the achievement of goal of producing low-cost but high-specification smartphones for masses and thereby triggering significant growth in smartphone adoption.



Source: Enixta Analysis

[12]An exponential trend line is a curved line that is most useful when data values rise or fall at increasingly higher rates

3.0 Smartphone Manufacturing: Domestic Manufacturing Industry

Despite the strong demand for mobiles phones, India's local production of mobile phones is not sufficient to meet the overall demand in the country and most of the domestic demand for mobile phone is met through imports.

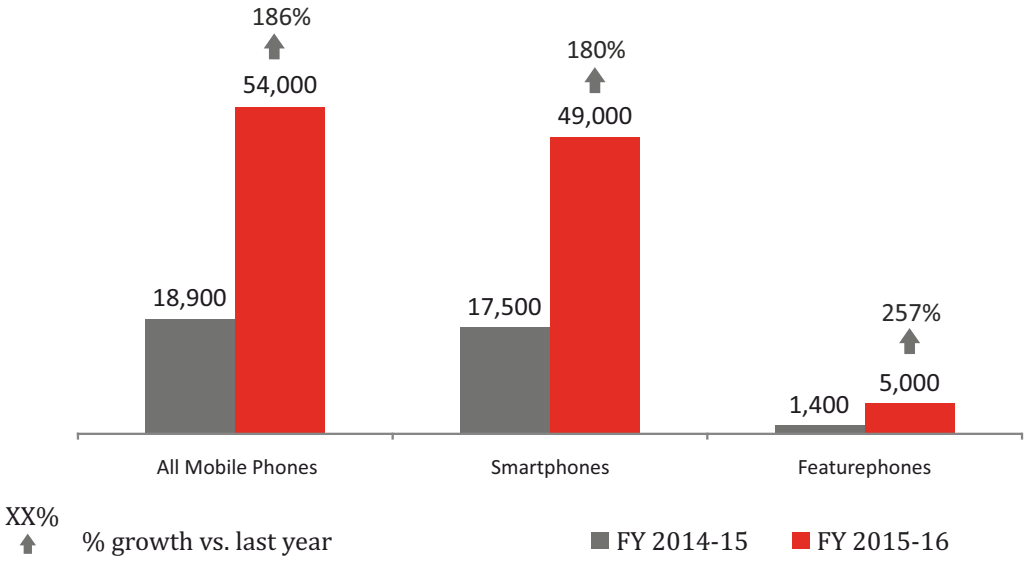
Currently, India possesses limited capabilities across manufacturing value chain activities. There is a high dependency on imports for components that has resulted in low levels of localization amid weak manufacturing ecosystem. To become a global mobile phone manufacturing hub, the Indian mobile phone industry must strengthen its ecosystem and put efforts to increase the local manufacturing value addition from just being involved in the last mile assembly. Therefore, the industry must focus on increasing the level of local value addition in mobile phone manufacturing by focusing on CKD (completely knock down) assembly.

3.1 Domestic Manufacturing Market Size

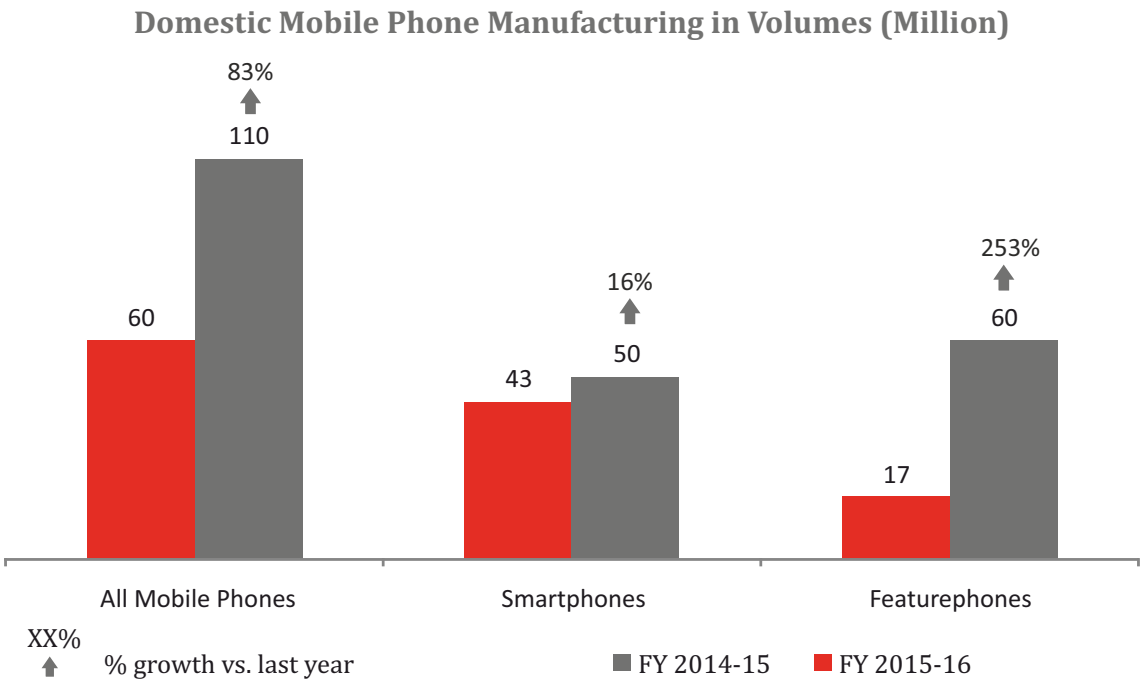
In FY 2015-16, India manufactured mobile phone worth ₹54,000 crore locally, which was an increase of 186% as compared to the last financial year. Smartphones constituted more than 90% to the total domestic manufacturing value in FY 2015-16 with worth of ₹49,000 crore.

In term of units produced, 110 million of smartphones were manufactured domestically in FY 2015-16, in comparison to 60 million mobile phones manufactured in FY 2014-15. The majority of the mobile phones manufactured in FY 2015-16 were feature phones with 60 million units.

Domestic Mobile Phone Manufacturing in Values (INR Crore)



Source: Teleanalysis

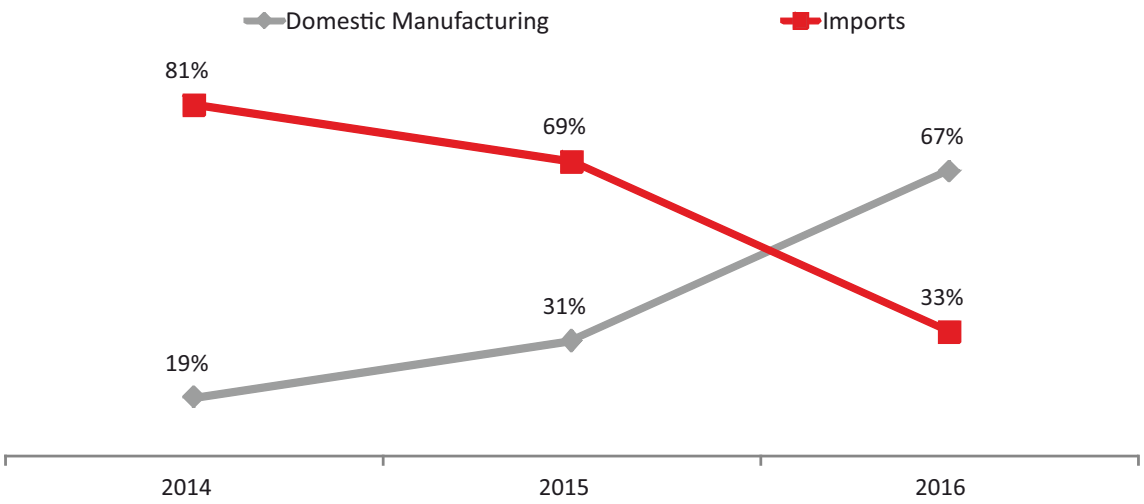


Source: Teleanalysis

In 2016, 2 out of every 3 mobile phone sold in India will be domestically produced. It is estimated by 2020; almost 96% of the mobile phones to be sold in India will be locally manufactured[13]. The numbers are expected to go up further, if the export numbers are added to the domestic consumption numbers.

[13]Source: Maximizing Local Value Addition in Indian Mobile Phone Manufacturing - A Joint Report by IIM Bangalore & Counterpoint Research

India Mobile Phone Market: Domestic Manufacturing vs. Imports (% Contribution to Volume)



Source: A Joint Study of IIM Bangalore & Counterpoint Research

3.2 Mobile Phone Manufacturing Value Chain

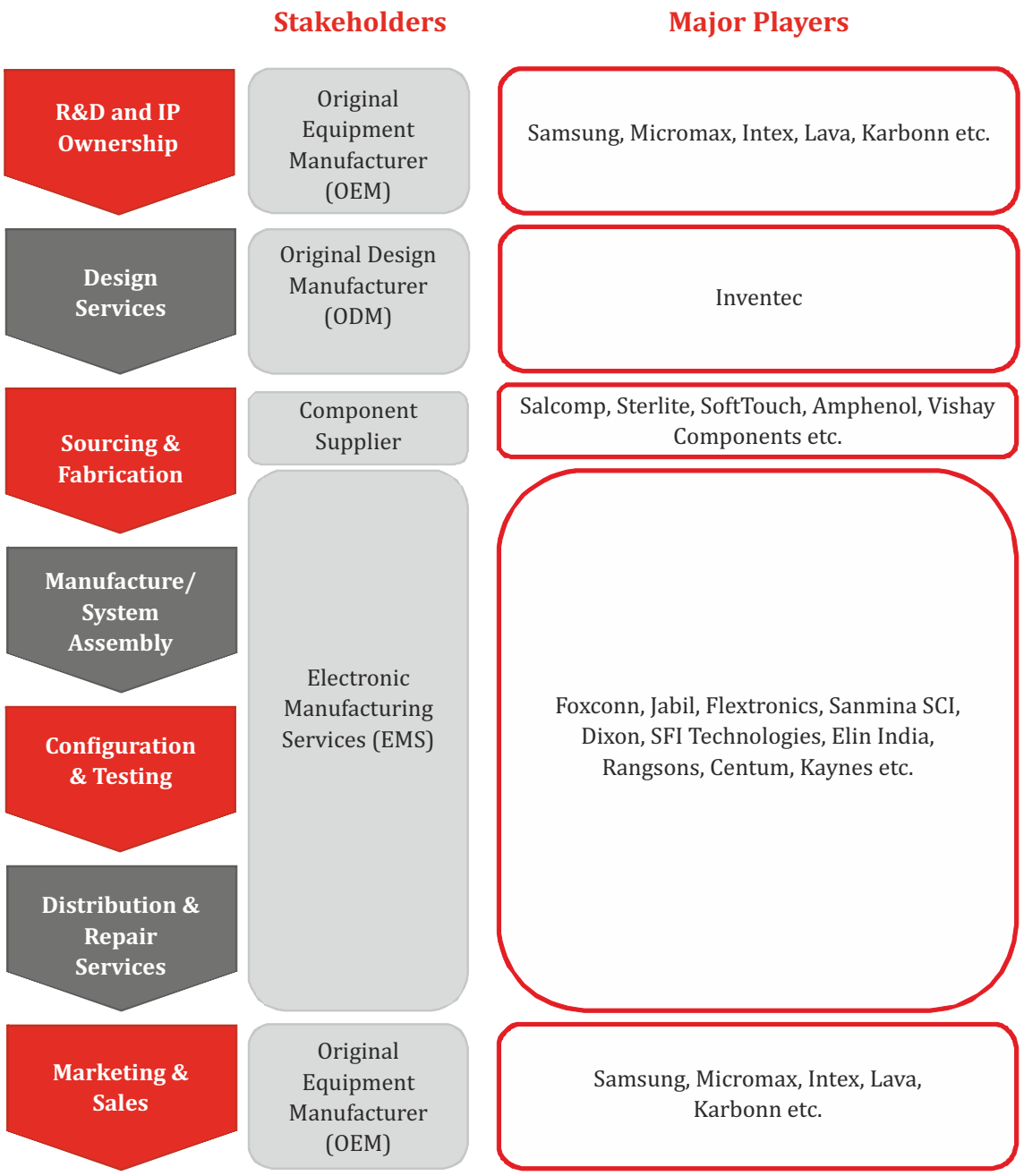
Mobile phone manufacturing is interplay between the design aspect, the components and the manufacture of the device. A typical mobile phone manufacturing process starts with a prototype. Once a final design is developed, the concept is provided to the engineers for electronics configuration. In addition to the hardware, software is also required for mobile phones to be fully functional.

While most of the 'manufacturing' in India happens in SKD (semi knock down) form with some level of localization, high-end components are imported in CBU (completely built unit) form. Currently, most of the localization takes place in the last mile assembly stage.

More than 50 OEMs to ODMs to EMS to component suppliers are currently involved in manufacturing of mobile phones in India[14]. India currently has multiple global and local players across the various stages of mobile phone manufacturing ecosystem.

[14]Source: IIM Bangalore & Counterpoint Research

Major Players in India across Mobile Phone Manufacturing Value Chain



Components sourcing and fabrication are considered to be the building blocks of any electronic devices such as mobile phones etc., and the strength of any country's capabilities in manufacturing is determined by the local activities in component sourcing and fabrication. Currently, India has the presence of very few component suppliers with most of the high value and critical components being imported from markets such as China, Japan, Indonesia, Malaysia and Taiwan.

3.3 Government Initiatives & Support

The Government of India is increasing its focus on this sector and plans to develop India as a major mobile phone manufacturing hub with capability to cater to the demands from the domestic market as well as from overseas market.

The 'Make in India' campaign encouraged local mobile phone manufacturing and 38 new mobile manufacturing units have been set-up since September 2015, which has ramped up the manufacturing of mobile phone units in FY 2015-16 by 90%[15]. These new manufacturing units have capacity of 20 million units per month, and have generated close to 40,000 direct jobs and 1.25 lakh indirect employments.

As per Indian Cellular Association (ICA), Chinese investment of USD 2-3 billion (approximately 13,000– 20,000 crores) over the next two years looks like a real possibility along with employment for 1-2 lakh people. This would give a major boost to the 'Make in India' initiative of making India as a global manufacturing destination.

The Union Budget of FY 2015-16 had almost 11% excise duty differential between local and imported phones, an increase from the earlier 5%, designed to create a pull for local manufacturing. Apart from the difference in duty, India is still in a growth phase, and will offer the volumes that are able to justify investment in a manufacturing or assembly unit in India.

The 'Make in India' initiative is attractive for OEMs to set-up domestic manufacturing in India not only because of the differential duty advantage but also because it gives them more control over the manufacturing, quality, processes and features localization. Furthermore, incentives from state and central governments under this initiative coupled with cheaper labour costs in India are making the proposition much more attractive.

The states of Uttar Pradesh, Andhra Pradesh & Telangana have emerged as the mobile phone manufacturing hubs in the country with half of the 38 manufacturing units being established between September 2015 and October 2016 in these states (see Annexe for greater details). The incentive schemes from respective state governments like various concessions, reimbursements, exemptions on taxes & duties in addition to subsidies on CAPEX investments etc. are encouraging manufacturers to set up their manufacturing facilities in these states (see Annexe for more details).

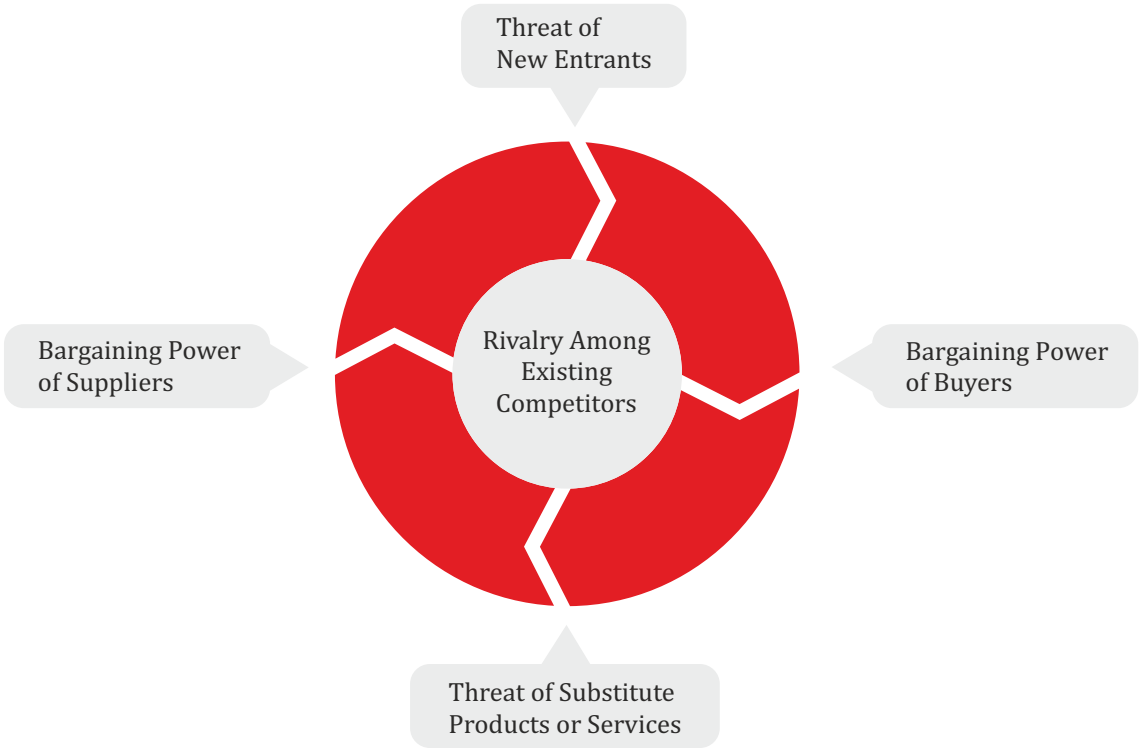
The Ministry of Electronics and Information Technology (MeitY) has recently held consultation with industry leaders to develop a roadmap for One Trillion Dollar Digital economy in India, which is expected to provide greater impetus to domestic manufacturing of mobile phones in the country. The roadmap gives huge emphasis on increasing electronics manufacturing in the country in which mobile phone manufacturing is a key element.

[15]Source: The Mobile Economy, India 2016 by GSMA

3.4 Porter's 5 Forces Analysis

- **Competition Rivalry - High.** There are 150+ brands operating in the Indian market with the top players accounting for the major share of the market. Product innovation/ differentiation as well unique marketing strategies are used to stay ahead of competition, thereby intensifying the rivalry.
- **Threat of New Entrants - Low.** The margins for the brands are low and the market is dominated by few major players like Samsung, Intex, Micromax, Lava, Lenovo etc. Given rapidly evolving technology in this sector, players need to keep up with the latest technology upgrades and innovations to stay competitive.
- **Substitute Products - Low.** The threat of substitute product is low as there is no alternative for smartphones. The other technology products such as Tablets and Wearables still have to go a long way in proving their relevance to mass population.
- **Bargaining Power of Suppliers - Low.** The bargaining power of suppliers is low, since product differentiation is less. There are multiple suppliers except for advanced components, thereby creating fierce competition among suppliers to win contracts. Most of the OEMs source components from multiple suppliers and the cost of switching to other suppliers is low.
- **Bargaining Power of Customers - High.** The differentiation in hardware aspect has become marginal and mobile phones have increasingly become commoditized. The options available to the consumers are wide - with availability of similar mobile phones by different brands as well as various models across different price bands.

Indian Mobile Phone Industry – Porter's 5 Forces Analysis



3.5 India vs. Other Key Manufacturing Countries

As per a joint study by IIM Bangalore & Counterpoint Research, countries like China, India, Brazil, Indonesia and Vietnam now account for almost 85% of the world total phone manufacturing. The local value addition for China is at staggering 70%, followed by Vietnam at 35% and Brazil at 17%.

In the last decade, China has been the key destination for mobile phone production due to cost advantages and economies of scale. While India presently has a capacity to assemble 270 million mobile phones a year, the capacity of mobile phone production in China is 1.1 billion.

In 2011, KPMG compared India and China's competitiveness in handset manufacturing. The landed cost of materials, it assumed, would be 10% lower for the Chinese manufacturers. While an Indian manufacturer would have to import 80% components, the Chinese manufacturers would be importing only 5% of components. Furthermore, the Chinese labour was 1.8 times more productive, Power costs were 20% to 30% lower while water was 30% to 35% cheaper in China. These ensured that a mid-sized Chinese manufacturer with a capacity to make 20 million units a year would have a profit margin of 9% while the same for an Indian company would be 2.6%.

However, China is now facing challenges because of around 20% rise in labour costs since 2011[16]. The Rupee has weakened while the Yuan has strengthened against the Dollar, which affects export margins.

Subsequently, countries such as India, Vietnam and Indonesia, are emerging as attractive manufacturing destinations due to host of factors such as significant domestic demand, availability of low-cost and skilled labour and encouraging support from government.

Of these, Vietnam seems to be a favoured destination with manufacturers such as Samsung, Microsoft and LG relocating their manufacturing outlets to Vietnam. Besides cheap labour, one of the primary drivers for the influx of foreign investment into Vietnam is the tax concessions and subsidies provided by the Government in its recent efforts for being more investment-friendly, particularly for high technology companies. Vietnam offers a 30-year tax holiday window at just 10% tax on mobile manufacturing which further goes down to 100% exemption in the first four years and reduction of 50% in the next nine years. Additionally, VAT exemption is applied on technology transfer. In addition, companies are permitted to use profits before tax to establish a fund for scientific and technology development where the amount paid may not exceed 10% of the total taxable income for the assessable tax year. Tax incentives are also granted based on location and size of investments.

India has the advantages of strong domestic demand, competitive labour costs, a huge workforce and huge opportunity for exports. India only requires a stable policy and predictable regulatory environment with attractive government incentives to build a strong mobile phone manufacturing ecosystem with high localization rate.

Key Indicators of Mobile Phone Manufacturing Opportunity

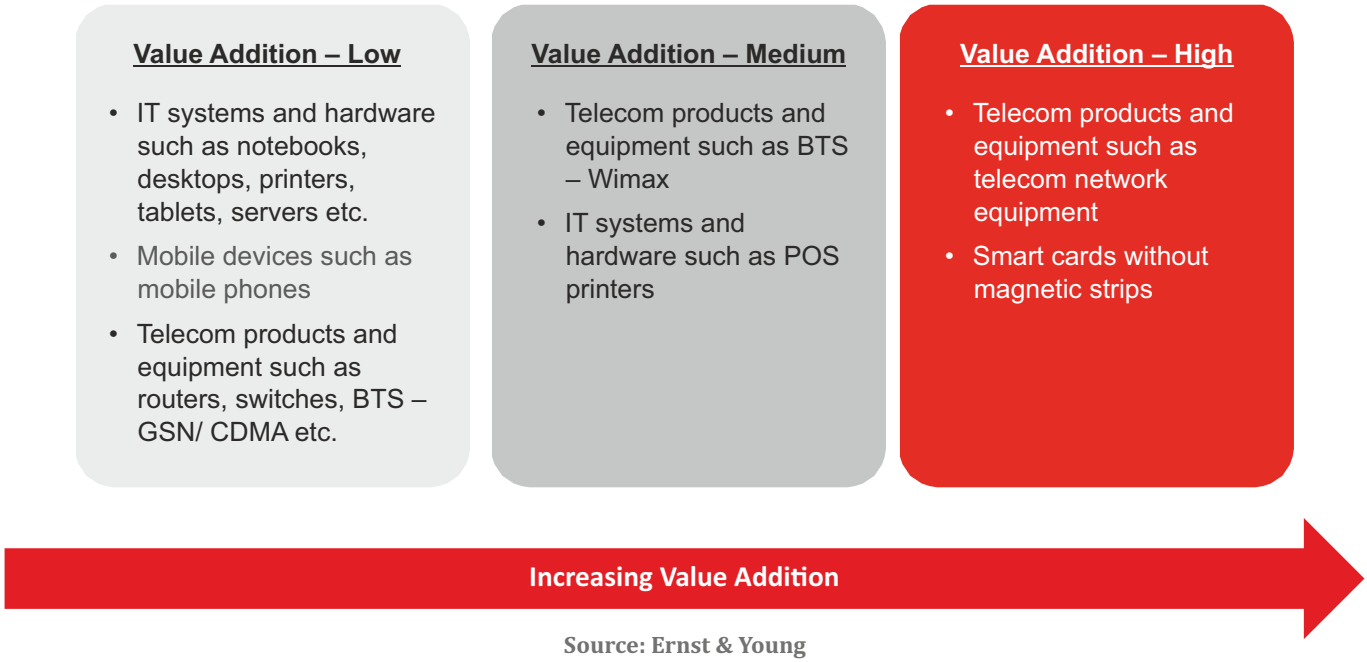
	India	China	Vietnam
Smartphone Penetration	Low	High	Medium
Domestic Demand	High	High	Low
Average Wages in Manufacturing Sector	Low	High	Medium
Working Population as a % of Total Population	High	Medium	High
Entry Barriers for New Players	Low	High	Low
Predictable Regulatory Environment	Medium	High	High
Government Incentives & Subsidies	Low	High	High

[16] On China's east coast, starting salaries in the mobile manufacturing industry are equivalent to ₹25,000 a month. In India, the monthly salaries are in the range of ₹7,000 to ₹8,000.

4.0 Smartphone Manufacturing: Local Value Addition

Post the launch of 'Make in India' campaign, the domestic manufacturing of mobile phone has been largely driven by excise duty differential on fully imported phone and some components such as batteries, chargers and accessories. However, local value addition is still limited to final assembly with major components being imported. The lack of robust manufacturing ecosystem is resulting in low local value addition. It is imperative for all the stakeholders to play an active role in increasing their involvement to boost domestic value addition, backed by significant policy reforms and a robust manufacturing ecosystem.

Electronic Products (ITA I Products) Value Addition Grid



Source: Ernst & Young

In April 2017, the Government of India notified the Phased Manufacturing Programme (PMP) to boost indigenous production of mobile phones by providing tax relief and other incentives on components and accessories used for the mobile phones. The PMP, proposed by the joint panel of the industry and the government called 'Fast Track Task Force' plans to promote depth in domestic manufacturing of mobile phones and thereby substantially increase value addition within the country.

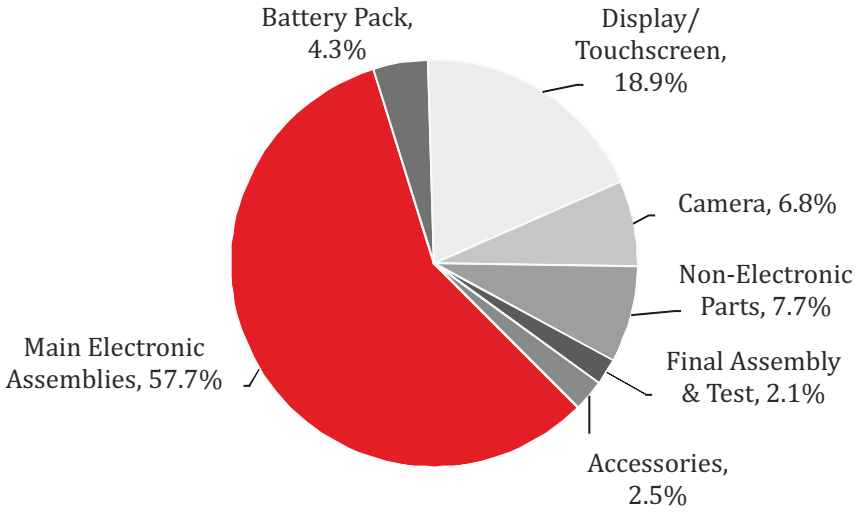
Phased Manufacturing Programme (PMP) – Mobile Phones

Year	Sub-Assembly
2016-17	(i) Charger/ Adapter (ii) Battery Pack (iii) Wired Headset
2017-18	(iv) Mechanics (v) Die Cut Parts (vi) Microphone and Receiver (vii) Key Pad (viii) USB Cable
2018-19	(ix) Printed Circuit Board Assemble (PCBA) (x) Camera Module (xi) Connectors
2019-20	(xii) Display Assembly (xiii) Touch Panel/ Cover Glass Assembly (xiv) Vibrator Motor/ Ringer

Source: Ministry of Electronics & Information Technology, Government of India

4.1 Key Components of a Smartphone

Key Component Share in Bill of Materials Value for Smartphones in India



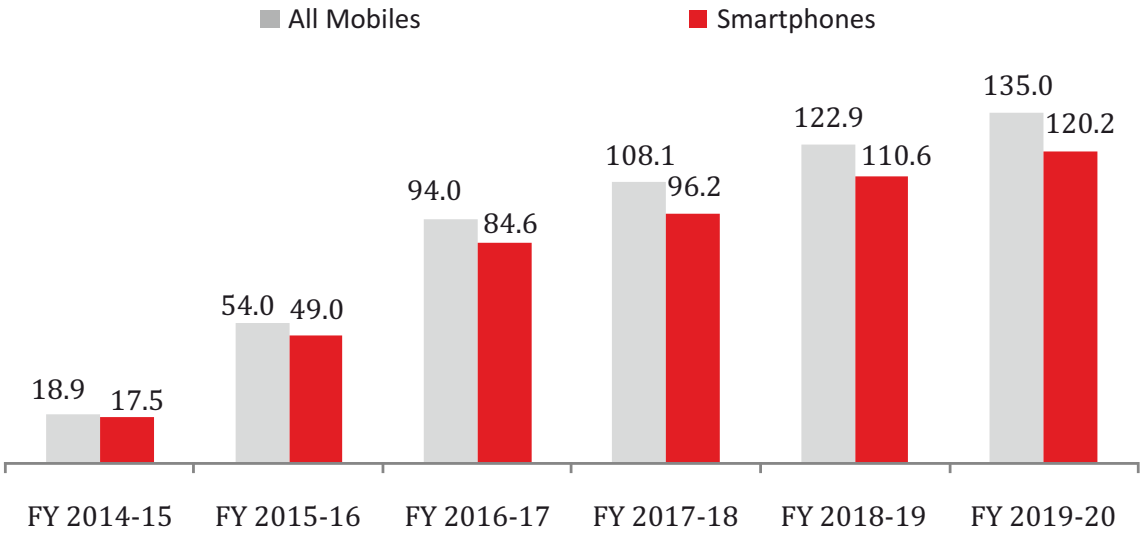
Source: Enixta Analysis

A smartphone consists of various electronics and non-electronics components. The key components in the bill of materials of a smartphone are the main electronics assemblies comprising of main board and sensor flex that contributes around 58% of the total bill of materials (BoM) cost. Other components like battery, display and camera further add 30% to the total bill. Most of these high value components are imported and have zero contribution to the local manufacturing value addition.

4.2 Local Value Addition Possibilities by 2019

The size of the domestic mobile manufacturing industry in FY 2019-20 is expected to be ₹135,000 crore as compared to ₹94,000 in FY 2016-17. For smartphones, the market size of domestic manufacturing in FY 2019-20 will be ₹120,200 crore.

Domestic Manufacturing Market Size – All Mobiles vs. Smartphones (₹ '000 Crore)



Source: Enixta Analysis on Teleanalysis data

In light of the roadmap drawn by Indian government in terms of Phased Manufacturing Programme (PMP), local manufacturing value addition of more than 25% can be achieved for smartphones by 2019, translating into ₹31,000 crore of local component sourcing and local assembly in case of smartphones. In 2016, the local value addition for smartphones stood at 6.1%.

Smartphone Manufacturing Local Value Addition Possibilities

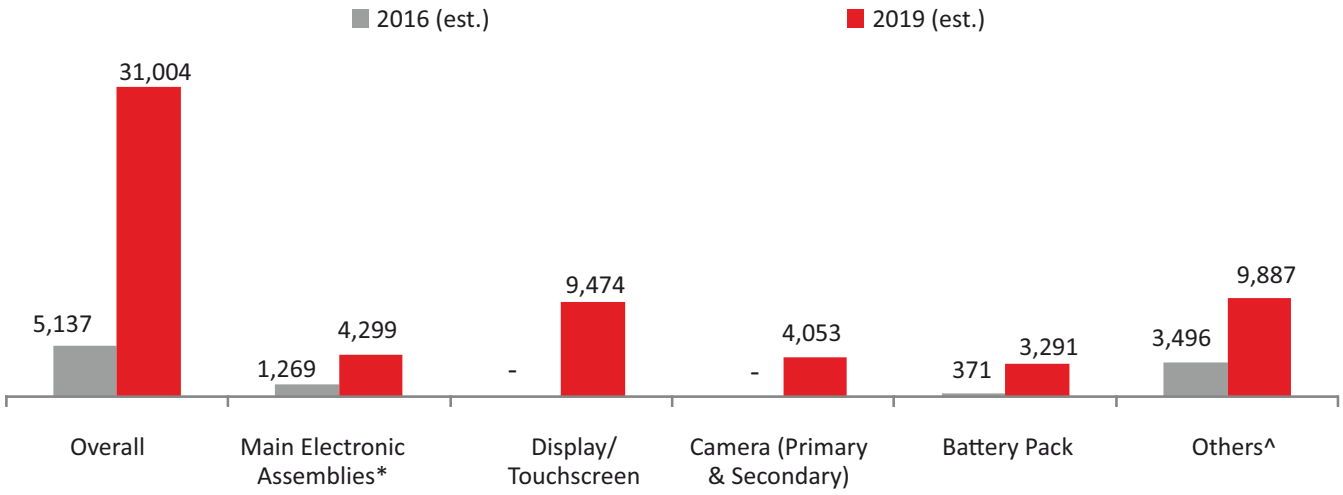
	Local Sourcing Possibilities	% Local Value Addition - 2016	% Local Value Addition - 2019
Overall	N.A.	6.1% →	25.8%
Key Components			
Main Electronic Assemblies (Main Board & Sensor Flex)	Low	2.6% →	6.2%
Display/ Touchscreen	Medium	0.0% →	41.8%
Camera (Primary & Secondary)	Medium	0.0% →	49.6%
Battery Pack	High	10.2% →	63.7%
Others (Non-Electronics Part + Accessories + Final Assembly & Testing)	High	33.6% →	66.9%

Source: Enixta Analysis

The components such as battery, chargers, earphones, packaging etc. have high possibility of local sourcing and assembly. These components constitute almost 17% of the total bill of materials value. There is a strong possibility of achieving the local value addition of more than 60% by 2019.

Camera is expected to achieve almost 50% of local value sourcing and assembly contribution by 2019. At the same time, more than 40% of local value sourcing and assembly contribution is expected for display. Camera and display covers more than one-fourth of the total bill of materials value. The main electronic components which account for more than 57% of the total bill of materials value are expected to contribute marginally to the local value addition with contribution of 6.2% by 2019.

Total Local Value Addition (in ₹Crore) by Key Components – 2016 vs. 2019



Source: Enixta Analysis
***Main electronic assemblies include main board and sensor flex**
^Others include non-electronic components, accessories and assembly & testing

Going forward, India needs to build a strong and supportive manufacturing ecosystem for semiconductor component suppliers. The growth of India as a leading technology supplier will depend on the presence of local advanced semiconductor fabs catering to both domestic electronics manufacturing demand and export demand. The proliferation of smartphones as well as Internet of Things (IoT) applications present a strong case for significant domestic consumption and exports to other countries to all the stakeholders of the ecosystem for active role.

A detailed analysis of localization potential for components of a smartphone is as follows:

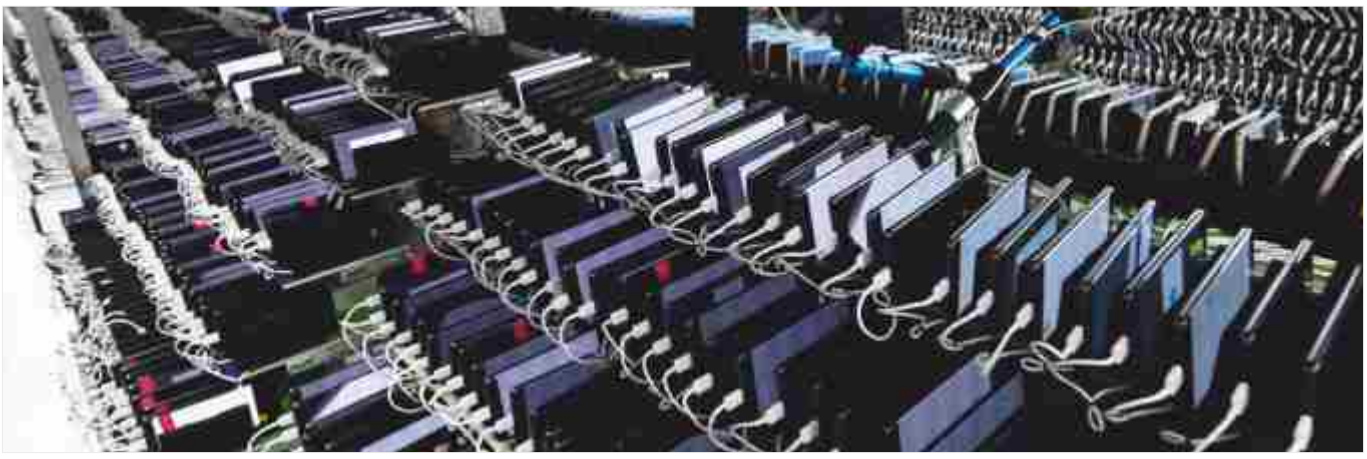
Battery
Local Sourcing Possibilities: High
Expected % Local Value Addition by 2019: 63.7%

Local Value Addition Possibilities – Battery Pack

	% Local Value Addition - 2016	% Local Value Addition - 2019
Overall - Battery Pack	**10.2%**	**63.7%**
Key Sub - Components		
Cell	**0.0%**	**45.9%**
Integrated Circuits	**0.0%**	**1.7%**
Passive Components	**0.5%**	**1.4%**
Connector Components	**1.0%**	**2.5%**
Substrates	**0.0%**	**0.7%**
Non - Electronics Components	**4.3%**	**4.9%**
Assembly & Testing	**4.4%**	**6.7%**

Source: Enixta Analysis

In the current scenario, the batteries are being assembled in India but sub-components are not completely sourced locally. Battery cell, the sub-component with more than 70% contribution to the total battery cost is completely imported, thereby limiting the local value addition contribution to 10%. The high value addition of more than 60% can be achieved by 2019, if the OEMs procure all the sub components locally especially battery cell and electronic components as well as all the OEMs assemble their batteries in India.



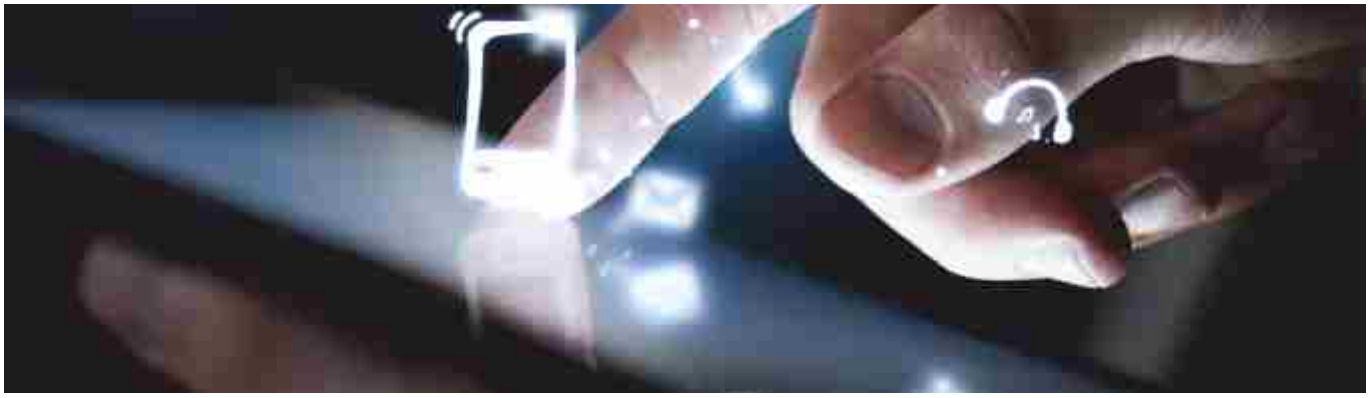
Display/ Touchscreen
Local Sourcing Possibilities: Medium
Expected % Local Value Addition by 2019: 41.8%

Local Value Addition Possibilities – Display/ Touchscreen

	% Local Value Addition - 2016	% Local Value Addition - 2019
Overall - Display/ Touchscreen	**0.0%**	**41.8%**
Key Sub - Components		
Integrated Circuits	**0.0%**	**3.7%**
Small Active Components	**0.0%**	**0.7%**
Passive Components	**0.0%**	**0.2%**
Connector Components	**0.0%**	**0.2%**
Substrates	**0.0%**	**7.4%**
Circuit Assembly	**0.0%**	**0.9%**
Panel	**0.0%**	**14.5%**
Non - Electronics Components	**0.0%**	**12.1%**
Assembly & Testing	**0.0%**	**2.1%**

Source: Enixta Analysis

Display is the second most expensive component of a smartphone after main electronic components of main board and sensor flex, with almost 19% share in the total bill of materials value. Currently, no sub components of the display are sourced locally. Given the value of display in the smartphone cost, it becomes important to attract display suppliers to invest in display manufacturing fabs in India by offering attractive business incentives. To start with, the focus can be on sub components such as non-electronics part and panel.



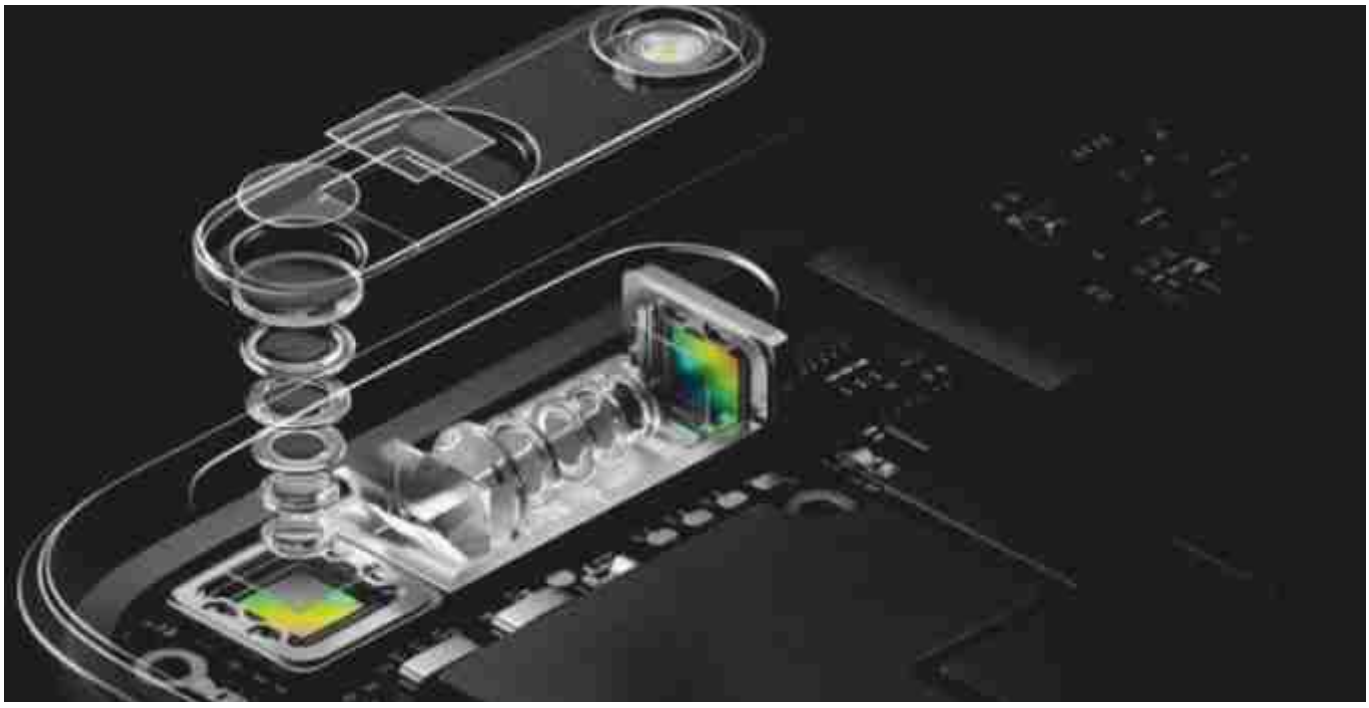
Camera (Primary & Secondary)
Local Sourcing Possibilities: Medium
Expected % Local Value Addition by 2019: 49.6%

Local Value Addition Possibilities – Camera (Primary & Secondary)

	% % Local Value Addition - 2016	% Local Value Addition - 2019
Overall - Camera (Primary & Secondary)	**0.0%**	**49.6%**
Key Sub - Components		
Integrated Circuits	**0.0%**	**11.6%**
Modular & Odd Form Components	**0.0%**	**7.9%**
Passive Components	**0.0%**	**0.4%**
Substrates	**0.0%**	**4.1%**
Non - Electronics Components	**0.0%**	**18.9%**
Assembly & Testing	**0.0%**	**6.8%**

Source: Enixta Analysis

Like display, there is no local sourcing of the subcomponents of camera. The contribution of camera to the total bill of materials is around 7%. The local sourcing of subcomponents and assembly of the camera needs to be encouraged with attractive policies and incentives to have a meaningful contribution to the target of achieving overall local value addition of more than 25% by 2019.



Main Electronic Assemblies (Main Board & Sensor Flex)
Local Sourcing Possibilities: Low
Expected % Local Value Addition by 2019: 6.2%

Local Value Addition Possibilities – Main Electronic Assemblies

	% Local Value Addition - 2016	% Local Value Addition - 2019
Overall - Main Electronic Assemblies (Main Board & Sensor Flex)	**2.6%**	**6.2%**
Key Sub - Components		
Integrated Circuits: Main Board	**0.0%**	**0.0%**
Modular & Odd Form Components: Main Board	**0.0%**	**0.0%**
Small Active Components: Main Board	**0.0%**	**0.0%**
Passive Components: Main Board	**0.0%**	**0.0%**
Connector Components: Main Board	**0.0%**	**0.0%**
Substrates: Main Board	**0.0%**	**0.0%**
Assembly & Testing: Main Board	**2.5%**	**5.9%**
Integrated Circuits: Main Board	**0.0%**	**0.0%**
Passive Components: Main Board	**0.0%**	**0.0%**
Connector Components: Main Board	**0.0%**	**0.0%**
Substrates: Main Board	**0.0%**	**0.0%**
Assembly & Testing: Main Board	**0.1%**	**0.3%**

Source: Enixta Analysis

Currently, readymade assemblies are imported from a third party ODM based out of India. Also, the OEMs are not sourcing the sub-components of the main electronic assemblies, due to the lack of semiconductor and other subcomponent manufacturing ecosystem. Furthermore, the import of entire main electronic assemblies doesn't attract any higher duties to encourage local sourcing of the subcomponents.

The focus on the design and SMT (Surface Mount Technology) level assembly aspects could be the starting point for higher local value addition. The local design and assembly will ensure benefits such as control on smartphone design, selection of key components and features and multiple quality checks and testing.

4.3 Duty Structure in India

In FY 2014-15, the Government of India introduced a duty differential structure on mobile handsets. The rate of excise duty was reduced to 1% (instead of 6%) subject to the condition of non-availment of CENVAT credit on the inputs and capital goods used in the manufacturing of said goods, thereby incentivizing local manufacturers as compared to importers of mobile handset. Subsequently, in FY 2015-16, the differential was increased to 11.5% by raising the CVD rate to 12.5%.

With the Phased Manufacturing Program (PMP), the Government has created a differential structure on three components of mobile handsets — chargers, batteries and headsets — wherein the rate of excise duty was reduced to 2% (instead of 12.5%), subject to certain conditions including non-availment of CENVAT credit on the inputs and capital goods used in the manufacturing of such goods.

In the pre-GST regime, the manufacturing of smartphones in India in 2016 registered a duty differential of around 10% on the sales price to distributor/ retailer as compared to import of smartphones to India.

Duty Differential Benefit – Illustration

Sl. No.	Particulars	Import of Smartphone (in INR)	Manufacture in India (in INR)
A	MRP	3,000	3,000
B	Sales Price to Distributor/ Retailer	2,400	2,400
C	Cost of Completely Built Unit (CBU)	2,200	2,200
D	Local Value Addition in India	0%	6.1%
E	Cost of Imports	2,200	2,066
F	Cost of Domestic Additions	0	134
G	Total Input Tax Paid	290	31
H	Total Credits Available	0	28
I	Excise Duty on Manufacture	0	39
J	Net Tax Payable (I – H)	0	11
K	Total Tax to Importer/ Manufacturer (J + G)	290	44
L	Tax Benefit (Manufacture in India - Import of Mobile Phone)	-	246
M	Duty Differential of Sales Price to Distributor/ Retailer (Manufacture in India - Import of Mobile Phone)	-	10.3%

Key Assumptions:

- The MRP of the mobile handset is assumed as INR 3,000, Sale price to the distributor/ retailer as INR 2,400 and the Cost of the completely built unit as INR 2,200
- Customs duty on imports is calculated on MRP after a 35% reduction
- On the sale of the manufactured handset, Excise Duty has been computed at a concessional rate of 2% on MRP after 35% reduction

- It is assumed that all parts, components and accessories are imported from outside India except the charger, battery, headset and packaging material
- Input service cost for local procurements is considered as 15% of domestic additions, and input service cost for sales and distribution is considered as 8% of cost of CBU
- CENVAT credit is availed on the service tax component (14%) paid on input services
- No service tax credit is available on Swachh Bharat Cess (0.5%) and Krishi Kalyan Cess (0.5%).

The Government of India imposed a special additional duty (SAD) levy of 2% on populated printed circuit boards (PCBs) in the Union budget for FY 2017-18. It is expected to drive long-term commitment from mobile phone manufacturers for setting bigger investments in India and thus providing the necessary impetus to domestic manufacturing initiative. This will lead to a potential 1% increase in the cost of mobile handsets and it depends on OEMs to decide whether to pass it on to end consumers or not.

Probable Impact of GST

The Government of India has implemented Goods and Services Tax (GST) from July 1, 2017. The basic intent of GST is to avoid a cascading tax effect in the supply chain with seamless credit flow, which, in turn, would make products cheaper and increase the country's global competence. However, GST has the risk of negating the benefits available to domestic mobile phone manufacturers under the pre-GST tax regime.

The Government of India has effected a goods and services tax (GST) of 12% for mobile phones. The imposition of 12% GST on mobile phones is expected to make most of the mobile phones costlier by 4%-5%, thereby washing away the benefit under duty differential that was being offered to local manufacturers. As per Indian Cellular Association (ICA), 30 out of the 36 jurisdictions (29 states and 7 Union Territories) will have tax on mobile phones nearly doubling to 12% leading to an increase in the prices of mobile phones.

12% GST on mobile phones is also likely to have an impact on the working capital of importers and domestic manufacturers. An importer's upfront cash flows may increase only due to an increase in the rate of duty. On the other hand, domestic manufacturers would be required to pay duties on the import of parts, components and accessories for manufacturing, as compared to zero duty under the pre-GST regime. The pre-GST incentive of around 10% available to domestic manufacturers will become zero under GST regime unless specific provisions are built in.

Thus, the impact of increase in upfront cash flow is expected to be higher for domestic manufacturers as compared to importers. In such a scenario, the mobile phones imported to India will become cheaper and most of the locally manufactured mobile phones will get costlier especially manufactured in the low VAT states like Karnataka.

There has been some relief to the domestic manufacturers as the government has decided to impose 10% basic custom duty (BCD) on cellular mobile phones and its specified parts like charger, battery, wire headset, microphone and receiver, keypad, USB Cable, with effect from 1st July 2017. This move is expected to make the imported mobile phones costlier than those produced in the country. However, the present exemption from basic customs duty on specified parts of mobiles, namely, Printed Circuit Board Assembly (PCBA), camera module, connectors display assembly, touch panel, cover glass assembly, vibrator motor, ringer will continue. Further, inputs and raw material for manufacture of parts of above specified electronics goods including mobile phones will also continue to be exempt from BCD.

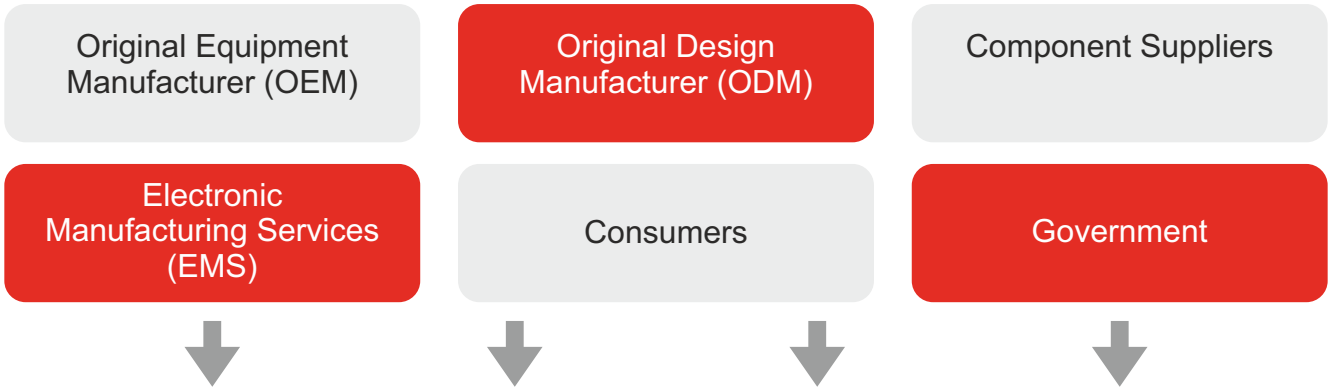
5.0 Smartphone Manufacturing: The Way Forward

Many Indian as well as global companies are looking to tap the opportunity of domestic manufacturing of mobile phones in India. Despite the initial enthusiasm along with policy level initiatives, the industry still faces challenges such as global competition, nascent state of domestic capabilities and weak infrastructure.

A strong domestic mobile manufacturing hub in India is the need of the hour as it promises great benefits for the socio-economic well being of the nation in the digitalised era. It is also a part of the bigger vision of forming a One Trillion Dollar Digital economy in the country by FY 2024-25.

Benefits of Domestic Manufacturing of Mobile Phones in India

Stakeholders in the Mobile Phones Ecosystem



Expected Benefits to the Stakeholders

- **Favorable Government Policies**
- **Lower Labor Costs**
- **Lower Manufacturing Costs**
- **Lower Logistics Costs**
- **Increased Employment Opportunities**
- **Forex Savings**
- **Higher Sales & Revenue Opportunities**
- **Affordable Mobile Phones**
- **Feature Localization**
- **In-House Design**
- **Intellectual Property**
- **In-House Quality Control**
- **Skill Enhancement/ Development**
- **Exports Opportunity**
- **Better Customer Service**
- **Better Quality Mobile Phones**

5.1 Challenges faced by Domestic Manufacturing Industry

The readily identified challenges faced by the Domestic Mobile manufacturing sector are:

- **Emerging manufacturing eco-system.** The domestic manufacturing of mobile phones is mostly limited to last mile assembly activities, which results in low local manufacturing value addition. Also, limited availability of components and other raw material at low-cost and good quality leads to low localization.
- **Low scale of operations.** Given the emerging scenario of domestic manufacturing of mobile phones in India, the current scale of operations is low, thereby resulting in reduced cost competitiveness. On the other hand, the established manufacturing destinations such as China and Vietnam have high scale of operations with significant capacities built across manufacturing value chain.
- **Availability of skilled workforce.** Availability of relevant skilled workforce is crucial to the development of domestic mobile phone manufacturing industry. Given the nature of highly specialized activities of the industry, the availability of talent with relevant skill sets carries greater significance. Also with the challenge of technology obsolescence, the workforce needs to be constantly trained.
- **High cost of capital.** One of the major challenges faced by domestic manufacturers is the high overall cost of finance. This is due to the high cost of working capital and capex-related financing because of high interest rates. The cost of borrowed capital is 12%-14% in India as compared with the global average of 5%-8%.
- **Clarity on the duty differentials under GST regime.** The industry seeks clarity on the concerns related to status of incentives in the pre-GST regime provided by the states or new sops for the domestic manufacturers on the 12% GST imposed on mobile phones from 1st July 2017.
- **Infrastructure concerns.** The basic infrastructure such as roads, power, logistics etc. in most places of India desire a lot in terms of quality set-up. The poor state of existing infrastructure leads to host of distribution challenges of mobile phones to smaller towns and rural areas of India.
- **Ease of doing business.** According to the current World Bank ranking on Ease of doing business, India rank is 130. The complex and time-consuming procedures, clearances and compliances such as Factories Act, Industrial Employment Act, Minimum Wages Act, Trade Unions Act, Contract Labor Act, IPR laws and environmental laws have a detrimental impact on the business sentiment. In the recent times, the government has taken major reforms to remove arcane rules and simplify procedures. These steps are expected to improve the business environment.

These impediments need to be addressed at the earliest to enable the mobile phone manufacturing sector to flourish in India.

5.2 Recommendations

India Mobile Phone Manufacturing Industry – The Road Map

The roadmap for development of a robust domestic mobile phone manufacturing in India can be established in three phases – Current Scenario, Short-Term Goals & Long-Term Goals.

- **Current Scenario:** The current stage refers to the nascent stage of domestic mobile phone manufacturing in India, predominantly focused on last-mile assembly of SKD units with low level of localization for some of the components
- **Short-Term Goals:** The short-term approach should be to fully meet the domestic demand by local manufacturing of mobile phones with various levels of localization for components. This can be achieved by incentivizing mobile phone manufacturers along with favorable policy directions for manufacturers to adopt localisation for the Indian market
- **Long-Term Goals:** The long term approach would be to develop India as a mobile phone export hub to meet global demands. This will require focus on R&D, development of component ecosystem, infrastructure development, and policies to drive global majors in the mobile phone manufacturing industry to set-up full-scale manufacturing units in India

The key recommendations to boost domestic manufacturing and creating a robust manufacturing ecosystem for export readiness are listed :

Tariff

- Inverted Duty Structure Concerns
  - Ending or providing exemptions on inverted duty structure to encourage domestic production
  - All tariffs and domestic taxes levied on inputs to be rebated back at the exit point irrespective of inputs sourced domestically or from abroad
  - Exports to be subjected to zero taxes

Taxation

- Incentives under GST regime
  - Government to provide clarity on the incentives provided to the local manufacturers under GST
- Extension of Differential Excise Duty
  - More components of a mobile phone to be progressively included under tax rationalization scheme

Component Ecosystem

- The Government needs to support and provide incentives and exemptions to encourage local component manufacturing and domestic value addition.
  - Expand Modified Special Incentive Package Schemes (MSIPS) to incentivize and support local component manufacturing and domestic value addition

- Consider component manufacturing as a 'Priority' industry and provide privileges and sops such as duty benefits and tax exemptions. For e.g.: Introducing 8-10 years tax holiday to manufacturers investing at least USD 1 billion and creating 15,000 jobs or more

- Set up duty-free component trading and warehousing zone to facilitate ease of raw material supply
- The Government may allow duty-free import of raw materials and components for the initial three to five years when companies are setting up in the country so that they can start with assembly plants. However, once their plants and machinery are equipped and market demand is generated, then imports should be levied duties

Incentivize Export

- Status of 'deemed export' should be granted to the domestically manufactured products/ components and sold in India. This special status can be developed using domestic value addition contribution, where the minimum limit increases over the years in a manner conducive to business environment. The benefits such as drawback and output excise duty refund can be offered
- In the Foreign Trade Policy 2015-20, the government has introduced Merchandise Exports from India Scheme (MEIS), which provides exports benefits on the basis of country groupings. The industry expects standard incentives to be provided for exports for the product categories/ components irrespective of the country of export.
- The government may consider providing tax breaks for domestically manufactured products and merging the benefits in DTA and SEZ areas for better economies of scale

Steps to Improve Running of a Business

- Subsidy of 2%-5% of the interest rate should be provided on interest paid on working capital. Also, the growth in domestic value addition should result in higher subsidy. This is likely to help offset high finance cost
- Borrowing interest rates may be reduced and preferential financial loans may be provided in order to reduce high financing costs so that small manufacturers can thrive
- Provision of export freight subsidy for non-port locations

Skill Enhancement

- There has to be a focus on improving infrastructure and faculty profile in the skill training institutes (such as ITIs) so that practical training can be imparted to students passing out of these institutes that will improve their employability in the industry. The government should consider creating a fund to providing reimbursements to companies for providing skill-gap training to their employees

Ease of Doing Business

- The industry expects improvement in approvals, refunds and clearances related to procedural, regulatory and custom aspects
  - For tax refund processes, there should be nodal offices for one-stop location for all refunds and clearances along with faster recovery system
  - Simplification of duty drawback scheme and rapid credit transfer
  - Simplification and faster process of BIS registration and certificate issuance

Infrastructure Development

- Identify 2-3 thousand square kilometers for creating electronic industry specific zones and clusters under the Sagar Mala project to modernize the ports of India that plans to develop coastlines and drive port-led development, thereby contributing to India's growth.
- The government may consider setting up incubators, parks and hubs in specially constructed zones. These buildings and facilities can be taken on rent by SMBs to rationalize their cost in terms of high cost of land and construction

In the last few years, the Government has taken encouraging steps toward creating a conducive business, financial and economic environment in India. The mobile phone manufacturing industry has taken these initiatives in a positive way and various Indian as well as global manufacturers have announced their expansion plans in the country.

Nevertheless, the sector still looks up to the Government to play a key role in supporting them for setting up full-scale facilities for mobile phone production. Lack of collaborative approach among stakeholders in the manufacturing eco-system can easily lead to a situation of missing the bus for the next wave of growth. The challenges facing the mobile manufacturing sector need to be addressed as soon as possible to reap the full potential it offers.

Methodology

We used the following methods to triangulate the findings for the report:

- **Statistical analysis on the technical specification and pricing data for smartphones from Buysmaart website.** Buysmaart scans diverse sources of online data, collate required information (technical specifications and pricing data points) from the online platforms, uses intelligence to authenticate and classify data as per requirement for multiple products including smartphones. The data taken into consideration for analysis were technical specifications of the smartphones such as RAM, operating system, battery capacity, prices of the smartphones on the e-commerce portals. The data were analyzed to perform forecasting based on trends from past time series on price and technical specifications
- **Sentiment analysis of online user reviews available on the e-commerce portals.** Buysmaart analyzes customer sentiments expressed in online reviews for multiple products including smartphones on e-commerce portals. Buysmaart reads millions of user reviews written on popular e-commerce portals, and uses machine learning techniques to analyze this content and interpret the underlying sentiment expressed by users. Buysmaart performs a fine-grained, attribute level sentiment analysis using these techniques, to automatically understand what the aggregate of users are saying about a smartphone in terms of sentiment polarity - Positive or Negative
- **Bill of Materials (BoM) analysis of a smartphone.** Identifying the different components which constitute a smartphone across different price segments. Further drill down was done of the key components such as main electronic assemblies, battery, display and camera. The cost of each component along with sub-components (in total of 42 components) was determined through primary (expert interviews) and secondary research. After calculating the BoM costs by components and subcomponents, the components with varied level of local manufacturing value addition possibilities (high, medium and low) were determined. The BoM costs for 2016 were used to forecast the scenario of 2019 in terms of local value addition and total local value generated
- **Expert Interviews (Primary Research).** In-depth interviews with mobile handset manufacturers (both Indian and International) and key industry associations
- **Secondary Research.** Analysis of the data obtained through desk research from industry reports, journals, industry association websites, company websites etc.

Annexe

New mobile handset manufacturing units established in India during September 2015 to October 2016

Name of the Brand/ Company	Number of Units	Location of Units	Manufacturing Capacity (Mn. Units/ Month)	Employment (Nos.)
Foxconn (Rising Star Mobiles India (P) Ltd.	5	1. Sri City 2. Sri City 3. Sri City 4. Sri City 5. Maharashtra	2.5	8,000
Micromax (Bhagwati Products Ltd.)	1	Hyderabad, Telangana	0.3	600
MCM (Million Club Manufacturing)	1	Noida, U.P.	1.0	1,500
Lava International	2	1. Noida, U.P. 2. Noida, U.P.	2.0	5,000
Intex Technologies	4	1. Noida, U.P. 2. Noida, U.P. 3. Jammu 4. Baddi, H.P.	3.0	5,000
Celkon Mobiles	1	Medchal, Telangana	0.5	1,200
Dixon Technologies (India) Private Limited	1	Noida, U.P.	1.0	900
GDN	1	Greater Noida, U.P.	1.0	1,200
Vivo Mobile	1	Greater Noida, U.P.	0.3	500
Videocon	2	1. Aurangabad, Maharashtra 2. Kasipur, Uttarakhand	1.0	2,000
Flextronics	1	Sriperumbudur, TN	1.3	2,500
SEPL	1	Haridwar, Uttarakhand	0.5	1,000
TMB Electronics	1	Kundli, Haryana	0.4	800

Name of the Brand/ Company	Number of Units	Location of Units	Manufacturing Capacity (Mn. Units/ Month)	Employment (Nos.)
Innovative Industries	1	Delhi	0.4	700
Labanyo Electronics	1	Noida, U.P.	0.2	500
KMC Electronics	1	Kotdwar, U.P.	0.7	1,000
Champion Computers	1	Delhi	0.3	500
BGM Electronics	1	Shahibabad, U.P.	0.4	500
SST Electronics	1	Kundli, Haryana	0.4	500
Hyve Mobiles	1	Delhi	0.3	300
Bingo Mobiles Tech.	1	Noida, U.P.	0.2	300
Delhi Phone Battery	1	Haridwar, Uttarakhand	0.5	800
ADCOM	1	Kirti Nagar, Delhi	0.1	300
VSUN	1	Bawal, Haryana	1.7	1,800
Hi-Tech	1	Kolkata, W.B.	0.2	600
Higher Industries (India) Pvt. Ltd.	1	Mundka, Delhi	0.5	300
Runsheng Technologies Pvt. Ltd.	1	Faridabad, Haryana	N.A.	N.A.
Compal (Mnfc. for LeEco)	1	Greater Noida, U.P.	N.A.	N.A.
Penguin Electronics	1	Daman	N.A.	N.A.
Total	38		20.7	38,300

Source: Department of Industrial Policy and Promotion, Ministry of Commerce and Industry & Department of Telecommunications, Ministry of Communications

Key Incentive Schemes for Mobile Phone Manufacturing

Uttar Pradesh	Andhra Pradesh	Telangana
15% on fixed capital other than land subject to maximum of INR 50 million	100% reimbursement of the Stamp Duty, Transfer Duty and Registration Fee	100% reimbursement of stamp duty
5% per annum for a period of 7 years on the rate of interest paid on the loans obtained from Scheduled Banks/ Financial Institutions shall be reimbursed subject to a maximum of Rs. 1 crore per annum per unit	100% exemption on Electricity duty for a period of 5 years	To allow a 20% capital subsidy, subject to a ceiling of INR 10 crores per company (including subsidiaries and ancillary units)
100% exemption of stamp duty on purchase/lease of land	100% Tax reimbursement of VAT / CST for a period of 5 years	5.25% per annum on term loan for a period of 5 years or till reaching 50% of the capital involved, whichever is earlier, subject to an overall ceiling of INR 1 Crore per unit per annum
100% tax reimbursement on VAT/ CST subject to a maximum of 100% of fixed capital investment other than land (such as building, plant, machinery, testing equipment etc.) for a period of 10 years	25% Rebate on land cost limited to Rs.10 lakhs (1 Million) per acre in Industrial Estates, Industrial Parks, SEZ's	100% exemption on Electricity duty for a period of 5 years
	3% Interest Rebate limited to Rs.5 lakhs (0.5 Million) per year for 5 years	100% Reimbursement of net VAT/CST or State Goods and Services Tax (SGST) for a period of 5 years
		20% Investment Subsidy, up to a maximum of INR 2 Crores
		25% subsidy on lease rentals to eligible companies for a period of 10 years

Source: Electronics Manufacturing Policy of respective states

References

- A report on 'Maximizing Local Value Addition in Indian Mobile Phone Manufacturing' by IIM Bangalore and Counterpoint Research
- A study on 'Indian Electronic System Design and Manufacturing (ESDM) Disability Identification' by Department of Electronics and Information Technology (DeitY), Ministry of Communications & Information Technology, Government of India
- A report on 'Make in India Strategy for Electronic Products' by Niti Aayog
- A report on 'Incentivizing domestic handset manufacturing in India under the GST regime' by Broadband India Forum (BIF) and Ernst & Young
- A report on 'Turning the Make in India dream into a reality for the electronics and hardware industry' by ASSOCHAM India and Ernst & Young
- A report on 'Online and upcoming: The Internet's impact on India' by McKinsey & Company
- Tech Insights reports by teardown.com

Internet And Mobile Association Of India

Internet and Mobile Association of India (IAMAI)

The Internet and Mobile Association of India (IAMAI) is a young and vibrant association with ambitions of representing the entire gamut of digital businesses in India. It was established in 2004 by the leading online publishers but, in the last 13 years, has come to effectively address the challenges facing the digital and online industry including mobile content and services, online publishing, mobile advertising, online advertising, ecommerce ad mobile and digital payments among others.

Thirteen years after its establishment, the association is still the only professional body representing the online industry. The association is registered under the Societies Act and is a recognised charity in Maharashtra. With a membership of nearly 300 Indian and overseas companies, and with offices in Mumbai, Delhi, Bengaluru and Kolkata, the association is well placed to work towards charting a growth path for the digital industry in India.

Enixta Innovations

Enixta Innovations established in India and US is an artificial intelligence company whose mission is “To help customers make the right buying decisions and help enterprises enhance the customer eXperience on their product offerings”. Enixta's core competencies are - Generating insights from the raw text by analyzing the structured/ unstructured data and the hidden sentiments, Conversational Bots, and Fuzzy Search. The capabilities of the technology are inherently transferable across industries and Enixta has been helping world renowned clients from e-retailers, FMCG manufacturers and OTAs (Online Travel Agents) so far. Without restricting this technology only to enterprises, the benefits of their work can be realized by the end users (serving US and India market) on www.buysmaart.com - a product discovery platform for electronic consumer goods, spreading the goodness of AI technology far and beyond the enterprise businesses. For more details, please visit www.enixta.com.

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