

ANALYSING INNOVATIVE IDEA OF “MAKE IN INDIA”

India’s journey from 10th largest to 5th largest economy

Abstract

Every country has an urge to become a strong economy in the world. Industrialisation, infrastructure development, attracting foreign investments are some of the key areas which a lot of developing countries are focusing on. It is evident historically that Manufacturing is imperative for rapid development of a nation and its economy. India is one of the fastest growing economy in the world, which has been mainly an agriculture based economy until 1980s. Late 1990s, the IT Services sector accelerated and became dominant. Manufacturing of goods and services was slow paced during this period. The IT Services sector flourished year on year since then and India was called back office for the world in services like IT, Business Processes Outsourcing, Call Centres etc. In 2014, India’s honorable Prime Minister Narendra Modi, realized the necessity of manufacturing sector and initiated a campaign, “Make in India” with an aim to become a manufacturing hub and investment destination. Like any other developed nation, India started focusing on huge capital investment, building strategic partnerships, enhanced infrastructure, extensive government incentives for Foreign Direct investments and startups, industry collaborations, etc. Its journey, mainly from agriculture based economy to a service based and to now, emerging as a manufacturing based, is very fascinating in itself. This dissertation, through literature research, explores the areas in which India has made extensive progress under “Make in India” campaign and compare with other countries that have already implemented such business model. Out of all 25 sectors introduced under MII, Aerospace sector is researched as a case study. A detailed analysis of Make in India will be conducted and a conclusion will be drawn. The dissertation will also complement any previously performed research studies on this topic. The literature review of Make in India is purely for academic purposes and for any future research studies.

Dissertation

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1 Abbreviations

AAI	Airport Authority of India
AAP	Accelerated Apprenticeship Program
AASSC	Aerospace and Aviation Sector Skill Council
ACE	Automated Commercial Environment
ADU	Aerospace & Defence Universe
AEDIC	Aerospace Engineering and Digital Innovation Centre
AHM	Air Health Management
AI	Artificial Intelligence
AIESL	Air India Engineering Services Limited
AIF	Alternative Investment Funds
AITC	Airbus India Training Centre
AME	Aircraft Maintenance Engineers
ATF	Aviation Turbine Fuel
ATM	Air Traffic Management
AWS	Amazon Web Services
BIETC	Boeing India Engineering Technology Centre
BR&T	Boeing Research and Technology
CGST	Central Goods and Services Tax
CGT	Capital Gains Tax
CII	Confederation of Indian Industry – A non-government, non-profitable organization, industry led and industry managed with private, public, MNCs members.
CSIR	Council of Scientific Industrial Research
DGCA	Directorate General of Civil Aviation
DPIIT	Department for Promotion of Industry and Internal Trade
DST	Department of Science and Technology
EADS	European Aeronautic Defence and Space Company

EASA	European Aviation Safety Agency
EFB	Electronic Flight Bag
EoDB	Ease of Doing Business
FAA	Federal Aviation Authority
FAL	Final Assembly Line
FDI	Foreign Direct Investment
FFS	Fund of Funds for Startups
FTA	Free Trade Agreements
GCI	Global Competitiveness Index
GE	General Electric
GeM	Government e-Market Place
GETC	Global Engineering and Technology Center
Gol	Government of India
GST	Goods and Services Tax
GSTN	Goods and Service Tax Network
HAL	Hindustan Aeronautics Limited
I4.0	Industry 4.0
IBC	Insolvency and Bankruptcy Code
IBEF	India Brand Equity Foundation
ICAO	International Civil Aviation Organisation
IGST	Integrated Goods and Services Tax
IIGP	India Innovation Growth Programme
IISc	Indian Institute of Science
IIT	Indian Institute of Technology
IMF	International Monetary Fund
INR	Indian Rupee (Currency in India)

IoT	Internet of Things
IREDA	Indian Renewable Energy Development Agency
IT	Information Technology
ITC	Input Tax Credit
L & T	Larsen and Toubro
LM	Lockheed Martin
MAITRI	Maharashtra Industry, Trade and Investment Facilitation Cell
MeITY	Ministry of Electronics and Information Technology
MII	Make in India
MNRE	Ministry of New Renewable Energy
MoU	Memorandum of Understanding
MRO	Maintenance, Repair and Overhaul
MSDE	Ministry of Skill Development & Entrepreneurship
MSME	Micro, Small, Medium Enterprises
NCAIR	National Centre for Aerospace Innovation and Research
NCAP	National Civil Aviation Policy
NDLM	National Digital Literacy Mission
NHIDC	National Highway and Infrastructure Development Corporation
NISE	National Institute of Solar Energy
NIWE	National Institute of Wind Energy
NSDM	National Skill Development Mission
NSWS	National Single Window System
NTTF	Nettur Technical Training Foundation
OEM	Original Equipment Manufacturer
PAN	Permanent Account Number
PLI	Production Linked Incentives

PM	Prime Minister
PMP	Phased Manufacturing Programs
PPP	Public Private Partnerships
PTA	Preferential Trade Agreement
R&D	Research and Development
RCEP	Regional Comprehensive Economic Partnership
RCF	Regional Connectivity Fund
RCS	Regional Connectivity Scheme
RNFC	Residential Noise Footprint Charges
SANKALP	Skills Acquisition and Knowledge Awareness Promotion
SEBI	Securities and Exchange Board of India
SECI	Solar Energy Corporation of India
SEZ	Special Economic Zone
SGST	State Goods and Services Tax
SIDBI	Small Industries Development Bank of India
SIFS	Startup India Seed Fund Scheme
SITC	SAAB India Technology Centre
SSS-NIBE	Sardar Swarn Singh National Institute of Bio Energy
STT	Securities Transaction Tax
TAML	Tata Advanced Materials Limited
TASL	Tata Advanced Systems Limited
TBAL	Tata Boeing Aerospace Limited
TFP	Total Factor Productivity
TLMAL	Tata Lockheed Martin Aerostructures Limited
UDAN	Ude Desh ka Aam Nagarik (English Translation as: Let the Common Citizen of the Country Fly)
UK	United Kingdom

UPI	Unified Payment Interfacing
US	United States of America
UT	Union Territories
UTCIPL	United Technologies Corporation India Pvt. Ltd
UTGST	Union Territories Goods and Services Tax
VET	Vocational Education and Training
VGF	Viability Gap Fund
WDA	Welsh Development Agency

2 Distribution

Alan Mumby at University of Wales Trinity Saint David.

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The author will refrain from political influences in this dissertation.

Due to the restrictions and permits of using symbols of MII, Author has deliberately not used the symbols of MII and its schemes.

Dedicated website for Make in India: <https://www.makeinindia.com/>

4 Introduction

For a country to improve its economy, manufacturing of goods and services plays a significant role. Per (Felipe 2018) empirically, there is a close relationship between the GDP growth of a country and its industrial growth. Manufacturing offers a pool of opportunities for all other sectors including agriculture and services by contributing to productivity, innovation and creates employment. A study had been steered on the rate of growth of manufacturing sector with 63 middle and high-income economies based on the first two laws of the renowned British economist, Nicholas Kaldor. The data analysed revealed that both the laws are progressive and relevant (Nelson Marconi 2015). The rate of growth of manufacturing is directly proportional to the rate of productivity and the rate at which the economy of the country grows.

Manufacturing sector leads to a collective path for new inventions, innovations, technological advancements etc. (The importance of manufacturing in India 2020). Many developed countries are sheer examples of such economical breakthroughs during industrial revolution. On the contrary, the developing nations have been actively trying to attract global companies for investments to improve their economy and emerge as manufacturing hubs.

Like any other developing nation, India also has been trying its ways to tackle unemployment and improve its economy. India is one of the fastest growing economies in the world in the present days. Up until the late 1980s, it was principally agriculture-based economy (Lawly Das 2014). In 1990s, the Software Services sector overwhelmingly started booming (Gupta 2003), and the investors predominantly focused on the Services sector. The growth in the Service sector dominated other sectors like, Manufacturing and Agriculture, contributing to nearly 50% of the total GDP (O'Neil 2023) compared 31.97% in 1970s as shown in Figure 1 and Figure 2 (Lawly Das 2014). India became Back Office of the world since then (Yadav 2020). Manufacturing sector has been rather slow in its growth due to a number of factors (Kumar 2016) as India shifted directly from Agri-based economy to Service based economy.

Year	Agriculture	Manufacturing	Services
1950-51	59.19	13.29	27.52
1960-61	54.74	16.61	28.65
1970-71	48.12	19.91	31.97
1980-81	41.82	21.59	36.59
1990-91	34.92	24.49	40.59
1991-92	34.08	23.93	41.99
1992-93	34.17	23.74	42.09
1993-94	33.54	23.69	42.77
1994-95	32.94	24.35	42.71

Figure 1 Sectoral Shares Source: (Lawly Das 2014)

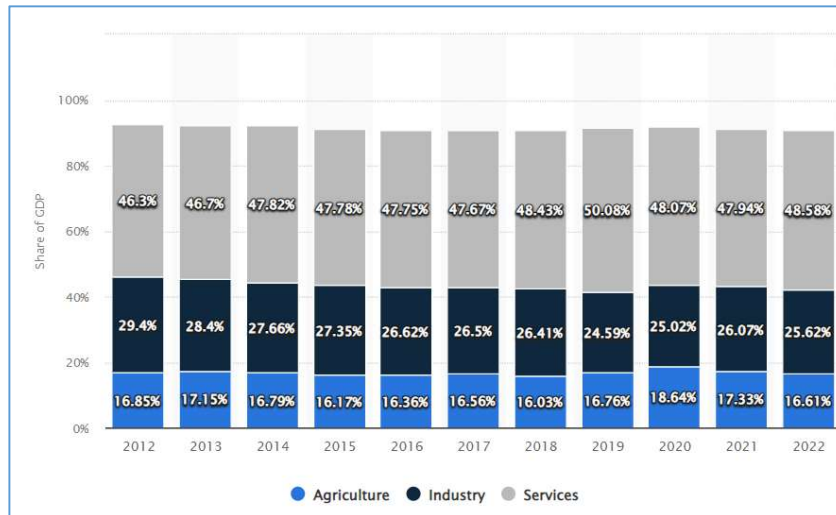


Figure 2 Share of different Economic Sectors in India GDP Source: (O'Neil 2023)

Major economic reforms of 1991, were a gateway to a more generous policies till date, with Liberalisation of private firms with less government restrictions, privatisation of the public and globalisation by opening up for foreign investments (Clearias 2023). These reforms played a prominent role to rescue India that was on the brink of economic collapse.

Many government initiatives did not gain right momentum to encourage and attract manufacturing for a sustained growth.

In 2013, the financial and economic growth of India decelerated to its lowest in the decade due to various reasons such as, global slow down, inflation, India’s high fiscal deficit and unstructured government policies during investment process (Papi 2013). Hence, India was tagged as one of the “Fragile Five” countries with current account deficits of -5.5% and inflation of 6.1% (Badkar 2013).

In year 2014, a new government was elected under the premiership of Mr. Narendra Modi as the Prime Minister (PM). On 25th September 2014, the honourable PM, realised the absolute need for manufacturing sector development due to the declining economic conditions. To fulfil domestic demand, to create employment and to make India a Manufacturing Hub, a new campaign, “Make in India” was launched by the PM of India (Major Initiatives n.d.). It is a very fascinating story to read on how the logo for MII was introduced (KK 2016) by Sunil Kumar V, Creative Director at Weiden+Kennedy. The initiative identified 25 different sectors like Textiles, Automobiles, Energy, Electronics, Aviation etc. (Sectors n.d.) for development. To attract internal and Foreign Direct Investments (FDI), the Government introduced new investment friendly FDI norms & policies, improved infrastructure, simplified investment approvals, improved Tax conditions, land acquisition and labour laws etc. to improve Ease of Doing Business (EoDB) (New Initiatives n.d.). This innovative approach includes targeting local consumer-based companies and

international companies to invest in manufacturing in India and localising the supply chain. However, MII has its own challenges to overcome, like bureaucracy, infrastructure, skills development, productivity that are further discussed in the section, Challenges (Ashish Saxena 2017).

Figure 3 shows list of Sectors considered in MII

-
- Manufacturing Sectors**
- i. Aerospace and Defence
 - ii. Automotive and Auto Components
 - iii. Pharmaceuticals and Medical Devices
 - iv. Bio-Technology
 - v. Capital Goods
 - vi. Textile and Apparels
 - vii. Chemicals and Petro chemicals
 - viii. Electronics System Design and Manufacturing (ESDM)
 - ix. Leather & Footwear
 - x. Food Processing
 - xi. Gems and Jewellery
 - xii. Shipping
 - xiii. Railways
 - xiv. Construction
 - xv. New and Renewable Energy
- Service Sectors**
- xvi. Information Technology & Information Technology enabled Services (IT &ITeS)
 - xvii. Tourism and Hospitality Services
 - xviii. Medical Value Travel
 - xix. Transport and Logistics Services
 - xx. Accounting and Finance Services
 - xxi. Audio Visual Services
 - xxii. Legal Services
 - xxiii. Communication Services
 - xxiv. Construction and Related Engineering Services
 - xxv. Environmental Services
 - xxvi. Financial Services
 - xxvii. Education Services

Figure 3 List of Manufacturing and Service Sectors Source: (Press Information Bureau 2021)

Paragraph 9 of this dissertation discusses a case study on Aerospace Sector to analyse the effect of MII on the growth of the aviation industry and impact on the economy is discussed.

In general, the dissertation covers overall improvement in all the other sectors, which contributed to the improvement in EoDB and improvement in Economy.

4.1 Aims

The aim of this dissertation is,

- a) To comprehend the innovative idea of how MII has contributed towards the economic growth from 10th largest economy to the 5th largest economy in the world in a span of 9 years from 2014 to 2023.
- b) Perform a case study of Aviation Manufacturing and Services Industry, by analysing the data of pre-MII and present.
- c) To assess the benefits of considering innovative methods like Industry 4.0 methods of Innovation Management systems.
- d) To compare with other similar initiatives like Welsh Development Agency formed in 1976 (Strachan 2021).

4.2 Objectives

Following are the objectives of this dissertation.

- a) To find out major challenges and ways which India has overcome/is overcoming these challenges during the implementation of MII.
- b) To analyse what innovation methods are considered in the implementation of MII.
- c) To understand what worked for MII and what didn't.
- d) Is MII novel idea or is it heavily influenced from other nations.

4.3 Justification

Author’s recent trip to Bengaluru, in August 2023, where he heard from his ex-colleagues of Collins Aerospace (now Raytheon) about the progression of Collins Aerospace in terms of opening India Engineering and global operations centre, Raytheon’s Pratt & Whitney India Capability Centre (Raytheon Technologies 2023) and other aerospace companies investments. Many Foreign investments have been made in Aviation sector and it is a rapidly growing sector (Indbiz 2018). The dynamic conditions of industrialisation influenced him to select this topic. This had a direct impact on the author to consider this study to assess the development in industrialisation.

4.4 Research Methodology

The widely used research methodologies are Systematic and Traditional Narrative. These are unique in their own ways (Bui 2021).

As this dissertation is informal and neither answering any particular question nor making any decisive statement on MII campaign other than assessing the innovative methods, the Traditional research methodology is considered (Demeyin 2016). Furthermore, since it also involves, where necessary, analysing the data provided in various articles, journals, etc., Systematic research will be referenced in this document.

The dissertation will cover all sectors of MII campaign whilst researching MII and the economy shift from the 10th largest economy in the world in 2014 to 5th largest economy in 2022.

4.5 Research Limitations

This literature study is largely limited to aviation sector, as the author himself is an Aerospace Engineer. Yet, other sectors of MII are also considered in a larger perspective, mainly to see how the innovative methods of MII have contributed to the economy shift and improved the EoDB index.

4.6 Research Ethics

The dissertation is a literature-based study through reports, journals, articles etc. accessible in the internet and within the UWTSD Library. Hence, it shall include all the references, citations and due credits to the authors of different works carried out in this area of subject, MII (Resnik 2020). Where information is inadequately referenced, it might be due to confidentiality.

5 Why India is late to the Manufacturing sector

Although there are many factors to be considered, but some of the important aspects are as below.

5.1 Poverty

India was ruled by different dynasties until it became independent from the British rule in 1947. By this time, it had suffered heavy de-industrialisation of its industries mainly textile and was facing problems of food scarcity and poverty. In order to improve the economy and ensure import substitution, the new government strategically focused on heavy industrialisation which could indirectly improve productivity in agriculture and other sectors (Aggarwal 2016). However, the push towards industrialisation did not sustain for long and as planned, due to the Government policies around the Industrial sectors. The demand and the supply constraints played a major role in slowing down the industrial growth due to disproportionate investment patterns (Aggarwal 2016) that stagnated the agricultural sector. In order to self-sustain and reduce food scarcity, agricultural sector took precedence over other sectors as explained in section 5.2.

5.2 Agriculture

Agriculture has been traditionally a dominating sector in India and the primary source of livelihood for more than 70% of its population during the period of independence. Post India's independence in 1947, the planning process heavily focused on agriculture by emphasizing on “everything can wait but agriculture”. This was to drive India from food scarce to food surplus (Pathak H 2022). As stated in (Pathak H 2022), the “Grow More Food” campaign was initiated in 1947 to feed its people of independent India. Agriculture also took precedence in 1960s due to two consecutive wars with its neighbours and to self-sustain. “Green Revolution” was initiated during 1960s over other sector to become self-sufficient. Whilst other countries were concentrating on manufacturing, between 1950s and 1980s, India was in the process of improving its agricultural sector to become food surplus.

5.3 Government policies and Regulations

The government policies around industrialisation and foreign capital investments were not as investor friendly as they were in 1991. Although, there were some reforms, often referred to as “Liberalisation by Stealth” during 1980s, the reforms were still struggling to attract investments, mainly due to state intervention. During 1990-91 currency over evaluation, high fiscal deficits and high current account deficit led to the Exchange Crisis. This led to various Structural reforms in 1991 with Tax incentives, import liberalisation, export incentives and more realistic exchange rates (A. Panagariya 2004). This also ended the public sector monopoly in various sectors. The policies and the regulations also opened doors to the automatic approval of foreign capital investments up to 51%. India's yearly growth rate in Figure 4 shows, how the growth behaved during 1980-1990 and improved after 1991 reforms.

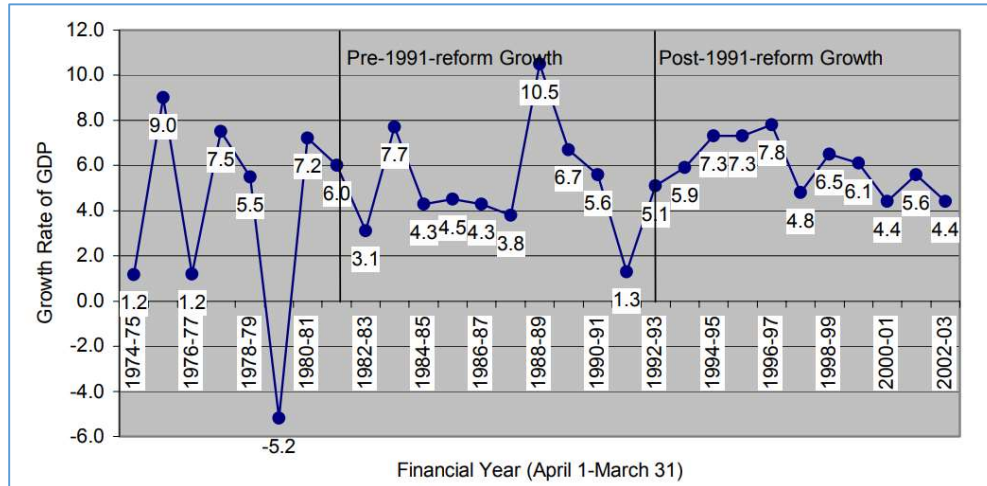


Figure 4 India's Growth Rate Source: (A. Panagariya 2004)

5.4 Service Sectors

Every developed and developing country has gone through a Structural change in a sequence in their developments. The traditional sequence is from Agriculture sector to Industrial sector and to Services Sector. However, in India, the Industrial sector did not pick up as anticipated (Kujur 2021). The Services sector dominated both agriculture and industrial sector from late 1970s as shown graphically in Figure 5. After 1991 economic reforms, the Services Sector crumpled the other two sectors, however all three sectors were equally emphasised.

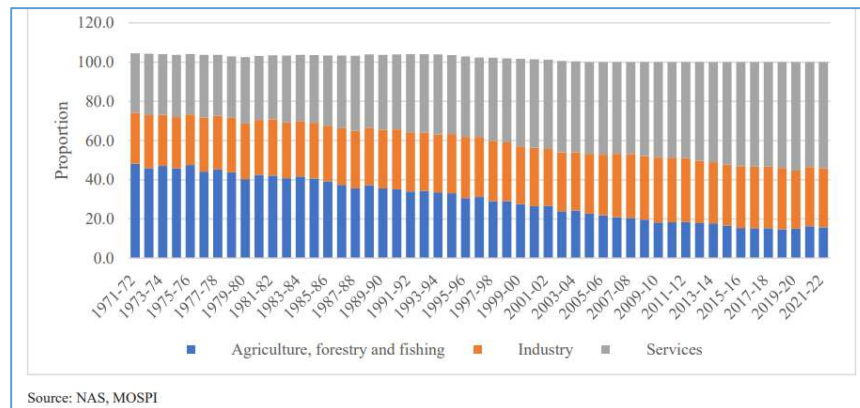


Figure 5 Share in Gross Value Added (Kujur 2021)

6 Why “Make in India” (MII)

6.1 Employment

Employment has been one of the prevalent problem in India and it is a direct challenge to its economic landscape (macrotrends n.d.). The trend in Figure 6, shows the spikes where unemployment was at peak. Several factors influenced the unemployment rate at different time lines. For example, the 2008-09 financial crisis had a severe impact and a surge in unemployment. MII also targeted to tackle unemployment by helping generate jobs through industrialisation (ANI 2016). The economy impact on a country also defines the unemployment (Öner n.d.).

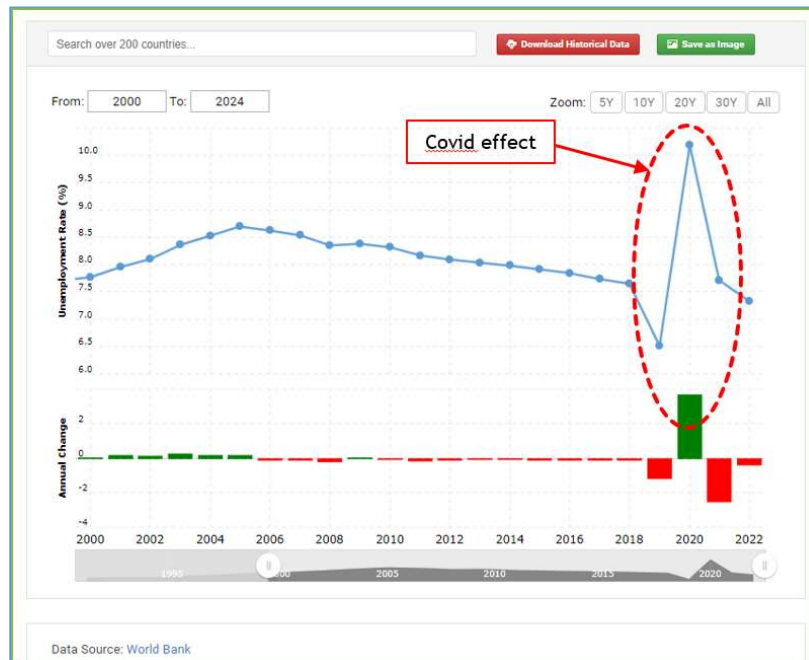


Figure 6 Total Unemployment Rate Source: (macrotrends n.d.)

6.2 Economy

Another reason for MII initiative was to improve its Economy. Manufacturing sector contributes a major role in the Economic development of the country (Felipe 2018). During inaugural speech of MII campaign, the PM Narendra Modi expressed his ambition to improve India’s economy. India was 10th largest economy in 2013. The PM set a target of becoming world’s powerful economy with GDP growth target from 16% in 2013 to nearly 25% in 2020 (Govt of India 2014). The government taxation regimes and its control over private sector had a significant role in the economy before liberalisation of the laws in 1991 as explained in 5.3. The process of obtaining the permits and land acquisitions were too stringent to the private companies in comparison to the Public sectors (A. Panagariya 2022). Economy development was slow due to these restrictions during the early decades of independence.

6.3 Self-Reliant

In 1970s, India was self-sufficient in terms of food due to agrarian economy. However, the other two sectors were sluggish in growth (Lawly Das 2014). India heavily depends on the developed nations for the supply of equipment, machinery, etc. (India Imports of Machinery, nuclear reactors, boilers 2022). It is not so easy for India to become self-reliant with current import trend as shown in Figure 7. With its huge population and increasing demand, MII emphasises to upkeep domestic demand by manufacturing within India. Although a separate initiative, “Self-Reliant” (Athmanirbhar Bharat), was commenced in 2020, the aim of MII to support domestic manufacturing and reduce import strongly aligns to the former (Government of India 2020).



Figure 7 Source: (India Imports of Machinery, nuclear reactors, boilers 2022)

6.4 Growing Domestic Demand

India’s current population is 1.4 billion and constitutes nearly 17.6% of world’s population. As explained in Section 6.3, India is heavily dependent on other developed nations for machineries and other equipment. In order to cater to the domestic demand, MII plays a pivotal role in alluring domestic capital investments and FDIs. Many agricultural, industrial and constructional equipment in Tier 1 and Tier 2 cities are on the surge equally (Manufacturing Today 2022). The government’s initiative of net zero by 2030 by installing 500 Gigawatts of clean energy has put the renewable energy sector to meet the government’s targets. This seamlessly has created a spike in the demand for solar and wind energy plants construction equipment and machinery (Parkin 2023).

6.5 Leadership determination

Mr. Narendra Modi’s vision to make India a manufacturing hub is very ambitious that needs a special interest and cultural shift towards policy changes. The leadership determination is imperative for realising such difficult aspirations especially with the challenges described further in Section 7. Mr. Narendra Modi

has shown his leadership skills by creating and conserving a great relationship with countries like America, UK, France, Japan, Germany, Brazil, Saudi Arabia, Russia, etc. The Indo-French long-term relationships strengthened further in 2014 under his leadership for the co-operation in defence and strategic relations (Akshithaa Singh 2023). Another instance of his leadership was with Regional Comprehensive Economic Partnership (RCEP), where Mr. Modi declined to join the club and this is assessed as a testimony of his statesmanship (Verma 2020). Mr Modi rejected RCEP to support domestic needs by not importing heavily from other countries, but instead manufacture locally with a long-term vision was a commendable decision.

7 Challenges

Out of many challenges for MII and the investors, following are some vital ones. In 2013, India was ranked 134 out of 189 countries in EoDB (World Bank 2014) with various criteria viz., dealing with Starting a business, Construction Permits, getting Electricity Permits, Registering Property, Paying taxes, Trading across borders, getting Credits, enforcing Contracts, protecting Investors and resolving Insolvency. It shows how depraved the situation was for setting up a business. Apart from these productivity, skills shortage, infrastructure and corruption were also areas of concern. Some of the important challenges are further discussed as below.

7.1 Productivity

The standard of living of a country and its economy is a result of its productivity (Labour and Capital Productivity combined). If the productivity is low, the standard of living is less and hence its economy. (SINGH 2021) composes some of the reasons for decline in productivity as below.

- Low level of Total Factor Productivity (TFP): Whilst, TFP is an economic efficiency and is calculated by subtracting growth rates of labour and capital inputs from that of the output.
- Limited Free Market Economy: A systematic state control on businesses, entrepreneurship, trade and investment Barriers, control on private investments, etc.
- The rigidity of Free Markets: Restrictions on Foreign investments, Tariffs imposed, etc.

Different types of enterprises are classified as Micro, Small, Medium (often referred to as MSME) and large enterprises. Sample data was assessed for these enterprises (P. C. Parida, Arup Mitra, Kailash Ch. Pradhan 2021). It is found that middle-sized enterprises are missing in manufacturing, generally referred as “Missing Middle”. The Missing Middle is a phenomenon where employment is dominated by Micro and Small and very few Large enterprises, whilst disproportionately few small and medium enterprises. The data in Figure 8 shows that the medium and large enterprises share is miniscule.

Types of enterprises	No. of enterprises	% Share
Micro	75,122	69.2
Small	28,399	26.2
Medium	3,485	3.2
Large	1,593	1.5
Total	1,08,599	100.0

Note(s): Sample size is based on criteria of enterprises that have reported total revenue data during the base year 2010 (FY2009–10)
Source(s): Ministry of Corporate Affairs (MCAs), Government of India

Figure 8 Sample data – Source: (P. C. Parida, Arup Mitra, Kailash Ch. Pradhan 2021)

Due to tax benefits, many organisations showed resistance to grow large. Very low government incentives also contributed to low productivity.

The lack of infrastructure, like better roads, connectivity, traffic etc. also act like a catalyst to the productivity diminution (Gridlines 2013).

7.2 Infrastructure and Resources

Infrastructure plays a major role in attracting the investors and in improving the economy of a country. Road, rail, electricity, water, internet etc. are very vital for businesses investing. Infrastructure and Manufacturing share a strong relationship with each other. Countries with better infrastructure are economically strong with a great productivity. The study of relationship between the infrastructure and manufacturing (Rochna Arora 2022), was performed and found that the Infrastructure index has a positive and significant impact on manufacturing growth. Many developed nations exhibit high productivity and as a result, are able to attract huge manufacturing companies. Infrastructure is also one of the pillars to determine the Global Competitiveness Index (GCI) that determines the micro and macroeconomic foundations of national competitiveness and are grouped into 12 categories (About the Global Competitiveness Index 2015) as shown in Figure 9.



Figure 9 GCI Framework Source: (About the Global Competitiveness Index 2015)

In 2018, India was rated 40th per the data provided by International Monetary Fund (IMF) as shown in Figure 10 (World Economic Forum 2018).

India		40 th / 137									
The Global Competitiveness Index 2017-2018 edition											
Key indicators, 2016 Source: International Monetary Fund; World Economic Outlook Database (April 2017)											
Population millions	1,309.3	GDP per capita US\$	1,723.3								
GDP US\$ billions	2,256.4	GDP (PPP) % world GDP	7.23								
Performance overview											
Index Component	Rank/137	Score (1-7)	Trend	Distance from best	Edition	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
Global Competitiveness Index	40	4.6	↔		Rank	59 / 144	60 / 148	71 / 144	55 / 140	39 / 138	40 / 137
Subindex A: Basic requirements	63	4.7	↔		Score	4.3	4.3	4.2	4.3	4.5	4.6

Figure 10 Global Competitiveness Index 2017-2018 Source: (World Economic Forum 2018)

Another factor is that the government laws, regulations around investments into infrastructure that makes it profoundly difficult for manufacturing companies to invest. Furthermore, India has to prepare for itself for its growing urban population since most of the towns are now being urbanised quite rapidly. The World Bank estimates that, India needs to invest nearly \$840 billion for next 15 years in its infrastructure to meet the needs and requirements of the fastest growing urban population (worldbank 2022). The current investment is estimated to be \$55 billion on an average in 2022.

7.3 Skills Readiness

The trained skilled workers for manufacturing sector is another challenge for MII. (Nair 2018) discusses various challenges faced by the Human Resources department. Per World bank data, (Worldbank 2017), only 2.3% of the total workforce is formally trained. With a projection of 12 million workforce between the ages of 15 years and 29 years entering every year for the next 2 decades, the skills training is a gigantic target for India to train its workforce in the relevant sectors. The skills shortage is also because of shortage of the trainers and necessary infrastructure. Mismanagement of available funds, lack of funds, entrepreneurship skills, low private interfacing, government’s control, laws and regulations have also contributed towards the skills shortage. Unorganised education system, lack of access to skill based jobs, population, early marriages of young girls (Protap Mukherjee, Renu Singh 2022), improper infrastructure like availability of laboratories, class rooms have been other major concerns for lack of right skills.

7.4 Resolving Insolvency, Investor protection and Transparency

Insolvency is the process where the debtors are unable to pay the debt or have defaulted a payment to the creditor. In India, it took an average 4.5 years in resolving Insolvency prior to 2016 as compared to United Kingdom, which took 1 year and United States around 1.5 years (ETBSI 2020). A lot of companies that went bankrupt had to undergo a lot of stress due to lengthy liquidation process with uncertain outcome due to the judiciary laws and acts around the bankruptcy (Singh 2016). During liquidation, it is important that the investors need to be protected. Therefore, Investor Protection insurance is important for the investors. Investor protection in 2013 was at its lowest (Bhuta 2020) as shown in Figure 11.

INDIA'S INVESTOR PROTECTION REGIME HAS IMPROVED IN RECENT YEARS ACCORDING TO THE WORLD BANK



Figure 11 India's Investor Protection rank Source: (Bhuta 2020)

7.5 Taxation

Taxation is an important component for the investment. Figure 12 (KPMG 2020) shows resident Corporate Income Tax as high as averaged 33% compared to some other developing countries and United Kingdom for reference. Additional surcharges, education cess are imposed based on the income earned. This also illustrates India has a higher tax rates for the investors to incur compared to other countries. Furthermore, the tax system involving around 17 local levies like, VAT, service tax, excise duty etc. of taxes and 13 Cesses, made the system complex and corruptive (Business Today 2022).

Corporate tax rates for 2011-2020

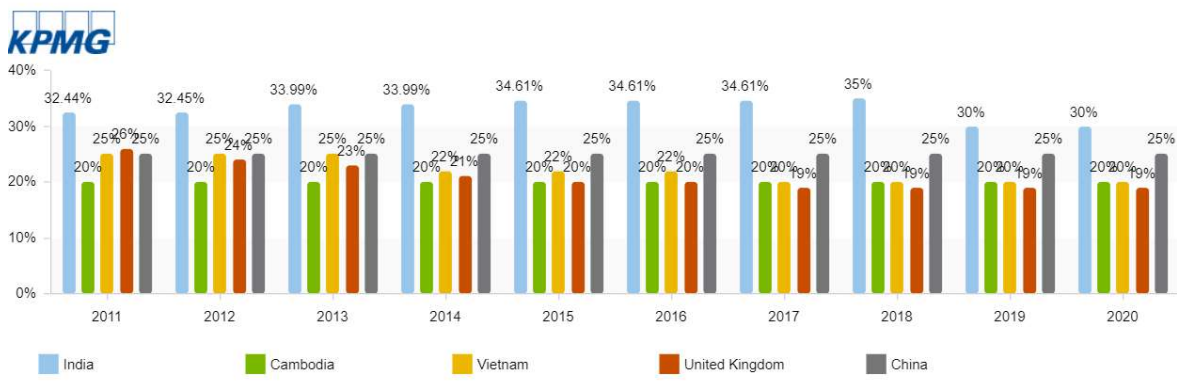


Figure 12 Corporate Tax rates 2011-2020 Source: (KPMG 2020)

A typical example of how Corporate Income Tax is calculated is shown in Figure 13 (Alastair Thomas 2017). The complex system of taxation not only creates tax disputes that takes a long time to resolve.

Box 1. Tax rate calculations for resident and non-resident corporations, 2016

The table below presents a calculation of the tax due on INR 100 of profit earned by an Indian resident vs non-resident corporation. In both cases the corporation is assumed to have taxable income of more than INR 100 million (approximately EUR 1.4 million), so that the highest surcharge is applicable. For a resident corporation, the after corporate tax profit (INR 65.39) is assumed to be distributed to the shareholder(s) so that the DDT and associated surcharge and cesses are also payable by the corporation in India.

Resident corporation	INR	Non-resident corporation	INR
Corporate income	100.00	Corporate income	100.00
CIT at 30%	30.00	CIT at 40%	40.00
Surcharge on CIT at 12%	3.60	Surcharge on CIT at 5%	2.00
Education cess on CIT & surcharge at 2%	0.67	Education cess on CIT & surcharge at 2%	0.84
Higher education cess on CIT & surcharge at 1%	0.34	Higher education cess on CIT & surcharge at 1%	0.42
DDT at 15% on distributed dividend	9.81		
Surcharge on DDT at 12%	1.18		
Education cess on DDT & surcharge at 2%	0.22		
Higher education cess on DDT & surcharge at 1%	0.11		
Total tax paid	45.92	Total tax paid	43.26

Figure 13 Typical Tax Rate Calculations Source: (Alastair Thomas 2017)

7.6 Being Competitive with other countries (E.g. Thailand, Vietnam, China, etc.)

India has to compete with economies like China, Vietnam, Mexico, Brazil, Thailand, etc. nations to attract the industries. China is nearly constitutes 30% of total manufacturing in the world. Post Covid and due to US-China trade war many companies are showing interest to move out of china and countries like, Vietnam, Mexico, India, Cambodia, Singapore etc. are attracting the companies with cheap labour costs, infrastructures, lot of incentives and benefits (Charlotte Gifford 2023). GoI regulations are too stringent and are not as open as the other nations for FDIs (OECD n.d.).

7.7 Corruption

India has a federal system of government led by the PM at the Centre and it has 28 states and 8 Union Territories, with each State having their own governments, led by the Chief Ministers. The government bureaucracy and Corruption Starting from land acquisition, obtaining construction permits, obtaining electricity and water permits, dealing with taxes, political pressures etc. are the biggest challenges. According to (Transparency staff 2022), ref Figure 14 corruption perception index currently ranks 85th out of 180 countries. (James Owen 2014) shares his experience of how he was denied his deposit by the landlord for a return favour. He also explains about “Jugaad” of making money in a hook or crook way but most of the cases, unharmed. The government laws and regulations on anti-corruption are not as stern as other developed countries. Author, himself has experienced this when he lived in India in dealing with government officials.



Figure 14 Corruption Perception Index of India Source: (Transparency staff 2022)

8 How MII is achieved

Since this dissertation is about MII introduced in 2014, author considers policies introduced from 2014 onwards. In order to foster innovation and compliment MII, the Gol also introduced “Skill India” to help support on skill based trainings, skill enhancement etc. and “Digital India” to transform and empower India through e-services and high-speed internet connections (Anjan A. Kaikini 2023).

8.1 Foreign Investment policies

Government has introduced three categories of investments applicable for both resident and non-resident (Invest India 2020) as shown in Figure 15.

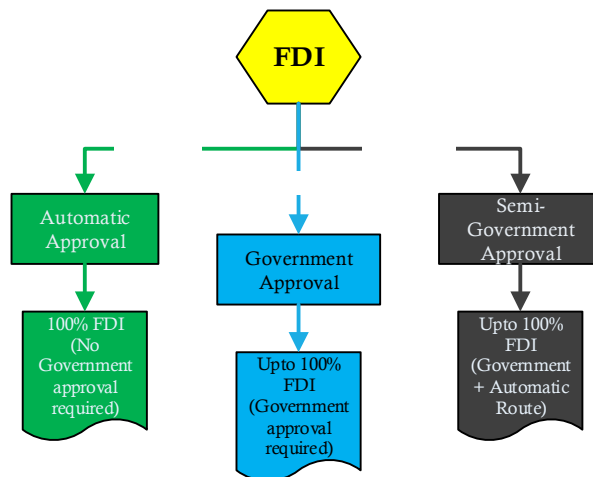


Figure 15 Authors Illustration of Approval routes based on Reading Source: (Invest India 2020)

The 100% automatic route avoids interference of government officials, delays, corruptions etc.

Before approval of 100% FDI for defence sector in 2016, only 49% FDI was allowed for a foreign company. The Foreign companies had to go through a joint venture with the local Indian companies for the investments. 100% FDI allowed foreign companies to directly invest in Indian defence through proper Government approvals saving lot of time by avoiding discussions with the local companies. In 2023, the

Swedish defence Organisation SAAB became the first company to receive approval for 100% FDI in India to setup a Carl-Gustaf manufacturing facility in India (SAAB 2023).

In a detailed survey conducted by EY & Confederation of Indian Industry (CII) titled “*Vision-Developed India: Opportunities and expectations of MNCs*”, the FDI inflow has been consistent and expected to contribute to an extent of US\$475 Billion in next 5 years (Soumitra Bhattacharya 2022). Despite global slowdown in 2021-2022, India attracted about US\$84.8 Billion FDI inflow. A very positive feedback from the respondents of the survey with 75% of them endorsing India to be the investment destination. Various economic and policy reforms by the government under MII have also contributed towards the positive economic growth and FDI. The detailed report is an interesting read that touches upon various government reforms and initiatives like GST taxation, PLI, EoDB, FTA, flagship of MII for manufacturing sector etc. For further reading, see Appendix 1.

A similar initiative to attract inward foreign investments for business development was initiated by Welsh Development Agency (WDA) in 1976. Initiatives like “Source Wales” was coined to attract investors to make use of the local talent, resources and integrate local companies to the supply chain in Wales, whilst providing the necessary infrastructure. After its several successful years, it was dissolved and absorbed by Government of Wales in 2006 and was named as “Investment Promotion Agency”. In an article (Strachan 2021) mentions that WDA fell apart because of its own success, overindulgence and political vendetta. Although, MII is not exactly the same, but attracting FDIs is a common factor between WDA and MII.

8.2 Free Trade Agreements (FTA) and Customs duty

India has been able to attract and been successful to reach Trade agreements with its partner countries since liberalisation in 1991 like Preferential Trade Agreement (PTA) with ASEAN region, South Korea, Japan and South Asian Countries, Comprehensive Economic Partnership agreement with UAE. Under PTA, some of the finished goods have very low or nil duty rates on imports. Under Phased Manufacturing Programs (PMP) introduced under MII, low duty rates are calibrated for unprocessed, semi-processed compared to higher duty rates on the processed goods. Some of the countries have zero duty on finished goods. There are ongoing trade agreement negotiations with major Economies in the world like EU and UK. These are expected to be signed in later part of 2024.

Gol has also initiated Production Linked Incentives (PLIs) on some sectors, in which, the industries can avail incentives based on a threshold level of Capital investment and an incremental production of goods. These incentives can be up to the level which could even score over the benefits of nil duty rates of PTA, which is a more attractive proposition to the industries to manufacture in India (Srivastava 2022).

8.3 Infrastructure and Digital India

Infrastructure includes Transportation (by Road, Air and water), Electricity availability, Water resources, Internet facilities, cleanliness, pollution, sewage, etc.

The Public Private Partnerships (PPP) boosted the road infrastructure development. Figure 18 (Bigfundu 2023) shows various infrastructure projects status before and after 2014.

- The Indian network constitutes of National Highways, State Highways, district roads and rural roads. National Highways and Infrastructure Development Corporation (NHIDC) was formed in 2014 to accelerate the developments of National Highways. Figure 16 shows a network of Highways for a quick glance. The development in National highways are nearly twice in the last 9 years to that of between 2006 and 2014 (Bigfundu 2023). After the launch of MII, the construction of highways has had a push to improve the pace of construction through corridor based National Highway approach and reached 29Km/day in 2021-22 from that of 12km/day in 2014-15 (Invest India 2015). One of the major program of Roadways is “Bharatmala Pariyojna” under which Bengaluru-Mysore Expressway was recently inaugurated in Karnataka state. Bengaluru is the “Silicon Valley of India” and Mysore is a “Cultural city” which is now positioned as second IT city in Karnataka State. For benefit of this, the distance of 118kms between Bengaluru and Mysore can now be travelled in 75mins from that of 3hrs time.

Another initiative, “Gati Shakti” was introduced to create a coordinated approach with other departments like, sewage, electricity board, etc., to ensure their plans are integrated during road construction through digital platform (Sonika Nitin Nimje 2023). This ensures co-operation between all the other stake holders.



Figure 16 Golden Quadrilateral, East-West Corridor and North-South Corridor Source: (Invest India 2015)

- “Digital India” initiative contributed to increased internet broadband subscriptions from 2014 to 2023 by nearly 13 times to that of what it was between 2006 and 2014. The main aim of this initiative is to bring in the e-services, e-communication tools and services between the government and the citizens. This had to be through unprecedented digitisation and high speed internet connection for Urban and rural areas. It has shown a remarkable transformation. The Unified Payment Interfacing (UPI) has almost sky rocketed with online transactions through phones and other electronic devices (EY India 2023) as shown in Figure 17.

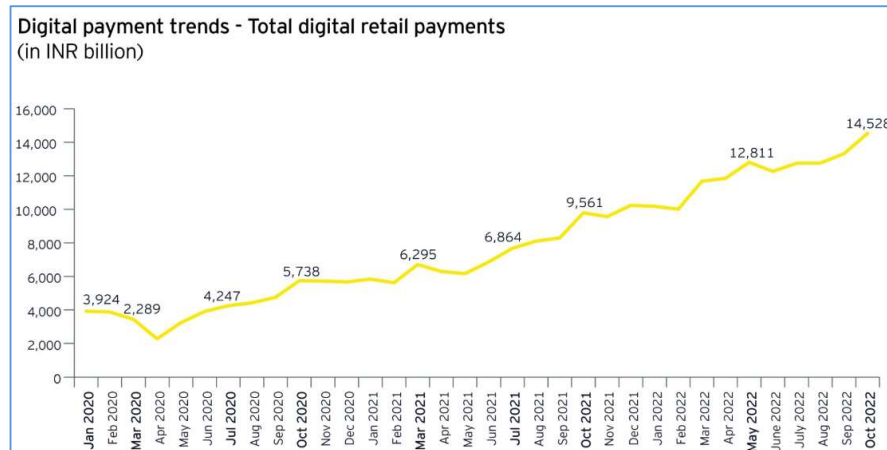


Figure 17 Digital Payment trend Source: (EY India 2023)

- The renewable electricity sector consisting of Hydro, Solar, Wind and Biofuels, has increased from 76.37GW in March 2014 to 167.75 in May 2022. The Ministry of New and Renewable Energy (MNRE) has been supported by five institutions with three autonomous institutions, National Institute of Wind Energy (NIWE), National Institute of Solar Energy (NISE), Sardar Swarn Singh National Institute of Bio Energy (SSS-NIBE) and public sector undertakings Indian Renewable Energy Development Agency (IREDA) and Solar Energy Corporation of India (SECI). These institutions carry out training, research and development in collaboration with other institutions. For example, NIWE has signed a joint declaration in the form of a Memorandum of Understanding (MoU), in Offshore wind energy research, innovation and development (MNRE 2023). Several government schemes and incentives are listed in (MNRE 2023) of which Production Linked Incentive under “National Programme on High Efficiency Solar PV modules” and FDI of up to 100% allowed for Wind Energy sector through automatic route are points of interests.
- Indian railways is a government owned entity by the Ministry of Railways. Foreign private companies like Alstom (France), Bombardier Transportation (Canada), Siemens (Germany), Ansaldo STS Transportation Systems India (Australia), CAF India Pvt Ltd., are some of the major private companies that have collaborated with Indian railways involved in manufacturing of wagons, electro mechanical equipment, etc. Up to 100% FDI is made available in railway

infrastructure segment. Metro rail connection was planned in several State capitals e.g. Bengaluru, Pune, Hyderabad, Chennai, etc. where Alstom has played a significant role (Financial Express 2023). Moving towards net zero emissions with global commitments, Railways has achieved nearly 90% electrification (Rajiv Kumar 2023).

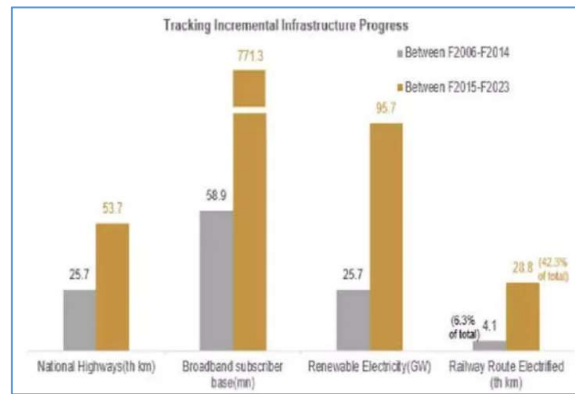


Figure 18 Infrastructure Trend Source: (Bigfundo 2023)

8.4 Skills development

Acquiring right skills at the right time is the need of the hour in this highly volatile and disruptive technological world. In view of Skill development, GoI formed Ministry of Skill Development & Entrepreneurship (MSDE) department in 2014. Skill India was an initiative that was launched in 2015 for achieving the skill requirements for the success of MII. In the same year, MSDE launched National Skill Development Mission (NSDM) to provide a complete institutional framework to rapidly achieve the objectives of skills development at the National, State and District levels (MSDE 2019).

The organisation structure with different subdivisions shown in Figure 19 are laid out as a plan where PPP are also involved down the stream. The same structure is adopted for the State from the Mission Directorate level.

Furthermore, Skill development for accelerating manufacturing sector with new technologies and innovations by (Dilip Chenoy 2019) assesses that considering Industry 4.0 could boost the productivity, efficiency, safety etc. Success of MII depends on the success of Skill India mission. To support the vision of India and help the young generation acquire job specific and relevant skills, World Bank has invested US\$250m (Worldbank 2017). As per the latest MSDE annual report (MSDE 2023), the World bank releases funds based on successful achievement of the targets. This is monitored through a programme called Skills Acquisition and Knowledge Awareness Promotion (SANKALP). The effective utilisation of this investment from the World Bank is monitored access to training and quality training to acquire employment. In order to learn and implement the best practices, India has set up MoU for skill

development, training and Vocational Education and Training (VET) with many countries like Germany, United Kingdom, France, Australia, Denmark, Japan, as etc. listed in annual report 2022-2023 (MSDE 2023) and many more international agreements are under discussions.

Gender inequality in education is been promoted through “Gender-Inclusion Fund” constituting equal education for all genders (Govt of India 2020).

In terms of qualifications, majority of qualifications from India are not internationally recognised and vice versa. NSQF builds a qualification framework to align the qualifications acquired in India to the international standards with relevant bilateral and multilateral agreements. All qualification requirements are now mandated to be compliant to the NSQF framework in 2018 (Dilip Chenoy 2019).

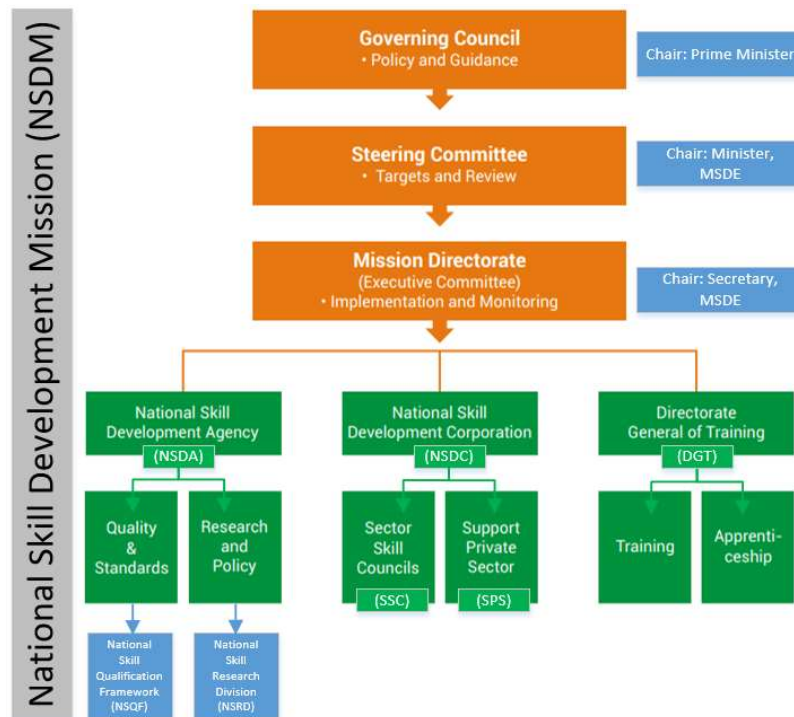


Figure 19 Organisation Structure and Mapping slightly modified by the Author Original Source : (MSDE 2019)

Additionally, the private companies are also supporting the Skill development through Skill India. Boeing invests in skill development (Boeing India 2019) as shown in Figure 20.

Boeing has established,

- An externship programme with several premiere institutes where students are picked to work with its partner company Cyient in advanced engineering projects and expose students to high technical career paths.

- Vocational training courses with Nettur Technical Training Foundation (NTTF) to enhance the technical skills.
- Boeing has developed its own curriculum to train employees of private companies like, Rossel Techsys, Lakshmi Machine Works, Jaivel, Tata Advanced Materials Limited (TAML). The course provides an accredited Post-Diploma to the participants.
- Conducts annual Aero Modelling competition, where Boeing provides training on Aircraft design, building. Around 1000 students participated from 250 institutes across India in 2019.
- Boeing in partnership with Air India Engineering Services Limited (AIESL) and Ministry of Civil Aviation also provides an Accelerated Apprenticeship Program (AAP) to develop Aircraft Maintenance Engineers (AME).

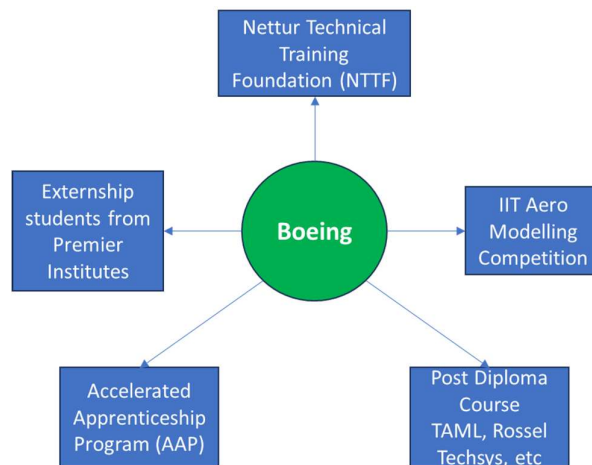


Figure 20 Author's illustration based on reading- Boeing Skill Development Program Source: (Boeing India 2019)

Also refer to (Boeing 2018) the social responsibility of Boeing.

8.5 States (Provinces) initiatives in line with MII initiatives

To complement MII, some States have also launched their own initiatives like, Magnetic Maharashtra (2018), Make in Odisha (2022), Tamil Nadu Global Investors Meet (2015), Happening Haryana (2016) and Make your future in Karnataka (2017). All the governments are incentivising, improving infrastructure by establishing Special Economic Zone (SEZ), IT Parks, Aerospace Parks, Industrial Parks etc. individually to attract global companies. The governments are planning to allot certain SEZs for investments to avoid delays due to bureaucracy. For example, in Maharashtra, although before MII several policies were functional, the state government realised the challenges related to Land acquisition, permissions, skilled labour availability, etc. These challenges were improved further through policy changes, Figure 21 (KPMG 2015). The government promotes Micro, Small and Medium Enterprises (MSMEs) through public funding, adopting cluster based approach in manufacturing, fiscal incentives and institutional support in terms of

collaboration. Fiscal incentives for Stamp duty, exemptions and subsidies on power and electricity are also provided to attract investors (IBJ 2020). The ambition for becoming a first Trillion dollar economy by creating jobs and 12 to 13% growth in 2023. Investment into infrastructure development through infra pioneers in the industry like MIDC agency for promoting development activities to create a better transportation network, logistical movement and attract investors. The government has also introduced a “Maha Parwana”, online single window system to fast track permissions to industries, therefore, the industries receiving a deemed approval from Maharashtra Industry, Trade and Investment Facilitation Cell (MAITRI) within 48 hours.

Policies for Ultra Mega and Mega Projects	
Fiscal Support <ul style="list-style-type: none"> VAT + CST Abatement Stamp Duty Exemption Electricity Duty Exemption Plus, a host of other benefits... 	Non-Fiscal Support <ul style="list-style-type: none"> Skill Development Investor Facilitation Investor After Care Cell
Mega and Ultra Mega project can qualify for fiscal incentives up to 100% of the fixed capital investment	10% additional incentive is provided by the state if the project creates double the employment required for the eligibility

Qualification Criteria				Incentive Basket	
Project Classification	Area Classification	Fixed Capital Investment	Direct Employment	Taluka /Area Classification	(% of Fix Capital Investment)
Ultra Mega Industrial Unit	Entire State	USD 225 Million (INR 1500 cr)	3,000	A & B	50
Mega Industrial Unit	A & B	USD 113 Million (INR 750 cr)	1,500	C	75
	C	USD 75 Million (INR 500 cr)	1,000	D, D+ & NID	100
	D & D+	USD 38 Million (INR 250 cr)	500		
IPS formula in the state			For Mega Projects in Marathwada, Vidarbha, North Maharashtra and Ratnagiri and Sindhudurg For Mega projects in rest of Maharashtra For Ultra Mega projects all over the state	100 % Gross VAT + 100% of CST 50% Gross VAT + 100% of CST 100 % Gross VAT + 100% of CST	Investment (In USD Million) Max. Period (in Yrs.) Up To 75 (INR 500cr) 7 86 to 113 (INR 750cr) 9 114 to 150 (INR 1000cr) 12 Above 150 (INR 1000cr) 20

Note: 1 USD = 66.5 INR

Figure 21 Government of Maharashtra Policy changes Source: (KPMG 2015)

8.6 Government e-Market Place (GeM)

GeM is a platform where sellers can sell their goods or service to the buyers and vice versa. This system is created to help buyers and sellers by simplifying, increasing efficiency, creating transparency and inclusivity between the businesses. According to an interview, (P. K. Singh 2023) Prashant Kumar Singh, CEO, the business can be set up in any village or a town in any corner of India and can be sold to a buyer at any place in India through GeM portal. GeM uses digital payments, bidding, challenging the buyer or seller on a purchase, etc. There is no intermediary involved in a purchase, avoiding delays, corruption, extra charges and hidden charges. Often, small businesses and enterprises selling goods and services, faced a sustainability or selling problems. With GeM, it has created a level playing field for both buyer and the seller to agree on a purchase with no delays and transparency. Both the buyer and the seller can track the consignment until it is delivered. GeM uses the digital technologies like Cloud, digital payments, paperless transactions, etc. eliminating the vulnerabilities prior to GeM.

A great place for MSMEs and Startups to foster their business entrepreneurship. As per World Bank Blog (LAL 2018), a purchase in remote Andaman and Nicobar Island has said, GeM has brought down the delivery time from 30-60 days to 10-15 days. Since GeM’s launch in 2016, by 2018 it created a base for 138,000 sellers and 27,000 buyers catering to around USD \$1.7 Billion. According to a case study (Centre for Public Impact 2019), the Government through General Financial Rules Act, has also mandated all the

Organisations, departments and ministries of Central Government to source common goods and services through GeM. Even the World Bank funded projects need to be processed through GeM. Some of the state governments have signed up MoU with the Central Government to get on board with GeM.

As per (Centre for Public Impact 2019), GeM is developed based on other countries similar Government-To-Business platforms, in particular, Chile’s “Chile Compra”, South Korea’s “KONEPS” and Singapore’s “GeBiz”. The Indian government linked up the procurement agencies of these three countries and the World Bank to obtain the pricing data for the platform. GeM has also tied up with Digital India initiative.

8.7 Startup India

On 16th January 2016 by Department for Promotion of Industry and Internal Trade (DPIIT) launched Startup India, to encourage young investors and build a strong and inclusive ecosystem for innovation entrepreneurship. India is ranked at the 4th place in Top 20 Startup Output countries by StartupBlink in 2023 (Sengul Enginsoy 2023) as shown in Figure 22.

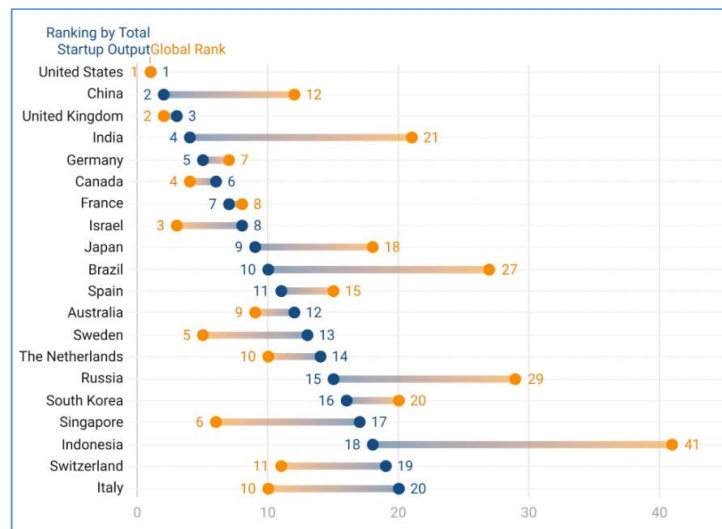


Figure 22 Startup Output Vs Global Rank (Sengul Enginsoy 2023)

Startup India has been built up on 19 Action items spanning across “Simplification and Handholding”, “Funding Support and Incentives” and “Industry Academia partnership and Incubation”. The 19 Action items are listed (Piyush Goyal 2020) for more details. It is interesting to note that the GoI doesn’t directly provide funds to the aspirants i.e., Startups. Figure 23 shows an illustration of flow of funds. GoI makes available funds in the form of Fund of Funds for Startups (FFS) to DPIIT which acts as a monitoring agency. DPIIT monitors the fund through Small Industries Development Bank of India (SIDBI). The capital is then made available to Securities and Exchange Board of India (SEBI) registered companies in the form of

Alternative Investment Funds (AIF). These AIFs then invest in the Startups based on their projects, prototypes etc.

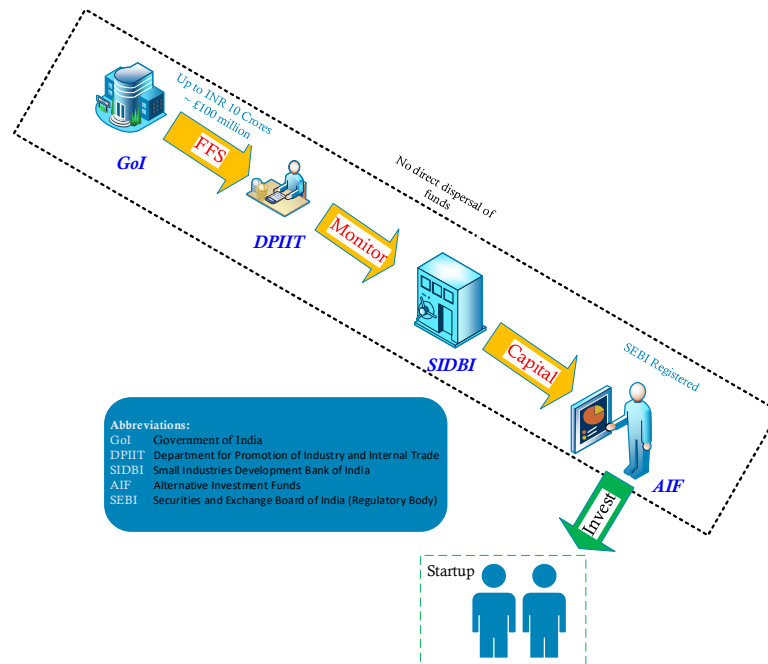


Figure 23 Author's Illustration of Flow of Funds from Government of India to Startup after reading Source: (Piyush Goyal 2020)

Whereas, Angel investments, venture capitalists and Commercial banks need some assurance in the form of asset to provide capital investments from a startup having just a concept idea or prototype. Many startups struggle to gain access to capital needed to kick start their business.

“Startup India Seed Fund Scheme (SIFS)” is one of the scheme under Startup India, where startups are provided with financial assistance for proof of concept, prototype, product trials, marketing and commercialisation of the product. The scheme will help startups through DPIIT monitored Incubators (further explained below) to gain maturity, before they find some Angel investors or venture capitals to invest in their business (Seedfund 2023).

[Incubator: It is a workspace created for a startup to gain access to all resources under one roof. They provide, space, mentors, business services, funds and networking opportunities.]

As per the Startup India report (Evolution of Startup India 2020) around 14,740 startups were launched in 2020 as compared to 504 in 2016, a significant rise. The Startup India has continuously evolved from its launch to what it is now, based on experience and learning from other similar programmes in different countries. As compared from 2020 to 2016, the number of procedures to incorporate a company reduced to 3 as regards to 10 and the time to incorporate has also reduced to 4 days as compared to 18 days. More detailed reading is available in (Evolution of Startup India 2020).

Lockheed Martin’s (LM) India Innovation Growth Programme (IIGP) has supported nearly 400 innovators to resonate to “Startup India” by providing necessary resources, handholding schemes and technology commercialization training for the innovators to setup their ventures in India and abroad. Through this programme, Indian Entrepreneurs have generated nearly \$ 1 Billion and is a flagship program for Department of Science and Technology (DST). (Lockheed Martin 2023)

The Insolvency and Bankruptcy Code (IBC) introduced in 2016 helps resolve the legal as described in Paragraph 7.4. Fast track resolution for corporates makes it even easier to exit within 45 days in case of dispute.

8.8 Digitisation & Industry 4.0

In July 2015 GoI initiated “Digital India” to transform India into a digital hub. The objectives of this initiative is to

- a) Build a conducive secure and stable digital infrastructure
- b) Provide digital services
- c) Ensure every citizen has access to Internet.

As per the report published by McKinsey Global Institute, (Noshir Kaka, Anu Madgavkar, Alok Kshirsagar, Rajat Gupta, James Manyika, Kushe Bahl, Shishir Gupta 2019), India is one of the fastest growing markets for the digital customers, next only to China. It states, the Public and Private sectors have propelled the growth alike. The report also estimates that, India could become a truly connected nation by 2025 and it could boost the country’s digital economy. See Appendix 2 for further reading. Because of the population and domestic demand, the digital networking sector, big data industry, cybersecurity industry, cloud computing, online retailing sector, logistics, healthcare, aviation, manufacturing industries especially MSMEs etc., have a great benefit with this initiative. India is the second largest manufacturers of smartphones and as per news article, (Kaur 2023) as show in Figure 24. By 2023, 98% of the phones produced were made in India for the domestic market. The government PLI schemes have helped the manufacturers to invest. Apple, smartphone manufacturer has now penetrated India and started manufacturing through MII initiative.



Source: Counterpoint's 'Made in India' Research, 2022

Figure 24 Growth of Smartphone manufacturing from 2014 to 2023 Source: (Kaur 2023)

Necessary funding to develop the digital infrastructure is very important for the rapid and steady growth. As pointed in India Brand Equity Foundation (IBEF) website, (IBEF 2024), Ministry of Electronics and Information Technology (MeitY) has collaborated with the technology firms as below.

- [Collaboration with Google to launch “Build for Digital India” programme to provide engineering students an opportunity to create market-ready, technology-based solutions.
- Collaboration with Amazon Web Services (AWS) to establish a quantum computing applications lab in India to accelerate quantum computing-driven research & development and enable new scientific discoveries.
- Government collaboration with private sector companies (e.g. Amdocs, Cognizant, Google, Intel, Microsoft and Zensar Technologies) to establish National Digital Literacy Mission (NDLM) centres and facilitate digital literacy training in India.]

8.8.1 National Single Window System (NSWS)

NSWS was introduced on 22-September-2021 to bring all the regulatory and licence approvals under one roof fully digital as one stop shop. This gives a favourable experience to the investors, businesses and corporates without having them to go to the offices physically. The customs, immigration clearances speed up creating an ecosystem for EoDB with transparency. A Permanent Account Number (PAN) similar to UK National Insurance number is a must to register a case.

An article in Trade Finance Global, (Carter 2024) indicates that, Similar Single Window Systems have been in place before NSWS was implemented. For example, South Korea was the first country to implement the Single Window System called Uni-Pass in 2003 and it became fully functional in 2009. In 2015, America also introduced similar system, named as Automated Commercial Environment (ACE).

8.8.2 5G/6G network revolution

In a report from Deloitte, (Dr Amit Kapoor 2023), the introduction of 5G network from 2022 onwards, is estimated to open a plethora of opportunities in every sector. The report estimates, by 2040, the economic contribution of 5G could be \$455 Billion. Internet of Things (IoT), Artificial intelligence (AI), Cloud, edge computing, Metaverse, etc. will be taking over in major sectors like manufacturing, retail, Information and communication, Agriculture etc. The telecommunication companies are heavily investing in providing the right infrastructure for their consumers.

One of the eye catching point in the document about products in service is, predicting the health of the product real-time through AI. The sensors within the products send signals of health to a command centre, which alerts manufacturing company. The data is then assessed by the manufacturing company to either repair or replace the parts. This will improve the reliability, product quality, cost involved etc. With 5G connectivity, the companies can benefit to implement I4.0 with high efficiency.

The manufacturing industry is continuously evolving with technologies as illustrated in Figure 25.

Industry 4.0 (I4.0) is an integration smart systems using digital or cyber technologies to implement real time and self-optimized systems in manufacturing (Berger 2017). With the implementation of 5G high speed internet connectivity is one of the major steps towards I4.0. The GoI has collaborated with Private companies, educational institutions, for the evolution of 6G network.

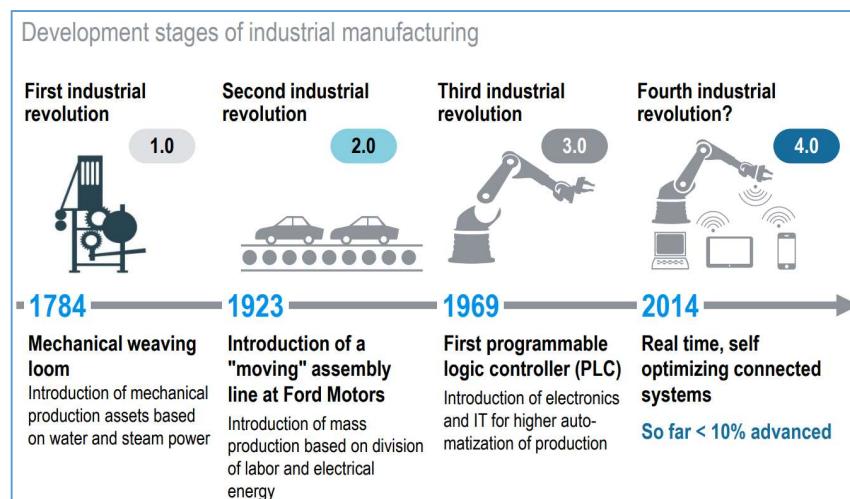


Figure 25 Evolution of Industrial Revolution (Berger 2017)

The GoI has launched **SAMARTH Udyog Bharat 4.0** to reduce manufacturing cost with highest quality and safety standards to sell products to the domestic and global markets. SAMRUTH Udyog Bharat 4.0 is an I4.0 initiative to enable automation in manufacturing sector through incorporation of AI, innovative cyber technology, software etc. Several Institutions and Public Sectors have collaborated with private

organisations for Technology, infrastructure, resources and equipment (Ministry of Heavy Industries 2018). These Organisations provide trainings, workshops, national and international conferences apprenticeship and internship and facilitate I4.0. Many countries like Germany, Japan, America, China and France have already started embracing I4.0.

8.9 Goods and Services Tax (GST)

Two types of taxation system exist in India, Direct and Indirect (Rashi Maheshwari 2023).

- **Direct tax** is on the profits & income, complex, non-transferable, paid directly to the government. Examples: Income tax, Capital Gains Tax (CGT), Securities Transaction Tax (STT)
- **Indirect taxes** are Goods and Services, simple & convenient, paid indirectly via intermediary, regressive tax burden etc. Examples: Goods and Service tax, Customs Duty for any import of goods and services from abroad,

In 2017, GST Bill was approved by the parliament. Most of the indirect taxes like VAT, Excise duty, service tax, etc., were replaced by GST to eliminate double taxation across different states of India and to eradicate corruption involved in the taxes. Although, it had a significant effect and rejection in the beginning, but was later welcomed by majority of industry experts (Deloitte 2023). This not only reduced the goods and services cost but also contributed to improve EoDB ranking.

Goods and Service Tax Network (GSTN) acts as an interface between the government and tax payers. It provides infrastructure between all the stake holders namely, tax payer, bank, is a portal interfacing between the users and the government agencies.

The main objective of introducing GST was to

- **Unify the most complex and tedious Indirect taxation:** Majority of the Central and State indirect taxes were merged into GST, making it one system, under the government’s slogan of “**One Nation, One Tax**”. With the introduction of GST, every state had to impose the same tax rate on a particular product or a service. Any state can manufacture the goods or provide services to another state with the same rate. With the pre-GST period, companies had to decentralise to avoid various taxes in the movement of goods. With GST, the companies can manufacture the product from anywhere in the country and sell it to any state at the same indirect tax rate. Refer Figure 27 for an illustration.
- **Eliminate cascading tax**

With the implementation of GST, the tax is levied on the Customer. The companies that process the product can request refund of GST paid at the stages of selling to the other companies and processing through Input Tax Credit (ITC). This is illustrated in Figure 26.

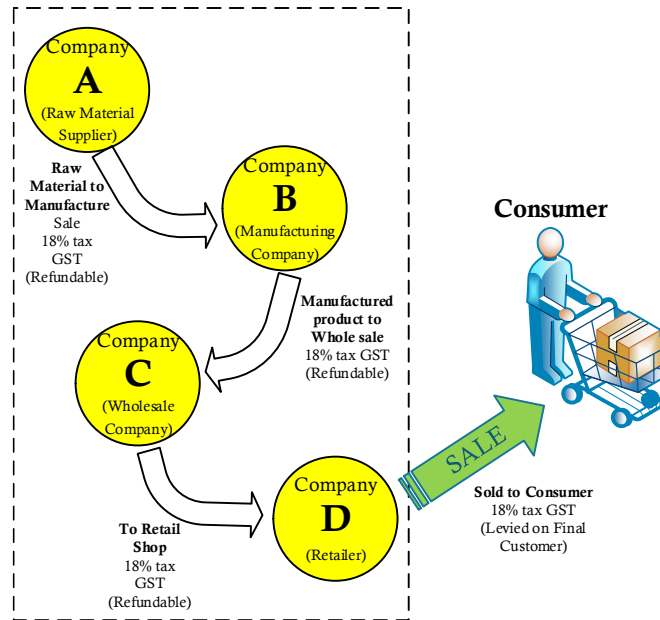


Figure 26 GST levied on Final Consumer. Author's illustration based on reading

- **Curb tax evasion**
- **Increase tax payer base**
- **To improve EoDB rating at the global stage**
- **Attract Foreign investments**
- **Improving the logistics and distribution**

Three types of GSTs are collected Central Goods and Services Tax (CGST), State Goods and Services Tax (SGST), Union Territories Goods and Services Tax (UTGST) and Integrated Goods and Services Tax (IGST) (Inamdar 2019). The Figure 27 presents a case where GST of 18% is collected whether the sale is within a State (Intra State) or between two States (Inter States). Where, Union Territories of India is involved UTGST is collected in place of SGST.

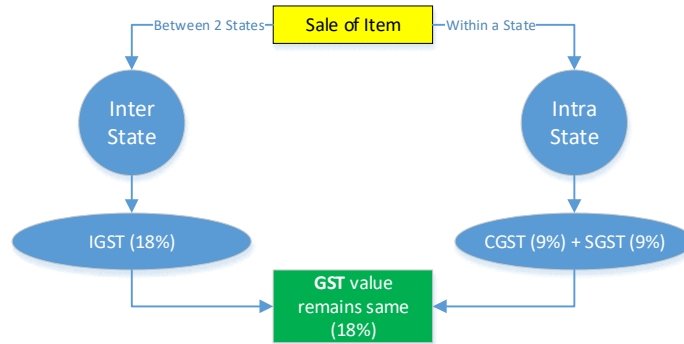


Figure 27 GST Types and Illustration (Author's diagram presenting information and data)

The GST is fully digital and has been evolving since it was introduced. The GST range includes 0%, 5%, 12%, 18% & 28% depending on the goods or services. A GST rate analysis of different countries per article, (Subodh Kumawat 2023) , shows that India has the highest GST. The GST model is similar to VAT/GST models of France, United Kingdom, Singapore, Canada, EU, Australia, New Zealand etc. European tax economy has conceived GST tax economy for more than 50 years.

Point to be noted is that some of the products like petrol, diesel, ATF were not subsumed under GST tax regime and were managed by the State government VAT.

A survey report conducted by Deloitte in 2023, (Mahesh Jaising 2023) shows that 72% of the survey respondents had a positive GST experience compared to 59% in previous year 2022. 94% of the respondents had an affirmative sentiment towards GST. The six pillar survey considers with a positive feedback in all these areas. Following are the six pillars. Refer Appendix 7.

- EoDB,
- Tax Technology,
- 360° profiling of tax payers,
- Focus on investment centric growth,
- Investment aspects of GST,
- Forward looking ideas

The Gol's structural and procedural efforts to simplify GST compared to 2022 is welcomed and favourable to the respondents and around 93% of the respondents perceive that the GST regime supplements Gol's impetus towards the MII initiative. The concern raised by these respondents is the dual investigations by multiple tax authorities that consumes time, effort, extensive reporting, etc.

9 Case Study Aviation

For simplicity, aviation sector is classified into Civil aviation and Defence aviation.

Civil Aviation	Defence Aviation
Commercial and Business aircrafts for pleasure, business etc.	Aircrafts for internal security of a country used in Air Force, Military and Naval forces

Aviation Suppliers:

Figure 28 is of (PricewaterhouseCoopers 2009) describes Supplier Tier levels for information.

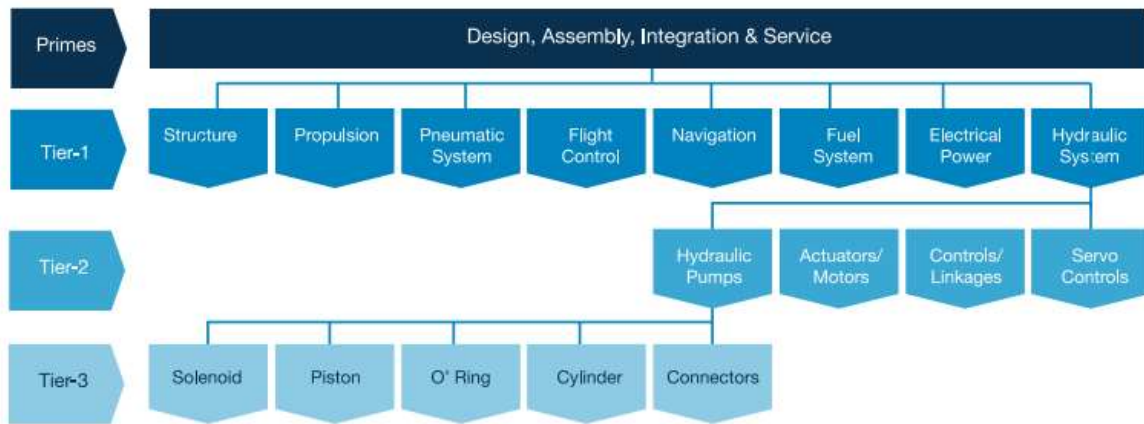


Figure 28 Tier Levels of suppliers Source: (PricewaterhouseCoopers 2009)

Some prominent International and Indian Aerospace giants are as follows,

International Companies	Indian Companies
Airbus (EADS Group – Europe) France	Hindustan Aeronautics Limited (HAL)
Boeing (United States of America - USA)	Tata Group
Lockheed Martin (USA)	Bharat Electronics Limited (BEL)
Goodrich (USA)	Dyanamatic Technologies
Rolls Royce (United Kingdom)	QuEST Group (now called Aequs)
General Electric –GE (USA)	Larsen and Toubro (L & T)
Safran Group (France)	Mahindra Aerospace

5 years of data is collected for FDI inflow in Aerospace sector. Data collection is limited to Airline Operations, Design and Services, Manufacturing and Maintenance which are defined as below.

Definitions			
Airline Operations	Design and Services	Manufacturing or Production	Maintenance
For study purposes, author considers only number of passengers travelled, passenger air traffic, number of aircrafts, etc.	Design and Services industry provide design activities, Software development, Engineering services, Purchasing, Supplier management, Quality, Certification activities, etc.	Production of Parts or assembly for prototyping or installation on the aircraft.	Aircrafts are subjected to regular checks or modified due to in service issues, improvements, etc. to maintain continued airworthiness of the aircraft. These activities take place in Maintenance, Repair and Overhaul (MRO) Organisations to maintain Airworthy.

9.1 Pre-MII

Before 2014, 100 percent FDI was not allowed in aerospace sector which restricted foreign investments. Up to 49% FDI for Civil Aviation was allowed through government approval (Shawn Greene 2013).

International Civil Aviation Organisation (ICAO), an international regulatory body, rated India's Directorate General of Civil Aviation (DGCA) as 57.1% for complying to ICAO standards. This was below the global average of 63.5%. India was also tagged 13th worst performer in Safety. As a result, ICAO, did not audit India in 2014 and hence same ranking continued (NEELAM MATHEWS 2017). During an evaluation in 2014, the United States Federal Aviation Authority (FAA) downgraded DGCA India to Category 2 from Category 1, which means DGCA is not compliant to ICAO standards and therefore, aircrafts coming from India into the US airports will be scrutinised with increased checks. The two FAA categories include, Category 1 – Compliant to ICAO standards and Category 2 – Non compliant to ICAO standards. These scorings are very important for doing business with other countries especially America. In this case study, Author considers major OEMs (Boeing, Airbus, and SAAB), Tier 1, Tier 2 and Tier 3 companies in accordance with Figure 28.

A report released by Pwc on Indian aviation market in 2013, provides a great insight that includes, International companies existence, Indian majors, tax regime, evolution of aerospace sector, etc. (Dhiraj Mathur 2012). See Appendix 3 for more reading.

9.1.1 Airline Operations

Figure 29 shows data for 5 years (2009-2014) before MII extracted from (Air transport, passengers carried - India 2021). During this period, an increase of 25 million in passenger travelled is observed. Although the trend shows increase in passenger travel, the airlines industry suffered heavy losses due to rising fuel costs and interest rates as per article (Gaytri Madhura 2014).

Some airlines could not sustain due to fierce competition, Aviation Turbine Fuel (ATF) costs, taxes and poor management during 2009 to 2014. Another reason could be, because of the low rating of the DGCA by ICAO and Category downgrading by FAA as described in Paragraph 9.1. As a result, airlines suffered with increased costs, delays and strained strategic relationship with the government.

ATF charges contribute to nearly 34% of the operating costs as mentioned in the report (Dhiraj Mathur 2012). The soaring cost of ATF, \$118 a barrel and the exchange rates from INR to US Dollar (USD) made it even harder for the airlines to survive. About 75% of the cost is denominated in USD (Manisha Singhal 2013).

The FDI capping was <49% for investments on Airlines and that restricted foreign investors to invest.

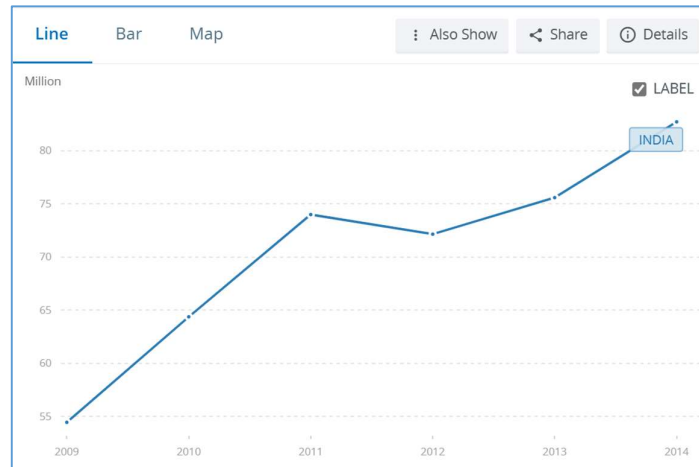


Figure 29 Passengers carried data Source: (Air transport, passengers carried - India 2021)

9.1.2 Design & Services

Services sector is the strongest in India. India has a huge pool of young talent. Due to lack of consolidated data of Aerospace companies providing design services, the author has considered the following major companies that are providing design and other engineering services. Many foreign companies set up their businesses directly or indirectly through joint ventures in India during this time and in early 2000, some of which includes Boeing, Airbus, SAAB, Bombardier, Goodrich, GE, Pratt & Whitney, Honeywell, Thales and many more.

Boeing, an American aircraft company, has been working with Indian Engineering Services companies like Wipro, HCL, TCS, and Infosys for design and software services (Boeing Frontiers 2010). The history goes back to 1997 and it expanded its business on variety of knowledge based engineering, data analytics and design activities with these companies.

In 2009, per Boeing web news release, (Ashmita Sethi 2019), Boeing expanded by opening Boeing Research and Technology (BR&T) Centre in Bengaluru. It started with four employees working collaboratively to support organisations with which it was working like HAL and engage with local institutions like Indian Institute of Science (IISc), Council of Scientific Industrial Research (CSIR) and Indian Institute of Technology (IIT), to create high quality engineering solutions, digitisation, material research, etc. It also continued to provide support to Airport Authority of India (AAI) with Air Traffic Management (ATM) and Air Health Management (AHM) solutions.

In 2011, Boeing signed an MoU with DST to establish a centre to promote India’s aerospace manufacturing capabilities, and create an aerospace manufacturing ecosystem in India. As a result, National Centre for Aerospace Innovation and Research (NCAIR) was formed in association with a premier educational institute, IIT Bombay, where Boeing provided direct funding and technical assistance (IIT Bombay 2011).

Airbus an European aircraft company, had two Design Centres at QuEST Global and AXIS CADES and were Centres of Excellence for Design engineering work that carried out various design, analysis, publications, etc.

In 2011, Cassidian, a subsidiary of European Aeronautic Defence and Space (EADS), forged a joint venture with an Indian Engineering company Larsen and Toubro (L&T) in the ratio of 74% (L&T) and 26% Cassidian. The new Engineering Centres based out of Talegaon near Pune and Bengaluru was involved in system design, analysis and other engineering activities The joint venture worked closely with Cassidian’s new engineering centre in Bengaluru to support system design and analysis activities for electronic warfare, radar and avionics for military application (Corpwebstorage 2011). See document attached in Appendix 4 for reading.

In 2011, **SAAB**, a Swedish defence and security company, partnered with Mahindra Satyam, an Indian IT giant providing engineering services inaugurated SAAB India Technology Centre (SITC) at Hyderabad. The centre would undertake R&D activities, mechanical design, software engineering services etc. An initial workforce of 100 employees will be extended to 200 in the next coming years (SAAB-Mahindra 2011).

9.1.3 Manufacturing

Boeing’s news article (Boeing Frontiers 2010), HAL is a single source supplier for Boeing’s 757 over-wing exit doors since 1991. By 2010, HAL added an array of components to its portfolio to manufacture like Boeing’s 777 gear uplock box and the gun bay door for the F/A-18 Super Homet fighter, Flaperons composite control surfaces for 777 jetliners. History of Boeing presence in India is in Boeing India website, (Boeing-India 2022).

Airbus had an agreement with HAL to manufacture aircraft doors for single aisle aircrafts. In 2009, Airbus had placed an order to manufacture 2000 shipsets of forward passenger aircraft doors worth \$150 million (Sharma 2008). Airbus did not have its own manufacturing facility and was looking opportunities for joint ventures with private sectors, in addition. Dynamic Technologies had Airbus delegates visiting them for partnership as per newsletter (Dynamics 2009).

SAAB, formed a joint venture with QuEST Global (74% share) with SAAB having 26% share, to manufacture aerostructure parts for its aircrafts in 2012 at Belgaum, India. Joint venture was named “Aero Assemblies India” to manufacture and supply assemblies for aerostructures market. The facility was planned to build from 2013 onwards with 50 employees initially and foreseen to grow to 400 employees (QuEST 2012).

Lockheed Martin’s joint venture with Tata Lockheed Martin Aerostructures Limited (TLMAL), formerly Tata Advanced Systems Limited (TASL) is a single global source of C-130J empennage assemblies (Aircraft

tail assembly) included in the Super Hercules Aircrafts. The empennage has been manufactured since 2010 (Lockheed Martin 2023).

Sikorsky S-92 helicopter cabin production plan was laid out in 2009. By 2013, the cabin production became indigenous. Around 5000 components were produced by TASL (Manufacturing Group 2013).

9.1.4 Maintenance

The MRO services in aviation can be broadly classified into the following categories.

Airframes (Heavy Maintenance)	Line	Components	Engine
C Checks – Detailed inspections. D checks or 4C Checks – Major reconditioning.	Pre-Checks & Air Transit checks, Daily checks, Weekly or overnight checks, Visual checks, A checks involving functionality testing, emergency and Safety equipment checks, Control surface mechanism checks, non-destructive testing	Involves Avionics, Auxiliary Power Units, Equipment, Hydraulic system, Pneumatic system, Structures, Fuel Systems, Flight Controls, Landing gear, water and waste system, cargo, Tyres, Nacelles, Thrust reverser systems, Wheels and Brakes, etc.	Off wing disassembly and overhauling of Aircraft Engines.

Although 100% FDI was permitted, tax and customs duty on import of components for MRO activities are higher.

- 100% FDI is permitted through automatic route for establishment of an MRO facility.
- Duty free import of components and parts for 1 year.
- Foreign aircrafts could stay for 15 days for MRO services in India.
- Land allotment for MRO setting up was 3-5 years depending on the State.
- 13% Royalty tax to be levied on MRO services by AAI.
- Complex and high tax regime constituted 40 to 50% of the cost.
- Majority of maintenance work was outsourced. Only some line and component level maintenance was carried out in India. Airframe and Engines maintenance was majorly outsourced.

The aircraft maintenance is the key sector in maintaining aircrafts airworthy. India is a net importer of MRO services. Some of the major MROs in 2013-2014 are shown in Figure 30

- Air India Limited
- Air Works India (Engineering) Private Limited
- Arrow Aviation Services Private Limited
- Blue Dart Aviation Limited
- Cochin International Aviation Services
- Deccan Aviation
- Eaton Aerospace
- HAMCO
- Hindustan Aeronautics

Figure 30 List of major MROs in 2013-14 Source: (Entrance-exam 2013)

9.2 Current State (Since 2014)

Up to 100% FDI is available in various areas of aerospace like as compared to only 49% prior to 2014. 100% FDI through automatic routes is granted in areas of Flight Training, helicopter services, ground handling services, cargo handling services, Greenfield and Brownfield airport projects.

Other areas like Scheduled Air Transport, Domestic and Regional air transport service are granted <49% FDI through automatic route and rest through government approval.

On the taxations side, introduction of GST completely eliminated the complex tax system of Central and State government taxes as explained in Paragraph 8.2.

The GoI offset policy of 30%, has led to the global manufacturing competition as per the report (Roger Moser 2019). Developing nations like Brazil and Korea have already been benefiting from offset policy. Offset policy is where the investing foreign company will enter into an obligation of either utilising the local sources of supply or technology transfer or other way of contribution to the local country.

In 2022, ICAO found India complying with their Standards during their Audit and ranked India at 48th place as compared to 102nd rank in 2018 and its ranking as 13th worst in 2014. This shows a significant improvement in the DGCA's performance in following the regulation set by the international body (IADB 2022).

India also regained its Category 1 status with FAA International Aviation Safety Assessment (FAA 2015).

Given the size of the economy and the sheer scale of its population, there has been an incredible effort in terms of bringing the EoDB up to 63rd rank from 134 in 2014 (pre-MII) (World Bank 2020).

9.2.1 Airline Operations:

The working middle income group has increased and so is the affordability to fly. In order to create an integrated aviation ecosystem, the government introduced National Civil Aviation Policy (NCAP) in 2016. One of the key elements of NCAP is Regional Connectivity Scheme (RCS). Under RCS, Ude Desh ka Aam Nagarik (UDAN), [translated in English as “Let the Common Citizen of the Country Fly”] was emphasized. The RCS is to connect unserved or under-served airports within the country extending the connectivity to Tier 2 and Tier 3 cities where business or tourism is prominent. The idea is to attract airlines to use these airports by providing Central - State government and airport concessions. The GoI provides financial support in terms of Viability Gap Fund (VGF). A VGF is a funding paid out by both Central (80% or 90%) and States/Union Territories (20% or 10%) from RCF to the RCS airlines, where the differential amount between Airlines Operation cost and expected revenues.

The RCS scheme is similar to (Jim Lee 2015); Australia’s Regional Air Development Scheme & Remote Air Services Subsidy Scheme; America’s Essential and Air Service Program Regional Air Connectivity Fund of United Kingdom that was launched in 2013.

The Central, State Government and Airport Operators Concessions are provided in Table 1, reference source (Team UDAN 2021).

Table 1 RCS Concessions Source: (Team UDAN 2021)

Salient features of Concessions		
Central Government	State Government	Airport Operators
Selected airlines get 2% levy on Excise duty on ATF purchased at the RCS airports	Reduced State GST of $\leq 1\%$ on ATF at RCS airport for 10 years within the State.	No Landing and Parking Charges.
Airlines can enter into code sharing arrangement with other domestic or international airlines. Code sharing agreement works with 2 airlines where one could be called “Operating Carrier” and the other as “marketing carrier”. For instance, Air India having code sharing agreement with Vistara airlines where both airlines jointly operate to a certain destination, Air India (Marketing Carrier) can advertise, market and sell tickets under its own code for Vistara (Operating Carrier).	Provision of minimum land required for Airport, free of cost and free of all encumbrances involved for RCS Airport development with provision for multi modal hinterland connectivity like Road, rail Water, etc.	No levy on Terminal Navigation Landing Charges (encompasses Communication and Navigation Services and ATM services) on RCS flights.
Reimbursement of GST on RCS seats sold in an RCS flight from the RCF	Emergency services like Fire and security services free of cost.	Residential Noise Footprint Charges (RNFC) is levied by AAI @42.50% of Normal Charges. Note: Normal Charges include without any concessions.

	Subsidised utility services like Electricity, water etc.	RCS Airline operators or staff are allowed to self-ground handling.
	North-Eastern States and UT of India provide 10% VGF as compared to the rest of the states as 20% of VGF.	

Airfare cap of INR 2,500 (~£25) is applicable for flights under RCS Scheme for

- Distance travelling within 500km for fixed wing aircrafts.
- Flight duration of 30mins in Helicopter.

Certain amount in the form of levy is collected from Scheduled flights per departure of the domestic airlines as Regional Connectivity Fund (RCF). The RCF is collected based on the distance travelled and type of routes. CAT II & CAT II A, RCS Scheme airlines and flights with Maximum certified take off mass of 40,000 kgs are exempted from this levy for RCF. Whereas,

[CAT II is flights connecting routes from Metro cities to North Eastern States, Jammu & Kashmir, Himachal Pradesh, Andaman and Nicobar Islands)

CAT II A is flight connecting routes (Flights connecting within North Eastern States, Jammu & Kashmir, Himachal Pradesh, Andaman and Nicobar Islands).]

RCF is shared between the Central and State Governments/UT as 80% and 20% respectively and for North Eastern States, the share between Central and North Eastern States is 90% and 10%.

Air travel data from 2014-2019 in Figure 31 shows an increase of about 80 million passengers, nearly three times compared to 2009-2014.



Figure 31 Passengers carried data Source: (Air transport, passengers carried - India 2021)

The trend in Figure 32 extracted from (Macrotrends 2024) shows, there was a decent economic growth. Due to economic activity during 2014 to 2019, passenger demand increased and hence, a surge in the passenger movement.

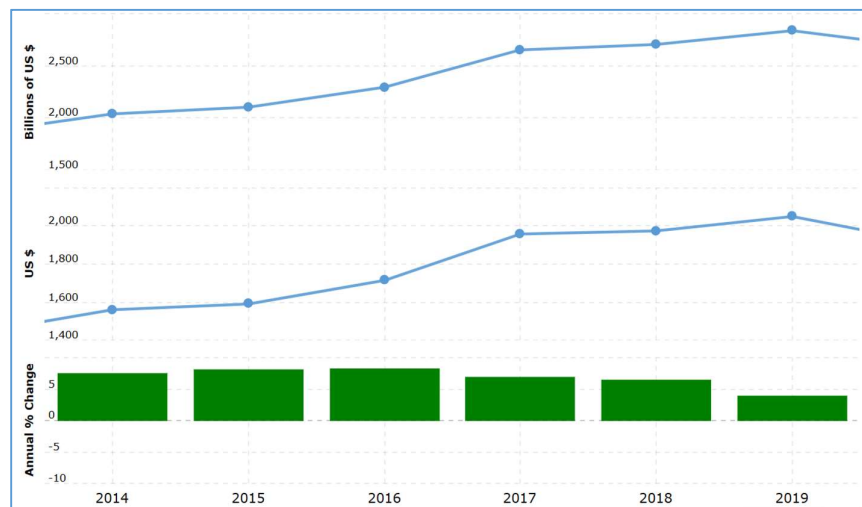


Figure 32 India Economic Growth Source: (Macrotrends 2024)

A critical review on RCS scheme was conducted by Chandrashekhar Iyer (K. Chandrashekhar Iyer 2019) in which he found that RCS has improved the regional connectivity with people using services offered by the airlines and the airlines getting benefitted through RCS scheme.

As per Airbus Press Release in March 2022 (Krittivas Mukherjee, Neha Vij, Justin Dubon 2022), India’s air traffic is expected to grow significantly over the next 20 years at a rate of 6.2% annually (global average of 3.9%). Therefore, an estimated 2210 aircrafts [as compared to 688 active fleets calculated (Airfleets 2023) need to be added to the commercial aviation wing to support both passengers and freights. Of 1100 aircraft orders, major airlines like Air India and Indigo share a big chunk of 470 and 500 aircrafts,

respectively (Business Today 2023). Airbus estimates, 34,000 pilots and 45,000 technicians are needed by 2040. This has a great potential to create an integrated aerospace ecosystem of design & services, manufacturing, MRO, supply chain, software development etc. A whole new aviation regulations & policies monitored under an independent body needs to be implemented to cater to these growing requirements. United Arab Emirates has shown an expression of interest for Open Sky Agreement with India that would allow double the number of passengers currently flown. To cater to these requirements, the Infrastructure, like skilled workforce, regulations, aviation policies, new airports, MRO facilities, supply chain etc., needs to be in place and on par with international standards (Navin Berry 2023).

9.2.2 Design & Services

Many international aerospace companies have made their presence in India by either collaborating with Indian companies or by starting their own. The table below is prepared per KPMG report (Roger Moser 2019). For further reading refer to Appendix 8

Company Name	Design and Services Investments (Non-Exhaustive list)
Boeing	<ul style="list-style-type: none"> • In 2017, Boeing India Engineering Technology Centre (BIETC) in Bengaluru was set up to carry out Engineering Research and Innovation. • In 2018, Boeing introduced Digital Innovation Centre to its operations in Bengaluru to provide digital services, Internet of Things (IoT), Cloud services, Analytics and Mobility. • Started with 100 employees in 2017, its workforce grew over 1000 employees in 2018 expected to increase to 2500 in coming years. The team works on specialised field of IT, Engineering and R&D (G 2018). • Boeing India has 4000 employees working, 300+ local suppliers, 7000+ employees with Partners, \$1Billion annual sourcing.
Airbus	<p>Airbus brought its Civil and Defence aviation businesses under one company, Airbus Engineering Centre India. Started with 4 employees in 2007, it grew up to 350 in 2014 (Anirbhan Choudhury 2014). Currently, its employee headcount is 900 and expected to grow up to 2000 in future. The Engineering Centre is a home for high value engineering services like, design life cycle, flight physics, Airframe, Systems and propulsion, manufacturing engineering, Computational Fluid Dynamics, Digital Simulation and visualisation.</p>

	<p>Airbus subsidiaries NAVBLUE and AERIAL have signed up partnership agreements with 3 Indian Startups under “Airbus Bizlab” program (Damini Bindra 2018). This comes as a push and bolster the “Startup India” and “MII” programmes.</p> <ul style="list-style-type: none"> • Airbus NAVBLUE and Stelae Technologies, where Stelae provides aeronautical data services and enables faster introduction of fully data driven next generation aircrafts with “Electronic Flight Bag” (EFB) solution. EFB is the data required by flight crew members, e.g. Flight Manuals, flight information and eliminates hardcopy manuals, books, etc. • Airbus NAVBLUE and EFLIGHT, where EFLIGHT provides comprehensive service solution to the Indian Aviation Market. • Airbus AERIAL and Airpix, where Airpix provides a geo-analytic solution and imagery services in the country. <p>In this program, the startup companies can gain access to all Airbus data, expertise, Airbus consultations, expert advice, etc. It is a 6 months accelerator program between the startups and Intrapreneur of Airbus where innovative ideas propositions are transformed into a valuable business (Airbus 2018).</p> <p>Per Airbus Press release, (Airbus 2015), Quest, Tech Mahindra continue to provide engineering services to Airbus. Infosys provides SAP and maintenance services and Geometric provides PLM Services.</p>
<p>Collins (Formerly Goodrich/UTC)</p>	<p>Collins has existed for more than 25 years through its predecessor company Goodrich Aerospace, where Author himself was part of the wider Engineering design group, during the year 2009 till 2015. It has a great team of Engineers working on various technologies in Design, Analysis, Software development supporting various OEMs like Airbus and Boeing programs.</p> <p>In 2015, UTC Aerospace received approval from FAA to ship life rafts made in India which aligns to MII. UTC became one of the first companies in India to receive the approval from FAA to ship the four persons Life Raft (UTC Aerospace 2015).</p> <p>In 2022, Collins expanded its business by opening new Global Engineering and Technology Center (GETC) and Collins India Operation</p>

	<p>Center. The GETC opened in Bengaluru, will accelerate the R&D and Engineering work with a plan to expand its workforce with 2000 engineers. It is currently on course with its \$200 million dollar commitment aims to house around 5000 employees as per the strategic planning of Collins (Collins Aerospace 2022). The new Pratt & Whitney United Technologies Corporation India Pvt. Ltd (UTC IPL) contract engineering services is planned to open at the same location. In an interview with Aerospace & Defence Universe (ADU), the Managing Director Customer & Account Management of Collins, Mr. Sunil Raina talks about Collins aerospace strategic expansion to reciprocate with MII (Raina 2021) .</p>
<p>Rolls Royce</p>	<p>Rolls Royce opened its own Engineering Centres in India.</p> <p>2015 – Engineering Centre opened in Bengaluru to provide engineering, design, analysis and other services in aerospace sector.</p> <p>2016 – Engineering Centre opened in Pune, a city in the State of Maharashtra, to carry out Marine and Power engineering activities.</p> <p>In 2022, Rolls Royce and Infosys, one of the Indian IT giant, have jointly opened a “Aerospace Engineering and Digital Innovation Centre” (AEDIC) for engineering services, digital innovation, software development, etc. (Infosys 2022).</p>

Due to India’s young population, its highly talented workforce in IT & Engineering, increased passenger travel and government offerings like FDI concessions and incentives, under the scheme of MII, many organisations are seeking this opportunity to invest in India.

9.2.3 Manufacturing

<p>Company Name</p>	
<p>Boeing (Manufacturer of Civil and military Aircrafts) An Original Equipment Manufacturer (OEM)</p>	<ul style="list-style-type: none"> • In 2015, TASL and Boeing signed an agreement for a joint venture. As a result Tata Boeing Aerospace Limited (TBAL) was established in 2016 to produce AH 64 Apache Fuselage. It has around 350 skilled employees and 90% of the parts are procured within India. Hence, a strong supplier base is created (TATA 2018). • In 2018, Boeing and State government of Karnataka signed an agreement to open Boeing’s solely owned Engineering and

	<p>Technology Campus for Avionics manufacturing and assembly in Bengaluru. The campus is the second biggest outside of America (Karnataka Government 2018). See Appendix 5 for further reading.</p>
<p>Airbus (Manufacturer of Civil and military Aircrafts) An Original Equipment Manufacturer (OEM)</p>	<p>India is to replace existing old AVRO aircrafts with Airbus C295 aircrafts. In a recent newsletter, (Airbus C295 2023), by November 2024, Airbus in partnership with TASL, will start manufacturing and assembly of 40 out of 56 C295 military aircrafts from India. The new Final Assembly Line (FAL) will operate from Vadodara.</p> <ul style="list-style-type: none"> • The components or parts for final assembly are to be manufactured at TASL Hyderabad in India. (Airbus 2016). This is a \$3 Billion project which can create a strong supply chain ecosystem and employment of around 600 skilled jobs, 3000 indirect jobs and 3000 semi-skilled jobs. • In another deal in defence, the military helicopters, H125M Fennec, AS565MBe Panther and EC725 will be manufactured in collaboration with Mahindra Defence. Mahindra Aerospace became the first Tier 1 supplier company to receive a direct order from Airbus Helicopters for manufacturing of the Helicopters (Airbus 2016). • Airbus has signed agreement with Dynamatic Aerospace as a Tier 1 supplier for manufacturing Flap Tracks to assemblies, eventually for its A330 fleet. • Airbus also procures evacuation slides, interior and exterior lighting systems, Power drive units, auxiliary motors, from UTC Aerospace in Bengaluru. • Per Airbus Press release, (Airbus 2015), Wipro manufactures about 8000 actuators a year for various aircrafts like A400M, CN235 and CN295W. • In one year (2014 to 2015), Airbus procurement increased by 15% and thus, Airbus has contributed towards MII (Airbus 2015). • In 2020, the annual procurement from India has raised to \$650 million, around 20% increase as per article (Krittivas Mukherjee 2020).

	<ul style="list-style-type: none"> • Airbus partnership with Engineering Services companies are shown in Figure 33. <p>For future aircraft deliveries and commitments of Airbus has signed new contracts with the suppliers like, Aequs, Mahindra Aerospace, Gardener, Dynamatic etc. within India to create an integrated ecosystem. These companies will be involved in manufacturing of aircraft structures and wing components. Per press release, (Neha Vij, Aaina Prakash 2023), MII is a core of Airbus strategy in India. The current work force of 10,000 will increase to 15,000 in coming years. By 2030, it is estimated to achieve \$70 Billion in aerospace sector.</p>
<p>Lockheed Martin (Manufacturer of Fighter Jets, Defence aircrafts etc.)</p>	<p>In 2018, a metal to metal bonding facility was inaugurated by LM and TASL (Lockheed Martin Newsroom 2018). This facility houses around 80 skilled employees with a cutting edge technology supporting manufacturing processes. The facility also provides on-the-job training to develop required skills in manufacturing sector and contributes to “Skill India” initiative of GoI.</p> <p>TLMAL is a joint venture between LM and Tata Group to produce fighter jet wings of F-16 at Hyderabad facility. On 10th March 2023, an MoU was signed between both the parties to manufacture the wings at TLMAL. According to the MoU 29, shipsets with additional shipsets, if required, will be commenced from 2025.</p> <p>Furthermore, indigenous F-21 specially configured for Indian Air force will be manufactured in India. This will create numerous job opportunities within the aerospace sector and boost the economic activity of MSMEs (Lockheed Martin 2023). This exemplifies MII.</p> <p>TLMAL is a single global source of C-130J empennage assemblies included in the Super Hercules Aircrafts. The empennage has been manufactured since 2010.</p> <p>TLMAL also sponsors on-the-job women-apprenticeship program that provides specialised training in the field of manufacturing and technical skills contributing to “Skill India” initiative as described in Paragraph 8.4.</p>
<p>Safran Group (Manufacturer of Aircraft Engines, Helicopter Engines,</p>	<p>As per article, (Safran 2022), Safran, French aerospace company, opened three new production sites in Hyderabad and Bengaluru. With</p>

<p>Seats, Lavatories, Cabins, etc.)</p>	<p>an investment of \$200 million on these three sites, it is expected to triple the employment rate by 2025, as compared to 750 employees. The CEO of Safran, Olivier Andries has said [<i>“With these new sites, we’re opening a new chapter in Safran’s long history with the Indian aerospace and defense industries, and we are reaffirming our commitment to the government’s ‘Make in India’ policy and sovereignty strategy”</i>].</p> <p>In 2018, Safran Electrical and Power inaugurated its new plant in Hyderabad to manufacture wiring for LEAP engines and Rafael fighter. Opened with 150 employees and estimated to grow to 200 with full capacity.</p> <p>On 26th October 2023, Safran Aircraft Engines and HAL signed an MoU to produce “LEAP” engine components at HAL facility in Bengaluru. Per article (Safran-HAL 2023), Safran’s long term aim is to develop a comprehensive aircraft engine ecosystem for manufacturing of engines in India.</p> <p>Safran Aircraft Engines, in a reciprocal action to MII, has signed a multi-year contract with PTC Industries to supply titanium castings for its LEAP engine. This will localise the supply of the parts to the other four sites of Safran Aircraft Engines within the country (Safran-PTC Industries 2023).</p>
<p>Rolls Royce</p>	<p>2021 – Rolls Royce and Hindustan Aeronautics Ltd (HAL) have signed an MoU to make Adour engine parts that will create a local supply chain ecosystem (Rolls Royce 2021).</p>
<p>Collins Aerospace</p>	<p>As per news article, (Collins Aerospace 2022) the Collins India Operation Centre at KIADB Industrial park in Bengaluru is planned to house nearly 1700 employees in Operations (manufacturing).</p>

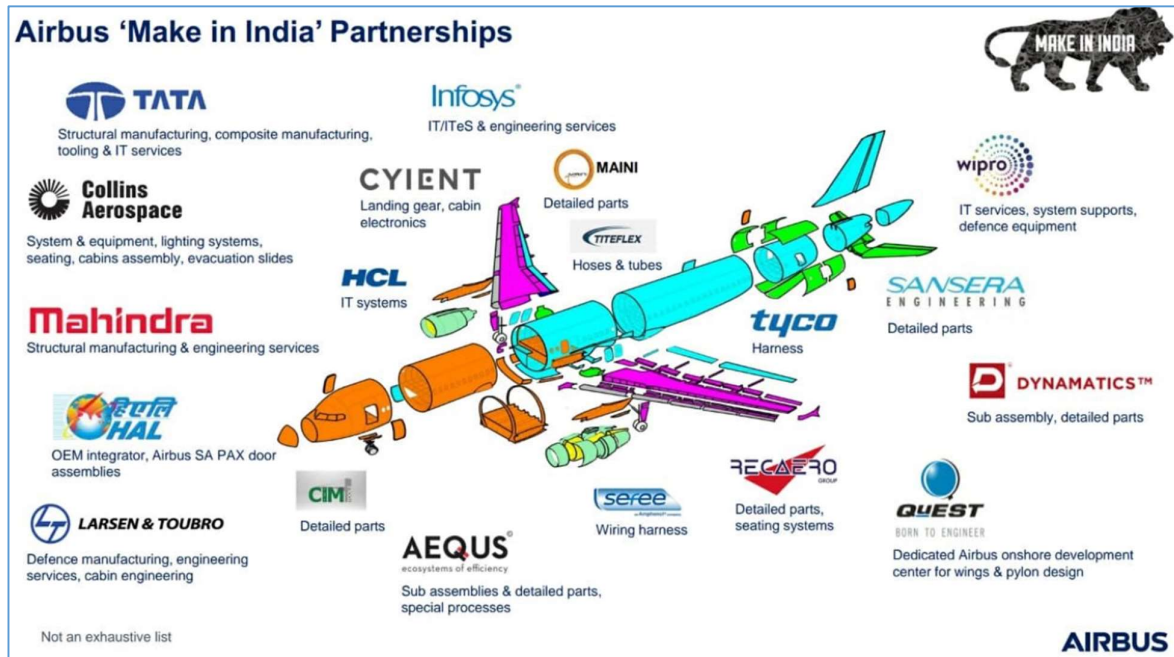


Figure 33 Airbus MII Partnerships Source: (Kant 2019)

9.2.4 Maintenance

With the growing demand of airline operations per para 9.2.1, the MRO services to maintain airworthiness of these aircrafts is a significant area for investment. Under NCAP, the MRO policies have been evolving time to time.

The following are the key strategic elements of GoI offerings per the report generated by Bureau of Research on Industry and Economic Fundamentals Pvt. Ltd (Bureau of Research on Industry and Economic Fundamentals Pvt. Ltd. 2022) and (Deloitte Touche Tohmatsu India LLP 2021). For more information refer BRIEF Report in Appendix 6 of this document.

- 100% FDI is permitted through automatic route for establishment of an MRO facility.
- Duty free import of components and parts for up to 3 years.
- MRO companies to be exempt from Airport Royalties and extra costs for 5 years.
- No requirement for providing proof from MRO regarding their clients demands.
- GST rate of 5% on MRO services.
- Foreign aircrafts can stay for up to 6 months to benefit from MRO services in India as compared to only 15 days before.
- Land allotment for MRO service providers is now increased to 30 years from 3-5 years.
- No Royalty tax charged by the airports and liberalised land rentals.

A national skill development programme, Aerospace and Aviation Sector Skill Council (AASSC), has been in place as part of “Skill India” in support of MII (AASSC 2023). Under this programme, nearly 16,000 have been trained and about 75% of the trained staff are employed in MRO related jobs.

In 2019, due to the growing demand for flights and air traffic, Airbus opened an “Airbus India Training Centre (AITC)” at Gurgaon near Delhi for Pilot and maintenance trainings. The centre has incorporated A320 flight simulator for full flight simulation. The state of the art facility complements existing Airbus Training facility in Bengaluru, where around 4,500 maintenance engineers have been trained (Krittivas Mukherjee 2019). The AITC has an advanced training programme specialised and aimed at training Pilots, maintenance crews and engineers. This shows a great commitment from Airbus to skill the workforce for future needs and help Skill India campaign to train India’s workforce.

As a result of increased air travel and high demand for airports and connectivity, the demand for MRO in coming years will be sky rocketing. As per (Indian Brand Equity Foundation 2023), the MRO industry is likely to grow by USD 2.4 Billion by 2028 compared to USD 800 million in 2018. Figure 34, MRO opportunity to become 4 billion by 2031 as per a report by (Bureau of Research on Industry and Economic Fundamentals Pvt. Ltd. 2022)

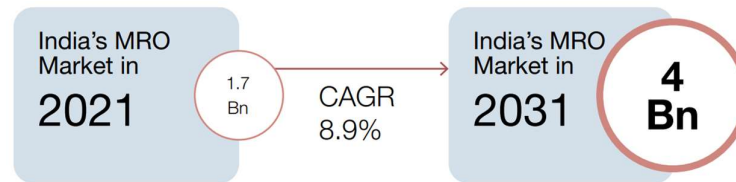


Figure 34 MRO Forecast Source: (Bureau of Research on Industry and Economic Fundamentals Pvt. Ltd. 2022)

Figure 35 shows market share of the MRO sectors, where engine comprises of nearly half of the maintenance of the aircraft. India needs to have its workforce skilled and trained alongside global private MRO partnerships to support the demand. The report published by Deloitte in Appendix 6, is a great read for opportunities, challenges and GoI policies on MRO industry.

Figure 1: Global MRO market share (US\$ billion)

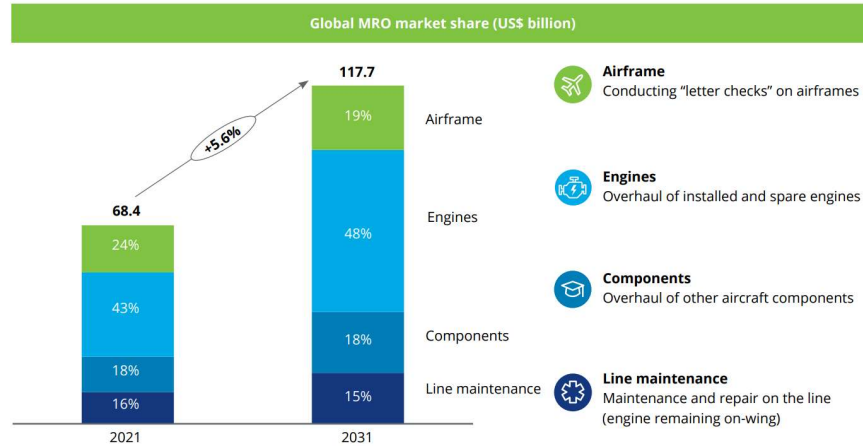


Figure 35 MRO Market share Source: (Deloitte Touche Tohmatsu India LLP 2021)

Safran Aircraft Engines plans to setup a fourth facility of its MRO to carry out LEAP engine activities in Hyderabad and fifth facility Helicopter Engine MRO jointly developed with HAL, both by 2025. As per the article there are currently 2200 LEAP engine orders by Indian Airlines. With MRO setup, the maintenance activities can be carried out locally and this will create the ecosystem for maintenance activities and related supply chain (Safran-HAL 2023).

Various domestic and international MRO ventures were formed with major manufacturers like Airbus, Boeing, Rolls Royce, GE, Safran, etc., some of which are listed in Figure 36.

Region	Competencies (MRO Segments)	Expertise of Key Players
Bengaluru	<ul style="list-style-type: none"> • Airframe • Component 	<ul style="list-style-type: none"> • Air Works India's facility in Hosur, which specializes in airframe repair of Airbus 320s, Boeing 737s and ATR42/72 turboprops • Air India Engineering Services Ltd. (AIESL) facility in Thiruvananthapuram specializes in airframe checks, wheel and brake overhauls and maintenance of Boeing 737s
Chennai	<ul style="list-style-type: none"> • Airframe • Component 	<ul style="list-style-type: none"> • GMR Aero Technic and SpiceJet Technic caters to the airframe segment of Boeing 737s, Airbus A320s, ATR42/72s and Bombardier Q400s • Turbo Jet Engines Private Limited (Telangana) and SpiceJet Technic provides component MRO services for Airbus A320s, Boeing 737s and ATR42/72s
Kolkata	<ul style="list-style-type: none"> • Component (with emphasis on propeller overhaul and repair) 	<ul style="list-style-type: none"> • Arrow Aviation Services Private Limited (New Delhi), NSCB Aviation Private Limited (Kolkata), and the Aerospace Research and Development Center in Guwahati are some players specializing in component MRO • AIESL provides services in airframe inspections for A319 and A320, component overhaul for auxiliary power units for A320 series, high-flow pneumatic components, and provides fuel accessories
Mumbai	<ul style="list-style-type: none"> • Airframe • Component • Engine 	<ul style="list-style-type: none"> • Air Works (for A320, Boeing 737, and ATR42/72 fleet types) and AIESL (for Airbus A330 and Boeing 737/777/747/787) specialize in airframe MRO • AIESL provides component overhaul for Boeing 777, 787, 747 and 737 fleets. • AIESL also provides engine overhaul for PW4056/4152, CF6680C2, CFM56-7B and GE90
Delhi	<ul style="list-style-type: none"> • Airframe • Component • Engine 	<ul style="list-style-type: none"> • Bird Execujet Airport Services Private Limited and AIESL dominate the airframe and engine MRO categories • Interglobe Aviation Private Limited and Indamer Aviation are two major participants in component MRO activities • AIESL provides maintenance and repair services for Airbus A330 and Boeing 737 aircrafts; it also conducts engine overhaul for the IAE V2500, JT8D and CFM56-5B engine versions

Figure 36 List of MROs operational Source: (Bureau of Research on Industry and Economic Fundamentals Pvt. Ltd. 2022)

9.3 Highlights

Highlights		
Criteria	Year Pre MII (2009 to 2014)	Current State (2014 to 2023) Introduction of MII in 2014
Passenger Travel increase	25 million increase during this period. Also see Paragraph 9.1.1.	80 million increase during this period. Almost 3 times to pre-MII. Also see Paragraph 9.2.1
EoDB Ranking	122 nd in 2009 134 th in 2014 A downward slip by 12 positions	EoDB raking 63 rd An all-time high ranking (as of 2019)
FDI	<ul style="list-style-type: none"> Up to <49% FDI for Civil aviation under Government approval. Up to 74% for Airports approval See Paragraph 9.1. 	Up to 100% FDI through Automatic and some partially through government approval. See Paragraph 9.2.
ICAO Ranking	<ul style="list-style-type: none"> Rated as 13th Worst in 2012. ICAO didn't perform audit in 2014 and retained the same ranking. See Paragraph 9.1. 	<ul style="list-style-type: none"> 2018 Rank: 102nd 2022 Rank : 48th See Paragraph 9.2.
FAA Assessment and Categorisation	In 2014, FAA Downgraded to Category 2. See Paragraph 9.1.	In 2015, upgraded to Category 1 and retained the same since then. See Paragraph 9.2.

With reference to Aerospace and Defence industry, undoubtedly there has been a more liberal approach compared to pre-MII period. Particularly the FDI policy up to 100% permission is more liberal than ever and introduction of “Automatic route” made it easier to avoid any bureaucracies or third party interventions.

10 Conclusion

MII is a great initiative with a vision towards attracting manufacturing and services companies from both foreign and domestic investors to improve economic conditions of India.

After reading various articles, newsletters, reports, research papers, etc., the author reminds himself that government policy reforms and incentives have complemented each other for MII’s success (Soumitra Bhattacharya 2022). The government has consistently taken steps to improve EoDB. A strong vision and commendable willpower of the government for the development of the country through its initiatives like Skill India, Digital India, UDAN, GST, PLI, easing approval routes for FDI investments up to 100 percent through automatic routes in several protected sectors has created its own ecosystem of development. The encouragement towards PPP sets up a level playing field for competitive market.

As seen in paragraph 7.2, transportation has improved due to connectivity of Metro cities with Tier 2 cities and with towns and villages. This has helped quick transportation of goods and people. The infrastructure around internet connectivity are of high significance in India’s development. Phone and Internet connections have penetrated deep into remote villages. The PLI schemes for mobile phone manufacturers enthralled investments. The government impetus of the PLIs have set up the right ecosystem for mobile phone sectors and MSMEs, in particular.

Foreign automotive companies like Toyota, Mercedes, Suzuki, BMW, Audi, Nissan, Volkswagen, etc. have invested heavily in India, as described in (IBEF-Automobiles 2023). The automobile companies have the benefit of selling cars to the growing middle income groups.

The strength of India is its population and its demand, creates opportunities for companies to establish their businesses domestically. It’s relatively young population with great IT skills can become the workforce for countries across the world, if fuelled with relevant skills and training (EY 2023). The IT skills, IoT, Big data, etc. could be integrated with manufacturing processes to make manufacturing more efficient and produce top notch quality products.

Another strong suit of India is, English language that makes it easier to communicate with the rest of the world. It is taught in schools, colleges and universities. It is also the principal business language in the corporate world. About 265 million people out of 1.3 billion speak English as per the data in (Worldpopulationreview 2024) and is ranked number one in South Asian Countries.

Due to low labour costs, India could emerge as a leader in manufacturing sector with I4.0, by having a proper infrastructure, Skills, training its workforce. India has got a pool of talent in software and IT. The IT skills can be utilised to excel I4.0, mainly in MSME as these need to contribute to the total manufacturing, as explained in Paragraph 7.2.

The introduction of GST to curb and unify most of the indirect taxes and avoid taxes on taxes was a master stroke and a game changing policy. The unified tax system has boosted the economic activity and has also contributed to improve the EoDB ranking of India at the global level. However, the tax rates are still very high compared to its competitors as described in Paragraph 8.9. Per the blog, (Subodh Kumawat 2023), around 60% of the goods and services have GST ranging from 18% to 28%. The report (Soumitra Bhattacharya 2022), where the survey reveals an optimistic atmosphere from the respondents about GST. There is a strong buzz from the respondents of India becoming China +1, if the GoI relaxes its policies and taxes similar to its competitors.

The time taken for refund of Input Tax Credit (ITC) needs to be improved to make sure enough cash flow is available, particularly for MSMEs. Effective utilisation of digital technologies needs to be considered for seamless processing of GST and ITC.

The aerospace industry is yet to benefit from the offset policy of 30% according to (Roger Moser 2019), as it has not been as effectively implemented as its counterparts like Korea and Brazil.

Majority of the development initiatives like infrastructure, GST, PLIs, tax relaxations, etc. have already been executed by other developed nations. India may have considered these as a base line for its geographical conditions and population.

It is also a fact that manufacturing industry is a labour intensive and India has to create the necessary policies and infrastructure to attract labour intensive workforce similar to China, South Korea or Taiwan.

The policies and initiatives of MII discussed in this report could have also helped India to become 5th largest economy in the world in 2023 compared to 10th largest in 2014.

The author has also read some articles where media have placed their opinion that MII is not working. These could be politically motivated or may even be so that some sectors may not have met targets of MII. Through case study on aerospace in this report, it seems the number of foreign companies investments have flooded. The author must admit, the top aerospace companies that were considered for case study, had their presence for many years manufacturing limited number of parts. However, the policy reforms of MII has led to further increased investments with full range of products and aircraft building itself. The MSMEs will have to tap this golden opportunity. The MRO sector needs to improve significantly to take up heavy maintenance tasks of Engines and airframes. Currently, more than 90% of engine maintenance is outsourced to neighbouring countries. The local companies need to collaborate with international MRO players like, AAR CORP, HAECO, etc. to set up the necessary skill and infrastructure, as there will be more number of aircrafts flying in future, as forecasted. Aircraft

certification regulations need to be more aligned with EASA and FAA to benefit at the international market.

The sustainability of MII is another challenge to India’s growth and future governments need to keep the rhythm going and make MII success.

11 Recommendation

The author considers that MII is a huge subject in itself. It would be an interesting research to consider further research studies of all the other Sectors listed in Figure 3. The author has limited himself to the scope of this report and researching other Sectors could lead to a different dimension and conclusions. Researching can be extended on Aerospace by considering all major OEMs, Tier 1, Tier 2, Tier 3 and Engineering Service providers of aerospace by collecting their financial data, human resources, investments, etc. to quantitatively assess the growth.

12 Appendix



Appendix 1.pdf



Appendix 2



Appendix 3.pdf



Appendix 4.pdf



Appendix 5.pdf



Appendix 6.pdf



Appendix 7.pdf



Appendix 8.pdf

13 References

- AASSC. *Aerospace and Aviation Sector Skill Council*. 2023. <https://www.aassc.in/> (accessed December 29, 2023).
- About the Global Competitiveness Index*. 2015. <https://ec.europa.eu/futurium/en/system/files/ged/wef-gcr14-15-gatefold.pdf> (accessed December 01, 2023).
- Aggarwal, Aradhna. “Growth, Structural Transformation and Poverty Reduction: Issues and Challenges with special reference to India*.” *United Nations*. 4-6 May 2016. <https://www.un.org/esa/socdev/egms/docs/2016/AradhnaAggarwal.pdf> (accessed November 21, 2023).
- Air transport, passengers carried - India. *Air transport, passengers carried - India*. 2021. <https://data.worldbank.org/indicator/IS.AIR.PSGR?end=2021&locations=IN&start=1970&view=chart> (accessed December 29, 2023).
- Airbus C295. *Airbus delivers first C295 to India*. 13 September 2023. [https://www.airbus.com/en/newsroom/press-releases/2023-09-airbus-delivers-first-c295-to-india#:~:text=First%20C295%20'Make%20in%20India'%20in%202026&text=The%20first%20'Ma ke%20in%20India,the%20IAF%20by%20August%202031](https://www.airbus.com/en/newsroom/press-releases/2023-09-airbus-delivers-first-c295-to-india#:~:text=First%20C295%20'Make%20in%20India'%20in%202026&text=The%20first%20'Make%20in%20India,the%20IAF%20by%20August%202031). (accessed January 18, 2024).
- Airbus. *Local production plans for the C295W military transport aircraft with Tata and helicopter manufacturing with Mahindra to be highlighted along with a range of products*. 2016. <https://www.airbus.com/en/newsroom/press-releases/2016-03-airbus-group-to-make-a-mark-at-defexpo-2016-with-its-make-in-india> (accessed January 5, 2023).
- . *Make in India’ boost: Mahindra to make parts for Airbus Helicopters AS565 MBe Panther rotorcraft*. 11 July 2016. <https://www.airbus.com/en/newsroom/press-releases/2016-07-make-in-india-boost-mahindra-to-make-parts-for-airbus-helicopters> (accessed January 5, 2024).
- . *Press Release*. 2015. https://www.airbus.com/sites/g/files/jlcbta136/files/694ae5f23274eaa68e0ec326000cec8e_In%20a%20boost%20to%20Make%20in%20India%20Airbus%20Groups%20annual%20procurement%20from%20Indi....pdf (accessed January 5, 2024).
- . *Twenty-four startups join Airbus accelerator programme*. 12 November 2018. <https://www.airbus.com/en/newsroom/press-releases/2018-11-twenty-four-startups-join-airbus-accelerator-programme> (accessed January 5, 2024).
- Airfleets*. 29 December 2023. https://www.airfleets.net/recherche/list-country-India_0.htm (accessed December 29, 2023).
- Akshithaa Singh, Tanya Kala. “India-France Partnership under the Leadership of Emmanuel Macron and Narendra Modi: An Analysis of Strategic Cooperation and Future Prospects.” *SOCIAL DEVELOPMENT & SECURITY* 13, no. 2 (April 2023): 65-79.
- Alastair Thomas, Isabelle Joumard, Tibor Hanappi and Michelle Harding. “Taxation and Investment in India.” OECD Economics Department Working Papers, Paris, 2017, 51.
- ANI. *Unemployment India’s biggest concern, direct selling at rescue*. 23 June 2016. <https://indianexpress.com/article/business/business-others/unemployment-indias-biggest-concern-direct-selling-at-rescue-2871547/> (accessed November 23, 2023).

- Anirbhan Choudhury. *Airbus to bring Indian operations under single unit*. 12 March 2014. <https://economictimes.indiatimes.com/industry/transportation/airlines/-aviation/airbus-to-bring-indian-operations-under-single-unit/articleshow/31827618.cms?from=mdr> (accessed January 5, 2023).
- Anjan A. Kaikini, Mahalakshmi C. “Make in India, Digital India and Skill India: Awareness among Graduate Students - A Case Study on Sagara Taluk.” *Researchgate*. June 2023. https://www.researchgate.net/publication/323338844_Make_in_India_Digital_India_and_Skill_IndiaAwareness_Among_Graduate_Students-A_Study_on_Sagara_Taluk (accessed December 08, 2023).
- Ashish Saxena, Raj Kumar Tomar. “MAKE IN INDIA: ISSUES AND CHALLENGES.” *MAKE IN INDIA: ISSUES AND CHALLENGES* 6, no. 6 (June 2017): 387 to 390.
- Ashmita Sethi. *Boeing marks a decade of research and technology presence in India*. 8 November 2019. <https://www.boeing.co.in/news-and-media-room/news-releases/2019/november/boeing-decade-of-research-and-technology-in-india.page?> (accessed January 6, 2024).
- Badkar, Mamta. *MORGAN STANLEY PRESENTS: 'The Fragile Five' — The Most Troubled Currencies In Emerging Markets*. 24 September 2013. <https://www.businessinsider.com/morgan-stanley-fragile-5-emerging-markets-2013-9?r=US&IR=T#the-indian-rupee-3> (accessed November 26, 2023).
- Berger, Jonathan. *2014 MRO Market Overview & Trends*. 11 March 2016. <https://www.slideshare.net/ICFI/2014-mro-market-overview-trends> (accessed January 16, 2024).
- Berger, Roland. *Industry 4.0 and Relevance for India*. Research and study, Not known: FICCI, 2017.
- Bhuta, Vrunda K. *Taxguru*. 31 May 2020. <https://taxguru.in/company-law/investor-protection-education-focus.html> (accessed December 6, 2023).
- Bigfundu. *India's Growth Story — 2014 to 2023*. 4 June 2023. <https://bigfundu.medium.com/indias-growth-story-2014-to-2023-825067897bd4> (accessed December 14, 2023).
- Boeing. *Community*. 2018. <https://www.boeing.co.in/boeing-in-india/community.page> (accessed January 4, 2024).
- Boeing Frontiers. “Rising Star.” *Boeing*. February 2010. https://www.boeing.com/news/frontiers/archive/2010/february/ts_sf.pdf (accessed January 16, 2024).
- Boeing India. *Skill India*. 2019. <https://www.boeing.co.in/boeing-in-india/skill-india.page?> (accessed January 04, 2023).
- Boeing-India. *History of Boeing in India*. 2022. <https://www.boeing.co.in/boeing-in-india/history.page?> (accessed January 16, 2024).
- Bui, Nhung Thị Hong. “METHODOLOGY OF THE LITERATURE REVIEW: A COMPARISON OF SYSTEMATIC LITERATURE REVIEW.” *International Journal of Economics, Commerce and Management*, 2021: 367 to 371.
- Bureau of Research on Industry and Economic Fundamentals Pvt. Ltd. “MRO in India.” Research, 2022.

Business Today. *Business today*. 15 June 2022.

<https://www.businesstoday.in/latest/corporate/story/90-of-indian-industry-leaders-feel-gst-made-doing-business-easy-deloitte-337712-2022-06-15#:~:text=Automation%20of%20tax%20compliances%20and,reforms%20introduced%20by%20the%20government.&text=About%2090%> (accessed December 14, 2023).

—. *Indian airlines have more than 1,100 planes on order*. 18 February 2023.

<https://www.businesstoday.in/industry/aviation/story/indian-airlines-have-more-than-1100-planes-on-order-370621-2023-02-17> (accessed December 29, 2023).

Carter. *Single Window Systems*. 2024. <https://www.tradefinanceglobal.com/customs/single-window-systems/> (accessed January 17, 2024).

Centre for Public Impact. *The Indian Government's E-Marketplace (GeM)*. 10 December 2019.

<https://www.centreforpublicimpact.org/case-study/indian-governments-e-marketplace-gem> (accessed January 10, 2024).

Charlotte Gifford. *World Finance*. 2023. <https://www.worldfinance.com/home/top-5/top-5-countries-poised-to-become-the-worlds-next-manufacturing-hub> (accessed December 5, 2023).

Clearias. *Economic Reforms of 1991 (LPG Reforms)*. 5 October 2023.

<https://www.clearias.com/economic-reforms-1991/> (accessed November 2023, 12).

Collins Aerospace. *Collins Aerospace opens new engineering and global operations centers in India to accelerate innovations in R&D and manufacturing*. 08 December 2022.

[https://www.collinsaerospace.com/news/news/2022/12/collins-aerospace-opens-new-engineering-global-operations-center-india#:~:text=BENGALURU%2C%20INDIA%20\(Dec%208%2C,Center%20\(GETC\)%20and%20Collins%20India](https://www.collinsaerospace.com/news/news/2022/12/collins-aerospace-opens-new-engineering-global-operations-center-india#:~:text=BENGALURU%2C%20INDIA%20(Dec%208%2C,Center%20(GETC)%20and%20Collins%20India) (accessed January 16, 2024).

Corpwebstorage. “Larsen & Toubro and CASSIDIAN join forces in India to forge long term partnership.” *Corpwebstorage*. 10 February 2011.

<https://corpwebstorage.blob.core.windows.net/media/39630/cassidianjv-lt2011-01-14v5.pdf> (accessed January 16, 2024).

Damini Bindra. *Airbus Signs Up Three Indian Startups to Power GenNext Aviation Solutions*. 13 July 2018.

<https://www.prnewswire.com/in/news-releases/airbus-signs-up-three-indian-startups-to-power-gennext-aviation-solutions-688090761.html#:~:text=Airbus%20subsidiaries%20NAVBLUE%20and%20Aerial,flight%20operations%20and%20imagery%20services.> (accessed January 5, 2024).

Deloitte. *Deloitte*. 20 June 2023. <https://www2.deloitte.com/in/en/pages/tax/articles/gst-at-6.html> (accessed December 14, 2023).

Deloitte Touche Tohmatsu India LLP. *MRO in India – Poised to take off*. Research, Deloitte Touche Tohmatsu India LLP, 2021.

Demeyin, Weyinmi. *Traditional reviews vs. systematic reviews*. 3 February 2016.

<https://s4be.cochrane.org/blog/2016/02/03/traditional-reviews-vs-systematic-reviews/> (accessed November 2023, 05).

Dissertation: Analysing Innovative idea of "MAKE IN INDIA"

Dharmarajan, Sridhar. *How industry 4.0 will transform manufacturing as we know it*. 2 September 2022. <https://timesofindia.indiatimes.com/blogs/voices/how-industry-4-0-will-transform-manufacturing-as-we-know-it/> (accessed October 11, 2023).

Dhiraj Mathur. *Indian aviation: Spreading its wings*. Research, New Delhi: pwc, 2012.

Dilip Chenoy, Shobha Mishra Ghosh, Shiv Kumar Shukla. "Skill development for accelerating the manufacturing sector: the role of 'new-age' skills for 'Make in India'." *The international journal of training research* 17, no. 1 (September 2019): 112-130.

Dr Amit Kapoor, Neeraj Sinha. *The Digital Dominance: Catalysing India's rise as a global digital leader*. Article, New Delhi: Deloitte, 2023.

Dynamics. *Dynamic signs MoU with Spirit Aerosystems (Europe) Ltd*. 2009. <https://dynamics.com/news13.shtml> (accessed January 20, 2024).

Economy grows at slowest rate in a decade in 2013. 2013. <https://www.businesstoday.in/in-depth/year-2013-roundup/story/economy-logged-lowest-decadal-growth-rate-in-2013-42229-2013-12-26#:~:text=It%20had%20grown%20by%204.7,cent%2C%20the%20slowest%20since%202002.&text=%22For%20the%20Indian%20economy%2C%202013,bee> (accessed Nov 12, 2023).

Entrance-exam. 2013. <https://entrance-exam.net/top-mro-companies-in-india/> (accessed January 20, 2024).

ETBSI. *BFSI*. 21 February 2020. <https://bfsi.economictimes.indiatimes.com/news/banking/what-is-insolvency-and-bankruptcy-code-ibc-2016/74235436#:~:text=Insolvency%20resolution%20in%20India%20took,of%20big%2Dticket%20loan%20accounts>. (accessed December 06, 2023).

Evolution of Startup India. 2020. [https://www.startupindia.gov.in/content/dam/invest-india/Templates/public/5_years_Achievement_report%20_%20final%20\(1\).pdf](https://www.startupindia.gov.in/content/dam/invest-india/Templates/public/5_years_Achievement_report%20_%20final%20(1).pdf) (accessed January 13, 2024).

EY India. *Digitalizing India: a force to reckon with*. 7 February 2023. https://www.ey.com/en_in/india-at-100/digitalizing-india-a-force-to-reckon-with (accessed December 14, 2023).

EY. *India@100*. 11 April 2023. https://www.ey.com/en_in/india-at-100/reaping-the-demographic-dividend (accessed January 10, 2024).

FAA. 6 May 2015. <https://www.faa.gov/newsroom/us-transportation-secretary-foxx-announces-improved-aviation-safety-rating-india?newsId=18575> (accessed January 4, 2024).

Felipe, Jesus. "ASIA'S INDUSTRIAL TRANSFORMATION: THE ROLE OF MANUFACTURING AND GLOBAL VALUE CHAINS (PART 1)." *Asian Development Bank*. July 2018. <https://www.adb.org/sites/default/files/publication/436361/ewp-549-asias-industrial-transformation-part1.pdf> (accessed November 20, 2023).

Financial Express. *Financial Express*. 16 December 2023. <https://www.financialexpress.com/business/railways-indian-railways-is-the-foundation-of-countrys-economy-partnering-for-growth-so-that-we-can-take-india-places-3340113/> (accessed December 17, 2023).

- G, Arjun. *Boeing sets up new Digital Innovation Centre in Bangalore*. 19 June 2018. <https://medium.com/redact/boeing-sets-up-new-digital-innovation-centre-in-bangalore-e17f99e7421f> (accessed January 5, 2024).
- Gaytri Madhura. *Interest, fuel costs made Indian aviation's flight choppy in 2014*. 19 December 2014. <https://www.businesstoday.in/in-depth/year-roundup-2014/story/indian-aviation-flights-airline-how-the-sector-worked-2014-138691-2014-12-19> (accessed January 5, 2024).
- Government of India. *Atmanirbhar Bharat Abhiyaan*. 12 May 2020. <https://www.makeinindia.com/atmanirbhar-bharat-abhiyaan> (accessed November 26, 2023).
- Govt of India. *About us*. 2014. <https://www.makeinindia.com/about> (accessed November 26, 2023).
- . *National Education Policy*. 2020. https://www.education.gov.in/sites/upload_files/mhrd/files/NEP_Final_English_0.pdf (accessed December 2, 2023).
- “Gridlines.” *pwc*. 2013. <https://www.pwc.com/gx/en/capital-projects-infrastructure/assets/gridlines-india-article-2013.pdf> (accessed November 29, 2023).
- Gupta, Jim Gordon and Poonam. “Understanding India's Services Revolution.” *A Tale of Two Giants: India's and China's Experience with Reform and Growth*. New Delhi: International Monetary Fund, 2003. 2 to 4.
- HSBC. *HSBC*. 16 October 2023. <https://www.businessgo.hsbc.com/en/article/what-is-digital-india-initiatives-objectives-and-benefits> (accessed December 07, 2023).
- IADB. *ICAO Global Aviation Safety Ranking Places India To 48th Position*. 6 December 2022. <https://www.iadb.in/2022/12/06/icao-global-aviation-safety-ranking-places-india-to-48th-position/> (accessed January 4, 2024).
- IBEF. *NEED FOR ‘DIGITAL INDIA*. 2024. <https://www.ibef.org/government-schemes/digital-india> (accessed January 16, 2024).
- IBEF-Automobiles. *India Brand Equity Funding*. October 2023. <https://www.ibef.org/industry/india-automobiles> (accessed January 18, 2024).
- IBJ. *Magnetic Maharashtra 2.0: Mobilising Investments for 2020 and Beyond*. 31 October 2020. <https://www.indiabusinessjournal.com/full-story/122/magnetic-maharashtra-20-mobilising-investments-for-2020-and-beyond> (accessed December 12, 2023).
- IIT Bombay. *National centre for Aerospace Innovation and research (NCAIR)*. 2011. [https://rnd.iitb.ac.in/node/101499#:~:text=During%20late%202009%2C%20IIT%20Bombay,Innovation%20and%20Research%20\(NCAIR\).](https://rnd.iitb.ac.in/node/101499#:~:text=During%20late%202009%2C%20IIT%20Bombay,Innovation%20and%20Research%20(NCAIR).) (accessed January 3, 2024).
- Inamdar, Dr. Meghnad Pushkarkumar. “Goods and Services Tax (GST) - Difference between.” *Journal of Emerging Technologies and Innovative Research* 6, no. 6 (June 2019): 675-681.
- Indbiz*. 2018. <https://indbiz.gov.in/aerospace-manufacturing-gaining-heights-in-india/> (accessed October 30, 2023).
- India Imports of Machinery, nuclear reactors, boilers*. 2022. <https://tradingeconomics.com/india/imports/nuclear-reactors-boilers-machinery> (accessed November 26, 2023).

Dissertation: Analysing Innovative idea of “MAKE IN INDIA”

Indian Brand Equity Foundation. *Growth of Aviation Industry in India - Infographic*. 41, New Delhi: Indian Brand Equity Foundation, 2023.

Infosys. *Infosys and Rolls-Royce extend strategic collaboration with launch of joint ‘Aerospace Engineering and Digital Innovation Centre’ in India*. 7 April 2022. <https://www.infosys.com/newsroom/press-releases/2022/launch-aerospace-engineering-digital-innovation-centre.html> (accessed January 16, 2024).

Invest India. “Invest India.” *Invest India*. 15 October 2020. <https://www.investindia.gov.in/foreign-direct-investment> (accessed December 8, 2023).

—. *Roads & Highways*. 14 December 2015. <https://www.investindia.gov.in/sector/roads-highways> (accessed December 16, 2023).

James Owen. *Forbes*. 25 June 2014. <https://www.forbes.com/sites/riskmap/2014/06/25/indias-corruption-culture-a-dangerous-game-for-businesses/?sh=6c4546721334> (accessed December 4, 2023).

Jim Lee. *New UK Regional Air Connectivity Fund to aid connectivity*. 9 April 2015. <https://flyinginireland.com/2015/04/new-uk-regional-air-connectivity-fund-to-aid-connectivity/> (accessed January 4, 2024).

K. Chandrashekhar Iyer, Nivea Thomas. “A Critical Review on Regional Connectivity Scheme of India.” *Transportation Research Procedia* (Elsevier B.V) 48 (May 2019): 47-59.

Kant, Amitabh. *Airbus “Make in India” Partnerships*. 5 July 2019. <https://twitter.com/amitabhk87/status/1147011930160168961/photo/1> (accessed January 7, 2024).

Karnataka Government. “Proceedings of Government of Karnataka.” *Karnataka Government*. 5 January 2018. https://industry.karnataka.gov.in/storage/pdf-files/Go/Boeing%20India%20Pvt%20Ltd_Amendment.pdf (accessed January 6, 2024).

Kaur, Dashveenjit. *Over 98% of smartphones shipped in 2022 were Made in India*. 16 August 2023. <https://techwireasia.com/08/2023/over-98-of-smartphones-shipped-in-2022-were-made-in-india/> (accessed January 18, 2024).

KK, Sruthijith. *Meet The Man Who Designed The Make In India Logo*. 16 Jan 2016. https://www.huffpost.com/archive/in/entry/meet-the-man-who-designed-the-make-in-india-logo_n_8996910#:~:text=This%20was%20when%20Sunil%20worked,a%20unique%20vision%20in%20India. (accessed November 16, 2023).

KPMG. *EORIYADH*. 2015. <https://www.eoiriyadh.gov.in/docs/Magnetic-Maharashtra.pdf> (accessed December 11, 2023).

—. *KPMG*. 2020. <https://kpmg.com/dk/en/home/insights/2016/11/tax-rates-online.html> (accessed December 09, 2023).

Krittivas Mukherjee. *Airbus opens state-of-the-art commercial pilot and maintenance training centre near Delhi*. 20 February 2019. <https://www.airbus.com/en/newsroom/press-releases/2019-02-airbus-opens-state-of-the-art-commercial-pilot-and-maintenance> (accessed January 4, 2024).

- . *Airbus to showcase world-class technology at DefExpo*. 22 January 2020. <https://www.airbus.com/en/newsroom/press-releases/2020-01-airbus-to-showcase-world-class-technology-at-defexpo> (accessed January 6, 2024).
- Krittivas Mukherjee, Neha Vij, Justin Dubon. *Airbus: India aircraft demand seen at 2,210 over next 20 years*. 24 March 2022. <https://www.airbus.com/en/newsroom/press-releases/2022-03-india-aircraft-demand-seen-at-2210-over-next-20-years> (accessed December 25, 2023).
- Kujur, Siddhant. *The Analysis of Service Sector post 1970*. Working Paper, India: Indian Economic Service, 2021.
- Kumar, Rajiv. "Manufacturing in India: Have we missed the bus?" *The Indian Journal of Labour Economics*, 2016: 269-280.
- LAL, SHANKER. *How government e-marketplace is revolutionizing procurement in India*. 4 October 2018. <https://blogs.worldbank.org/governance/how-government-e-marketplace-revolutionizing-procurement-india> (accessed January 10, 2024).
- Lawly Das, Rajesh Raut. "Procedia Economics and Finance." *Impact of Changes in Service Sector in India in Shaping the Future of Business & Society II* (2014): 9.
- Lockheed Martin Newsroom. *Tata, Lockheed Martin Bring New Cutting-Edge Aerospace Technology To India*. 18 April 2018. <https://news.lockheedmartin.com/2018-04-18-Tata-Lockheed-Martin-Bring-New-Cutting-Edge-Aerospace-Technology-to-India> (accessed January 16, 2024).
- Lockheed Martin. *Tata, Lockheed India*. 10 March 2023. <https://www.lockheedmartin.com/en-us/who-we-are/international/india.html> (accessed January 16, 2024).
- Macrotrends. *India Economic Growth*. 2024. <https://www.macrotrends.net/countries/IND/india/economic-growth-rate> (accessed January 4, 2024).
- macrotrends. *India Unemployment Rate 1991-2023*. n.d. <https://www.macrotrends.net/countries/IND/india/unemployment-rate> (accessed November 23, 2023).
- Mahesh Jaising. *GST @ 6 An insight into the sixth year of GST*. Survey Report, Bengaluru: Deloitte, 2023, 37.
- Major Initiatives*. n.d. https://www.pmindia.gov.in/en/major_initiatives/make-in-india/ (accessed November 03, 2023).
- Manisha Singhal. *Why beleaguered Indian aviation industry may get a breather from 2014*. 24 November 2013. <https://www.businesstoday.in/magazine/features/story/india-aviation-industry-turnaround-prospects-43823-2013-11-07> (accessed January 6, 2024).
- Manufacturing Group. *TATA Sikorsky JV Delivers S-92 Helicopter Cabin*. 13 November 2013. <https://www.aerospacemanufacturinganddesign.com/news/tata-sikorsky-jv-delivers-s-92-helicopter-cabin-111313/> (accessed January 16, 2024).
- Manufacturing Today. *Budget spurs demand for industrial machinery by 83%: JD Mart Consumer Insights*. 12 February 2022. <https://www.manufacturingtodayindia.com/sectors/budget-spurs-demand-for-industrial-machinery-by-83-jd-mart-consumer-insights> (accessed November 26, 2023).

Dissertation: Analysing Innovative idea of “MAKE IN INDIA”

- Ministry of Heavy Industries. *SAMARTH Udyog Bharat 4.0*. 2018. <https://dhi.nic.in/samarth-udyog-bharat-40> (accessed January 10, 2023).
- MNRE. “Annual Report 2022-2023.” *Ministry of New and Renewable Energy (MNRE)*. 2023. <https://cdnbbsr.s3waas.gov.in/s3716e1b8c6cd17b771da77391355749f3/uploads/2023/08/2023080211.pdf> (accessed December 15, 2023).
- . “Schemes.” *MNRE*. 15 December 2023. <https://mnre.gov.in/policies-and-regulations/schemes-and-guidelines/schemes/> (accessed December 16, 2023).
- MSDE. “Annual Reports.” *Ministry of Skill Development*. 15 September 2023. <https://msde.gov.in/en/reports-documents/annual-reports> (accessed December 2, 2023).
- . *National Skill Development Mission*. 2019. <https://www.msde.gov.in/sites/default/files/2019-09/National%20Skill%20Development%20Mission.pdf> (accessed December 01, 2023).
- Nair, Manju, Sankalpa. “Make In India - HR Issues and Challenges.” *Journal of Management & Research* (ProQuest Central) 8, no. 1 (2018): 103-111.
- Navin Berry. *Destination India april issue 2023*. India Outlook, New Delhi: Cross Section Media Pvt. Ltd., 2023, 21-27.
- NEELAM MATHEWS. *India Braces for Next ICAO Audit*. 22 August 2017. <https://www.ainonline.com/aviation-news/air-transport/2017-08-22/india-braces-next-icao-audit> (accessed January 4, 2023).
- Neha Vij, Aaina Prakash. “Airbus boosts ‘Make in India’, awards aerospace component manufacturing contracts to local suppliers.” *Airbus*. 6 November 2023. <https://www.airbus.com/en/newsroom/press-releases/2023-11-airbus-boosts-make-in-india-awards-aerospace-component> (accessed December 29, 2023).
- Nelson Marconi, Cristina Fróes de Borja Reis, Eliane Cristina de Araújo. “Manufacturing and economic development: The actuality of Kaldor's first and second laws.” *Structural Change and Economic Dynamics*, 2015: 75 to 89.
- New Initiatives*. n.d. <https://www.makeinindia.com/policy/new-initiatives> (accessed November 2023, 03).
- Noshir Kaka, Anu Madgavkar, Alok Kshirsagar, Rajat Gupta, James Manyika, Kushe Bahl, Shishir Gupta. *Digital India Technology to transform a connected nation*. Research, Mumbai & Delhi: McKinsey, 2019.
- OECD. *OECD - FDI regulatory restrictiveness index*. n.d. https://data.oecd.org/fdi/fdi-restrictiveness.htm?mod=article_inline (accessed December 5, 2023).
- O'Neil. *India: Distribution of gross domestic product (GDP) across economic sectors from 2012 to 2022*. 13 October 2023. <https://www.statista.com/statistics/271329/distribution-of-gross-domestic-product-gdp-across-economic-sectors-in-india/> (accessed October 28, 2023).
- Öner, Ceyda. *Unemployment: The Curse of Joblessness*. n.d. <https://www.imf.org/external/pubs/ft/fandd/basics/unemploy.htm> (accessed November 26, 2023).

Dissertation: Analysing Innovative idea of “MAKE IN INDIA”

P. C. Parida, Arup Mitra, Kailash Ch. Pradhan. “The missing middle phenomenon in Indian manufacturing sector: myths or realities?” *Journal of Economics and Development* (Emerald Publishing Limited) 23, no. 3 (March 2021): 15.

Panagariya, Aravind. “The Indian economy at 75.” *The Round Table*, 2022: 275–290.

Panagariya, Arvind. “India in the 1980s and 1990s: A Triumph .” *International Monetary Fund*. March 2004. <https://www.imf.org/external/pubs/ft/wp/2004/wp0443.pdf> (accessed November 20, 2023).

Papi, Laura. *India's Economy: Stamina Is The Name Of The Game*. 21 February 2013. <https://www.imf.org/en/Blogs/Articles/2013/02/21/indias-economy-stamina-is-the-name-of-the-game> (accessed November 12, 2023).

Parkin, Benjamin. *India's renewables industry under pressure to fulfil government's target*. 8 April 2023. <https://www.ft.com/content/699cb5a7-9a65-4c1a-9ab7-919d652ae9d1> (accessed November 26, 2023).

Pathak H, Mishra JP and Mohapatra T. *Indian Agriculture after Independence*. New Delhi: Dr S.K. Malhotra, Project Director, Directorate of Knowledge Management in Agriculture, Indian Council of Agricultural Research, 2022.

Piyush Goyal. *Features of Start Up India*. 11 March 2020. <https://pib.gov.in/PressReleaseDetail.aspx?PRID=1605956> (accessed January 12, 2024).

Press Information Bureau. *MAKE IN INDIA 2.0*. 3 February 2021. <https://pib.gov.in/Pressreleaseshare.aspx?PRID=1694804> (accessed January 12, 2024).

PricewaterhouseCoopers. *Changing Dynamics India's Aerospace Industry*. Research, New Delhi: PricewaterhouseCoopers, 2009.

Protap Mukherjee, Renu Singh. *What's holding young women in India back? Closing the gender gap in accessing decent work*. 24 November 2022. <https://www.qeh.ox.ac.uk/blog/whats-holding-young-women-india-back-closing-gender-gap-accessing-decent-work> (accessed December 2, 2023).

QuEST. *QuEST Global Manufacturing joins hands with SAAB AB to set up Aerostructure Assembly Joint Venture*. 29 November 2012. <https://www.quest-global.com/news/quest-global-manufacturing-joins-hands-with-saab-ab-to-set-up-aerostructure-assembly-joint-venture/> (accessed January 20, 2024).

Raina, Sunil, interview by Aviation & Defence Universe (ADU). *Collins Aerospace sees India as a growing strategic sector* (24 May 2021).

Rajiv Kumar. *News 18*. 7 July 2023. <https://www.news18.com/india/indian-railways-now-past-90-electrification-milestone-as-zero-carbon-emission-mission-on-fast-track-8278801.html> (accessed December 17, 2023).

Rashi Maheshwari. *Difference Between Direct And Indirect Tax*. 14 June 2023. <https://www.forbes.com/advisor/in/tax/difference-between-direct-and-indirect-tax/#:~:text=Types%20of%20Direct%20Taxes%20in,slabs%20of%20the%20IT%20department.> (accessed January 06, 2024).

Dissertation: Analysing Innovative idea of "MAKE IN INDIA"

- Raytheon Technologies*. 19 January 2023. <https://www.rtx.com/news/news-center/2023/01/19/raytheon-technologies-expands-bengaluru-operations-with-opening-of-pratt-whitne> (accessed October 30, 2023).
- Resnik, David B. *Research Methods*. 23 December 2020. <https://www.niehs.nih.gov/research/resources/bioethics/whatis/> (accessed November 5, 2023).
- Rochna Arora, Baljit Kaur. "Core Infrastructure and Manufacturing Activity in the Indian States: Does the Income Group Matter?" *Indian Economic Journal* 71, no. 5 (December 2022): 16.
- Roger Moser, Heiko A. Von der Gracht, Tobias Gnatzy. *The Indian Aerospace Industry 2019*. Study, Bremen: BrainNet Supply Management Group AG, St. Gallen, 2019.
- Rolls Royce. *Rolls-Royce and HAL ink deal for Adour engine parts to be 'Made in India' for global markets*. 14 September 2021. [https://www.rolls-royce.com/media/press-releases/2021/14-09-2021-rr-and-hal-ink-deal-for-adour-engine-parts-to-be-made-in-india-for-global-markets.aspx#:~:text=Rolls%2DRoyce%20and%20Hindustan%20Aeronautics,IMGT\)%2C%20HAL%20and%20Mr.](https://www.rolls-royce.com/media/press-releases/2021/14-09-2021-rr-and-hal-ink-deal-for-adour-engine-parts-to-be-made-in-india-for-global-markets.aspx#:~:text=Rolls%2DRoyce%20and%20Hindustan%20Aeronautics,IMGT)%2C%20HAL%20and%20Mr.) (accessed January 16, 2024).
- ROSS, SEAN. *Investopedia*. 11 August 2023. <https://www.investopedia.com/ask/answers/040715/why-are-factors-production-important-economic-growth.asp> (accessed October 28, 2023).
- SAAB. "Saab approved for 100% ownership of Carl-Gustaf manufacturing facility in India." SAAB. 9 November 2023. <https://www.saab.com/contentassets/bbe2be6fe164437f8ba1554ae78b3db7/saab-approved-for-100-ownership-of-carl-gustaf-manufacturing-facility-in-india.pdf> (accessed December 8, 2023).
- SAAB-Mahindra. 21 October 2011. <https://www.saab.com/newsroom/press-releases/2011/saab-india-technology-centre-in-partnership-with-mahindra-satyam-inaugurated-in-hyderabad> (accessed January 18, 2024).
- Safran. *Safran expands presence and industrial footprint in India*. 6 July 2022. https://www.safran-group.com/pressroom/safran-intensifie-sa-presence-son-empreinte-industrielle-inde-2022-07-06#_ftn1 (accessed December 16, 2024).
- Safran-HAL. *Safran and HAL sign MoU to develop industrial cooperation in commercial engines parts manufacturing*. 26 October 2023. <https://www.safran-group.com/pressroom/safran-and-hal-sign-mou-develop-industrial-cooperation-commercial-engines-parts-manufacturing-2023-10-26#:~:text=Safran%20Aircraft%20Engines'%20long%2Dterm,LEAP%20MRO%20activities%20by%202025.> (accessed January 16, 2024).
- Safran-PTC Industries. *Safran and PTC Industries sign contract to provide casting parts for the LEAP engine powering single-aisle jet*. 13 November 2023. <https://www.safran-group.com/pressroom/safran-and-ptc-industries-sign-contract-provide-casting-parts-leap-engine-powering-single-aisle-jet-2023-11-13> (accessed December 17, 2024).
- Sectors. n.d. <https://www.makeinindia.com/index.php/sectors> (accessed November 03, 2023).
- Seedfund. *Startup India Seed Fund Scheme*. 2023. <https://seedfund.startupindia.gov.in/> (accessed January 13, 2024).

Dissertation: Analysing Innovative idea of "MAKE IN INDIA"

- Sengul Enginsoy. *Top 20 Countries by Total Startup Output in 2023*. 6 November 2023. <https://www.startupblink.com/blog/top-20-countries-by-total-startup-output-in-2023/> (accessed January 12, 2024).
- Sharma, Ravi. *HAL bags \$150-million Airbus order*. 19 May 2008. <https://web.archive.org/web/20110116105437/http://www.hindu.com/2008/03/19/stories/2008031953481400.htm> (accessed January 20, 2024).
- Shawn Greene. *2013 Changes in Indian FDI Policy*. 21 November 2013. [https://www.india-briefing.com/news/2013-changes-indian-fdi-policy-7149.html/#:~:text=Changes%20to%20FDI%20Caps%20and%20Approval%20Routes&text=FDI%20caps%20in%20the%20following,aviation%20\(49%20percent%20FDI%20cap\)](https://www.india-briefing.com/news/2013-changes-indian-fdi-policy-7149.html/#:~:text=Changes%20to%20FDI%20Caps%20and%20Approval%20Routes&text=FDI%20caps%20in%20the%20following,aviation%20(49%20percent%20FDI%20cap)) (accessed January 4, 2024).
- Singh, Harvinder. *Economic times*. 16 June 2016. <https://retail.economictimes.indiatimes.com/retales/what-friendly-bankruptcy-code-meant-for-failed-startups-fail-fast-fail-cheap-and-move-on/1562> (accessed December 6, 2023).
- SINGH, NEERAJ SAHAI AND DR. ARUN. *Forbesindia*. 21 January 2021. <https://www.forbesindia.com/blog/economy-policy/the-productivity-paradigm-indias-biggest-challenge-to-growth/> (accessed November 29, 2023).
- Singh, Prashant Kumar, interview by Amazon Web Services. *Procurement: Strategies Behind India's Government e-Marketplace (GeM) | AWS Public Sector* (21 February 2023).
- Skillindiadigital*. 02 December 2023. <https://www.skillindiadigital.gov.in/pmkvy-dashboard> (accessed December 02, 2023).
- Sonika Nitin Nimje. *PM Gati Shakti Master Plan: Everything you need to know about this project*. 21 August 2023. https://www.business-standard.com/india-news/pm-gati-shakti-master-plan-everything-you-need-to-know-about-this-project-123082500684_1.html (accessed December 14, 2023).
- Soumitra Bhattacharya, Sudhir Kapadia. *Vision: 'Developed India'*. Research, New Delhi: Confederation of Indian Industry (CII), 2022, 52.
- Srivastava, Manasvi. *Financial Express*. 11 March 2022. <https://www.financialexpress.com/opinion/make-trade-deals-for-make-in-india/2457320/> (accessed December 12, 2023).
- Startup India. *Startup India*. 2015. <https://www.startupindia.gov.in/content/sih/en/ams-result-dashboard.html> (accessed December 12, 2023).
- Strachan, Ruth. *The woeful tale of the Welsh Development Agency*. 19 August 2021. <https://www.investmentmonitor.ai/features/welsh-development-agency-closed-down/?cf-view> (accessed November 14, 2023).
- Subodh Kumawat. *Difference Explained: GST India vs GST in Other Countries*. 9 March 2023. <https://blog.saginfotech.com/gst-india-vs-foreign-gst> (accessed January 12, 2024).
- TATA. *Tata Boeing Aerospace delivers first AH-64 Apache combat helicopter fuselage*. 1 June 2018. <https://www.tata.com/newsroom/tata-boeing-first-AH-64-apache-combat-fuselage> (accessed January 15, 2024).

Dissertation: Analysing Innovative idea of “MAKE IN INDIA”

Team UDAN. *UDAN*. November 2021.

<https://www.civilaviation.gov.in/sites/default/files/migration/UDAN-Manual.pdf> (accessed January 4, 2024).

The importance of manufacturing in India. 12 May 2020.

<https://www.manufacturingtodayindia.com/sectors/7349-the-importance-of-manufacturing-in-india> (accessed November 11, 2023).

“The Indian Aviation Sector.” *Nishith Desai Associates*. August 2016.

https://www.nishithdesai.com/Content/document/pdf/ResearchPapers/The_Indian_Aviation_Sector.pdf (accessed January 6, 2024).

Transparency staff. *Transparency*. 2022. <https://www.transparency.org/en/cpi/2022/index/ind> (accessed December 3, 2023).

UNCTAD. *UNCTAD*. 23 September 2023.

<https://unctadstat.unctad.org/datacentre/dataviewer/US.TradeServICT> (accessed January 16, 2024).

UTC Aerospace. *UTC Aerospace Systems receives FAA approval to ship product made in India*. 4 Feb 2015. <https://www.prnewswire.com/news-releases/utc-aerospace-systems-receives-faa-approval-to-ship-product-made-in-india-300030315.html> (accessed January 17, 2024).

Verma, Raj. “The Regional Comprehensive Economic Partnership and India: a test case of Narendra Modi’s statesmanship.” *Australian Journal of International Affairs* 74, no. 5 (February 2020): 479-485.

World Bank. *Doing Business 2014: Understanding Regulations for Small and Medium-Size Enterprises*. 14 April 2014. <https://www.doingbusiness.org/content/dam/doingBusiness/media/Annual-Reports/English/DB14-Full-Report.pdf> (accessed December 3, 2023).

World Bank. *Doing Business 2020*. Progress, World Bank, 2020.

World Economic Forum. *The Global Competitiveness Index 2017-2018 edition*. World Economic Forum, 2018.

worldbank. *India’s Urban Infrastructure Needs to Cross \$840 Billion Over Next 15 Years: New World Bank Report*. 14 November 2022. <https://www.worldbank.org/en/news/press-release/2022/11/14/india-s-urban-infrastructure-needs-to-cross-840-billion-over-next-15-years-new-world-bank-report> (accessed December 02, 2023).

Worldbank. *Skilling India*. 23 June 2017.

<https://www.worldbank.org/en/news/feature/2017/06/23/skilling-india> (accessed December 1, 2023).

Worldpopulationreview. *English Speaking Countries 2024*. 2024.

<https://worldpopulationreview.com/country-rankings/english-speaking-countries> (accessed January 10, 2024).

Yadav, Nishtha. *India Briefing*. 06 February 2020. <https://www.india-briefing.com/news/india-back-office-world-india-software-hr-digitalmarketing-19476.html/#:~:text=India%20has%20been%20the%20preferred,of%20about%20US%24154%20billion.> (accessed November 2023, 03).

