



PAYMENTS OVERVIEW – INDIA

AN INTERNSHIP PROJECT DETAILING THE FINANCIAL MARKET AND PAYMENT SYSTEMS IN INDIA FOR FINANCE FINLAND AS PART OF HANKEN SSE'S BUSINESS LEAD PROGRAM

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Index

1 Introduction.....	3
2 Overview on the Financial Evolution.....	4
2.1 Evolution of the Indian Currency System.....	4
2.2 Evolution of the Banking and Payment System:	5
3 Overview of Financial Market.....	8
3.1 Growth in Indian Economy	9
3.2 Key Economic Trends for India.....	10
3.3 Literacy impacting the Financial Inclusion.....	11
3.4 Human Capital of India – Pros and Cons.....	12
3.5 Microfinance Market In India.....	14
3.6 Building the Cashless Layer of "India Stack"	15
4 LEGISLATIVE BODIES.....	16
4.1 Role of the Central Bank and other legislative bodies.....	17
4.2 Different Layers of Banking	19
4.3 Challenges and Implications.....	21
5 Payment Structures in India.....	23
5.1 Understanding the non cash payments, services and products in India.....	23
5.2 Selective initiatives to boost non-cash payments.....	24
5.2.1 RuPay Card.....	24
5.2.2 India's Ambitious Payment Platform 'UPI'	26
5.2.3 QR code-based payments	28
5.2.4 Aadhaar Enabled Payments	29
5.3 Case Study: PAYTM – A Journey from Mobile Recharge to E-Commerce Market.....	30
6 Fintechs in India.....	32
6.1 Different Segments of the Indian Fintech Market	35
6.2 Innovation in the Indian Fintech market	37
6.3 Challenges and Opportunities	39
7 Aadhaar – India's Digital Thumb Rule	39
7.1 Benefits of Aadhaar	41
8 Preventive Measures for Fraud.....	42
8.1 Regulation to address cybersecurity risks.....	45
9 Challenges on the Payment Infrastructure	47
9.1 Key Challenges	47

9.2	The Road Forward – Development and Future Prospects	49
10	Guidelines and regulations for foreign players entering Indian Financial market	50
10.1	Quick Guide To Indian Business Culture	51
10.2	Ways To Mitigate Risk For Foreign Businesses.....	54
10.3	Top Three Tips For Doing Business In India.....	55
11	Financial Inclusion.....	55
12	Conclusion	60
13	Reference	62
14	Abbreviations	62

1 Introduction

India has changed in a number of ways in the last decade. There have been profound shifts in politics and policy, in diplomacy and digitization, in arts and sports. Some of these changes affect not just the country's 1.3 billion people but the rest of the world too.

India's recent economic expansion has brought a record number of people out of poverty. There is a huge, growing middle class which has fueled impressive consumer growth. It is interesting to note that India is not just one of the world's largest economies, it is one of the youngest too. One of the dividends of India's young demography is that a large number of Indians are quick adopters of new technologies. Economic heft has brought with it a greater strategic sway too. This Indian government is the first one to consistently conduct diplomacy in the language of international business. There has been a significant change in the culture of corporate India, embedding international best practices in most of India's top companies.

This project aims to provide an overview of the Payments system in India and the various aspects related to it. The chapters are organized in the order that it begins with the journey of the Indian Rupee since Independence and a short history on the banking and payment system.

Then it moves to the huge demographic impact and challenges that India face in lieu with the banking and payment system. It discusses how microfinance is uplifting small businesses especially. In order to understand the financial market it is imperative to understand the role of the Central Bank, the various regulatory bodies, however briefly, and the structure of the banking system.

India has an interesting population mix. To mitigate the needs of such a diverse community different non cash payments and services are rapidly taking over the market from cash transactions. So we move to the different payment methods. Also covers digital payments viz wallets with a case study of India's biggest mobile wallet company PayTM.

The financial system in India has seen a rapid growth in digital penetration. Thus a brief understanding on the fintech market is covered as it has given rise to the various startups catering to the needs of young India.

The report covers extensively on how the evolution of the payment system in a fast growing economy like India created favorable conditions for the government for the mass adoption of digital and biometric program called Aadhar and then on to the data regarding the rise in cyber crimes and fraudulent activities and government's initiatives.

Though there has been a rise in digital and mobile payments, India remains an overwhelmingly cash economy. The challenges and opportunities are thus listed. It is important also to take note of the rules and certain guidelines for the foreign companies aiming to start their business in India. Hence a broad outline has been provided.

The topic of financial inclusion, the ultimate aim of the government that can be seen in the various socio economic initiatives, especially in the mass biometric program is discussed. And finally we conclude with listing the areas where best practices can be adopted and opportunities being evaluated by the Finnish / EU organizations.

2 Overview on the Financial Evolution

This chapter is divided into two parts. The first part aims to provide an insight into the reasons behind the depreciation of the Indian currency and its evolution. While the second part portrays the changing dynamics of the Indian banking and payment system.

2.1 Evolution of the Indian Currency System

A currency is said to be an intrinsic element of the cultural heritage of any country and justly reflects in the socio-economic scenario. India was one of the earliest issuers of coins in the world and is considered as a centre for many monetary experiments undertaken in the past. Since ancient times, India has been ruled by many emperors and dynasties and this is one of the prominent reasons behind India's diversity in traditions, culture and ethics. Indian currency has also evolved over the years. This evolution of the coinage and paper currency in India has experienced changes from time to time depending on the various rulers that India had.

The Indian currency is the “rupee” which comes from the Sanskrit word “Raupya” meaning silver. It was introduced by the Afghan emperor Sher Shah Suri during his rule. And later the Mughal emperors during their rule, standardized this coinage in order to consolidate the monetary system. **The Indian rupee (sign: ₹; code: INR) is the official currency** of the Republic of India. The issuance of the currency is controlled by the Reserve Bank of India.

Journey of Indian rupee since independence in 1947

At the time of independence i.e., on 15th August 1947, the exchange rate between Indian rupee and US Dollar was equal to one (i.e., 1 US Dollar = 1 Indian Rupee). As there was no outside borrowing/ loans on the balance sheet of India. But when British left India, Indian economy was in a paralyzed and begging state. So the path of overall development of India was developed and formulated in the form of five year plan to address below problems:

- Poverty
- Foreign Trade
- Necessity of fast industrialization
- Increase in population
- Growth and improvement of natural resources
- Capital insufficiency and market limitations

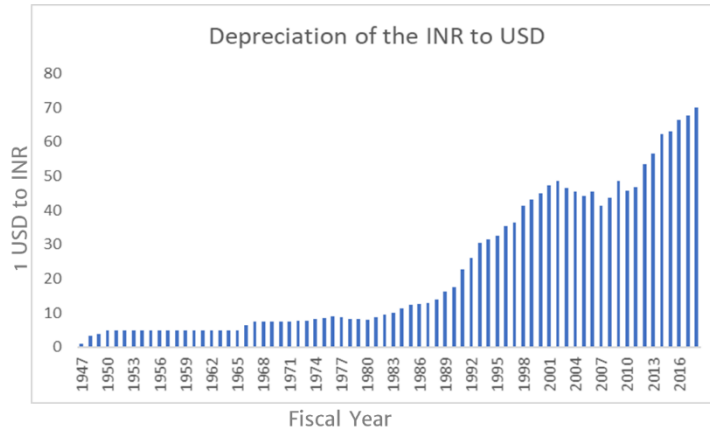
Thus, the **first five year plan (1951 – 1956)** was introduced to revitalize Indian economy and improve the standard of living of Indian people by prudent usage of natural resources and thus the overall development of Indian and its people by who suffered during British régime.

For the rejuvenation of Indian economy and its people under the path of five year plan, from 1950 Indian government continuously borrowed foreign money in the form of outside borrowing/ loan which increased to the utmost magnitude **in 1960s**. Thus, resulted in the devaluation of Indian rupee. At this point of time, **1 US Dollar is equal to 4 INR**. But this drift was worsened in 1966 by two factors: Firstly, two wars faced by India i.e., **Indo-China war in 1962 and Indo-Pakistan war of 1965**; and Secondly, **major drought faced by India between 1965/66** which resulted in severe rise in prices and a drastic increase in inflation. Thus, it became mandatory for Indian government to devalue Indian rupee majorly for the first time in 1966 to import weapons i.e., precursor of a path of liberalization and thus opening of Indian economy for foreign trade. And, as a result of which Indian Rupee was devalued to **1 USD = 7 INR in 1966**.

From 1970s till 1980s, US Dollar continued to grow stronger against Indian Rupee due to many reasons. Firstly, inability of Indian politics to inject a catalyst of robust growth in the Indian economy due to incompetency in stabilizing cordial business relation with US which was coupled with robust and sturdy economic development of US. Till 1970s, the exchange rate was 1 US Dollar = 7,47 INR which went up by 1 USD = 8,41 INR in 1975, the then Prime Minister of India failed to introduce necessary steps for the robust development of Indian economy as well as was caught to be involved in couple of scams. All this trouble resulted in the sinking value of Indian Rupee which recorded a new low of 1 USD = 12,34 INR in 1985. As up till now India was dependent majorly on Soviet Union for exports. Thus, when Soviet Union was divided into 15 small nations in 1991 then India's exports were down considerably. The value in the 1990s was 1 USD = 17,50 INR.

In 1991 when P.V Narsimha Rao was elected as the Prime Minister of India, Indian economy was in a state of gross negative. Therefore, he initiated the process of reforms in the form of more open Indian economy (i.e., market driven economy, allowing private sector to play major including FII and FDI and reorganizing the role to be played by the government) to accelerate the trend of economic growth & development and suppress poverty. Thus, again Indian rupee was devalued in 1991 to 1 USD = 22,72 INR to eradicate the problem of fiscal deficit and balance of payment (BOP) as well as to accelerate the process of liberalization.

Therefore, India encountered two major economic crisis since independence which resulted in two times devaluation of Indian rupee i.e., in 1966 and in 1991. Subsequently it is also important to understand that the value of Indian rupee has not depreciated but in fact that the value of Dollar has appreciated due to the robust growth of the U.S. financial market.



A graph depicting the depreciation of the INR, over the years, in comparison to the U.S. dollars is provided here for better understanding.

2.2

Evolution of the Banking and Payment System:

The advent of the Indian banking system started with the establishment of the first joint stock bank, the General Bank of India in the year 1786. After this first bank, Bank of Hindustan and Bengal Bank came to existence.

In the mid of 19th century, East India Company established three banks The Bank of Bengal in 1809, The Bank of Bombay in 1840, and bank of Madras in 1843. These banks were independent units and called Presidency banks. These three banks were amalgamated in 1920 and a new bank, Imperial Bank of India was established. All these institutions started as private shareholders banks and the shareholders were mostly Europeans. The Allahabad Bank was established in 1865.

The next bank to be set up was the Punjab National Bank Ltd. in 1894. Most of the Indian commercial banks, however, owe their origin to the 20th century. The establishment of **Reserve Bank of India in 1935 as the central bank of the country** was an important step in the development of commercial banking in India. The Government of India concerned by the frequent bank failures in the country causing miseries to innumerable small depositors and others enacted **The Banking Regulations Act, 1949**, which provided a frame work for regulation and supervision of commercial banking activity. Reserve Bank of India as the Central Banking Authority of the country was vested with extensive powers for banking supervision.

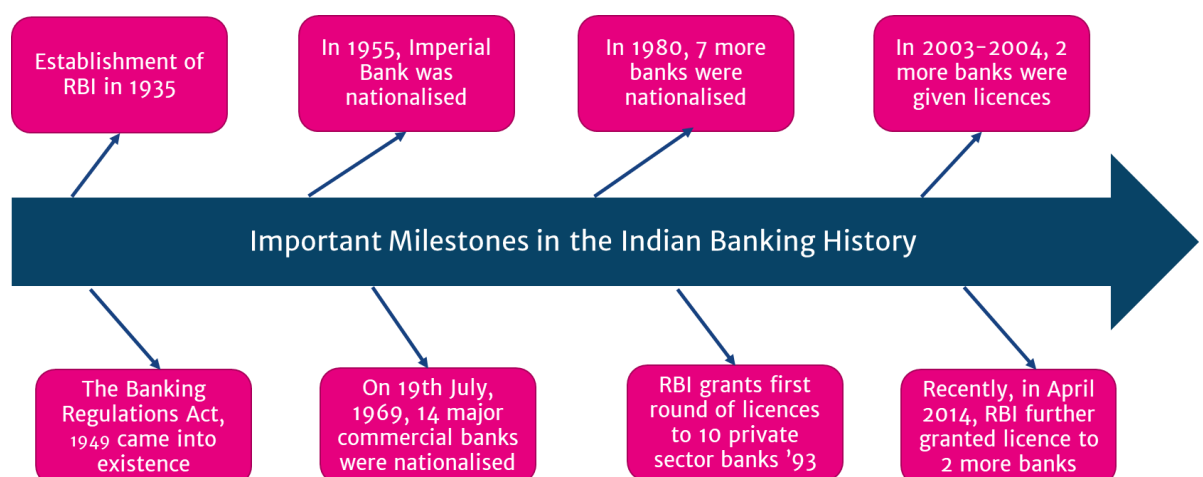
When the country attained independence, Indian Banking was exclusively in the private sector. The Government first implemented the exercise of nationalisation of a significant part of the Indian Banking system **in the year 1955**, when **Imperial Bank of India was Nationalised** in that year. But the major process of nationalisation was carried out **on 19th July 1969**, with the **nationalisation of 14 major commercial banks** in the country. One more phase of nationalisation was carried out **in the year 1980**, when **seven more banks were nationalised**. This brought 80% of the banking segment in India under Government ownership.

It is only after the independence, the Indian banking system has made rapid progress and today the Indian banking system is one of the well developed banking systems in the world. RBI has thus given licences to a dozen private banks in two phases, including the conversion of a cooperative bank into a commercial bank. The **first round of licences was issued in 1993**, wherein the central bank issued licences to **10 private sector banks in 1993-94**, shortly after a round of economic liberalization.

In 2003-04, two more banks were given licences. **ICICI Bank, HDFC Bank and Axis Bank** (formerly UTI Bank), promoted by financial institutions, have emerged as the **top three private banks** in the country.

In April, 2014 RBI further granted licence to two more banks. The RBI thus reiterated its standpoint that from now, the issuance of bank licences will not be a once-in-a-decade affair. It will fine-tune the guidelines and licences will be given on tap. There will also be differentiated licensing for entities, like payment banks, which are different from universal banks.

The evolution of the banking system is depicted in the picture below



Payment Structure

India's heavy reliance on cash has limited financial inclusion leaving nearly half the population without a bank account. In order to combat this problem, the government has introduced policies to promote non-cash payments, provide hundreds of millions of new payment-capable accounts to the unbanked and encourage new technology and innovation throughout the banking sector. These combined policies could have a major impact on economic welfare and financial inclusions in the coming years.

Most Indians rely exclusively on cash transactions. Only an estimated 10 percent of the population has ever used any kind of non cash payment instrument compared to the 40 percent of people in countries like Brazil and China. This cash reliance makes households vulnerable to inflation which erodes the value of cash not earning interest in a formal account. It also means their savings are unavailable to fund broader economic activity as banks can't lend cash held at home. Additionally, people operating exclusively in cash and without a bank account often face tougher borrowing conditions.

One way to reduce cash-related economic inefficiencies is to create inclusive non-cash payment systems. The availability of convenient, reliable, secure, and affordable payments can also introduce the unbanked to formal financial products like loans and insurance, creating synergies with broader financial inclusion goals.

Creating a National Payment System

In 2008 the Reserve Bank of India (RBI) established the National Payments Corporation of India (NPCI) to consolidate India's complicated retail payment systems into a standardized, coherent national network to make transactions easier and cheaper. Since then, the NPCI has initiated multiple reforms, including a national automated clearing house system for payments, the RuPay electronic payment card scheme, the Immediate Payment Service (IMPS) for mobile transactions, national check truncation, and a continuously operational system for remittances. Meanwhile, the government's rollout of universal identification cards—popularly known as Aadhaar cards and held by one billion Indians—lets any holder be authenticated by the Unique Identification Authority of India (UIDAI) and NPCI. This not only makes it easier for financial institutions to comply with “Know Your Customer” regulations, but also allows the payment system to support the government's financial inclusion efforts.

Bringing the Unbanked into the Financial System through Payments

Having established a more robust national payment infrastructure, the Indian government and RBI have initiated policies to attract unbanked citizens to the financial system through payment-focused accounts.

Key investments and developments in India's banking industry include:

- As of September 2018, the Government of India launched India Post Payments Bank (IPPB) and has opened branches across 650 districts to achieve the objective of financial inclusion.
- The total value of mergers and acquisition during FY17 in Non banking Financial companies (NBFC), diversified financial services and banking was US\$ 2,564 billion, US\$ 103 million and US\$ 79 million respectively.
- The biggest merger deal of FY17 was in the microfinance segment of IndusInd Bank Limited and Bharat Financial Inclusion Limited of US\$ 2.4 billion.

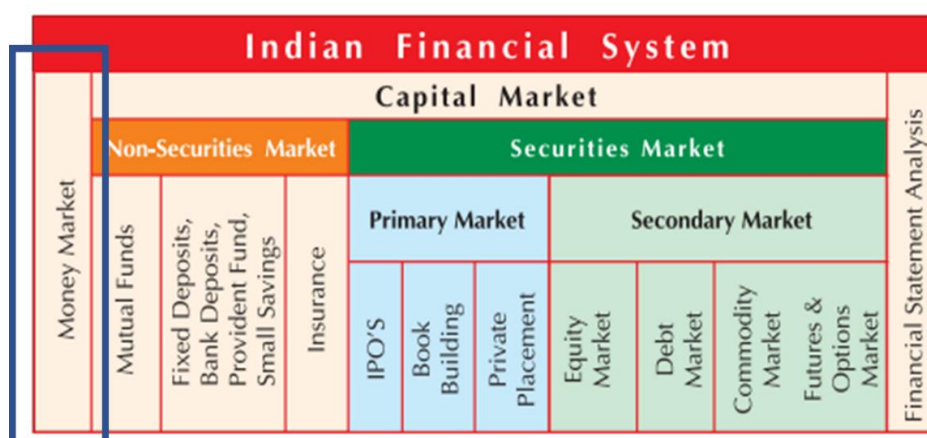
- In May 2018, total equity funding's of microfinance sector grew at the rate of 39.88 to Rs 96.31 billion (Rs 4.49 billion) in 2017-18 from Rs 68.85 billion (US\$ 1.03 billion).

Enhanced spending on infrastructure, speedy implementation of projects and continuation of reforms are expected to provide further impetus to growth. All these factors suggest that India's banking sector is also poised for robust growth as the rapidly growing business would turn to banks for their credit needs.

Also, the advancements in technology have brought the mobile and internet banking services to the fore. The banking sector is laying greater emphasis on providing improved services to their clients and also upgrading their technology infrastructure, in order to enhance the customer's overall experience as well as give banks a competitive edge. India's digital lending stood at US\$ 75 billion in FY18 and is estimated to reach US\$ 1 trillion by FY2023 driven by the five-fold increase in the digital disbursements. Exchange Rate Projected: INR 1 = US\$ 0.0149 as on Q1 FY19.

3 Overview of Financial Market

The financial market of India is broadly categorized under two major Financial Systems, **Money Market** and **Capital Market**. The Capital Market primarily deals with Securities and Non Securities market and in this document the Capital Market details have been excluded. This section will detail the Money Market and the impact of the various factors like population, inflation, literacy etc. on the money market.



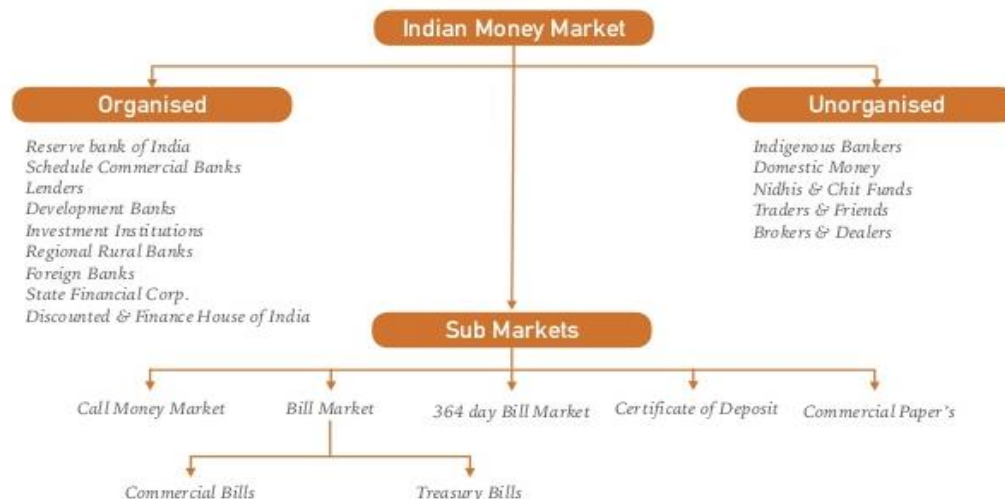
The Money Market is further subdivided into:

Organized Money Market – This comprises of the regulated banking industry under Reserve Bank of India. The Indian banking system consists of 27 public sector banks, 21 private sector banks, 49 foreign banks, 56 regional rural banks, 1,562 urban cooperative banks and 94,384 rural cooperative banks, in addition to cooperative credit institutions. In FY17-18, total lending increased at a CAGR of 10.94 per cent and total deposits increased at a CAGR of 11.66 per cent. India's retail credit market is the fourth largest in the emerging countries. It increased to US\$ 281 billion on December 2017 from US\$ 181 billion on December 2014.

Unorganized Money Market – Partially or non regulated banks and lenders are part of this Money Market. Efforts are being put to bring this sector under central regulations.

Sub Market – This comprises of the Bill Market, like Commercial Bills and Treasury bills and other certificate deposit schemes. This market is also regulated by Reserve Bank of India.

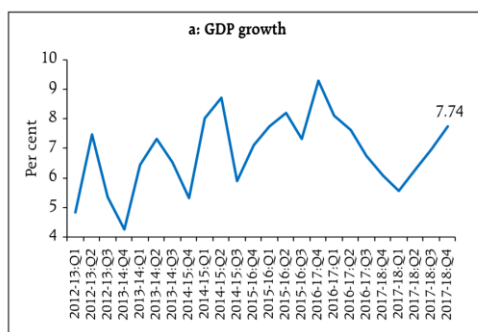
The picture below details the sub elements of the money market in India.



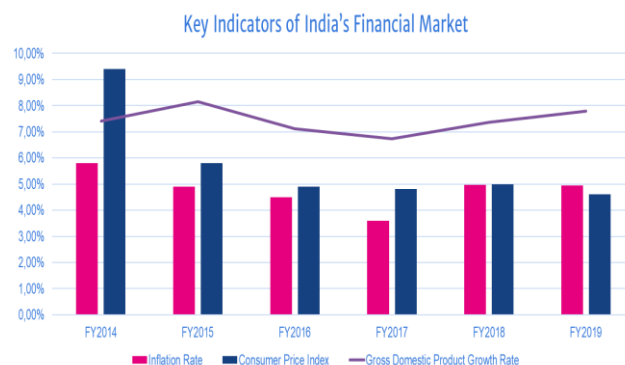
3.1

Growth in Indian Economy

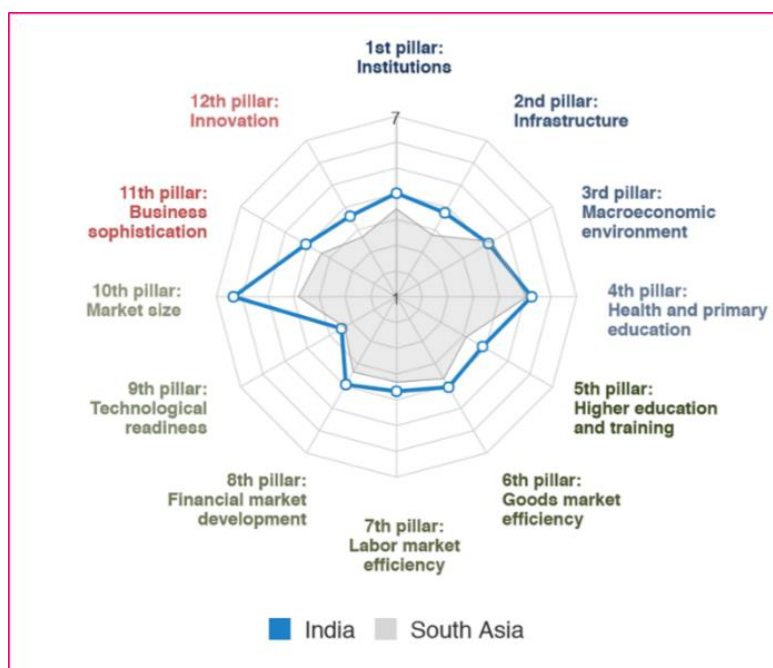
India's recent economic expansion has brought a record number of people out of poverty. A growing middle class has fueled impressive consumer growth. It is today the world's third largest market for smart phones and the sixth largest for cars. India's software industry employs more than 4 million people directly and more than 10 million indirectly. Almost half of India's population today is under the age of 26. While this unique demographic holds the promise of making India a thrumming engine of the world economy, it also poses the staggering challenge of finding jobs for the million-odd Indians who enter the employment market every month, not to mention providing for the health and education of such a large nation.



Source: Central Statistics Office (CSO)



If we follow, India's performance across the twelve (12) pillars of competitiveness as described in the World Economic Forum 2017-2018 Report, the market size stands out significantly. On analyzing the report, the financial market development is not in line with the market size and has areas of opportunity. It is imperative for the other pillars to perform well for the financial market development.

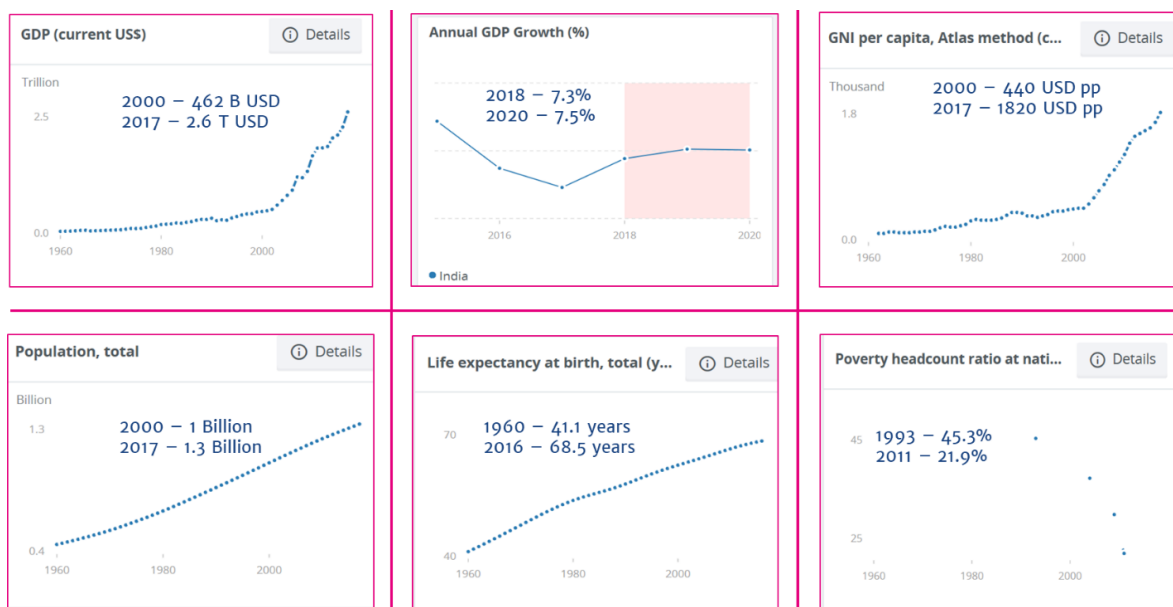


Source: World Economic Forum, Key Indicators 2017-2018

3.2

Key Economic Trends for India

India has come a long way in modernizing its economy, reducing poverty from 45.3% in 1993 to 21.9% in 2011 and improving living standards for a large segment of its population. Its economy has been one of the largest contributors to global growth over the last decade, accounting for about 10% of the world's increase in economic activity since 2005, while **GDP has increased from 462 billion USD in 2000 to 2.6 trillion USD in 2017**. The projected annual GDP growth rate continues to be stable for the next two years. The below figure shows the trend across key economic and domestic indicators:



Source: World Economic Forum, Key Indicators 2017-2018

Key takeaways from the “Key indicators” report are:

5 fold increase in GDP over 2 decades, with an average 7,5% growth, thus increasing the per capita income by 4 times. This increases the purchasing power of individuals, creating a huge financial and payments market.

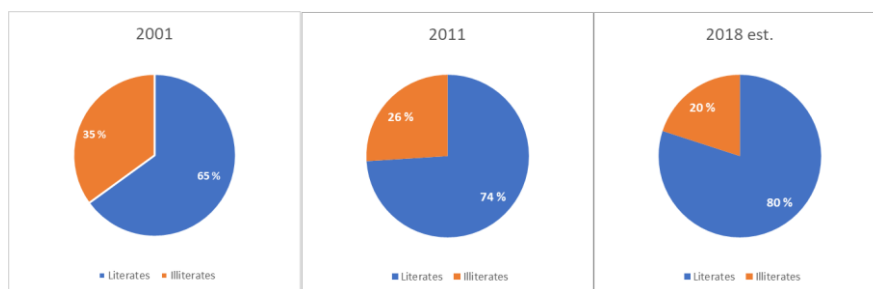
The population growth is significant, however the growth rate has reduced from 2,5% in 1970's to 1,8% in 2018. The life expectancy has significantly increased and poverty rate is expected to be sub 15% by 2020. This clearly indicates better healthcare, smaller families with more disposable income.

With one of the largest and youngest populations in the world, India needs to create millions of good-quality jobs in the near future to ensure decent living conditions for the vast majority of its citizens.

The country is often cited as an example of an economy that is modernizing by jumping directly into services without passing through manufacturing. The weight of manufacturing in India has been relatively stable over the past two decades, at much lower levels than China and ASEAN countries. Business services – a high value added sector – represent a larger share of economic activity in India than in Europe. The country hugely benefitted from the election of Narendra Modi as the Prime Minister, whose pro-business, pro-growth, and anti-corruption stance has improved the business community's sentiment toward the government.

3.3 Literacy impacting the Financial Inclusion

India scores relatively well in terms of access to finance for developing businesses and investing in the economy. India's entrepreneurs have better access to bank accounts, credit, venture capital, and equity markets than their counterparts in most peer countries. However, access to finance remains limited for low income individuals, especially women. Most unbanked are poor and female: only 27% of individuals in bottom quintiles and 37% of women have access to a bank account.



When we review the literacy rate, it shows that the literacy rate has surged forward from 64.83% in 2001 to 80% in 2018, showing an increase of 25% points. This shows a direct

correlation to the increase in bank accounts. Although, about 190 million Indian adults still don't have a bank account, second only to China, the account ownership has more than doubled from 35 per cent in 2011 to 80 per cent in 2017. There has been a rapid increase in financial inclusion with the number of account holders in the country having risen from 35 per cent of the adults in 2011 and 53 per cent in 2014 to 80 per cent in 2017. There is a reduced gender gap in ownership by 6 per cent compared to 2014, with 83 per cent men and 77 per cent women now having an account.



The above chart clearly indicates, the increase in bank accounts and the proportionate increase in deposits in the banking system in India.

3.4

Human Capital of India – Pros and Cons

Based on the history of all the developed countries, we can find that the human capital is a major component of growth. This can be basically said from the fact that resources required for economic growth are driven by the availability of human capital. But population growth may also have adverse effect on a nation's growth. This is because many resources has to be spent on the rising human population and it creates pressure on the limited natural resources a country has. Therefore the study of a relationship between these variables is important.

India has sustained **rapid growth of GDP for most of the last two decades leading to rising per capita incomes and a reduction in absolute poverty**. It has followed a different path of development from many other countries. India went quickly from agriculture to services that tend to be less tightly regulated than heavy industry.

Supply-side factors supporting Indian growth and development;

- A fast-growing population of working age: India is experiencing a demographic transition that has increased the share of the working-age population from 58 percent to 64 percent over the last two decades.
- India has a strong legal system and many English-language speakers which has been a key attraction for IT out-sourcing.
- Wage costs are still considerably low in India.
- India's economy has successfully developed highly advanced and attractive clusters of businesses in the technology space like the rapid emergence of Bangalore as a hub for global software businesses.

Despite optimism for India's prospects for economic growth and development, there are a number of obstacles which may yet see growth and development falter.

- Poor infrastructure – notably in transport and power networks
- Low productivity and weak human capital – A high percentage of workers are low-skilled and work in small businesses.
- High inflation and a persistent trade deficit
- Low national savings as a share of GDP, low share of capital investment
- Relatively closed economy – India is a net importer of primary products.

The problem of population has proved to be a big hindrance in the success of economic planning and development.

1. Problem of Investment Requirement: Indian population is growing at a rate of 1.8 percent per annum. This adversely affects the growth rate of the economy. In India, annual growth rate of population is 1.8 percent and capital output ratio is 4:1. It means that in order

to stabilize the existing economic growth rate (4×1.8) = 7.2 percent of national income must be invested.

2. Problem of Capital Formation: Composition of population in India hampers the increase in capital formation. High birth rate and low expectancy of life means large number of dependents in the total population. In India 35 percent of population is composed of persons less than 14 years of age. The burden of dependents reduces the capacity of the people to save.

3. Effect on per Capita Income: Large size of population in India and its rapid rate of growth results into low per capita availability of capital. But per capita income had risen around one percent. It is due to the fact that population growth has increased by 2.5 percent.

4. Effect on Food Problem: Rapid rate of growth of population has been the root cause of food problem.

5. Shortage of food grains hampers economic development in two ways:

People do not get sufficient quantity of food due low availability of food which affects their health and productivity. Low productivity causes low per capita income and thus poverty. Shortage of food-grains obliges the under-developed countries to import food grains from abroad. So a large part of foreign exchange is spent on it.

6. Problem of Unemployment: Due to shortage of capital resources it becomes difficult to provide gainful employment to the entire working population. Disguised unemployment in rural areas and open unemployment in urban areas are the normal features of an under developed country like India.

7. Low Standard of Living: Rapid growth of population accounts for low standard of living in India. Even the bare necessities of life are not available adequately.

8. Poverty: Rising population increases poverty in India. People have to spend a large portion of their resources for bringing up of their children. It results into less saving and low rate of capital formation.

9. Burden of Unproductive Consumers: In India, a large number of children are dependent. Old persons above the age of 60 and many more in the age group of 15-59 do not find employment. This dependency adversely affects effective saving.

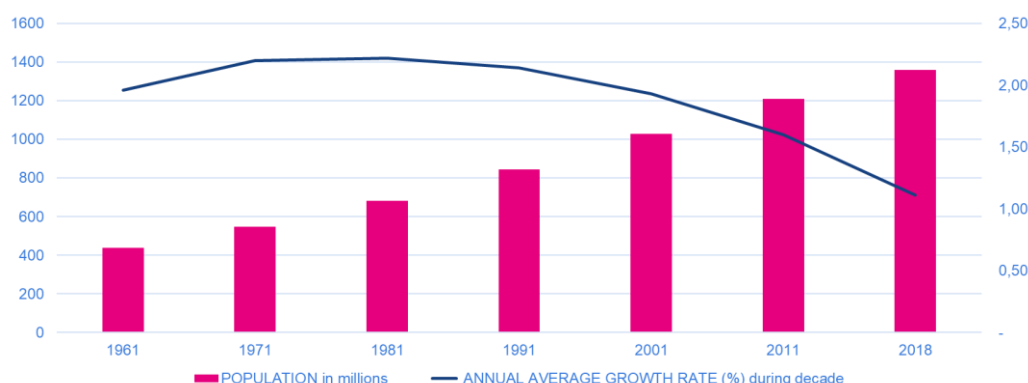
10. Population and Social Problems: Population explosion leads to migration of people from rural areas to the urban areas causing the growth of slum areas. People live in most unhygienic and insanitary conditions. Unemployment and poverty lead to frustration and anger among the educated youth. This leads to robbery, beggary, prostitution and murder etc. Overcrowding, traffic congestions, frequent accidents and pollution in big cities are the direct result of over-population.

11. More Pressure on Land: Rising rate of population growth exerts pressure on land. On the one hand, per capita availability of land goes on diminishing and on the other, the problem of sub-division and fragmentation of holdings goes on increasing.

12. Impact on Maternity Welfare: In India, population explosion is the result of high birth rate. High birth rate reduces health and welfare of women. This leads to high death rate among women in the reproductive age due to early marriage. Hence to improve the welfare and status of women in our society, we have to reduce the birth rate.

13. Pressure on Environment: Higher birth rate brings more pollution, more toxic wastes and damage to biosphere. Briefly speaking, population explosion hinders the economic development.

The chart below shows the exponential growth of the Indian population over the last few decades and the corresponding reduction of the growth-rate.



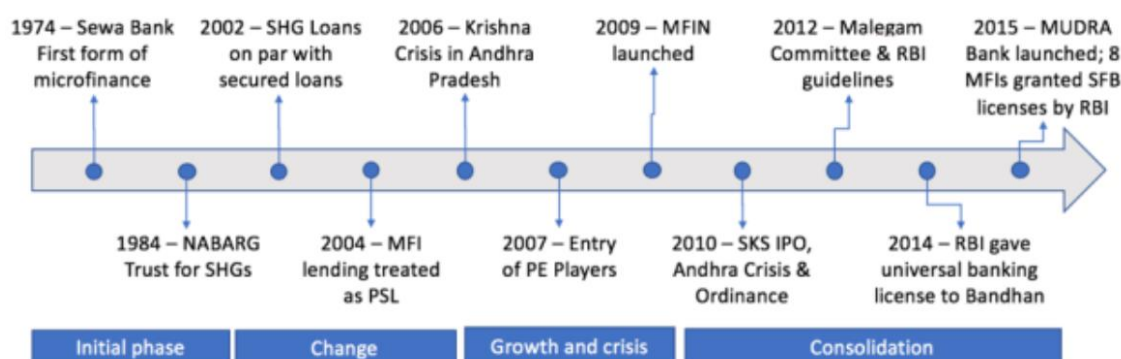
Though the annual average growth rate has declined though the number of population in millions is a staggering and will continue to grow over the coming years.

A democratic country like India cannot adopt coercive methods to control population. But, to show how rapid population growth retards economic development, it is necessary to mention that by economic development we mean not only an increase in national income (GNP) or per capita income, but also reduction in unemployment, as a result of the growth of employment opportunities and reduction in poverty and inequalities of income. Since economic growth depends on rate of saving and investment and productivity of labour, we will discuss the impact of population growth on these factors.

3.5

Microfinance Market In India

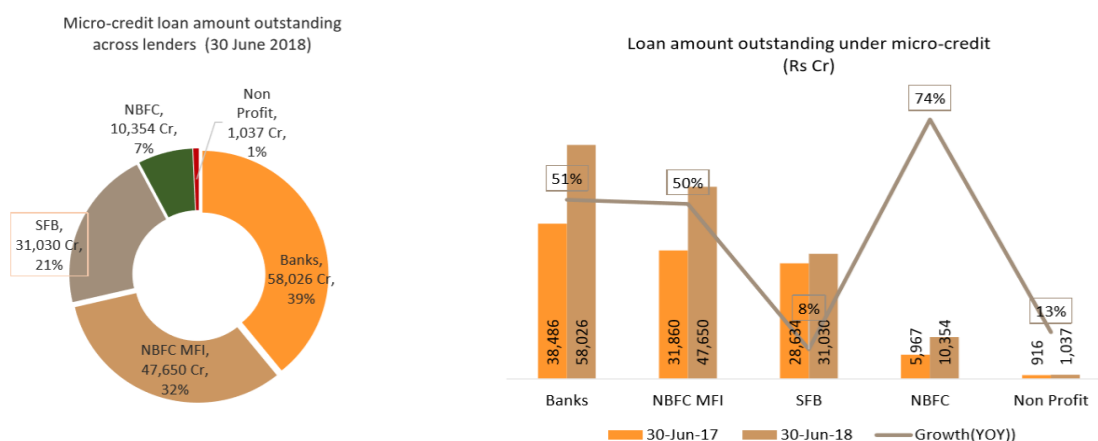
Microfinance in India has come a long way. It started as an **alternative source of finance to the unserved masses** comprising the bottom of the socio-economic pyramid and gradually turned out to be a tool for uplifting their social standard and working their way out of poverty. The sector has helped millions of small households in the most remote areas to give life to their dreams by providing them the means to fulfill them. Thus the best way to understand how microfinance has brought about a change in the Indian economy is to showcase the importance of it in rural areas.



The microfinance sector **started in 1970s with the emergence of informal self help groups (SHG)** to provide access to much needed savings and credit services. The sector witnessed strong growth following the liberalization of the Indian economy in 1991 since private organizations increasingly extended credit to microfinance companies. During 2005-2010, reported strong growth supported by strong demand for loans from the borrowers neglected by the banking system and investors eager to invest funds in the high growth

industry. However in 2010, the sector was severely impacted by the “Andhra Pradesh crisis” [a microfinance crisis in the southern Indian state of Andhra Pradesh, triggered by sensationalized newspaper accounts of suicides among over-indebted clients of some of India’s biggest microfinance institutions] and the State government promulgating an ordinance to curb the activities of microfinance companies. The crisis triggered a strong response from the RBI and in the years that followed, the sector has registered a turnaround and has evolved into a more mature market. Moreover the Government as well as the RBI have tried to create a conducive policy and a regulatory environment for MFIs to expand the financial inclusion agenda.

As of June 30, 2018, Banks hold largest share of portfolio in micro-credit with total loan outstanding of INR 0,58 billion. Banks thus account for almost 39% of total micro-credit universe.



In the above pie-chart, numbers represent loan amount outstanding in INR Crore (100 crore = 1 Billion) and share of each peer group in the universe as percentages. Compared with Q1 FY17-18, Banks portfolio has grown by 51%, Small Finance Banks by 8%, Non Banking Financial Cooperatives-MFIs by 50%, NBFCs by 74% and non-profit Micro Finance Institutions by 13%

MFI business is primarily cash-intensive but with demonetization, the focus has now shifted to “digital payments” necessitating digital literacy among clients. Historically banks under the guidance of RBI have been investing in financial literacy of customers. With many of their clients lacking digital literacy, MFIs can consider investing in client literacy as a business promotion measure. Data security and protection also needs to be beefed up. Blockchain technology can protect them from data thefts and manipulations, particularly significant for complying with Know-Your -Customer norms. While technology will influence the future narrative in Microfinance sector, the client will remain at the core of the business and hopefully the winds of change will blow in his direction.

3.6

Building the Cashless Layer of “India Stack”

India has developed a set of highly advanced retail payment systems over the past decade, all under the auspices of the **National Payments Corporation of India (NPCI)**, the umbrella organization promoted by the Reserve Bank of India and major banks. NPCI is responsible for building and managing these payment systems and is the most important player in the ecosystem.

Today, **NPCI is managing four important payment schemes:**

- **National Financial Switch (NFS)** – the **largest network of ATMs in India**, which also functions as the switch for many other payment schemes including IMPS.
- **Immediate Payments Service (IMPS)** – an **interoperable push payment scheme** that allows banks and wallet providers across India to transfer funds in real-time 24x7. An immediate funds transfer system, IMPS transactions can be carried out using ATM, mobile, and web interfaces. IMPS is an important payment system as it is used as a foundation for building several other payments services including Unified Payments Interface (UPI), and the recently launched interoperable Bharat QR Code.
- **Unified Payments Interface (UPI)** – an **interoperable mobile push payment service** that works real-time, 24x7 across banks in India. UPI is built on the IMPS platform and has features that are expected to make digital payments seamless and increase small-value merchant transactions. UPI is made available via a set of APIs, which banks and Fintech companies can use to build mobile applications. NPCI also built its own UPI App called BHIM (Bharat Interface for Money) which participating banks can use.
- **Aadhaar based payment systems** – the NPCI, working with the Unique Identification Authority of India (UIDAI), created the **Aadhaar Payments Bridge (APB)** to channel Government to Person (G2P) payments directly into beneficiaries' bank accounts using the Aadhaar number as the payment address. Additionally, the Aadhaar-enabled Payment System (AePS) allows customers to use their biometric information to authenticate and perform cash-in and cash-out transactions at any bank agent who has a biometrically-enabled POS device.

These payment systems and services are not stand alone setups but rather layers of infrastructure laid one over the other. NFS is used to provide IMPS. UPI is built over IMPS. When layered with Aadhaar (using the Mapper Unit), Aadhaar based payment systems are created. The use of layers in an infrastructure stack—as opposed to a value chain based approach—is what makes India's payment ecosystem quite incredible!

There are other, less tangible but all-important ingredients that have contributed to the India stack's success. The first is strong government commitment to the program. The second is the trust that the government enjoys among its citizens. Indian citizens are quite willing to share their biometric information with the government, a situation hard to imagine in most developed countries. Last, the government has endorsed and evangelized this payments infrastructure and continues to play a very important role in fostering quick, widespread adoption and usage.

4 LEGISLATIVE BODIES

It is a known fact that the overall economic efficiency and stability of any country is dependent on the national payment system in that country. As a result, the regulators in our country, including the central bank, have also been revisiting their operating model and policies regularly, for socio-economic developments.

The regulatory framework for financial markets in any country is generally decided by the central bank of that country. In India the **Reserve Bank of India (RBI)** decides the rules of the game for the way the national payment system shall function. The regulators have to closely safeguard the sanctity of payment systems, primarily from the viewpoint of systemic risk, risk of fraud, etc. Specifically, it is the responsibility of the Reserve Bank of India, to ensure and carry out the **development of national payment systems**.

This chapter aims to provide a panoramic view of the schematics of regulation over Indian payment systems.

4.1 Role of the Central Bank and other legislative bodies

The mission statement of RBI for payment and settlement system states that the endeavour would be “to ensure that all payment and settlement systems operating in the country are safe, secure, sound, efficient, accessible and authorised”. The **Payment and Settlement Systems Act, 2007** (‘PSS Act, 2007’), legislated in December 2007, governs and regulates all the modes of payment systems used in India. Under the PSS Act, 2007 the RBI is given the power to direct and regulate the payment systems and the payment system participants in India. The PSS Act, 2007 has been enacted to govern and regulate the activities which involve payment and settlement of transaction in substitute of paying or settling a transaction by cash or other means of physical movement of payment instruments to settle a transaction.

Under the PSS Act, 2007, **two Regulations** have been made by the RBI, namely, the Board for Regulation and Supervision of Payment and Settlement Systems Regulations, 2008 (BPSS Regulations) and the Payment and Settlement Systems Regulations, 2008 (‘PPS Regulations, 2008’). Both these Regulations came into force along with the PSS Act, 2007 on 12th August 2008. They together provide the necessary statutory backing to the RBI for overseeing the payment and settlement systems in the country.

The **Board for Regulation and Supervision of Payment and Settlement Systems** (BPSS), a sub-committee of the Central Board of the RBI is the highest policy making body on payment systems. The BPSS is empowered for authorising, prescribing policies and setting standards for regulating and supervising all the payment and settlement systems in the country. The **Department of Payment and Settlement Systems** of the RBI serves as the **Secretariat to the Board and executes its directions**.

A brief description on the main regulatory bodies is provided below:



RBI – Reserve Banks of India: Reserve Bank of India is the apex monetary Institution of India. It is also called as the central bank of the country. The Reserve Bank of India was established on April 1, 1935 in accordance with the provisions of the Reserve Bank of India Act, 1934. The Central Office of the Reserve Bank was initially established in Calcutta but was permanently moved to Mumbai in 1937. The Central Office is where the Governor sits and where policies are formulated.

Though originally privately owned, since nationalization in 1949, the Reserve Bank is fully owned by the Government of India.



SEBI – Securities and Exchange Board of India: Apart from RBI, SEBI also forms a major part under the financial body of India. This is a **regulator associated with the security markets** in Indian Territory. Established in the year 1988, the SEBI Act came into power in the year **1992, 12th April**. The board comprises of a Chairman, Whole time members, Joint secretary, member appointed, Deputy Governor of RBI,

secretary of corporate affair ministry and also part time member. There are three groups, which fall under this category, and those are the investors, the security issuers and market intermediaries.


PFRDA – Pension Fund Regulatory and Development Authority:

Pension Fund regulatory is a pension related authority, which was established in the **year 2003** by the Indian Government. It is authorized by the Finance Ministry, and it **helps in promoting income security of old age by regulating and also developing pension funds**. On the other hand, this group can also help in protecting the interest rate of the subscribers, associated with the schemes of pension money along with the related matters. PFRDA is also responsible for the appointment of different other intermediate agencies like Pension fund managers, CRA, NPS Trustee Bank and more.



ward Markets Commis

FMC – Forward Markets Commission: Other than the financial bodies mentioned above, FMC also plays a major role. It is the **chief regulator of the commodity (MCX, NCDEX, NMCE, UCX etc) of the Indian futures market**. As per the latest news feed, it has regulated the amount of Rs. 17 trillion, under the commodity trades. Headquarter is located in Mumbai, and the financial regulatory agency is working in collaboration with the Finance Ministry. The chairman of FMC works

together with the Members of the same organization to meet the required ends. The main aim of this body is to advise the Central Government on matters of the Forwards Contracts Act, 1952.



IRDA – Insurance Regulatory and Development Authority: It is also better to mention the name of IRDA or insurance regulatory and Development authority, as a major part of the financial body. This company regulates the apex statutory body, which will regulate and at the same time, **develop the insurance industry**. It comprised of the Indian Parliamentary act and was passed duly by the Indian Government.

The participation of central banks in the foreign exchange markets for stabilising exchange rates is very important because this infuses' confidence in the functioning of forex markets. Apart from RBI, the **Foreign Exchange Dealers' Association of India (FEDAI)** plays an important role in the **development of foreign exchange markets in India**.

How vast a role RBI plays on the Indian financial market will be clear if we take a look into its functions.

Monetary Authority	•It controls the supply of money in the economy to stabilize exchange rate, maintain healthy balance of payment, attain financial stability, control inflation, strengthen banking system
Issuer of Currency	•It has the sole authority in India to issue currency. It also takes action to control the circulation of fake currency.
Issuer of Banking License	•As per Sec 22 of Banking Regulation Act, every bank has to obtain a Banking license from RBI to conduct banking business in India.
Banker's Bank	•RBI is the bank of all banks in India as it provides the loan to banks/bankers, accept the deposit of banks, and rediscount the bills of banks.
Banker's to the Government	•It acts as banker both to the central and the state governments. It provides short-term credit. It advises the government on banking and financial subjects.
Act as clearinghouse	•For settlement of banking transactions, RBI manages 14 clearing houses. It facilitates the exchange of instruments and processing of payment instructions.
Banker and debt manager of government	•It keeps deposits of Governments free of interest, receives and makes payment, carry exchange remittances, and help to float new loans and manage public debt

4.2 Different Layers of Banking

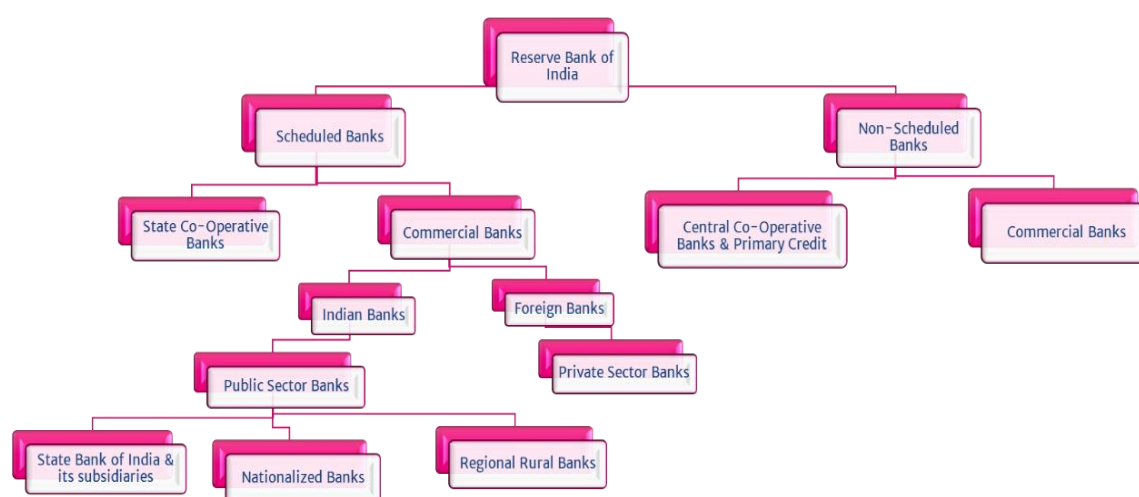
The Indian banking structure comprises a heterogeneous mass covering a wide spectrum ranging from the unorganized indigenous bankers at the one end to the foreign banks at the other.

It has at the apex the RBI entrusted with the responsibility for the formulation and implementation of the monetary policies of the country, regulating the banking sector, issuing and managing currency, purchasing and selling of government securities, and managing the foreign exchange position of the country.

The Reserve Bank derives its powers from the **RBI Act of 1935 and the Banking Regulation Act, 1949**. It performs the same functions as central banks do all over the world. But the RBI has taken developmental function also. Under this, it is responsible for institutionalizing of the vast savings of the country, through spread of banking habits and banking infrastructure. RBI is also supposed to help in a rapid industrialization through developmental organization set up for the purpose like the IDBI, IFCI, so on. It also oversees the agricultural development is not stifled for want of credit and has, for the purpose, set up **National Agricultural Board for Rural Development (NABARD)**.

Indian banking industry has recently witnessed the roll out of innovative banking models like payments and small finance banks. RBI's new measures may go a long way in helping the restructuring of the domestic banking industry. In **FY17-18**, total lending increased at a **CAGR of 10.94 per cent** and total deposits increased at a **CAGR of 11.66 per cent**. India's **retail credit market is the fourth largest in the emerging countries**. It increased to **US\$ 281 billion on December 2017** from US\$ 181 billion on December 2014.

Having RBI at the apex, the banks in Indian Banking System are classified into two categories and each category is sub divided into various units based on market requirements and reach of people.



The Indian banking system consists of **27 public sector banks**, **21 private sector banks**, **49 foreign banks**, **56 regional rural banks**, **1,562 urban cooperative banks** and **94,384 rural cooperative banks**, in addition to cooperative credit institutions. The **largest bank**, and the oldest still in existence, is the **State Bank of India**. In 1960, the State Bank of India was given control of eight state-associated banks under the State Bank of India (Subsidiary Banks) Act, 1959. These are now called its associate banks. In 1969 the Indian government nationalised 14 major private banks, one of the big bank was Bank of India. In 1980, 6 more

private banks were nationalised. These nationalised banks are the majority of lenders in the Indian economy. They dominate the banking sector because of their large size and widespread networks.

The Indian banking sector is broadly classified into scheduled and non-scheduled banks. The scheduled banks are those included under the 2nd Schedule of the Reserve Bank of India Act, 1934. The scheduled banks are further classified into: nationalised banks; State Bank of India and its associates; Regional Rural Banks (RRBs); foreign banks; and other Indian private sector banks. The term commercial banks refers to both scheduled and non-scheduled commercial banks regulated under the Banking Regulation Act, 1949.

Scheduled Banks

By definition, any bank which is listed in the 2nd schedule of the Reserve Bank of India Act, 1934 is considered a scheduled bank. The list includes the State Bank of India and its subsidiaries, all nationalised banks, regional rural banks (RRBs), foreign banks and some co-operative banks. These also include private sector banks. **To qualify as a scheduled bank, the paid up capital and collected funds of the bank must not be less than INR 500,000.** Scheduled banks are eligible for loans from the Reserve Bank of India at bank rate, and are given membership to clearing houses.

Non-scheduled Banks

Non-scheduled banks by definition are those which are not listed in the 2nd schedule of the RBI act, 1934. **Banks with a reserve capital of less than INR 500,000 qualify as non-scheduled banks.** Unlike scheduled banks, they are not entitled to borrow from the RBI for normal banking purposes, except, in emergency or “abnormal circumstances.”

Co-operative Banks

Co-operative banks operate in both urban and non-urban areas. All banks registered under the Cooperative Societies Act, 1912 are considered co-operative banks. In the urban centers, they **mainly finance entrepreneurs, small businesses, industries, self-employment and cater to home buying and educational loans.** Likewise, co-operative banks in the rural areas primarily cater to agricultural-based activities, which include farming, livestock, dairies and hatcheries etc. They also extend loans to small scale units, cottage industries, and self-employment activities like artisanship. Unlike commercial banks, who are driven by profit, co-operative banks work on a **“no profit, no loss”** basis.

Regional Rural Banks

Regional Rural Banks or RRBs, simply put, **serve the rural areas and agricultural sectors with basic banking and adequate financial services.** They were set up in 1975 first. The RRBs are owned by the central government (50%), the state government (15%) and the sponsor bank (35%). Several commercial banks have sponsored RRBs. RRBs were set up to eliminate other unorganized financial institutions like money lenders and supplement the efforts of co-operative banks.

The government has developed initiatives to address the rural areas more effectively through the State Bank of India’s expanding branch network and through the National Bank for Agriculture and Rural Development (NABARD) with facilities like microfinance.

More recently, **Reserve Bank of India (RBI) in August 2015**, has kicked off transformative changes in the financial system of the country by giving **licenses to 11 Payment banks and 10 small financial banks** that can generate a revolutionary storm.

Payment Banks

Payment bank is a type of niche **non-full service bank, which can receive deposits and provide remittances but cannot lend money**. The main target customers for them will be low-income households, small businesses and migrant laborers. The concept of payment banks was taking cue from Vodafone M-Pesa in Kenya, where 68 percent population don't have bank accounts but has financial inclusion of 70 percent due to M-Pesa. For the first five years, promoters' stakes should be minimum 40 percent and the minimum paid-up equity capital is INR 1 Billion. Foreign share holding as per rules of FDI in private banks is allowed. Payment banks are expected to reach to consumers through mobile phones rather than traditional system of bank branches.

- They can accept deposits upto INR 100,000 and pay interest just like savings bank account.
- They can't offer loans to individuals and can't issue credit cards.
- They can issue debit cards usable at ATMs of all banks.
- They can transfer money and remittances through mobile phones.
- They can also provide forex cards to travellers.
- They can offer third party card acceptance mechanisms like 'Apple Pay'.
- It can also distribute financial products like mutual funds and insurance.

Small Finance Banks

- Small finance bank is a type of niche bank, which can provide banking services like **accepting deposits and lending but mainly focusing on small businesses, small and marginal farmers, small and micro industries**. Small finance banks can perform all the operations of normal commercial banks, but at a smaller level targeting low-income segment.
- The minimum paid-up equity capital is INR 1 Billion. Promoters' stakes should be 40% minimum that must be brought down to 26% in 12 years. Foreign share holding as per rules of FDI in private banks is allowed.
- 50 percent of the lending should be given to borrowers who come under priority sector lending as specified by RBI. Minimum 75 percent of loan should be given to small borrowers with exposure less than 2.5 Million.
- So far Micro Finance Institutions ([Section 3.5](#)) were not allowed to accept deposits but now, by getting license to banking they can lower their interest rates. The area of operation for small financial banks is limited to a few districts of a state. However they can expand it with approval from RBI.

4.3

Challenges and Implications

The addition of these new players to India's payment system also brings challenges. Payment operators will confront **financial illiteracy and limited awareness among their customers**, a common barrier to financial inclusion efforts around the world. The rapid rollout of new payment models also creates **additional operational risks** for the industry. Meanwhile, **innovative business models have the potential to lead payment banks into unregulated areas**, necessitating enhanced supervision by the RBI.

While approximately **85 percent of transactions in India are still conducted in cash**, the share of non-cash payments is likely to increase rapidly due to ongoing reforms. With a national infrastructure in place and undergoing improvement, hundreds of millions of new payment-capable accounts, and a variety of firms entering the sector, the promise of a modern non-cash payment system has arrived—and with it, potential significant advances in financial inclusion for one of the world's most important developing economies.

How it will change current financial system:

- The move of giving licenses to payment banks and small financial banks will be the major step towards pushing financial inclusion in the country. The main target for payment banks and small finance banks will be small businesses and low-income household by providing them financial services at low transaction cost. It is uneconomical for banks to open branches in every village, but with mobile phones which have wider penetration can provide low-cost platform for taking banking services to every citizen. It will include people who mainly transact in cash to take their first step into banking system and also accelerate India's journey as a cashless economy.
- Cost of banking will come down due to competition from payment banks and small banks. Currently, private banks like ICICI, HDFC, Axis, etc. are making huge profits by collecting funds at lower costs from savings accounts & current accounts (Current Account Savings Account - CASA deposits account for 40% of bank deposits) and lending it to small borrowers at higher rates. But payment banks and small finance banks get big chunk from this by providing higher interest rate on deposits and giving credit (small finance banks only) at lower rates. This will increase competition and lower-income group and small businesses will be benefitted the most.
- For customers, the real attraction will not be higher interest rates, but the convenience of carrying out banking transactions at fingertips. Also, as payment banks will mainly have government as a borrower, there is very less chances of defaults. Government is also get benefitted as a borrower, as payment banks will expand access to cheap funds. As payment banks can only invest in short-term government bonds, government can borrow more at cheap rates.
- It will also eliminate black money from large part of financial system by reducing cash transaction and encouraging people for use of e-money. This is achievable within 5-10 years with investment in financial literacy and educating rural citizens, especially women.
- Payment bank will reduce dependency on cash and will increase m-commerce, as mobile wallets will be used as payment option. It will also transform our subsidy and social welfare schemes. With the troika of Aadhaar card, Jan Dhan Yojana and payment banks will enable government to provide direct subsidy.
- Today, there is a large unmet need for those at the bottom of the pyramid not just to have a bank account but also to get loan to run their small businesses and get out of poverty. Various models of rural and cooperative banks have failed to deliver these. But organizations that are selected for small financial banks have successfully done this job of giving small and know their borrowers' needs. So they have high chance of success.
- Small financial banks will extend formal financial access to small enterprises that are currently dependent on high-cost unorganized sector lending. According to RBI estimates 90 percent of small enterprises do not have access to formal financial institutions. So it will be a huge step towards full financial inclusion.
- Commercial banks mainly funds large and medium industries or give loans for home, education or vehicle purposes. But it is very difficult for diamond cutting units or restaurants or any other small enterprises to get working capital funding. Small financial banks can fill this gap. RBI expects them to be high technology and low cost operators, which also bring new innovations in the industry.
- Inclusion of both payment banks and small finance bank will mark biggest revolution after the nationalization of banks in the Indian banking section. It will make banking more competitive and more inclusive for both borrowers and

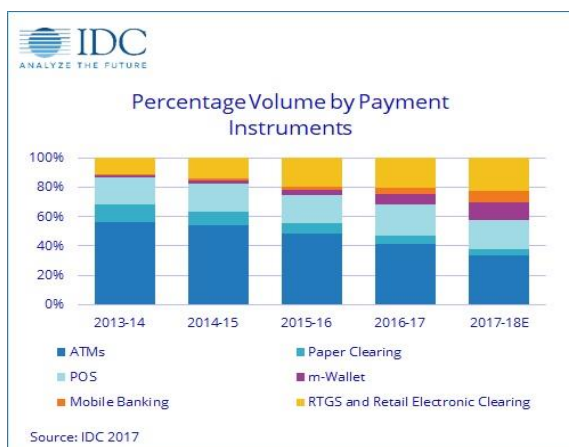
depositors thus making banking more affordable to the common man. The era of consumers has finally come!!

5 Payment Structures in India

Payments are a critical part of modern commerce that are simple in concepts but can be complex in application. The objective is to provide the basic principles of payment systems in India and their operations. But also to highlight the key challenges faced. Broadly speaking, all payment systems can be placed into one of the following payment channels:

- **Paper-based systems such as checks or drafts;** Payments are initiated when one party writes an instruction on paper to pay another. These systems are one of the oldest forms of non-cash payment system. Checks are a common paper-based channel in India and while in decline are still widely used for larger transactions.
- **RTGS (Real Time Gross Settlement) and other high-value payments;** called wire transfers by most people.
- **Low Value Batch Systems or Automated Clearing House (ACH) batch payments** were introduced in the early 1970s and were designed to replace checks with electronic payments. Unlike wires, which are processed individually, ACH payments are processed in batches and were originally intended for small payments **under \$100,000** such as payroll and consumer transactions.
- **Cards** are a payment channel that includes credit, debit and stored value cards. They are a heavily used and fast growing segment of the methods for making and receiving payments. The card channel also often provides the “rails” or settlement systems supporting some of the newer ecommerce payment systems such as mobile wallets.

Usage (number of transactions) of digital payment instruments has seen a tremendous improvement year over year versus traditional nondigital channels (excluding cash). The contribution of digital payment instruments (such as retail electronic clearing, mWallet, and mobile banking) means the volume of transactions has already doubled in 2016–17 and is expected to grow further by the end of FY17–18, from 32 percent in 2013–14 to 62 percent in 2017–18 (estimate) (see Figure below).



Source: Reserve Bank of India (RBI) Payment Indicators, IDC Analysis

5.1

Understanding the non cash payments, services and products in India

The pace of **shift to digital payments** has significantly increased with the strong move towards cashless economy. This shift would not have been possible without several factors that influence the growth and proliferation of digitalisation, including;

- An ever increasing mobile phone penetration
- Lower cost of service delivery
- Banks discouraging customers to visit branches
- Unorganised sector supporting the digital economy
- Demonetisation

The recent **demonetisation in November 2016** and the ‘**Digital India**’ initiative, launched in **2015** have provided substantial boost to the country’s digital ecosystem. Adoption of digital payments is visible when Prime Minister, Narendra Modi, launched a **mobile application, Bharat Interface for Money**, popularly known **as BHIM**, two months after announcing demonetisation and this mobile application, created a record, when it was downloaded more than **17 million times** in less than two months. Other channels such as **Immediate Payment Service (IMPS)** has witnessed **growth of 97% with about 72 million transactions**. India’s mobile wallet service provider has more than 150 million users as of today. The government took the initiative to run a **24*7 TV channel** called **DigiShala** to guide people and help them adopt digital payments.

While the macro factors clearly indicate favourable environment for digital payments, which is also being supported by the regulator, however several challenges remain before the country truly becomes digital.

- **Feature phones continue to be used widely in rural areas**, which make it a bit difficult but not impossible to transact.
- **Patchy digital connectivity** in parts of India
- Acceptance and **change in mind set**
- **Lack of awareness**
- Most importantly, **security in transacting**.

5.2 Selective initiatives to boost non-cash payments

5.2.1 RuPay Card



Until recently, almost all cards were supported by Mastercard or Visa, two of the most popular international card networks in the world. So, every time a private or public sector bank in India wanted to introduce its own debit or credit card, it had to pay additional fees and transaction charges (for every transaction made) to Mastercard or Visa.

While Mastercard and Visa were important for India’s foray into the card space, in the long run, this could lead to a significant drain to funds due to higher transaction costs. Additionally, the high transaction charges can act as a limiting factor to extend banking support to the vast unbanked segments in India, especially in the rural belts.

This economic divide among the population is what the government has been trying to bridge over the years. At both a systemic and grass root level, the government has been making several efforts like setting up a robust network of banks, introducing zero-balance savings accounts etc in order to bring about financial inclusion in the country. It is this objective of financial inclusion, to provide everyone easy and any time access to financial services and instruments at a reasonable cost that led to the introduction of RuPay, the **first domestic card network and payment gateway** that is multilateral and open loop. RuPay

derived from the words ‘rupee’ and ‘payment’ was launched by the **National Payments Corporation of India (NPCI)** on **March 26th 2012**, in order to integrate the various payment systems in India. RuPay is India’s first and only domestic card network.

RuPay reduces India’s dependence on external card networks like Visa and Mastercard and allows public and private sector banks to issue and manage cards at reasonable rates. In addition, being India’s very own card network, RuPay can be leveraged for several economic and social initiatives within the country.

RuPay cards work like all other cards from Mastercard and Visa and are accepted across a majority of ATMs, POS terminals and online platforms or e-commerce websites. Currently, RuPay cards can be used at nearly all ATMs, POS terminals and over 10,000 websites in India. Indian consumers can apply for RuPay cards through any public, private, regional or co-operative bank. RuPay cards are enabled with EMV (Europay, Mastercard and Visa) chip technology, the global standard for debit and credit cards.

RuPay cards are currently available as debit cards and credit cards will be available in the near future. The domestic card payment network has several advantages to the Indian consumer, as follows:

Lower Cost – The cost of clearing and settlement of transactions will be reduced due to domestic systems. RuPay Card transactions are **approximately 23% less costly** than a Visa or MasterCard transactions. This makes card processing for banks more affordable.

Versatility – RuPay cards are designed to be **interoperable across all payment channels like ATMs, mobile banking, merchant locations, online channels, cheques** etc.

Better suited for rural/untapped markets – The **low transaction and processing costs**, makes RuPay more **economically feasible** for both banks as well as consumers, even **in the rural and untapped segments of the society**.

Ability to be linked with other socio-economic initiatives – Powered and managed completely by the RBI in India, RuPay has the ability to lend itself to socio-economic initiatives for financial inclusion. **Initiatives like the the Pradhan Mantri Jan-Dhan Yojana**, a programme that aims to provide banking facilities to every household in India or the **IRCTC RuPay card scheme** that allows passengers to easily book train tickets.

Reliability of data - The data of users of RuPay cards is essentially safe because the **data stays within the boundaries of India** and is not accessed at any place outside India.

Secure transactions – RuPay cards are totally secure as they come with **enhanced security of 256-bit encryption**. The SMS alerts and notifications that are sent to the user’s registered mobile number after each and every transaction is done assures the users of the safety and security of the transaction.

The National Payments Corporation of India (NPCI) has tied up with Discover Financial Services and and Diners Club and through this association all RuPay card holders can utilise **Discover, Diners Club International and PULSE networks** for international purchases and cash access outside of India. RuPay has been seeing a promising growth since its launch and commands a good market share in the cards market today; nearly 40% of all cards issued in the country are RuPay cards. **RuPay card usage at POS terminals** rose from **3.83 million rupees in April 2016 to 28.09 million rupees in March 2017**, likewise, RuPay card usage on **online platforms** also saw an increase **from 2.78 million in April 2016 to 14.38**

million in March 2017, signalling a multifold increase in adoption from customers as well as merchants.

Digital payments comprises payment transactions carried out using a variety of electronic modes such as cards, mobile or internet based set ups, to send and receive money. The ecosystem consists of buyer (customer), seller (merchant, service provider) and Payment Service Provider (PSP) that enables transfer of money from buyer to seller for the product/service availed.

The PSPs in India consist of both bank and non-bank players. As of July 2016, PSP segment had 44 authorised Pre-Paid Payment Instruments (PPIs) including mobile wallets, prepaid card providers and eight authorised payment banks, eight authorised cross-border money transfer operators and eight authorised white-label Automatic Teller Machine (ATM) operators.

These PSPs offer a variety of digital payment modes – from traditional ones such as National Electronic Clearing Services (NECS) / Automated Clearing House (ACH), bank cards (credit, debit, pre-paid), internet banking, mobile banking to newer ones such as wallets (PPIs), Aadhar Enabled Payment System (AEPS), Immediate Payment Service (IMPS), UPI, Bharat Bill Payment System (BBPS), and now Aadhar Pay and India QR code.

The combination of regulatory innovation in the form of Payments Bank, institutional innovation in the form of NPCI and establishment of Aadhaar as a digital identity platform, along with the rapid adoption of mobile phones, have laid the foundation for rapid growth in digital payments in India.

The RBI have played a pivotal role in pushing digital payments forward in India through platforms such as RTGS, NEFT, IMPS and RuPay and upcoming initiatives such as Bharat Bill Payments and Unified Payment Interface (UPI) are only expected to accelerate this growth further. However, while the corporate and the government sector has eagerly adopted electronic payment platforms such as RTGS and NEFT for processing high-value business payments, small and medium enterprises have lagged behind. The value of the physical currency in circulation in the country is estimated to be more than 12% of GDP, one of the highest among emerging economies. India continues to be a cash-based economy at POS, with very low digitization of personal consumption expenditure.

5.2.2 India's Ambitious Payment Platform 'UPI'

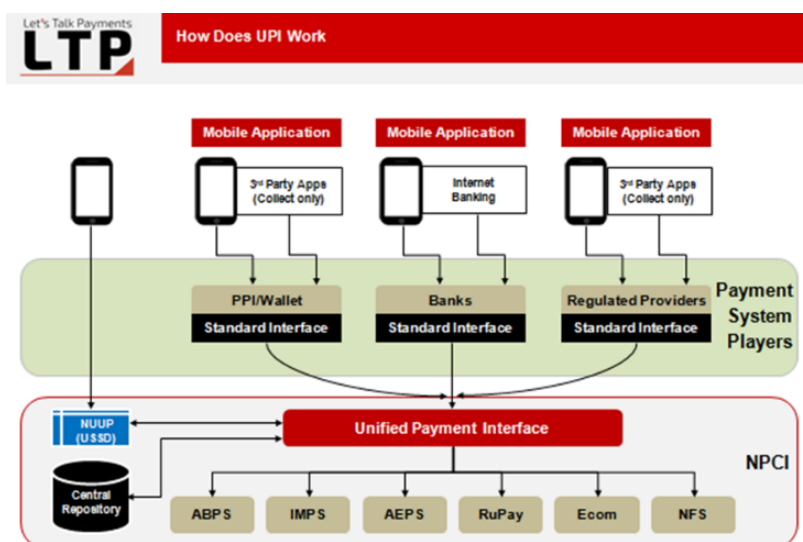
Perhaps for the first time in the world, a government body has led a Visa/MasterCard/Swift-free retail payments system that uses bank accounts directly. For many years, banks have imagined solutions that could make online buyers use the source of funds directly by paying via bank accounts (e-checks, ACH etc.). National Payment Corp of India, which was established in 2009, has launched a solution called Unified Payment Interface (UPI) which acts as the gateway for the cashless society in India. More than 19 banks are on board for UPI and many more are yet to join. Using UPI, people can send money using virtual IDs. Banks are integrating UPI to existing apps and users have loads of advantages like making payments without creating beneficiaries in bank accounts; receivers initiating the transactions; and single-click & two-factor authentication.

What is UPI?

UPI is an open-source platform designed for the mobile age that helps with easy integration of various payment platforms. UPI is powered by a single payment API and a set of supporting APIs. Here are the core features of UPI:

- It acts as primary device for all payments including person-to-person, person-to-entity and vice versa. The technology features the use of mobile to "pay" someone (push) as well as "collect" from someone (pull). The payment is facilitated only by providing an address. It doesn't require other credentials on third-party applications or websites and hence can also be operated with feature phones.

- Aadhar number, mobile number, card number and account number is used in a unified way. UPI is fully interoperable across all payment system players without having silos and closed systems. All payment system players can use a set of APIs for any-to-any push and pull payments.



Source: NPCI

UPI allows USSD, smartphone, Internet banking, and other channel integration onto a common layer at NPCI. This common layer uses existing systems such as IMPS, AEPS, etc. to orchestrate these transactions and ensure settlement across accounts. Usage of existing systems ensures reliability of payment transactions across various channels and also takes full advantage of all the investments so far. This unified layer offers next-generation, peer-to-peer immediate payment just by using a personal phone. The striking feature is that third-party API integration can collect payments from a "specified address." This avoids the need to share account details on third-party websites. Within this solution, payment authentication and authorization are always done using personal phones. Since this layer offers a unified interface, any-to-any (Aadhaar number, mobile, account, virtual addresses) payments would be done using a standard set of APIs.

If a user wants to pay someone, he need not add him or her as a beneficiary and there is no need for an IFSC code, account number, etc. The UPI app does away with all this. All one needs is the receiver's unique ID. Open the UPI app, select the amount to be paid, add the unique ID of the beneficiary and select "send." The app will ask for a mobile PIN to authenticate the payment and the transaction is initiated.

With the increase in the adoption of smartphone, **mobile wallets** that can be accessed through mobile applications are becoming commonplace. Mobile wallets in India have

already captured basic use cases such as recharges and bill payments, taxi services and food delivery and have expanded their footprint in the online and offline worlds by collaborating with Fintech companies to enable acceptance at supermarkets, restaurants and retailers.

5.2.3 QR code-based payments

Several wallet companies have introduced the **feature of QR code payments to drive acceptance in digital payments**. This **reduces the cost of merchant setup** (PoS terminal) and **cost of regular servicing**. Merchants can do a self-onboarding for accepting payments thus making the overall process very efficient. The QR codes can be used to store data such as weblinks and bank account details and can be read by smartphone cameras. They also enable merchants without a terminal or POS machine to accept card payments by scanning the QR code.

A government sponsored quick response (QR)code-based payment service, IndiaQR, was launched heralding the next major step in its ambition to be a cashless society. IndiaQR, a government-mandated initiative which has been developed by MasterCard, Visa and RuPay, is designed to make the codes present in as many merchants as possible.

Paytm, an ecommerce firm backed by Alibaba, has lined up a \$900 million (6 billion rupees) investment in the development of a new QR-based payments service. The company also plans to train 10 million merchants to accept digital payments across 650 districts by FY18. From India's largest cities to small villages, QR codes usher in a cheap, easy-to-use way to transact digitally. In rural parts people prefer to use mobile payments because the ATMs run out of cash very often. Grocers and medical shops have QR codes to accept payments.

In India, the revival of QR code is mostly being driven by payment companies and the government. They're easy to deploy, cost a fraction when compared to setting up a point of sale (PoS) terminal, and is easy for users. Which is why companies like Paytm Mall are betting heavily on it.

For QR codes to take off, two factors are important – smartphones and bank accounts tied to mobile phones.

Both smartphone penetration and mobile-linked bank accounts are on the rise in India. India is expected to end 2018 with 530 million smartphone users.

The government claims that more than 310 million new deposit accounts have been opened since August 2014 under the Pradhan Mantri Jan Dhan Yojana (PMJDY). The volume of UPI transactions grew seven times to 145.5 million between August and December last year.

While QR codes are set to become a dominant force in the payments business, it is unlikely to eradicate other forms of payment. The users are primarily drawn to digital payments is because of cashbacks.

To be sure, even a solution as simple as static QR codes come with vulnerabilities and odd situations. Criminals can stick their own QR codes on top of legitimate codes to swindle money from unsuspecting users – as has been happening in China. The companies providing QR code-based solutions should take responsibility for the security of transactions. Dynamically generated QR codes can solve this problem but require a smart PoS device. App developers can also encrypt QR codes so that it is readable only in their application.



5.2.4 Aadhaar Enabled Payments

Aadhaar-enabled transactions are card-less and pin-less which enable Android phones users to digitally transact using their Aadhaar number and fingerprint/iris authentication. Payments can be processed by authenticating a customer using biometric scanners and debiting the account linked to the Aadhar database.

India is undergoing a transition phase from cash to no cash transactions which enabled many E-Wallet companies like **Paytm & Freecharge** to grow exponentially. To continue day to day life payment system is a must. People have started using different alternatives to tackle cash crunch India is facing after demonetisation. Paytm is a name that has grown immensely popular. Even road side vendors have started using Paytm to accept payments. Now Government wants **Aadhaar-enabled payment** to replace debit, credit cards. People can now pay using aadhar card. It means you don't need to have plastic money or e wallets anymore. All you need is an aadhar card to make payments.



The initiative can help the government deal with situations like recent demonetisation. Also it will help curb black money menace and bring in more financial transaction transparency.

AEPS (Aadhaar Enabled Payment System) in its basic form is a machine known as **micro ATM**. This machine is similar to POS machines that accept credit/debit cards. The only difference is that instead of any card you need to authenticate your payments using your bio metrics (usually fingerprint).

A merchant who needs to accept payment will enter the aadhaar number and the amount in the machine using the touch interface provided. The customer then needs to authenticate the payment using his/her fingerprint. The amount will be deducted

from a bank account that is linked to customers aadhaar number and credited to the merchants bank account.

A merchant will have a smartphone with a finger print scanner connected to it via an application. You will have to place your finger on that scanner to pay using aadhaar. Your bank, which is already linked to your aadhaar number will be debited with the amount you pay to the shopkeeper.

UIDAI has introduced the much awaited Aadhaar Pay Merchant App. Using this aadhaar payment app, merchants can accept payments which will be cashless, cardless and pinless.

- To accept payments, merchants needs to register on the app using the **aadhaar number**. The registration needs to be authorised using the **fingerprint** of the merchant.
- Now to accept any payment from the customer, the merchant needs to enter the customer details which include customer **aadhar number, customer bank name, and amount** to be paid by the customer.
- An option to continue or to reject the payment will be provided. Once chosen to proceed, the payment needs to be authorised using the **customer's fingerprint**.
- After successful authentication, the amount will be transfered from the **customer's aadhaar linked bank account to merchant's aadhaar linked bank account**.

5.3

Case Study: PAYTM – A Journey from Mobile Recharge to E-Commerce Market

With the rapid adoption of smartphones over the last decade, improvement in telecom connectivity and declining handset prices, mobile has become the primary device around which our daily lives revolve and it is shaping how consumers search, purchase and pay for goods and services. As commerce is moving to mobiles, so are payments. A simple way to categorize wallets would be as instruments that act as a store of credentials.

Paytm is **an Indian e-payments and e-commerce brand**. Launched in August 2010, it is a **consumer brand of parent company One97 Communications**. The name is an acronym for "Payment Through Mobile". Paytm started as a **prepaid mobile recharge website** but quickly expanded as **online payment platform** including mobile recharges, utility bill payment, wallet payment and wallet to wallet and wallet to bank transfers for many leading internet based companies like Bookmyshow, Makemytrip, FoodPanda, IRCTC (Railway reservation site) and many others. Paytm is available in **10 different languages**.



As of January 2018, Paytm is valued at \$10 billion. It was **founded** under the implemented idea of **Vijay Shekhar Sharma** and has got the first mover advantage

in the mobile industry. The company has been backed up by Alibaba group and Ratan Tata. The firm raised \$575 million from Alibaba group for a share of 25% in the company. Paytm like every other great companies, started with one thing, **Online Bill Payments**, pioneered in that, become a market leader with more than 60% market share and then expand. They had a phase by phase market acquisition approach.

They were not the **first company in India to solve the problem of online bill payments** but they perfected their system to the extent that the entire transaction was extremely smooth for the user.

They tied up with multiple telecom operators, government bodies for electricity, water and gas. Customers found that PayTM was their **GoTo site for any kind of payments** and since they had to visit the site every month, PayTM spent less on customer retention but more on giving customer discounts. Their discounts were substantially higher than anyone had ever imagined.

Paytm is growing faster and they have over 20 million registered users as per their current data. Their website and mobile app has been **transformed into a fully-fledged e-commerce marketplace** offering categories from electronics, mobile phones, sports & health, home & kitchen, books, baby & toys and many more categories.

Every e-commerce company these days give discounts but few companies give 50-60% discounts on bills and products with less margins. In 2013 and 2014, PayTM followed a Customer First approach where they invested on customer. They ensured that instead of spending on large hoardings or TV ads or SEO/keyword bidding they spend that amount on customers by giving discounts, which gets added as a **CASHBACK** on their wallet. So, if you buy a product of INR 500, you will get 250 as real money **in WALLET**. Now, you can use this INR 250 again to buy a product on website. Again a discount of INR 125. And so on.

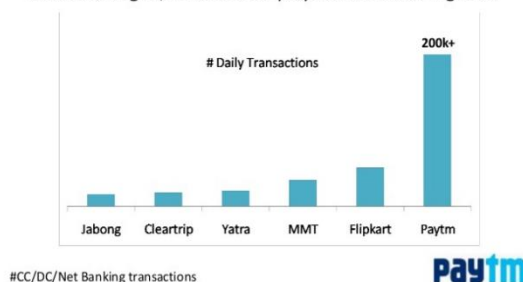
By doing this, they solved the biggest problem of customer retention. People voluntarily started using their site. The offers spread like wild fire, Word of Mouth was their biggest driver. People started telling (bragging) about the discounts to their friends and families. They gave discounts because the customer had to be educated about the wallet.

Customers were sceptical about the wallet but since they were getting **SUBSTANTIAL** discounts on the products, they used it anyway. If PayTM was not giving such a discount then not many would have dared to put their cash in wallet.

Bus Tickets and Uber was something which other companies did not offer. This was a unique model which they pioneered in. And all this increased their **Gross Merchandise Volume (GMV)**. PayTM did not have time to go by traditional approach of trust building and loyalty and excellent customer service. Discounting was the best option to show traction, to increase the user base and to build up wallets. But they never compromised on systems and technology. They never gave a sub-standard user experience.

Paytm – M/E-Commerce Leader

More transactions happen on Paytm every day than on other leading m/e-commerce players combined together



Besides, Paytm has also **contracted with IRCTC (Railway reservation) to make Paytm wallet as one of the online payment option while booking a ticket**. IRCTC processes around 180 million transactions every year; and Paytm has a strong base of 60 million wallet users who can use their wallet instead of using plastic card details. These wallet holders have an access to shop over the app and pay with Paytm wallet across 21,000 merchants.

In another major development, Paytm has now introduced the **“Paytm Tap Card”** solution for its users across the country. And what makes it unusual is it’s India’s **“First Offline Payments Solution”**. One97 Communications Limited, that owns the brand Paytm, announced in its official statement that the new offering is in sync with the company’s vision to provide innovative and seamless payments solutions for non-internet customers. It **enables Non-internet users to make digital payments.**

6 Fintechs in India

With a population of around 1.3 billion and a large percentage of unbanked or underbanked population, India is a young nation witnessing high growth in digital penetration, thereby making it an exciting global space for Fintech. With over half a billion dollars flowing into startups, Fintech in India has grown rapidly in the last three years. The government and regulators have taken several initiatives to boost the Fintech ecosystem and provide startups with new opportunities to launch competitive products.

From the mid 2000s the Indian banking and financial industry has witnessed the penetration of startups or Fintech in the consumer-facing offerings. **FinoPayTech** and **Eko India** were the major startups that took advantage of this opportunity. 2010 saw **an emergence of payment startups** in mobile wallets; e-bill payment and mobile recharge services. Major Fintech startups such as **Oxigen, MobiKwik, Paytm** and **Freecharge** originated between 2005–10. From 2010, there have been multiple Fintech startups that have mushroomed in different segments such as lending (100+ startups), personal finance management (40+ startups) and investment management (90+ startups).

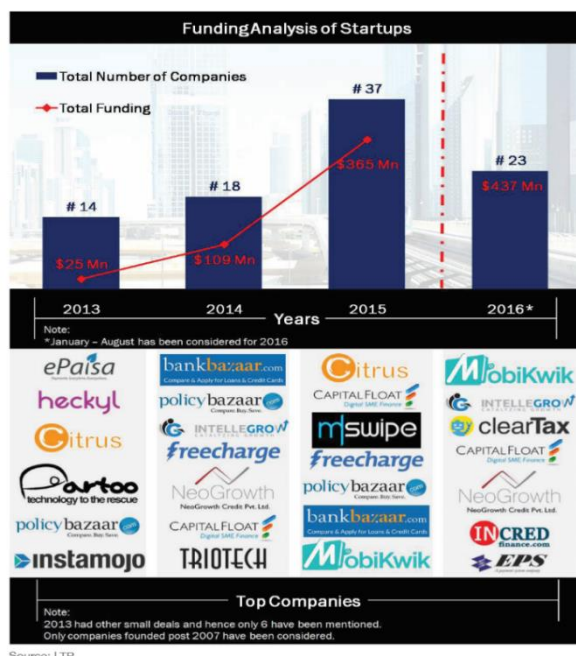
The regulatory bodies and banks have brought new solutions that will create interesting opportunities for Fintech and the financial services sector as a whole. The most prominent of these is the **launch of UPI – Universal Payment Interface.**

Another visible trend in Fintech ecosystem is the **growing number of partnerships between banks and Fintech startups.** For instance, **HDFC Bank and the Fintech startup ‘Tone Tag’** have partnered **to provide phone-based proximity services** and **Yes Bank partnered with Ultracash Technologies to enable sound-based proximity payments.** Banks have also launched solutions with the help of their in-house teams aimed at improving the digital financial infrastructure. Some of the initiatives include:

- ICICI bank launched a contactless mobile payment system which could enhance NFC payments in India
- Axis Bank presented the ‘Invoice to Payment’ feature that provide end-to-end digital invoicing and payment solutions
- DBS introduced the first mobile bank that allows customers to open accounts digitally with their PAN card and Aadhaar card
- Union Bank launched the *99# mobile application in partnership with NPCI that allows basic services like balance inquiry, fund transfers and mini statements to its customers even when there is no internet.

A major role in kick-starting the evolution of Fintech in India was played by startups offering digital mobile recharges. For a very long time, Indian consumers used coupons purchased from retail outlets, largely by cash for prepaid mobile phone recharges. This evolved to digital recharges, which in turn evolved into digital wallets and usage of wallets for various other commerce activities. The fact that these new offerings have strongly impacted consumer behaviour has not only attracted attention from more technology savvy individuals, but also a lot of investments. An analysis of Indian Fintech startups that have

been founded post-2007 shows that investments in these firms has grown from USD 25 million in 2013 to USD 109.1 million in 2014 and reached USD 364.6 million in 2015.



Interestingly, the investment in Fintech startups is not limited to mobile wallets. India currently has over 600 Fintech startups in the space of lending, payments, InsurTech, blockchain and RegTech. Apart from international financial institutions such as Goldman Sachs, Barclays and Citi, other banks such as Indian's largest national bank State Bank of India have set up innovation hubs or accelerator programs to attract startups. Well-known global investors like Sequoia, SAIF, Matrix Partners, IDG Ventures and others have made few big investments in the Fintech space such as MobiKwik, Citrus Payments and Bankbazaar.com.

Among the various other interesting Fintech startups that have procured funding, one such startup, Capital Float, provides loans to SMEs by assessing

their history through partnerships with e-commerce players. Another company, which has been getting traction from investors, is Bankbazaar.com, an application-based end-to-end financial service provider. The company aggregates financial products from banks and compares them to suit the needs of the customer. The company also helps in collecting the documents required for KYC and submits it to banks, which makes the application process easier for the customers and banks. They generate revenues by earning a commission on applications for banking products.

Additionally noticeable is the Fintech startup **Citrus Pay**, which has launched 'Sellfie' which enables individuals and small businesses to promote, sell and collect payments on social networks and instant messengers, propelling social commerce. Finally, to cater to the large number of customers without a credit card – only 10 million people in India have a credit card – **ZestMoney** has launched an on-demand instant credit service.

The government and the regulatory bodies have recognized the changes that are taking place in the Indian Fintech space and have constantly kept pace with the rapidly changing environment in terms of technology and customer expectation. The Indian government has launched a **funding support initiative** called '**Startup in India**' which has a dedicated fund of USD 1.5 billion to support Indian startups.

Furthermore, the Indian government has launched **various tax and surcharge reliefs such as income tax exemption for startups for the first three years, setting up National Credit Guarantee Trust Company to provide credit guarantee mechanisms via debt funding for startups, and exempting capital gain tax for investments in unlisted companies for longer than 24 months.**

Another popular Fintech initiative is the launch of UPI, that we have discussed in Chapter 5, a modern payment infrastructure that is launched by 18+ banks and Fintech startup partners. Apart from these initiatives, the RBI in June 2016 has also set up a multi-disciplinary committee to study the Fintech business in India. The committee is expected to

study the new models of innovation, provide a framework and guidance for Fintech startups, and also develop infrastructure to promote innovation.

Fintech startups, banks and the government's recent activities have hence paved the way for institutionalised startup activities. This has led to the emergence of specialized accelerators and incubators.

India is considered as one of the top five countries in terms of number of startups. More than 13 Fintech incubators and accelerators exist in India. Some of them are outlined below.

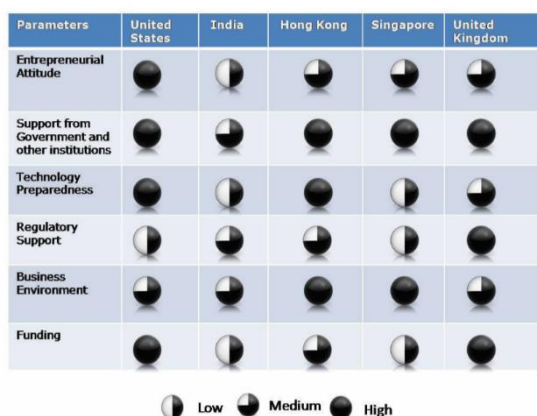
PayPal, which has been at the heart of Fintech innovation, launched **Start Tank incubator in 2013**. The incubator provides an obligation-free environment to startups to use their facility. A few Fintech startups that have taken part in their incubation program are **CashFree, D-Rewards, Notifie and ftcash**.

Rainmatter and K-start, both incubators, not only provide mentorship and technological benefits to startups, but also provide funding opportunities (US \$100–500k) for scaling the startup operations.

Also, **YES bank has partnered with India's largest incubator T-Hub** to provide Fintech startups products, payment gateways and open APIs. Similarly, **Axis Bank has launched Thought Factory** to help accelerate the development of innovative technology solutions for the banking sector. One of India's leading startup accelerator **Zone Startups** runs majority of corporate Fintech programs such as **Barclays' Rise accelerator program, Thomson Reuters's Fintech Innovation Challenge, and Axis Bank's startup accelerator program**. India offers a large fresh talent pool for Fintech companies from engineering background and it is also the **largest English-speaking nation after the USA**. An on-the-job technical training investment for fresh graduate hires is a normal industry practice in India. For many years, India has been a destination for major financial services to outsource their processes. Apart from outsourcing, leading global financial services firms have set their captive centres in India. Banks have been changing their model of the global extended team to service delivery model in India which has resulted in setting up various captive centres and centres of excellence. **Danske Bank** opened its captive centre in Bangalore in 2015, **Deutsche Bank** has set its captive in Bangalore, Pune, Mumbai and Jaipur and **Credit Suisse** has set up its Centre of Excellence in Pune.

Hence, the emergence of Fintech in India has been supported by entrepreneurial activities of early Fintech startups, the initiatives taken by banks, the government and incubators as well as the abundance of innovative talent.

Comparing India versus other Fintech hubs globally



Source: LTP

With the United States, Hong Kong, Singapore and the United Kingdom blooming as global hubs for Fintech, India has only recently emerged as a key player. However, India holds a lot of promise as it provides the right mix of technical skills, government support, regulatory policies and the business environment for startups to flourish. For example, UPI in India is unlike anything available in the United States or the United Kingdom.

Some of the key characteristics of the Indian market that make it exciting and interesting for Fintech startups are:

- **Financial Inclusion and Enablement:** The launch of 'Jan Dhan Yojana' scheme, aimed at providing a bank account for every individual and increase banking penetration, was launched in 2014 and has added more than 240 million bank accounts in the past three years. Fintech startups with their asset-light model can build on this infrastructure by providing easy-to-use and efficient transaction services (P2P, C2B or B2C) across financial services segments like micropayments, lending, insurance, mutual funds and others.
- **A growing digital population:** With around 370 million Internet users in India, the Internet penetration still lies at less than 40%. This is expected to grow in the near future continuing the 2x growth witnessed in 2015 in rural population coupled with government initiatives such as 'Digital India' aimed at penetrating digital services. The growth is expected to increase the penetration of current Fintech startups as well as provide a new market for potential new solutions and new players.
- **Promoting non-cash transactions:** In order to reduce the amount of paper cash being used in day-to-day transactions, the government has taken certain proactive steps like tax rebates for merchants accepting more than 50% as electronic payment.
- **Biometric identification database:** Aadhaar, the government's initiative to create a central identification database, now holds the information of over 1 billion Indian citizens. This is being leveraged for e-KYC and financial benefit transfer schemes. It also helps firms to reduce the time and effort required for first-time customer verification. DBS, a global bank, has launched their mobile-only banking platform called Digibank, which leverages Aadhaar for customer verification.

6.1

Different Segments of the Indian Fintech Market

Overall, India is confidently moving up the Fintech ladder and provides plenty of opportunities for Fintech startups to enter the diversified market and be successful provided a careful solution-customer match and a strong go-to-market strategy is in place. The two broad segments where Fintech is most active in India are payments and lending. Out of the more than 600 Fintech startups currently active in India, around **40% are payments and lending startups.**

Payments

The payment space is the most competitive segment and provides a strong growth potential: In the last 3–4 years, India has witnessed robust activities in payments. As such, the number of prepaid instruments transactions in 2015 to 2016 is almost twice of mobile banking transactions. The competitive payment space in India ranges from telecom companies, banks, wallet companies, e-commerce, technology firms and payment banks too.

Between 2009 and 2010, RBI issued 26 prepaid payment instrument (PPI) licenses. Two types of PPI exist in India now: Mobile Wallets and Prepaid Cards. Apart from PPIs, another exciting development in the payments space is the Payment Banks - new, stripped-down versions of banks conceptualized by the RBI. These banks reach their customers via digital channels and provide transaction services for the migrant labour market in India. As it would be economically inefficient for banks to open branches in every village, Payment Banks are expected to provide a digital alternative for the large unbanked population.

Alternative Lending

Another strong element in Fintech space in India is Alternative Lending. The major block of lending in India is still held in the form of community finance where family and community members, as well as offline lenders, dominate the space. Community lending has been thriving due to it being largely unregulated and a commonly accepted scheme of functioning among the unbanked and underbanked. However, with increasing financial inclusion and digital penetration, there have been an increasing number of startups that are looking at targeting this lending mechanism. Eight alternative lending startups feature among India's 50 most well funded Fintech startups.

More recently, **P2P (peer to peer) and segment-based lending** have been gaining prominence. Fintech startups have developed solutions that provide superior customer experience and faster processing times for lending. Faircent and i-lend are two of the prominent players in the P2P lending space. Some of the startups have been involved in the **activity of targeting microfinance with the goal of creating a social impact** and providing easier access to credit to small entrepreneurs. For example, players like crowdfunding platforms **Milaap** and **Rang De** have used the social chord in order to develop their platform as well to have an impact on farmers and rural population.

Segment-based lending, on the other hand, includes players like **EarlySalary** that focuses on younger working population for providing loans. Such segment-focused startups are at an early stage and could be a very attractive segment for new Fintech solutions.

In May, 2018, Indian company Flipkart became the world's largest e-commerce acquisition of all time, with Walmart paying \$16 billion for the online retailer. This incredible deal shocked the markets but appears to be a signal that India is poised to become the next leader in fintech, thanks to some unique macroeconomic conditions. In fact, Indian fintech software is projected to become a \$2.4 billion market by 2021, doubling in size since 2016 when it was just \$1.2 billion.

India is looked as, one of the most attractive markets in the world because of its size and growth rate. It is the world's third-fastest growing economy, and while digital adoption is currently relatively small it is likely to explode, with projections of rapid smartphone adoption over the next decade.

In addition to Walmart, Amazon has invested heavily into the Indian market – for example, recently putting \$12 million behind digital insurance startup Acko – and has been rewarded in kind. Having failed to make an impact in China, the e-commerce behemoth has more than scratched the surface in India, with a 30% market share to match Flipkart.

Indeed, with nearly \$270 million in funding in 2016, Indian fintech is one of the top five markets globally by value of capital funding and investments.

6.2 Innovation in the Indian Fintech market

Two key innovation drivers, Aadhar and UPI have huge potential to push the Indian Fintech ecosystem ahead.

Firstly, one of the most innovative initiatives to come out of India is Aadhaar, which acts as the core for India Stack initiative. 'India Stack' is a term used to explain a set of public APIs targeted at customer verification, digitizing identity, payments and secure personal digital content. It is led by iSPIRT, a non-profit industry body working with various volunteer technology leaders, regulators and government agencies. The reason for Aadhaar's success has been the support that it has gathered over the years from various entities. Major Indian regulators such as RBI, SEBI (securities), IRDA (insurance) and TRAI (telecom) have widely accepted the Aadhaar-based eKYC.

The second innovative initiative is Unified Payments Interface (UPI) with the aim to transform payments. It is an open API that banks can deploy to allow phone-to-phone payment transfers directly from bank accounts.

Challenges facing Indian Fintech industry

With all these positive developments in Fintech, India needs to address some important challenges.

Firstly, the absence of broad-based financial transaction infrastructure, which has been a major challenge as several Indians in rural parts of India do not have bank accounts, credit score and home ownership details. This has played a vital role in the lack of financial services penetration. For example, loans or lending in India is tedious and time-consuming as regulations demand physical documents for identification proof, pay slips, notary copies of all documents, verification of signatures, in-person verification, and physical inspection of property. Due to the lack of relevant financial data, the risk of lending to millions of undocumented and unverifiable Indians is very high even though they satisfy the income sufficiency test.

Secondly, as the native digital and financially literate population is low, the current set of financial products and services do not cater to the vast majority of Indians and are only designed for the top 40 million of the population.

Finally, there is a dire need for innovation in developing segment-specific vertical products unique to India. India has already seen a glimpse of it including small ticket of unsecured loans, prepaid plans for single medical procedures, instant point-of-sale credit, pay-per-day insurance, micro-investment products and others. Currently, startups have not gone in-depth to understand the segment and create solutions that are usable, affordable and profitable. For instance, solutions such as credit schemes focused on woman entrepreneurs, social financing and crowd financing are areas that are yet to see any large-scale disruptions.

Insurtech – the new kid on the block

Apart from traditional segments such as payments, lending and fund management, India offers a good potential in many other segments. One such segment is insurance where InsurTech startups can have deeper impact and possibilities to disrupt the market. India is attractive from an InsurTech perspective due to the size of its significantly underinsured population. Apart from the market potential, the government has been taking initiatives such as the **Pradhan Mantri Suraksha Bima Yojana**, which is a personal accident insurance scheme and the **Pradhan Mantri Jeevan Jyoti Bima Yojana**, which is the government's life insurance scheme. The two major schemes offer basic insurance at minimal rates and can be easily availed of through various government agencies and private sector outlets. Fintech startups can play a major role in both enabling established insurance firms and in designing new types of insurance products. In terms of product, very few products exist for traditional segments such as crop insurance, micro-insurance, motor insurance and health insurance sectors. Startups with strong underwriting capabilities can develop unique models for the Indian market and develop/design products that cater to the specific needs of the segment.

Currently, **PolicyBazaar** and **Coverfox** are the two main InsurTech companies that have been notably doing well in India. They are ensuring to educate customers not only on policies and their availability but also on the kind of insurance a particular customer needs, thus creating awareness for products in the consumer's mind.

Payments and wallets are a highly competitive segment in India with a large number of global and local players. To fight the large established Fintech players, access to capital would be a major requirement for new solutions enabling plain wallet services. With simple value added services, startups can expect higher customer loyalty and traction.

Zerodha – India's discount brokerage platform for the 21st century

Launched in 2010, Zerodha is India's first provider of electronic discount brokerage platform and is known for pioneering the zero-brokerage concept in India. It has generated revenue of USD 25 million and a profit of 16 million in 2017.

The company has disrupted the traditional model of brokerage in India where it charges a fixed fee per executed transaction rather than charging a percentage of the total traded. This has helped Zerodha in targeting clients that execute large volumes of trade in futures and options and exempted them in paying high-broking charges. This has led to a vast growth in the number of customers they serve. Apart from the low fees, the company has also built different offerings for different trading segments. It has a total of seven offerings, each catering to futures, equity, options, commodity and currency segments.

The company plans to grow its customer base and hence recently launched its platform in 11 regional languages. The company has taken steps to educate the customer in understanding their trading habits and how to evolve to be a better trader by launching tools such as **Q, Quant and Open Trade**. These tools not only help customers in understanding their trading habits but also help them in picking trade updates from profitable traders based on their trading style and help them in gaining customer loyalty.

Rainmatter, a Fintech Incubator is another key initiative by Zerodha which helps to bring innovative solutions to the market. Rainmatter provides startups with APIs, research, and mentoring and financial support.

Investments management is a high growth segment for startups. With a lower number of startup solutions, multiple subsegments could be targeted and could offer Fintech solution providers the first mover advantage. However, customer education is a key requirement for acceptance of these solutions in India.

6.3 Challenges and Opportunities

There is evidently a huge opportunity for innovative fintech companies on multiple levels. Firstly, the **absence of broad-based financial transaction infrastructure**, which has been a major challenge as several Indians in rural parts of India do not have bank accounts, credit score and home ownership details. This has played a vital role in the lack of financial services penetration. Any established analytics platform, which can provide such services, would be a great success in the Indian context.

As the **native digital and financially literate population is low**, the current set of financial products and services do not cater to the vast majority of Indians and are only designed for the top 40 million of the population. A few major areas that are ripe for disruptive solutions in the Indian context are InsurTech, analytics, artificial intelligence, and investments platform. Lending is also a growing segment in India. Also, fraud and security are a major focus area for banks as well as Fintech startups, especially in transaction and payment services.

Finally, there is a dire **need for innovation in developing segment-specific vertical products unique to India**. India has already seen a glimpse of it including small ticket of unsecured loans, prepaid plans for single medical procedures, instant point-of-sale credit, pay-per-day insurance, micro-investment products and others. Currently, startups have not gone in-depth to understand the segment and create solutions that are usable, affordable and profitable. For instance, solutions such as **credit schemes focused on woman entrepreneurs, social financing and crowd financing** are areas that are yet to see any large-scale disruptions. To make a mark in Indian Fintech, the startups must adopt a hybrid model which is a combination of online and offline strategy to acquire customers. As the market matures and services such as eKYC, digital verifications and digital payments become more common, startups could rapidly shift to a complete online model in India.

Fintech companies expanding into the market need to consider their patent protection in the region. For the companies that are looking to enter this market in its upward trajectory and capitalise on its rapid growth, protecting their invention to safeguard their corner of the market within the region will be key. Not only does **a strong intellectual property (IP) portfolio** protect a company's invention from competitors stealing the idea, but it also makes a company far more attractive to potential investors, partners, or acquirers.

Overall, India is confidently moving up the Fintech ladder and provides plenty of opportunities for Fintech startups to enter the diversified market and be successful provided a careful solution-customer match and a strong go-to-market strategy is in place.

7 Aadhaar – India's Digital Thumb Rule

India is leading the world in payment system evolution. Enablers like Jan-Dhan, Aadhaar, Mobile penetration, and more recently demonetisation have created favourable conditions for large scale adoption of digital payment systems in India. The country is expected to leapfrog plastic payment systems and have mass adoption of digital and biometric systems. India is leading the world in payment system evolution.

There are a multiple key initiatives that combine to make India a leader in payments. First is **Aadhaar**, India's 12-digit national identity number with biometric information. Launched by the Indian authorities nearly a decade ago, Aadhaar is now established as the world's largest biometric identification program.

A lot of countries today have national IDs with biometric information but what makes Aadhaar unique is its **federated architecture**. The Aadhaar database can be queried by any entity that needs to verify an Aadhaar number and biometric information against the information available in the database through the Aadhaar Auth API. No personal or biometric information is shared with the parties; the query will only respond with a "Yes" if there's a match between the information sent and the central Aadhaar database. This feature has enormous potential to drive "presence-less" and "paper-less" authentication of transactions in multiple industries particularly in banking and payments, across public and private sectors.

Aadhaar was first unveiled back in 2009, and the basic concept is simple. Biographic and biometric data is captured from all Indian residents aged over 18. This means name, date of birth, gender, address, a photograph, and ten fingerprint and two iris scans.

Each resident is then issued with their own, unique 12-digit Aadhaar number. It's a residential and not a citizenship card and not compulsory so far. The unique number and biographic information are printed on a paper document known as the Aadhaar card. **E-Aadhaar** (or e Aadhaar) is the electronic version of the Aadhaar card downloaded from the UIDAI website. And there is **no Aadhaar smart card** a such.

Aadhar UID is a single, universal, **digital identity number** that any registered entity can use to authenticate an Indian resident. Anyone who has lived in India for 182 days can enrol in Aadhar for proof of identity. In India, it's about **you being the identity** not the card.

Responsibility for managing the entire process falls to the **Unique Identification Authority of India (UIDAI)**, working under the auspices of the Ministry of Electronics and Information Technology. 1.2 billion people have an Aadhaar number accounting for more than 99% of India's total adult population. It has been an impressive achievement in a country where many citizens still live in remote rural locations.

Blue Aadhaar for Kids under 5

With the ever growing importance of Aadhaar the Unique Identification Authority of India (UIDAI) just launched **in February 2018 a new blue colored Aadhaar card or 'Baal Aadhaar' card for newborns and children below 5**. According to UIDAI, the child's birth certificate and the Aadhaar card number of one of the parents are required for enrollment. The card does not include biometrics information.

Initially, Aadhaar was designed primarily to aid the efficient management of public subsidies and unemployment benefit schemes. And it quickly proved successful in enhancing accessibility to vital services, strengthening protection against fraud, and reducing the cost of service delivery.

Driven by phenomenal growth in digital infrastructure (Aadhaar, Jan-Dhan Yojana, AEPs and India stack), India would shift to the new age biometric payment systems. This is a new frontier in payment technologies. Your cash is no more dependent on a piece of plastic or your smartphone. All you need is 'your thumb'.

Recently, **Aadhaar Payment App** was launched using AePS which allows consumers to pay merchants by entering their Aadhaar# and authenticating with their biometric information. Merchants have to download the App and connect their smart phone to a biometric reader. The impact of these initiatives increases as the number of Indians with a mobile phone and bank account continues to grow swiftly, and the benefits will percolate to the “bottom of the pyramid”.

It is interesting to note that a smart phone is not mandatory to enjoy many of the above-mentioned services. NPCI's **National Unified USSD Platform (NUUP)** allows any **feature phone user to dial *99# regardless of their mobile carrier or bank to make IMPS enabled transactions.**

7.1

Benefits of Aadhaar

By providing the citizens with the means to provide irrefutable proof of their identity with biometric authentication, Aadhaar offered vast potential to extend **social inclusion**, whilst simultaneously strengthening the country's defenses against threats of corruption, cyber-crime and identity theft.

Moreover, the Indian authorities took measures to further improve the security of the scheme. Specifically, this **included the use of facial recognition** and so-called **Virtual ID**. **This 16-digit number is derived from the 12-digit Aadhaar number.** It is designed to allow users to protect the integrity of their original Aadhaar number by deploying a virtual equivalent, in the form of a secure digital 'token'.

Facial biometrics, meanwhile, is an add-on to the biometric data which is required of all residents applying for an Aadhaar number. Furthermore, this supplementary information will also be captured from existing users, as and when they update their accounts. UIDAI launched **facial authentication in a phased rollout from September 15, 2018**. It will be available as an add-on service in fusion mode along with one more authentication factor like fingerprint, Iris or OTP.
2017-2018 nationwide changes initiated by Aadhaar

Aadhaar brings a digital revolution in the life of every Indian. It brings trust and is the enabler of huge transformation.

For 2017-2018, there are 7 major domains where the program could initiate major changes:

1. **Driving licenses** - The Indian driving license is particularly significant because road safety is a huge issue for the country. Since last year, the government began the **process of cracking down on the specific problem of drivers using fake licenses**. This was done by **taking steps to link genuine licenses to the holder's Aadhaar number**. Combined with new software to check the validity of driving credentials in real-time, this approach aims to ultimately rid the country's roads of the menace of unqualified drivers.
2. **Bank and savings accounts, PANs and mobile phones** - In 2017 the government also announced that, in future, Indian citizens would need to link Aadhaar to PAN (Permanent Account Numbers – issued by the Central Board of Direct Taxes), bank accounts. The same obligation applies to a diverse range of savings and investment schemes. In June, 2018 the authorities announced that PAN-Aadhaar linking deadline has been extended till March 2019. Residents would also need to link Aadhaar with mobile number (all pre- and post-paid mobile accounts) though it is not mandatory.
3. **Social security and welfare schemes** – They have a key part to play addressing poverty and financial exclusion. To help ensure that these important benefits reach their

intended recipients, and to protect them from corruption and abuse, 2017 also saw a decision to **link numerous such schemes to Aadhaar numbers**.

These cover everything from **educational scholarships** and **LPG cylinder subscriptions** to **subsidised meal programs** and the **targeted Public Distribution System (PDS)**.

4. **Payment services** – In the lines of financial inclusion, it was also announced last year that Aadhaar would provide the platform for a new payment service: the **Aadhaar Enabled Payment System (AEPS)**. This is designed to allow members to make secure cashless transactions, by providing their Aadhaar number and/or biometric authentication.

5. **Flights and trains** - By linking the Aadhaar database to an airport's system, via a fingerprint scan for check-in and security verification, for example, border protection can be improved. Furthermore, with the subsequent reduction in queues, the passenger experience is enhanced. For those looking to travel overseas, it's already compulsory to provide an Aadhaar number for passport applications.

In addition, the legendary **Indian railway network** is encouraging the use of biometric proof of identity; passengers that provide their Aadhaar number can access concessions in the event of problems during their journey.

6. **Private sector apps** - The **need for seamless and secure identification and authentication** is clearly not confined to the public sector. Reflecting this, an increasing number of enterprises in India are following the lead of the government in leveraging both the scale and integrity of the Aadhaar scheme.

7. **The word of the year is Aadhaar** - 'Aadhaar' could hardly be a more appropriate word. In English, the modern Hindi term translates to 'base' or 'foundation'. Essentially, that's a near-perfect description of the role that the scheme is likely to play in the years ahead - enabling and protecting a growing number of services and applications across both the public and private sectors.

In all cases, the **primary target is fraud**. Since the Aadhaar number is inextricably linked to the holder's unique biometric data, linking it to key financial accounts provides a powerful means of meeting KYC (Know Your Customer) obligations, as well as tackling modern menaces such as money laundering and tax evasion.

8 Preventive Measures for Fraud

Over the last two decades, the world has seen rapid strides in technology and communication. In the digital world, cybercrime is evolving rapidly, making it one of the biggest threats to businesses, individuals and governments. Cybersecurity is termed as one of the top business risks across sectors such as healthcare, e-commerce, telecom, financial services, government services, manufacturing and hospitality causing far reaching implications.

Cyber risk is not limited to geographical boundaries and corporates in India have been fairly exposed to this risk. The attacks have accentuated with **significant drive on adoption of digital payment channels over the last six months with phishing, Distributed Denial of Service (DDoS) and spam being most widely used attack vector**. Proliferation of digital channels along with increased data access covering the remote locations in India, has led to significantly high number of users having internet access.

Users today are accessing digital channels through multiple devices, and almost 48% of the users prefer using mobile phones. **Smart phones have emerged as a preferred mode** for carrying out digital payments but it also exposes individuals and organisations to **cyber security risks such as online fraud, information theft, and malware or virus attacks**.

A few illustrations of the online payment and banking frauds prevalent in India are:

Fund diversion attacks: These type of attacks are becoming increasingly prominent in India where more and more companies with export businesses are targeted. The typical modus operandi of this attack involves infecting computers of key personnel in accounts receivable department or the companies e mail server with a view to obtain the credentials of their e-mail accounts. By using Trojan, the cyber fraudster stealthily monitors the e-mail flow between the victim and the customers over a period of months. At an opportune time, the hacker strikes by impersonating the victim and directly communicating with the customer, asking them to remit funds into an account of his choice, which is instantly emptied out using an international laundering syndicate.

Spear-phishing: Spear-phishing is an e-mail spoofing fraud attempt that targets a specific organisation, seeking unauthorised access to confidential data or transfer of funds. As with the e-mail messages used in regular phishing attacks, spear phishing messages appear to come from a trusted source.

Companies in India are increasingly targeted with this type of fraud. The typical modus operandi is to first identify potential target companies and perform reconnaissance to gather information about the key personnel (usually from websites, social media sites). They then register a domain name that looks similar to the target's domain address. An e-mail account is hosted and forged e-mails posing to be CFO or CEO are sent to the finance Directors or Managers instructing them to perform fund transfer to an international bank account and charge the amount to admin expenses. Fraudsters typically target hundreds of companies with customised e-mails. A few corporates eventually do fall prey to this type of attack.

Malicious mobile application based attacks: An increasing number of cases have been noted where mobile users are presented with attractive online offers and enticed into downloading and installing unknown mobile applications. Good majority of the users either always grant permission or simply do not know enough about the kind of consent they may have granted while installation of applications. In this way, malicious applications enter the mobile devices. Depending on the level of permissions these applications have been granted, the hacker connects to the user's mobile phone and entices/demands the user or his/her contacts to make transfers through payment wallets.

These may happen because of the any of the following:

Inadequate security measures on devices – Smart phones with internet access are exposed similar to traditional computers from security perspective, however these devices are normally not secured through various security tools – such as antivirus, anti-phishing, anti-malware etc. This exposes the users to cyber security risks. Security of devices used for digital payments is therefore a major concern.

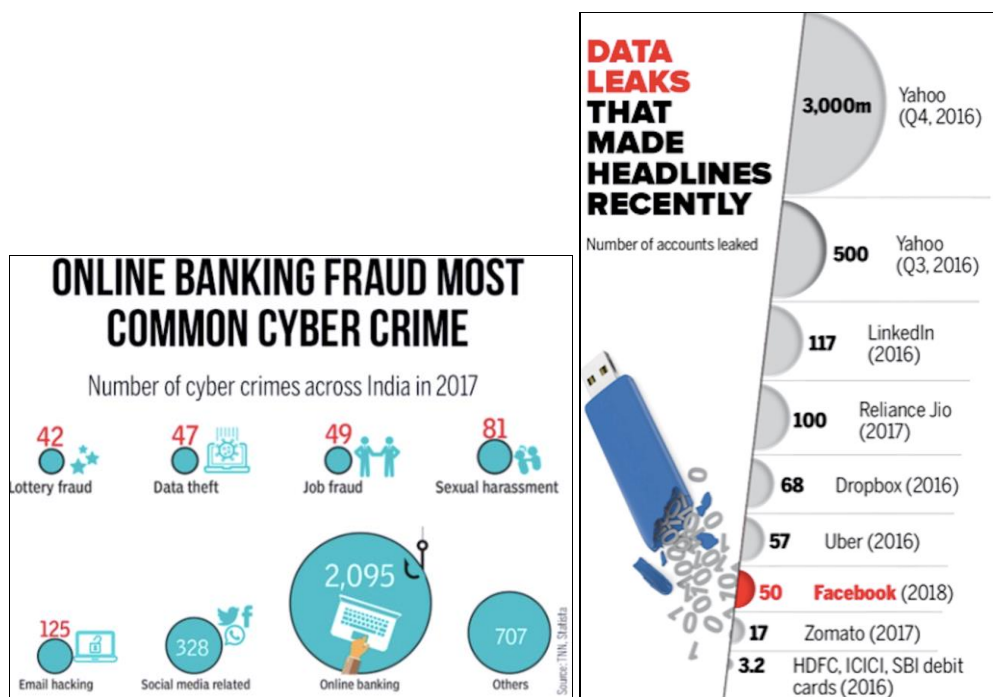
Cracked applications installed on devices - Users have multiple applications installed on their mobile phones, which also includes the 'cracked' applications that may have access to information across the device. These applications potentially access financially sensitive information and pass on to the attackers. Even information such as, One Time Password (OTP) can be accessed by malicious applications installed on mobile phones, which have access to user's messages or calls.

Vulnerable/unpatched operating systems – India has a mix of users having smart phone with Android and Apple operating system. The nature of some of these operating systems are extremely open which supports collaboration, but also exposes large set of users to potential security issues.

Security by design for digital payment products – The demand for accessing digital payment channels has increased significantly post the demonetisation drive in the country. While this provided an opportunity to service providers, the demand of solutions led to design and launch of multiple products during short period, which may lead to security controls not being designed comprehensively.

User awareness – Lack of end user awareness has emerged as one of the main causes for attacks being successful. Attackers continue to exploit lack of awareness through various social engineering attacks, which include identity impersonation, phishing sensitive information etc.

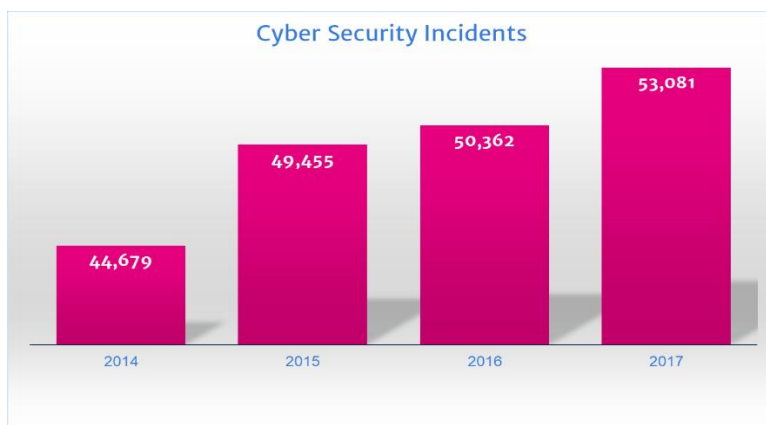
In India, online banking fraud is identified as the most common one. Additionally social media fraud is increasing significantly. The below figure illustrates the numbers:



Source – The Times of India, March 31, 2018

Cyber Swacchta Kendra (CSK) – Country wide initiative for fraud prevention

Established in February 2017, the Botnet Cleaning and Malware Analysis Centre, CSK, operated by Indian Computer Emergency Response Team (CERT-IN) focusses on desktop and mobile device security. There are multiple solutions which have been released, including solution on desktop security (USB Pratirodh) and mobile device security (focussed on Android based mobile phones called M-Kavach). This is a step which has been taken by CERT-IN to address the increased number of incidents being reported (more than 50,300 incidents reported in 2016) and is also part of the government's 'Digital India' initiative, under the Ministry of Electronics and Information Technology.



There have been more than 53,000 reports of cyber attacks in India as per the latest CERT-IN data.

8.1

Regulation to address cybersecurity risks

One of the key drivers for deploying adequate cybersecurity measures has been the regulatory requirements. The adoption of digital payments can be further enhanced by adopting a more proactive approach to build a robust regulatory framework.

The **RBI** has been monitoring the cybersecurity risks and have drawn regulations to be implemented by organisations across sectors to strengthen user's confidence in digital transaction. Recently **issued cybersecurity regulations** include:

- Banks to have comprehensive and robust cybersecurity framework
- Technical cybersecurity audit of Prepaid Payment Instrument (PPI) issuers

The regulations are enforcing PSPs to ensure that there is a minimum baseline of security controls.

The changing nature of cybersecurity attacks such as web application attack, ransomware, reconnaissance, DDoS attack clearly establish cyber-risk as new reality and also positions it as one of the top business risks today.

It is imperative to have structured approach to security, with the following key components:

Security strategy and governance

- Design and implement robust cybersecurity frameworks
- Identify 'crown jewels' and protect them
- Establish adequate measures for protection from third party risks
- Evaluate the changing threat landscape and align risk treatment strategies
- Empower the users through enhanced security awareness

Security defence and transformation

- Establish robust measures for establishing user identity and authentication for transactions
- Establish advanced authentication measures, such as risk based/adaptive authentication
- Deploy adequate technical and security measures to deal with 'cyber warfare'

Cyber Response

- Establish comprehensive cyber and incident response plan
- Conduct regular cyber drills to enhance preparedness
-

How Forensic Technology can help

While strategies of fraudsters have been evolving, so have the technologies and processes used for preventing, detecting and responding to frauds. Digital forensics is continuously evolving and numerous tools and methodologies are available with the forensic technology investigators to respond to payment frauds in an effective manner.

Cyber forensic experts can adequately identify, collect and preserve evidences in a manner that is presentable and acceptable in court of law.

Some of the activities that are typically performed by investigators to solve payment frauds are as below:

- Collection of evidences such as hard disk images, mobile phone images, server/desktop logs, firewall/security appliance logs in a forensically sound manner.
- Recovering deleted evidences from the computer systems
- Analysing the data to identify traces of fraud and its possible source.
- Presenting the evidences in a manner acceptable in a court of law.

While anonymity is still achievable by cyber criminals, the experts are able to track down the criminals by identifying IP addresses coupled with any other evidences left by the criminals in the data content and logs.

While it is evident that criminals prefer to carry out illegal activities using computing devices, making it hard for organisations and investigators to establish culpability. To detect cybercrime, organisations are increasingly leveraging on cyber forensics to know accurate facts of the incidences. Law enforcement agencies are required to increasingly cooperate among themselves to identify, track and extract evidences in order to capture criminals. Digital forensic evidence such as system logs and user identity details would be required along with the data from telecom, internet service providers and cloud service providers such as IP address, GPS coordinates, for an effective analysis of the crime.

Cyber forensic efforts are greatly enhanced if the organisations have appropriate audit trails and logging mechanisms established in its business environment. Lack of system level audit trails generated at the time of business activities can hamper the investigation as cyber forensic cannot recover something not created in the first place.

Corporates should bear in mind that an effective cybersecurity strategy, is not a one time activity but a continuously evolving cycle of activities that need to be carried out at periodic intervals.

Way Forward

With demonetisation, millions of Indians have enrolled for digital payments with mobile payments being the most preferred mode. With such surge in the volume and number of transactions, securing digital payments infrastructure becomes one of the most important concerns for banks and payment service providers such as digital wallet providers. With the

use of online payments going up, the incidents on misuse of payments network and data theft are also on the rise.

People are the weakest link in the security architecture, hence security should be the shared responsibility of the organisations as well as the users of the digital platform. Though the government has taken initiatives like 'DigiShala' but needs to be more proactive in educating the customers as well as enforcing basic security standards for organisations. To conclude, the digital payment ecosystem needs to be strengthened, with organisations, users as well as government equally sharing the responsibility of securing the digital payment ecosystem.

9 Challenges on the Payment Infrastructure

As one of the world's fastest growing economies, accounting for about 15% of global growth – India's economy has helped to lift millions out of poverty. But to sustain rapid growth and raise incomes for the country's 1,3 billion people, India will need to build on the success of its reforms.

India's economy is gaining momentum, due to the implementation of several recent noteworthy policies—such as the enactment of the long-awaited goods and services tax, and the country opening up more to foreign investors.

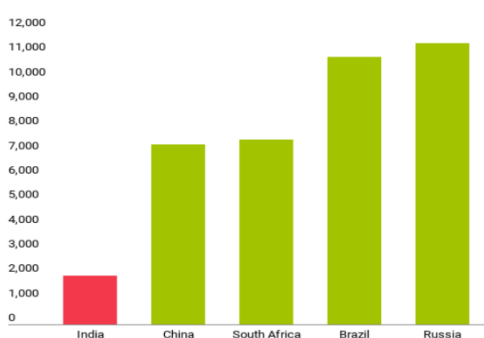
The **goods and services tax** created a unified national market for the first time by lowering internal barriers to trade—effectively establishing a free trade agreement for a market of over 1.3 billion people.

9.1

Key Challenges

Raising incomes

India is one of the world's fastest-growing economies, but per capita income is still well below peer countries.
(GDP per capita; constant 2010 U.S. dollars, 2017)

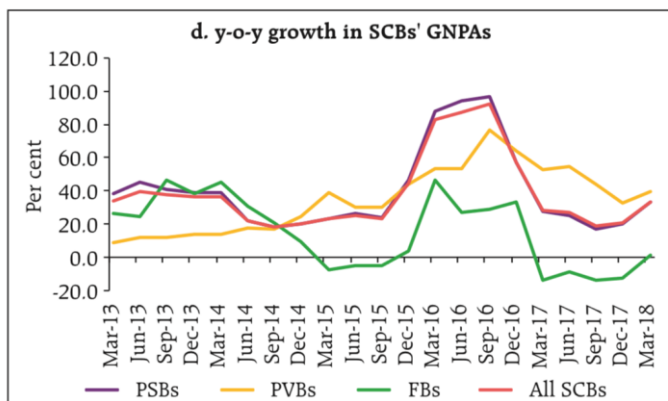


Source: World Bank, World Development Indicators (WDI).

and improving corporate repayment discipline.

Low Income - To sustain and build on these policies and to harness the demographic dividend associated with a growing working-age population (which constitutes about two-thirds of the total population), India needs to reinvigorate reform efforts to keep the growth and jobs engine running. This is critical in a country where per capita income is about \$2,000 U.S. dollars, still well below that of other large emerging economies.

Health of the banking system - The country has recently implemented a **new insolvency and bankruptcy code**, which should make it easier for creditors to seek repayment from debtors who are in arrears. The bankruptcy code is already shifting the power balance between debtors and creditors



Source: RBI Financial Stability Report June 2018

In addition to the bankruptcy code, the central bank and government have taken steps to improve banks' recognition of bad assets and to recapitalize public sector banks.

India's banking industry is on the cusp of a major transformation, with new banking licenses expected to bring in more players in an already competitive environment. In such an environment, banks across India are increasingly adopting business intelligence (BI) and analytics to drive their overall profitability. Core Banking System (CBS) is widely used across the banks for transaction management. However, its integration with risk management and other enterprise level applications is still at preliminary stages.

Mobile banking continues to be a focus area for banks. It is not only a way to increase their customer engagement in urban areas, but also to reach out to new ones in rural regions, and thereby significantly further their financial inclusion agenda.

In the last decade, India has seen a shift from traditional payment methods, i.e., cash/paper-based payments to modern electronic payment systems. However, 97% of payment transactions for public sector banks are paper based as compared to 60% for private sector banks.

In the recent past, the RBI has taken multiple steps to promote electronification of payment instruments such as:

- Framing the Payment & Settlements Systems Act to provide for the regulation and supervision of payment systems in India
- Providing robust RTGS/NEFT platform, establishing National Payments Corporation of India (NPCI) to act as an umbrella institution for all the retail payment systems
- Regulation and promotion of acceptance channels including ATMs, POS and payment gateway policy
- Issuance guidelines and security measures for all card transactions

Sustain Inflow of Foreign Direct Investments - India can benefit from improving its integration with global markets. The country has made a lot of progress, in that most foreign investments are now allowed to enter sectors of the Indian economy under what is known as "the automatic route." This amounts to a meaningful reduction in bureaucratic oversight, and greatly increases access to the Indian market for foreign investors.

However, more can be done to sustain the recent foreign direct investment inflows and remove trade barriers—which remain significant in the country.

These include:

- reducing trade documentation requirements and procedures;
- lowering tariffs;
- continuing to improve the business climate; and
- improving governance.

Labor Market Regulation - India has a young and growing youth population, and about two-thirds of the total population is of working age (between 15 and 64). One way to support job creation is by improving labor market regulations. Numerous, outdated, and restrictive laws prevent firms from expanding to operate at an efficient scale, lead to a misallocation of resources, and push economic activity into the informal and unregulated parts of the economy.

As a byproduct, these rigidities make it harder for women to join the work force, and make growth less inclusive. A reform and streamlining of the complicated web of labor laws would further help sustain growth.

9.2

The Road Forward – Development and Future Prospects

The confidence in the Indian economy has increased on account of policy measures taken up by the Government and the Reserve Bank of India. The Government of India has taken various initiatives to improve the confidence in the Indian economy and boost the growth of the economy and which also include comprehensive reforms in the foreign direct investment policy. The Government has launched a phased program for bank recapitalization. This entails infusion of capital to the public sector banks, which is expected to encourage banks to enhance lending. The **Insolvency and Bankruptcy Code** was enacted to achieve insolvency resolution in a time bound manner. The introduction of the **Goods and Services Tax (GST) in 2017** has provided a significant opportunity to improve growth momentum by reducing barriers of trade, business and related economic activities. Budget 2018-19 included various measures to provide a push to the economy, which among others, include major push to infrastructure via higher allocation to rail & road sector, reduced corporate tax rate of 25 per cent for companies with turnover up to INR 250 million which is expected to help 99 per cent of MSMEs, etc.

Another unprecedented policy move on 8 November 2016 was the **announcement of the immediate withdrawal of two high-value currency notes by Prime Minister Modi**. In one stunning move, 86% of the currency was taken out of circulation, to be gradually replaced by new bills. **The declared aim of the move was to fight black money and counterfeiting.**

The resolve to fight corruption is shown in other ways too. The **Prevention of Money Laundering Act**, which was implemented in 2005, has been given more teeth in recent years with an expanded Enforcement Directorate, the federal agency tasked with fighting money laundering. **Between April and August of 2017, the Enforcement Directorate and the Securities and Exchange Board of India, the stock market regulator, acted against at least 331 shell companies and 100 brokerages charged with facilitating money laundering.** This government has implemented **Aadhaar, the world's largest biometric identification system**, which was initiated by the previous government to root out duplication of identities and safeguard welfare schemes from corruption-related leakages. The government has launched **Digital India**, a campaign to improve the country's digital infrastructure and offer more government services online.

As of September 2018, the Government of India has made the **Pradhan Mantri Jan Dhan Yojana (PMJDY) scheme an open ended scheme** and has also added more incentives. According to the government data, the total number of Jan Dhan account holders has risen from 0,28 billion in March 2017 to 0,31 billion in March 2018.

As part of **government's capital infusion plan of US\$ 9.70 billion in 21 public sector banks during FY19**, US\$ 1.69 billion will be infused in Punjab National Bank, Andhra Bank, Allahabad Bank, Corporation Bank and Indian Overseas Bank.

In order to achieve economic reforms and social inclusion, the government should focus on

Potential priority areas for India

WORLD
ECONOMIC
FORUM
COMPETITIVENESS AND
SUSTAINABLE GROWTH
OF THE WORLD

Reforming the tax code and expanding social protection
India has one of the most narrow tax bases and the most regressive tax code among lower-middle income economies, with limited spending on social protection. Tackling these issues should be India's number one priority to reduce poverty and inequality.
Reducing red tape and fostering formal entrepreneurship
Regulatory burdens and inefficient public administration are stifling India's economy. The country is among the worst in the world when it comes to enforcing a contract or resolving insolvency. Starting a business is costly and the number of new, formal companies registered every year is extremely low
Improve access to sanitation and other basic infrastructure
Only 35% of Indian population has access to improved sanitation, making this one of the top priorities for the country. Electrification rate is also lower than in most other developing countries and uptake of digital technology has been stagnating over the last decade.
Making education more equitable and strengthen vocation training
The education system fails to adequately provide equal opportunities for all regardless of their socioeconomic background. The country also has one of the lowest attainment rates in the developing world and makes very little use of vocation training—failing to adequately develop the skills needed for a productive labor force
Increase transparency of the public administration
Although India has made improvements in recent years when it comes to tackling corruption and increasing transparency of the public administration, there is still large room for improvement, especially in ensuring the independence of the judicial system.
Further enlarge access to finance
India has also made significant progress in ensuring access to finance for its population, with special programs leveraging digital technologies and targeting rural areas. Yet, access to poor and marginalized populations will be needed to allow India to modernize its economy.

10 Guidelines and regulations for foreign players entering Indian Financial market

Foreign investors including companies looking to enter India or already operating in India need to understand the Indian Legal and Regulatory framework. The following section provides an overview of Indian laws and regulations which would be relevant for a foreign investor in India.

10.1

Quick Guide To Indian Business Culture

- India is a multilingual, multi-ethnic and pluralistic society, and vast cultural differences can be seen between North and South India.
- English is the official language of business.
- It is common for meetings to start and finish late and for interruptions to occur on a regular basis
- There is a more formal and hierarchical relationship between managers and staff in India
- Indians place great value on relationships: it is good to develop contacts and relationships.

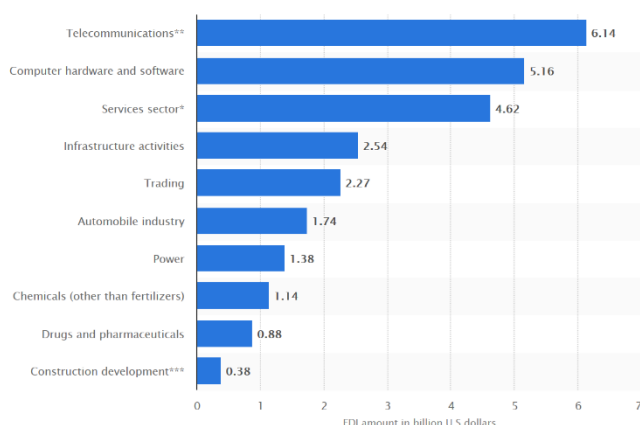
Entry Options

An appropriate entry strategy is a must for every foreign investor seeking to do business in India or with counterparties based in India. Entry strategy would usually vary depending upon the nature of business, the concerned sector, scale of operations and costs and other commercial objectives. Broadly, foreign investors can set up either a company, branch/liaison office or a **limited liability partnership (LLP) in India**. Indian companies are governed by the new company law, the Companies Act, 2013. LLPs are governed by a separate legislation, the Limited Liability Partnership Act, 2008. It may be pointed out that the Indian government has launched a series of initiatives aimed at enhancing the ease of doing business in India.

Foreign Investment Policy

Foreign investments into India are governed by a comprehensive foreign direct investment (FDI) policy issued annually by the Department of Industrial Policy and Promotion, which works under the aegis of the Ministry of Commerce and Industry, Government of India. The FDI policy is supplemented by various press notes that are issued throughout the year as and when a policy change is announced. This policy framework is operationalised by rules, regulations and circulars issued by India's Central Bank, the Reserve Bank of India.

Most investment sectors are under the automatic route (i.e. no prior approval is required for investment); only a few sectors such as insurance, real estate, non-banking financial corporations are regulated. FDI into LLPs is also permitted, subject to certain conditions. The new Indian Government has announced its commitment to further liberalise India's FDI policy, with a view to attracting greater foreign capital.



Services sector includes financial, banking, insurance, non-financial / business, outsourcing, R&D, courier, technical testing and analysis.

*** Telecommunications sector includes radio paging, cellular mobile, basic telephone services.*

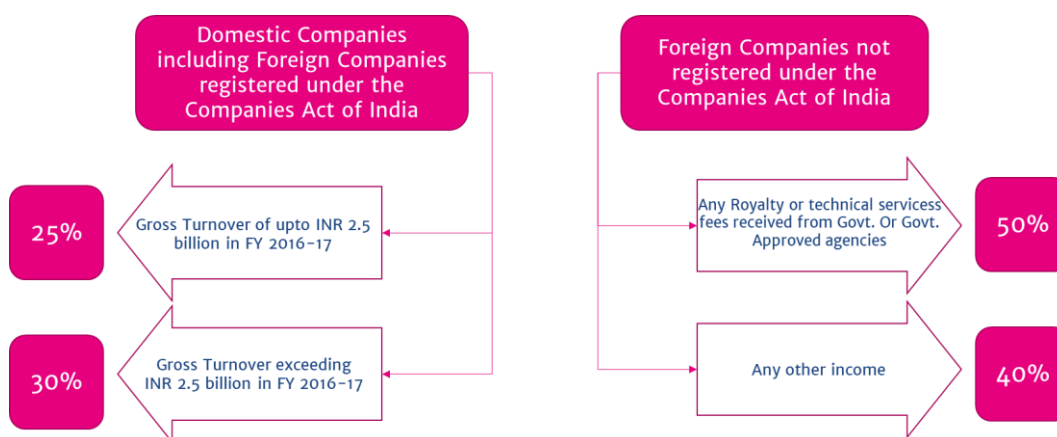
**** Construction development sector includes townships, housing, built-up infrastructure. India's financial year begins April 1st and ends March 31st.*

This statistic displays the **distribution of foreign direct investment (FDI) equity inflow in India for FY 2018, based on sector**. The telecommunications sector constituted for the largest part in foreign direct investment equity inflows in India with an overall amount of 6.14 billion U.S. dollars for FY 2018.

Taxation

Income tax in India is governed by a Central legislation, **the (Indian) Income tax Act, 1961**, while indirect taxes such as value added tax, customs and excise duty are subject to both Central and State laws. Currently, **a flat rate of 25% corporate tax is levied on the income earned by a domestic corporate**. A surcharge of 12% is levied in case the turnover of a company is more than INR 1 billion for a specific financial year. Corporate tax is also levied on the global earnings of the domestic company. On the indirect taxes front, the **introduction of Goods and Services Tax (GST)** has helped in reducing complexity and eliminating multiple taxation.

Tax Rates Applicable : The below illustration provide the details of the rates applicable to the domestic and foreign companies for AY 2019-2020 based on their turnover



Health & education Cess

Further 4 % of income tax calculated and applicable surcharge will be added to the amount of total tax liability before this cess.

Minimum Alternate Tax (MAT)

Alternatively, all the companies (including foreign companies) are required to pay minimum alternate tax at the rate of 18.5 % on book profits if the tax calculated as per above rates are less than 18.5% of book profits.

Dividend Distribution Tax (DDT)

Companies are required to pay tax on the dividend distributed to the shareholders in a particular year. This dividend is exempted in the hands of shareholders upto an amount of INR 1 Million but the companies have to pay tax @ 20.56 %.

India's Special Economic Zones

Special economic zones (SEZs) in India are certain localities which offer tax and other incentives to their resident businesses. The government introduced the SEZ in April 2000. They are designed to help stimulate both foreign and domestic investment, boost India's exports, and create new employment opportunities.

As of September 2017, 221 SEZs are in operation, and by January 2018, a massive 423 have received formal approval for operation.

Incentives for setting up in an Indian SEZ

Some advantages of setting up a sourcing or manufacturing platform within an Indian SEZ include:

- Duty free import and domestic procurement of goods for the development, operation, and maintenance of your company.
- 100 percent income tax exemption on export income for first five years, 50 percent for five years thereafter, and 50 percent of the export profit reinvested in the business for the next five years. These incentives will be withdrawn from April 1, 2020 (Sunset Clause), pending an extension, which is currently under discussion.
- Exemption from the Goods and Services Tax (GST) and levies imposed by state government. Supplies to SEZs are zero rated under the Integrated GST Act, 2017, meaning they are not taxed.
- External commercial borrowing (ECB) is allowed up to US\$500 million a year without restriction. For developers of an SEZ, the ECB channel may be availed after receiving government approval, and only for providing infrastructure facilities in the zone. However, ECB will not be permissible for development of integrated township and commercial real estate within the SEZ.
- Permission to manufacture products directly, as long as the goods you are producing fall within a sector which allows 100 percent FDI.

The benefits of India's SEZ policy have been substantial and have already served to exponentially increase the amount of foreign firms operating in India. Since 2005, exports from the country have almost continually been increasing, largely due to the rise in sourcing and manufacturing platforms there.

Choosing an SEZ location : There are many SEZs for companies to choose from – a list of which can be obtained from the Department of Commerce's website. For companies directly sourcing from or manufacturing in India, the platform should be well placed to acquire the raw materials needed for production, while at the same time being in an area suited for export (that is, on the coastline).

Intellectual Property in India

Intellectual Property is a valuable business asset and in an emerging market like India, it could be one of the main competitive advantage. Companies exporting to or operating in India, or even considering it as a future market, should have an IP management strategy that identifies and covers all of their IP and how best to protect it.

India has been a World Trade Organisation (WTO) member since 1995 and thus similarities between local IP law and enforcement procedures can be seen, and those in force in the UK. India is also signatory to various international treaties on IP rights.

IP protection is jurisdiction-specific, which means **IP rights must be registered in India** even if they are protected in the country of origin. Registration of patents, trademarks, designs and copyright could take several months or even years in India owing to considerable backlogs at the IP registries, so businesses should plan their registration well ahead of entering the market.

Checklist For An IP Strategy In India

New foreign entrants to the Indian market can take a few practical steps to minimise the risk of encountering IP issues:

Prevention is better than the cure: Prevent third party copying by having physical protection and destruction methods in place to protect documents, drawings, tools and samples. Safeguard product packaging and have measures in place to deal with production over-runs to prevent genuine products being sold under a different name.

Be prepared: Conduct a local risk review to avoid inadvertent infringement of third party IP rights. Seek advice from Indian IP rights experts. Conduct appropriate risk assessments and due diligence on organisations and individuals that you will be dealing with, including third parties to whom you will be licensing your IP.

Protect your IP rights: Instruct local lawyers to register your IP rights in India. Registration of patents, trademarks, designs and copyright could take significant time in India, so businesses should plan their registration well ahead of entering the market.

Dispute Resolution: Reduce the risk of infringement by an Indian counterpart by ensuring your contract is watertight with respect to your IP rights.

Create good relationships with organisations that can help you: Consult with agents, distributors and suppliers on how best to protect your IP rights in India.

Adhere to your usual business methods: There is no need to do things differently because you are trading in a different country.

Constant innovation: In emerging economies where several small players account for a large number of IP infringements, often constant innovation is the key to protect your competitive advantage.

Complying With The Bribery Act

As in many rapidly developing economies, the opportunities from great wealth creation bring accompanying challenges. When doing business in India, one of the challenges is around the issue of bribery and corruption.

India does have existing anti-corruption legislation such as the **Prevention of Corruption Act, 1988, the Indian Penal Code, 1960, Prevention of Money Laundering Act, 2002, Right to Information Act, 2005, and the Central Vigilance Act, 2003** to name a few. In an endeavour to promote good governance, India has taken a number of initiatives such as a new corporate offence of giving a bribe to a public official to gain a business advantage and a new strict liability offence of management participation in corporate offending, could impact private and public sector alike.

10.2 Ways To Mitigate Risk For Foreign Businesses

Most countries around the world have anti-bribery legislation of some kind. The importance of a comprehensive bribery risk assessment is underpinned by all the authoritative guidance on anti-bribery procedures. To help commercial organisations of all sizes and sectors to understand the sort of procedures they can put in place to prevent bribery, the adequate procedures guidance containing the six core principles has been issued by the Ministry of Justice.

Proportionate procedures: Based on what is right and adequate for your organisation, you should establish tailored procedures to mitigate bribery and corruption risks, and guide ethical conduct and decision-making.

Top – level commitment: The top-level management should devote appropriate time to anti-bribery compliance issues, and commit adequate resources to ensure the effectiveness of its anti-bribery programs and controls.

Risk Assessment: The more common areas of vulnerability could include, company operations in high risk locations (e.g. countries with higher perceived or actual level of corruption), higher risks attributable to particular sectors, peculiar type of transactions (e.g. licenses, public procurement, gifts/hospitality/entertainment) or business opportunities (e.g. those requiring high level of involvement of intermediaries). The risk assessment should examine a variety of such internal and external factors, and assess the areas of highest risk in terms of potential exposure to bribery.

Due Diligence: Bribes may be paid indirectly, via third parties, including sales agents/distributors, local representatives, and joint venture/business partners. Companies should undertake due diligence of third parties proportionate to the risks identified, and design procedures to prevent bribes being paid on the company's behalf.

Communication (including training): Communication of company's core values and supporting policies and procedures will strengthen its anti-bribery culture.

Monitoring and review: Companies should ensure adequate monitoring and reporting procedures to evaluate the effectiveness of its anti-bribery framework, for example, periodic reviews of implementation of anti-policies and procedures.

10.3 Top Three Tips For Doing Business In India

When choosing a **location**, compare local laws, government incentives, the local infrastructure and workforce. Often it is also crucial to find the right partner for your product or service.

Evaluate the most relevant **entry strategy**, the best structures and how to minimise risks and optimize sustainability.

Size doesn't matter: it is not just Vodafone and Tesco which are entering the India market. Companies of different sizes and from different sectors have found success in India.

Trade is one of the corner stones of the Indo-Finnish relations. During the last decade trade between India and Finland increased significantly making India Finland's fourth largest trading partner in Asia. India's annual trade with Finland has crossed USD 1 billion. In 2016, Finland was India's 60th largest trading partner globally, and the 10th largest within the EU.

About 100 Finnish companies now have operations in India including through investments. Large manufacturers like Kone, Huhtamaki, Salcomp, Ahlstrom have set up manufacturing facilities in different parts of India. And about 30 Indian companies, mainly in the software and consultancy sectors, like TCS, Wipro, Infosys are active in Finland.

11 Financial Inclusion

India is one of the largest and fastest growing economies of the world, but what has been the most disturbing fact about its growth is that its growth has not only been uneven, in the sense that there has been no unity in its growth performance, but also discrete and disconnected with regard to growth and distribution of growth benefits to certain sectors of economy. In recent decades, economic and social inequalities have increased alongside high growth rates which have increased regional inequalities. As a result, inclusive growth has become a national policy objective of the Indian government.

The main objective of financial inclusion is to ensure access to formal credit for people who depend on informal sources for fulfilling their financial needs, at an affordable cost in a fair and transparent manner, and to promote financial inclusion.



The six cornerstones pillars of financial inclusion

The ability of technology to bring services to people wherever they are and whenever they need them is the biggest driver of achieving comprehensive financial inclusion.	Electronic payments are accelerating this drive, and new developments, including Big Data, ubiquitous internet access and cloud computing, are expected to have enormous impact.	Regulators should consider relaxing restrictions in areas that disproportionately affect unbanked customers, e.g., through KYC, agent banking and mobile banking.	Interoperability can create value for customers to attract large volumes.	Keeping pace with technology changes in the financial inclusion space will require significant investments in the regulatory capacity and changes made in regulatory processes.	Government can incentivize service providers to introduce technology-enhanced business models that improve last mile delivery by deploying their own resources, e.g., DBT payments and universal service funds.
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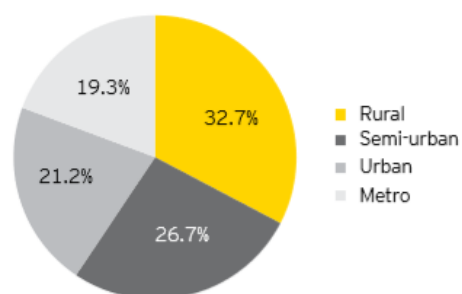
The spread of digital connectivity and mobile phones have created attractive opportunities in the Indian financial inclusion landscape. In particular, technology promises to enable hundreds of millions of people to access financial services for the first time due to its wide reach, convenience and low cost of delivery.

India is experimenting with several new ideas in financial inclusion in almost all areas requiring immediate focus — banking and payment channels, technology platforms, regulatory.

Mobile banking continues to be a focus area for banks. It is not only a way to increase their customer engagement in urban areas, but also to reach out to new ones in rural regions, and thereby significantly further their financial inclusion agenda.

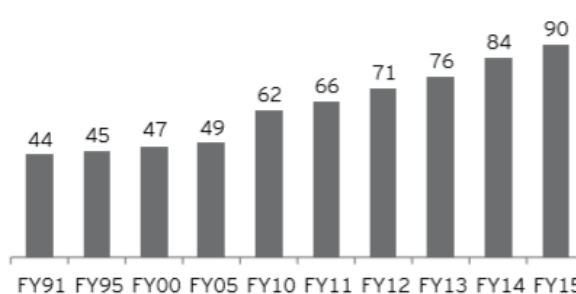
Scheduled commercial banks, particularly public sector banks (PSBs) have a tremendous domestic presence with wide spread distribution networks. PSBs have around 60% of their branches in rural and semi-urban areas. It is widely recognized that poor people could improve their lives significantly if they have easy access to even basic financial services such as savings accounts, loans and insurance. However despite this rationale and a strong institutional credit network, India's financial ecosystem is still lagging far behind in terms of physical infrastructure.

Public Sector Banks network spread (as of March 15)



Source: RBI: Database of Indian Economy

Distribution network of PSBs (in '000)



Source: RBI: Database of Indian Economy

India lags vis-a-vis other countries in terms of performance on financial inclusion parameters

Indicator	India	Brazil	Russia	China	South Africa
Commercial bank branches per 100,000 adults	14,06	20,40	30,14	8,78	10,16
ATMs per 100,000 adults	21,24	111,42	168,70	81,45	69,16
Outstanding deposits from commercial banks (% of GDP)	62,93	33,21	42,68	157,13	43,85



Highest
on the
indicator



Lowest
on the
indicator

Source: IMF Financial Access Survey Data, 2016

Over the years, the Government and the RBI has made several concentrated efforts to promote financial inclusion. These efforts include launch of co-operative banks, regional rural banks, introduction of mandated of mandated priority sector lending targets, formation of self-help groups, appointment of business correspondents by banks to provide door-step delivery of banking services. These initiatives helped to bring in a large section of the unbanked population under the formal financial credit system. However, a significant portion of India's population still remains devoid of access to basic formal credit facilities. Hence the Government, with RBI's support, **continues to introduce various new initiatives to fulfill its objective of achieving 100% financial inclusion.**

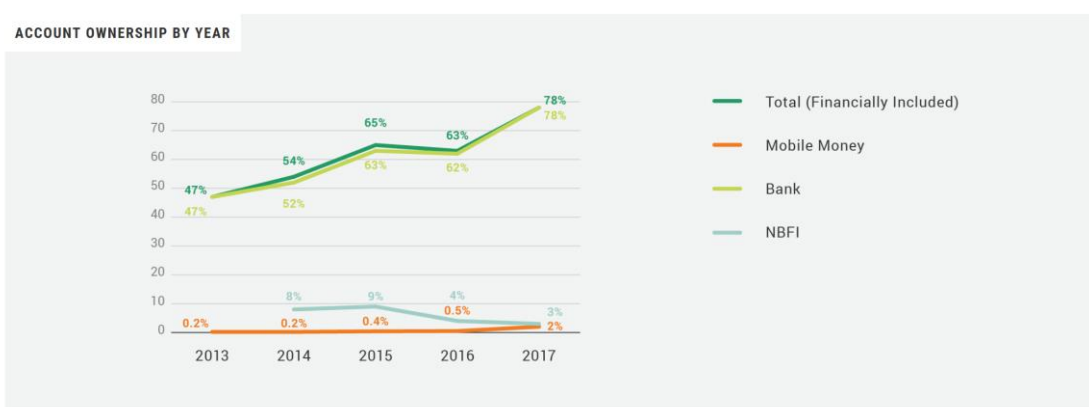
Various initiatives taken in the past few years in respect of financial inclusion

Pradhan Mantri Jan Dhan Yojana (PMJDY): A major scheme aimed towards financial inclusion, PMJDY was launched **on 28 August 2014**, to combat black money in the economy and provide 75 million unbanked Indians with zero-balance bank accounts—

delivering access to a full range of financial services, including pension, credit and insurance. The actual accounts numbers have exceeded these estimates. **Between 2014 and 2017, financial inclusion has grown from 54% to 78%.**

Launch of specialized banks – payment banks and small finance banks: The **RBI granted licenses for 11 payment banks and 10 small finance banks in 2015**. The sole purpose of these banks is to provide further push and in turn contribute to inclusive growth.

Launch of MUDRA Bank: **Micro Unit Development and Refinance Agency (MUDRA)** was launched **in August 2015**, to fund and promote microfinance institutions (MFI), which will, in turn, provide loans to small businesses. The MUDRA scheme refinances collateral-free loans of upto INR 1 million given by lending institutions to small, non-corporate borrowers, for income-generating activities in the non-farm segment.



*NBFI – Non bank Financial Institution

With the continued need for financial inclusion, MFI which have emerged as an alternative to provide financial service to low-income clients will continue to play an important role. With increasing contribution to development and exposure to needs, the buying capacity of rural Indians has taken a sharp upward turn. However, rural consumers' purchasing aspirations are often constrained by easy availability. **Digitisation and technology can facilitate access and availability of more and more services** and products be made available to meet the rising aspirations of the underserved and unreached rural India. This is being **driven strongly through the government's Digital India programme**. Digitisation can facilitate some of the key needs of rural India including **e-governance services, banking and financial services, educational and healthcare services, mobile/DTH recharge, e-ticketing services, online shopping, etc.** Over 10 years ago, the government, through its flagship **National e-Governance Plan**, envisaged to empower rural citizens by making available various government services to them via electronic media and created access points, i.e. common service centres run by village-level entrepreneurs (VLEs) at the village and gram panchayat level, which act as one-stop digital outlets providing both government and business services to rural citizens.

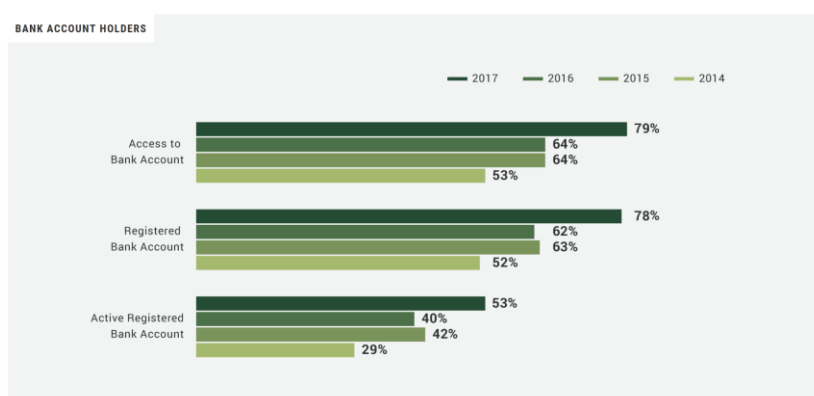
Financial inclusion is an important priority of the government. Only 38% of the 117,200 branches of scheduled commercial banks are working in rural areas, and a meagre 40% of the households have bank accounts. Thus, India is home to 19% of the world's unbanked population. To further enable mass transactions, AePS (Aadhaar-enabled Payment System) has been launched wherein rural citizens can perform simple banking transactions like deposit and withdrawal through their biometric ID and Aadhaar number at any of the AePS kendras.

E-commerce portals with a focused approach to cater to the needs of rural population are gaining popularity. This is only the beginning of a new wave that is impacting the bottom of the pyramid. While on one hand demonetisation paved the path for quicker adoption of digital payments, on the other there are several start-ups with novel solutions in digital learning and tele-medicine knocking on the doors of the rural consumer.

These initiatives have helped to grow the financial inclusion market in India and encourage previously underbanked populations such as women, rural and below poverty individuals to access formal financial institutions.

Financial Inclusion Breakdown By Accounts

Bank accounts have become the main driver of financial inclusion, with four in five (78%) adults having a bank account.



Progress of Financial inclusion at a glance

Parameter of financial inclusion	March 2010	March 2016	March 2017
Number of Bank branches in villages	33,378	51,830	50,860
Number of Business Correspondents (BCs)	34,174	531,229	543,472
Number of other forms of banking touch points	142	3,248	3,761
Total number of banking touch points	67,694	586,307	598,093
Number of BSBDA* (in millions)	73	469	533
Deposits in BSBDA (Amount in Rs. billions)	55	636	977

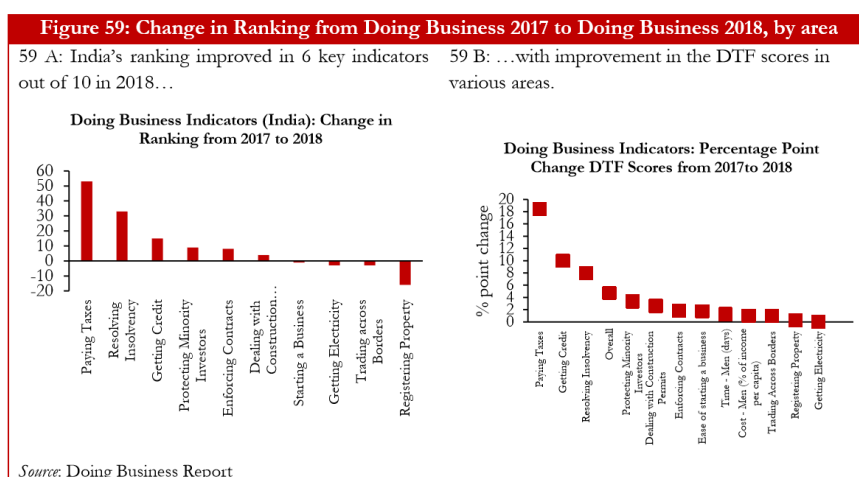
Note: *Basic Savings Bank Deposit Account is a no-frill savings account without the need to maintain minimum balance and where no charges are levied.

Source: Annual Report of RBI, 2016-17.

12 Conclusion

India's rank improved from 142 in *Ease of Doing Business 2014* to 77 in 2018, as per the recent *World Bank report*. The report presents various indicators that measure, among others, the ease of starting a business, registering a property, obtaining construction permits, getting credit, paying taxes, enforcing contracts and resolving insolvency. This remarkable improvement by India, among the highest year-on-year improvement ever experienced by any country, comes on the back of the government's reform agenda aimed at increasing manufacturing investment through reforms that reduce businesses' regulatory compliance burden.

Doing Business 2018 recognized India for being one of the top 10 improvers amongst the 190 countries that are studied annually. India is the **only South Asian and BRICS** (BRICS is the acronym coined for an association of five major emerging national economies: Brazil, Russia, India, China and South Africa) **country to be included in the list of top improvers**.



**DTF – An improvement in the Distance to Frontier (DTF) score suggests that the measured business environment has moved closer to global best practices.*

The growth in different payment methods marks a significant shift for the entire payments infrastructure of India. The government has created an enabling environment for the development of these varied payments as can be seen in the previous chapters. The government's focus of financial inclusion is evident from all the innovations undertaken across the payments and banking field. It can be seen from their regulations provided to the Payments Banks and Small Finance Banks, to the near universal adoption of Aadhaar as a digital identity. From their focus to combat black money to launching the "Digital India" initiative. From the introduction of RuPay, as India's first domestic card network and payment gateway to the launch of UPI, the open space cards-free payment gateway. It can be seen from their creating favourable conditions for Foreign Investments to the concerted efforts of reducing the unbanked population.

Since this project is aimed at an overall understanding of the advancements, opportunity areas and challenges of the Payment Systems of India for the Finnish / EU financial industry professionals, the conclusion aims at listing the areas where best practices can be adopted and opportunities being evaluated by the Finnish / EU organizations.

Best Practices

India has leap frogged from the paper-based-cash dependant industry to a digital era where technology is heavily being utilized to address the challenge of financial inclusion of all. The vast nation, with a population of 1,3 billion people is a challenge of a kind, and traditional American and European methods may not apply always.

Key Challenges	Best Practices
Huge unbanked population	Small Finance banks – For lendings to small business cutting the red-tapism and bureacracy Payment banks – Small deposits and remittances aiming at Rural population mainly where large banks are non-operational due to cost effectiveness
Low card payments due to transaction charges – Merchants unwilling	RuPay introduced nationwide as an alternate payment exchange to Visa and Mastercard. Significantly lower transaction charges leading to higher number of merchants embracing the plastic money
Cash dependency	Mobile Wallets have made significant inroads and high acceptability to consumers and small and large businesses QR Code based payments – Consumer Wallet to Seller Wallet based payment system
High Charges of Payment brokers (like Visa, Mastercard, Amex)	UPI based payments and Aadhar enabled payments are both avoiding the payment brokers, enabling a bank to bank transfer with no charges. 19+ banks have already enlisted for this service.

Opportunity Areas

There are several areas where Finland / EU financial and related organizations can contribute to the growth instruments in India. There are several American and Chinese companies investing in the startups in India and reaping the benefits. To name a few, Alibaba invested in PayTM, Walmart bought majority stake at Flipkart and Amazon is currently commanding 30% of the e-retailing market in India. Not to forget, Danske Bank has an India back-office operations center, taking advantage of the skilled-low cost labor in India.

The following table illustrates some of the opportunities where Finnish / EU companies can contribute:

Key Opportunities	Development Areas
Fintech – Bring the Finnish culture of innovation to mitigate Indian Financial market challenges	Potential areas are: Alternate lending Consumer payments Retail payments Insurtech
Fraud Management – Bringing EU best practices on fraud management to India	Areas requiring global best practices: Bank Frauds Mobile Frauds Cyber frauds for digital payments
Insurance Sector – Potential for Finnish Insurance companies to enter with Strategic JVs	Almost 90% of the population are not insured. The areas with most potential are: <ul style="list-style-type: none"> • Health • Life • Asset

Digital Infrastructure	The digital infrastructure requires a huge boost. Nokia and Ericsson are already established players in the Indian market. R&D on 5G and beyond has great potential in India and is supported heavily by the Indian Government
Startup Investing	Owing to the huge number of startups in Fintech, funding is always a challenge where Finnish investors can evaluate.

Owing to the market size, target segmentation is very important for organizations to operate and succeed in India. The government is making significant improvements in the business environment, taxation and reducing red-tapism. The best way to represent India's potential is by the tagline "the power of 1%". One percent represents 13 Million people. Any product or service which can target 1% of the population can reap immense financial benefits. Just imagine, a profit of 10 Euro per year per person makes it 130 Million Euro profit per year.

13 Reference

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14 Abbreviations

INR – Rupee
 GDP – Gross Domestic Product

RBI – Reserve Bank of India
NABARD – National Agricultural Board for Rural Development
NPCI – National Payments Corporation of India
IMPS – Immediate Payment Service
UIDAI – Unique Identification Authority of India
SLR – Statutory Liquidity Ratio
PPP – Purchasing Power Parity
GST – Goods and Services Tax
GFI – Grameen Foundation India
G-LEAP – Grameen Learning Programme
ATM – Automated Teller Machine
MFI – Microfinance Institution
UPI – Unified Payments Interface
AEPS – Aadhar Enabled Payment System
PSS Act - Payment and Settlement Systems Act
BPSS – Board For Regulation and Supervision of Payment and Settlement Systems
SEBI – Securities and Exchange Board of India
PFRDA – Pension Fund Regulatory and Development Authority
FMC – Forward Markets Commission
IRDA – Insurance Regulatory and Development Authority
FEDAI – Foreign Exchange Dealers' Association of India
RRB – Regional Rural Bank
CAGR – Compound Annual Growth Rate
RTGS – Real Time Gross Settlement
ACH – Automated Clearing House
BHIM – Bharat Interface for Money
IMPS – Immediate Payment Service
NPCI – National Payments Corporation of India
POS – Point of Sale
IRCTC – Indian Railway Catering and Tourism Corporation Limited
PSP – Payment Service Provider
PPI – Pre-paid Payment Instrument
NECS – National Electronic Clearing Services
UPI – Unified Payments Interface
BBPS – Bharat Bill Payment System
API - Application Programme Interface
PMJDY – Pradhan Mantri Jan Dhan Yojana
GMV – Gross Merchandise Volume
MICR – Magnetic Ink Character Recognition
TRAI – Telecom Regulatory Authority of India
KYC – Know Your Customer
NFS – National Financial Switch
G2P – Government to Person
NUUP – National Unified USSD Platform
DDoS – Distributed Denial of Service
OTP – One Time Password
CSK – Cyber Swacchta Kendra
CERT-IN – Indian Computer Emergency Response Team
CBS – Core Banking System
BI – Business Intelligence
LLP – Limited Liability Partnership
FDI – Foreign Direct Investment
MAT – Minimum Alternate Tax
DDT – Dividend Distribution Tax

IP – Intellectual Property

PSB – Public Sector Banks

MUDRA – Micro Unit Development and Refinance Agency

DTF – Distance to Frontier

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