

# Accelerating financial inclusion in India with digital products and services

Financial inclusion in  
India  
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## Abstract

**Purpose** - This article emphasizes on the initiatives and policy measures taken by the Indian government for improving the current status and future prospects of financial inclusion in digital India on the basis of facts and data provided by various secondary sources. It also focuses on how digital products and services are helping the government in achieving financial inclusion in rural areas.

**Design/methodology/approach** - The data used in this paper is collected from secondary sources. Secondary data was composed from the reports of Reserve Bank of India (RBI), the World Bank, the NABARD, the Government of India, published books, periodicals, journals etc. The secondary data of last five years is used to show the change in trend and status of financial inclusion after the boost of digital products in Indian banking system.

**Findings** - The digital finance is playing an important role in Indian digital economy. The research paper concludes that there is a vast need to provide quality financial services in rural areas for economic growth as it will help rural households to fund the growth of their livelihoods. The tables and graphs in paper shows an increase in number of people ATMs, immediate payment service (IMPS) and mobile banking in last five years. In a nutshell it can be said that India is at a fast pace towards achieving financial inclusion and this can be speeded up by collaborative efforts of Government, Reserve Bank of India and Citizens of the country.

**Research limitations/implications** - The major limitation of the research work is it is purely based on secondary data.

**Practical Implications** - This study reveals that the Government of India is taking various steps to bring the citizens of India under the ambit of banking services. It empirically studies the impact of financial inclusion policies pursued in rural areas of the country. The study also suggests that policies emphasizing on usage of digital products in financial sector helps in promoting financial which result in higher economic growth.

**Originality/Value** - The uniqueness of this article is that it highlights the financial initiatives taken by the government and the impact of digital products in financial sector helps in promoting financial inclusion with results in higher economic growth.

**Keywords** - Financial inclusion, Digital products, Rural area, Mobile money, Government policy.

**Paper type** - Research paper.

## 1. Introduction

World Bank (2017) defines financial inclusion (FI) as individual and businesses having access to useful and affordable financial products and services that meet their needs for transactions, payments, savings, credit and insurance, delivered in a responsible and sustainable way. The concept of financial inclusion was come into limelight as a measure to reduce poverty and inequality as part of World Bank's "sustainable development goals". Thus the main goal of financial inclusion is delivery of banking services to the vast section of vulnerable groups such as disadvantaged and low-income population. Financial inclusion plays a vital role in smoothing the progress of economic growth in both the developed and developing economies. An inclusive finance means providing better banking services to all sections of society, especially low-income and weaker sections of the society.



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*1.1 Financial inclusion in India*

FI entered the banking arena as per the recommendations of the Rangarajan Committee in 2008. The basic purpose of financial inclusion was to provide Banking services to hitherto non Banked population at lower cost to the excluded sections of the society and low-income households. The broader objective to implement FI was to keep the rural poor away from exploitative moneylenders. Governments of India's efforts are towards providing financial infrastructure to the 65 percent unbanked population of the country (conservative 2012 estimate by World Bank). Government of India and Reserve Bank of India are incessantly encouraging the banking sector to set up new branches in rural areas and increase the banking network.

As stated by Shri Raghuram Rajan, former Governor RBI, financial inclusion is necessary for sustainable growth of the country. Since financial inclusion not only promotes the growth but also helps in increasing the prosperity in the country. The distinctiveness of having a bank account not only provides basic banking facility to people but also provide finance for investment/production purposes which opens opportunities for enhanced employment. The simple access to financial services play an important role in lifting people out of poverty, in empowering women, and in helping government deliver services to their people.

Banks also realized the significance of FI as taking more number in their ambit is considered essential for business growth. According to the Bansal (2014) study, banks realized that like microfinance institutions working in remote areas in India the rural poor can also be worthy borrowers of banks. Financial inclusion has now become an integral part of the business of banks in rural areas, covering unbanked villages with population above 2,000 and those with population below 2,000.

**Table 1.**  
Types of enterprises

*1.2 Financial inclusion through digital channels*

Government of India and Reserve Bank of India are incessantly encouraging the banking sector to set up new branches in rural areas and increase the banking network. They are also encouraging banks to install new ATMs in backward areas and upgrade the people with new technological information. This will lead to ease of financial access to the poor, which will improve their financial condition and standard of living. The government of India is pitching digital products and services in rural areas to drive financial services more affordable and accessible. The purpose is to strengthen the lowermost layer of the society.

(Chatterjee and Das, 2019) states that the Digital India program has led to the technological rebellion in India as nowadays, businesses are using smart phones and internet to expand their businesses extensively. Technological advancement has entirely transformed the way we live, work and communicates. One of the major changes brought is in financial sector, the possibility to access banking services and carry out monetary transactions through the mobile device, which is known as mobile financial services. This breakthrough technology is expected to increase the number of people under the purview of the banking system. Digitalized payments for health, education or other social safety nets may yield big benefits for individuals, in addition to improving efficiency for governments and aid agencies by reducing transaction costs and leakage.

It is believed that the rapid expansion of internet access and high usage rate of mobile phones will create the digital payments easier, secure and affordable. (Paramasivan and Ganesh, 2013) in their article have observed that banking technology has progressed fast enough and more importantly they concluded that it is witnessed that now the poor is also bankable. Reserve Bank of India's vision for 2020 is to open nearly 600 million new customers' accounts and service them through a variety of channels by leveraging on IT. However, illiteracy and the low income savings and lack of bank branches in rural areas continue to be a road block to financial inclusion in many states. The need is to achieve synergies between the technology providers and banking channels to expand reach. Application developers should synergies core banking with micro financial applications.

The paper intends to find the effect of digitalization in the smooth working of financial inclusion. The paper is structured in the following way. Section 2 discusses the relevant literature. Section 3 deals with the financial initiatives taken by the Indian government for

the success of financial inclusion in the country. Section 4 has the importance of digital banking products for the accomplishment of financial inclusion. The concluding remarks are there in section 5.

1.3 Rationale of the study

Finance is been considered as key factor for the growth and development of the country. It is now attributed as the brain of an economic system and most economies strive to make their financial systems more efficient. With this background the paper, the paper aims to study the level of Financial Inclusion in rural areas of India. The previous studies has already discussed how finance help in the economic development of the country. So, this study further discusses how the digital products and services can help in achieving it. The Government of India has set up the committees to understand how financial inclusion can be achieved in rural India. The rationale is that even the existence of digital products and services people in rural areas are unaware about it. Therefore, the different digital products and services which help in the success of achieving financial inclusion are been discussed. Further, the steps taken by the Indian government and their success is also been discussed.

2. Literature review

S. No	Author/date	Topic	Publication/ working papers	Study description	Objectives
1.	Chatterjee, A. and Das, S. (2019)	Information and Communication Technology Diffusion and Financial Inclusion: An Interstate Analysis for India	Working Paper 178/2019 Madras School Of Economics	First authors construct a composite index of both Financial Inclusion and Information Technology diffusion and try to assess the status of 16 major Indian States through cluster analysis. Secondly, they attempt to analyse the role of information technology in improving the status of Financial Inclusion	1. This paper intends to investigate the role of ICT in improving the FI among the major Indian states. 2. The paper study whether the different socioeconomic status of different states have its own influence of the level of financial inclusion.
2.	M. Neelakandan and I. Maruthi (2019)	Analysis of Performance of Commercial Banks on Financial Inclusion in Kerala State with Special Reference To Credits And Loans.	International Journal of Social Science and Economic Research Volume:04, Issue:02	This work is mainly a descriptive research, and explains the available secondary data.	1. To find out the current status of financial inclusion in Kerala State. 2. To calculate the financial inclusion index for the state of Kerala for recent years. 3. To analyze the credit growth and banking accessibility in Kerala State.
3.	Kapadia, S. B. & Madhav, V. (2018)	Financial Literacy And Financial Inclusion in India	LMA Convention Journal Vol. 11, No. 1	This study is descriptive in nature and is based on several empirical studies done on secondary data	1.To study initiative taken by various financial institutions to improve financial literacy and credit counseling in India 2.To promote and facilitate collaborative research and exchange of resources for expanding capabilities of various stakeholders for greater financial inclusion 3.To enable create a platform thus providing an opportunity for educators, researchers and practitioners to share best practices and make linkages between theory and practice in the area of financial literacy and financial education

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4.	Chatterjee, A., & Anand, N. (2017)	Financial Inclusion, Information and Communication Technology Diffusion and Economic Growth: A Panel Data Analysis	Working Paper 165/2017 Madras School Of Economics	The indicators Penetration Indicators, Availability Indicators, Usage Indicators are used to study ICT development as well as financial inclusion.	1. The present study has first examined whether ICT development can be an important determinant of Financial Inclusion by using a fixed effect panel data model. 2. the paper has investigated the role of FI powered by a better ICT penetration in fostering the growth of the nation's using system GMM method by incorporating interactions between FI and ICT indicators	The results suggest that both FI and ICT individually and together through their close interaction can improve current year's growth. However, we need education, awareness and technical assistance to get sustained growth.
5.	Iqbal, B. A., & Sami, S. (2017)	Role of banks in financial inclusion in India	Contaduría y administración	This study is based on secondary data. Data has been analyzed by applying multiple regressions as a main statistical tool.	1. To examine present scenario of financial inclusion in India. 2. To investigate the major factors affecting access to financial services. 3. To study the impact of financial inclusion indicators on growth of Indian economy	The study states that there should be a need for proper financial inclusion regulation in the country to access financial services and customer awareness E - banking training and financial literacy programs should be organized.
6.	Ogale S.L., Mahal D. (2017)	Contribution of Financial Institutions Towards Financial Literacy And Credit Counseling In India	AADYA - Journal of Management and Technology	The present paper is based on secondary. The data collected from various websites of financial institutions and articles published in reliable sources.	1. To study initiative taken various financial institutions to improve financial literacy in India. 2. To study initiative taken by financial institutions towards credit counseling	This paper states that the absence of proper financial counseling and financial literacy has often resulted in forcing the consumers towards costlier decisions and eventual debt traps. Therefore there is a need for financial counseling in all the areas.
7.	Rajasekaran, N. (2017)	Including the Excluded: The Scenario of Financial Inclusion in India	IOSR Journal of Business and Management (IOSR-JBM)	This study is purely based on the secondary data collected from the government reports, RBI and other financial institutions reports, journals and web resources.	1. To know the various barriers those impede financial inclusion. 2. To reveal the initiatives taken by Reserve Bank of India and Government of India to overcome the barriers to financial inclusion.	The results of this study indicate that the initiatives taken by Reserve bank of India and Government of India has reached the majority of the financially excluded people in India. But the lack of financial literacy and low and irregular income affects the growth rate of financial inclusion in India.

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<b>Financial inclusion in India</b>						
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8.	Essien, J. M., Gbeghe, B. D., Kpune, H. N., & Piabari, N. (2016)	E-Marketing Products and Financial Inclusion in Nigeria	International Journal of Economics, Business and Management Studies	The study used the Diffusion of Innovations Theory to describe the adoption of e - marketing in Nigeria.	<ol style="list-style-type: none"> <li>1. To explore the nature and trend of financial services in Nigeria.</li> <li>2. To identify the benefits of financial inclusion in Nigeria.</li> <li>3. It enumerates the challenges to financial inclusion in Nigeria.</li> <li>4. It further explored the roles of e - marketing in surmounting these challenges.</li> </ol>	<ol style="list-style-type: none"> <li>1. It discovered that e -marketing products are yet to be fully appreciated in Nigeria.</li> <li>2. To overcome the challenges like illiterate, Bank crisis, inflation and political instability government need to implement e - marketing products.</li> </ol>
9.	P. Raja Babu (2015)	Global Financial Inclusion: Challenges and Opportunities	International Journal of Research and Development - A Management Review (IJRDMR)	This study is focused on the global scenario of financial inclusion.	<ol style="list-style-type: none"> <li>1. To study and know global scenario of financial inclusion</li> <li>2. To find out opportunities and challenges of financial inclusion in India</li> </ol>	<ol style="list-style-type: none"> <li>1. It concluded that India is at moderate level regarding financial inclusion when compared to the developed countries.</li> <li>2. In view of ATMs, branches, credit and outstanding deposits, the RBI has adopted various models and strategies such as BCs model, no - frills account, simplified KYC Norms etc., are essential to strengthen financial inclusion.</li> </ol>
10.	Gopalan, S., & Rajan, R. S. (2015)	How Does Foreign Bank Entry Affect Financial Inclusion in Emerging and Developing Economies?	HKUST IEMS Working Paper No. 2015-04	This paper examines the relationship between foreign bank entry and financial inclusion for a panel of 57 emerging and developing economies over the period 2004-2009.	This paper aims to advance the literature on financial inclusion by empirically testing the impact of foreign bank entry on banking sector outreach. We use broad indicators of financial inclusion in a panel framework for 57 EMDEs over 2004 to 2009. Additionally, considering the importance of the implications of banking concentration after financial liberalization in EMDEs, this paper is also specifically interested in testing how banking concentration and foreign bank entry jointly influence financial inclusion in EMDEs.	The empirical findings suggest that foreign banks have a positive impact in furthering financial inclusion, though the relationship turns negative when foreign bank entry is followed by greater banking concentration.

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11.	Bansal, S. (2014)	Perspective of Technology in Achieving Financial Inclusion in Rural India	Procedia Economics and Finance	This paper emphasize on the role of technology in implementing financial inclusion.	This paper is an attempt to study the contribution of ICT towards financial inclusion in the country and analyse different application of ICT which banks are adopting	1. It concluded that there is a requirement of uncomplicated and affordable product by the banks which help them in mobilizing their savings and bring them in the formal financial system. 2. There is a need of effective information and communication technology to bring in more and more people from all parts whether rural or urban to take part in the mainstream financial activities.
12.	Gupta, P., & Singh, B. (2013)	Role of Literacy Level in Financial Inclusion in India: Empirical Evidence	Journal of Economics, Business and Management, Vol. 1, No. 3	This study emphasizes on considering the behavioral factors for the proper implementation of financial inclusion in the country.	The objective of the study is to calculate correlation between the Usage Dimension of Financial Inclusion Index and literacy level in India.	The results depict a large variation in extent of correlation among the different states of the country with a very low correlation at the national level. Thus, the Government should promote the use of Information Communication Technology models like biometric ATM, telecentres to achieve Financial Inclusion in India as these models does not compulsorily require high literacy levels.
13.	Dangi, N., & Kumar, P. (2013)	Current Situation of Financial Inclusion in India and Its Future Visions	International Journal of Management and Social Sciences Research (IJMSSR)	The study is descriptive in nature. The data used for the study is secondary in nature and has been collected from RBI bulletin, annual reports of RBI and Ministry of Finance, GoI, Report on trend and progress of banking in India, various reputed journals, newspapers and websites of RBI NABARD and Ministry of Finance, Government of India (GoI).	1. To study present scenario of financial inclusion in India. 2. To study the major factors affecting access to financial services. 3. To study the major initiatives and policy measures taken by RBI and GoI for financial inclusion. 4. To suggest the future prospects of financial inclusion.	1. It concluded that financial inclusion shows positive and valuable changes because of change in strength and technological changes. 2. The paper found that for building customer awareness E-banking and mobile banking training and education programmes should be

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### 2.1 Research gap

According to the different researches done in this area, financial inclusion is a key ingredient to achieve inclusive growth of the country. It supports in improving the living standard of underprivileged population which leads to the overall economic development of the country. In India effective financial inclusion is needed for uplift of the poor and disadvantaged people by providing them the financial products and services at low cost and at their doorstep.

Some studies have been done on some banks operating in specific areas by analyzing their reach and performance for financial inclusion. A few studies have been done to analyze the impact of financial inclusion on Indian economic growth and found mixed results. In this backdrop, this study aims at usefulness of banking digital delivery channels for financial inclusion and major requirements for increasing their use by the rural / urban poor.

### 2.2 Objectives

- To study the progress of financial inclusion in India.
- To provide an overview of financial inclusion practices adopted in the country.
- To review various digital products & services and their reach in rural India.
- To highlight the impact of digitization on financial inclusion in the rural India.

### 3. Financial initiatives taken by Indian government

According to the RBI annual report (2017) the different financial initiatives taken by Indian government for strengthening FI are as follows:

- In its pursuit of the goal of financial inclusion for sustainable and inclusive growth, the Reserve Bank since 2010 has encouraged banks to adopt a structured and planned approach, with commitment at the highest levels through Board-approved financial inclusion plans (FIPs).
- The pradhan mantri jan dhan yojana (PMJDY) launched in August 2014, has been implemented in two phases - Phase I (August 15, 2014 - August 14, 2015) and Phase II (August 15, 2015 - August 14, 2018).
- Phase I aimed at providing universal access to banking facilities, basic banking accounts for saving and remittance, and RuPay Debit card with an in-built accident insurance cover of Rs.100,000.
- Phase II incorporated clean overdraft facilities of up to Rs. 5000/ to the eligible account holders
- A Credit Guarantee Fund was created for coverage of defaults in overdraft accounts.
- Micro-insurance and pension for the unorganised sector (Swavalamban) were other major initiatives.
- In September 2018, the PMJDY was extended beyond August 14, 2018 with new features viz., opening accounts from "every household to every adult"; raising the overdraft limit to Rs.10,000 from Rs. 5,000; overdraft facility up to Rs. 2,000 without any conditions; and raising accidental insurance cover for new RuPay cardholders from Rs.100,000 to Rs. 200,000, for PMJDY accounts opened after August 28, 2018.
- Within a span of four years, the total number of accounts opened under the PMJDY expanded to 328 million, with Rs. 851 billion deposits as on September 28, 2018. Of these accounts, 59.1 per cent were opened at branches located in rural and semi-urban centres. In terms of usage of these accounts, however, the initial spurt in average.
- Pradhan mantri jan dhan yojana (PMJDY) accounts at financial institutions have more than doubled since 2011 to 2017, 80 per cent of the Indian population has been covered.
- The above information discusses the efforts made by the Indian government for achieving the financial inclusion. It discusses the success of different steps taken by the Indian government in this area; the increase in number of accounts opened and its benefits for the people reflects the support of government towards thriving financial inclusion in rural areas.

#### 4. Importance of digital banking products for financial inclusion

As per Dangi and Kumar (2013) financial technologies along with digital banking products have transformed the way in which customer's access and use financial services. Digital banking is acting as a facilitator for banks, insurance companies, payment providers and other financial institutions to serve millions of underserved customers. According to the Trai report (2019) the increase in rate of mobile-phone ownership, even among people with low income group has created the possibility for organizations to reach not only individuals, but also mediators who can serve large number of rural people with the help of a single device. However, the only goal of financial inclusion is not only to access the financial services. Rather, it should be viewed as part of overall development, which helps people improve other aspects of their lives, including employment, housing, health and education. According to Essien *et al.* (2016), with the rise in digitization in this sector, the opportunity for organizations increases to learn more about users' preferences, choices and habits. This information is extremely valuable, as different rural areas have distinct needs, even within areas; people prefer different delivery channels for various types of transactions. Iqbal and Sami (2017) concluded that with the aid of digital services acquiring loan has become very easy, and in case of any problem; particularly for people who have limited financial literacy and may not clearly understand the pricing and other terms that they are accepting. By integrating options into services like this that allow customers to "undo" commitments they make on their phones is one potential way of reducing this risk. Despite all the risks and concerns, there remains a great amount of optimism for financial inclusion as a meaningful part of development.

The essential ingredient to the success of regulatory bodies in supporting financial inclusion is auxiliary political environment. The government of India has made significant commitments to support financial inclusion. The government is taking numerous steps to digitize the banking in rural area. India's drive for "universal" financial inclusion, *pradhan mantri jan-dhan yojana* (Prime minister's people money scheme), is so great that some deem it an overreach (RBI Annual Report, 2017).

Thus, it reflects that successful implementation of digital products and services in banking sector can lead to the betterment of the rural people lives as well as can raise the economy of the country.

##### 4.1 Digital tools for growth of financial inclusion

Besides, Debit cards, Internet Banking services and Mobile Banking services following are some recent IT enabled initiatives which can well be used for stepping up Financial Inclusion:-

- Physical point of sale (POS) - A point-of-sale (POS) transaction takes place through Pre-paid/Debit Cards between a merchant and a customer when a product or service is purchased. A POS system is a combination of POS hardware and POS software to create a POS machine for processing a transaction and payment.
- MPOS- Mobile phone connected with external POS device through jack / Bluetooth. An mPOS is a smartphone, tablet or dedicated wireless device that performs the functions of an electronic point-of-sale terminal (POS terminal) wirelessly. Because of their portability and versatility compared to traditional POS terminals, mPOS systems are ideal for businesses that are constantly mobile, to conduct credit card and debit card transactions on the go.
- Unstructured supplementary service data (USSD) - This service can be availed by dialing \*99#, a common number across all telecom service providers (TSPs), to transact through an interactive menu displayed on the mobile screen. Key services offered under \*99# includes some financial, non-financial and value added services, such as interbank account to account fund transfer, balance enquiry, mini statement etc. It works without Internet and available round the clock even on holidays.
- Aadhar enabled payment system (AePS) - AePS is a bank led model which allows online interoperable financial inclusion transaction at PoS (Micro ATM) through the Business correspondent of any bank using the Aadhaar authentication. AePS allows to do some six types of transactions. The only inputs required for a customer

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to do a transaction are: -

- IIN (Identifying the bank to which the customer is associated)
- Aadhaar number
- Fingerprint captured during their enrollment
- Immediate payment service (IMPS) through unified payment interface (UPI) - IMPS offers an instant, 24X7, interbank electronic fund transfer service through mobile phones. IMPS is an emphatic tool to transfer money instantly within banks across India through mobile, internet and ATM, which is not only safe but also economical. It is a multichannel and multidimensional platform that makes the payments possible within fraction of seconds with all the standards and integrity maintained for security.
- Mobile wallets - It is also called mWallet, digital wallet, or eWallet, refers to a mobile technology that works like a real wallet. The Mobile Wallet provides a convenient solution for purchase of products and services with greater ease. Mobile wallets are applications that act like our physical wallets but in the digital world. A mobile wallet is a virtual wallet that stores payment card information on a mobile device. Mobile wallets are a convenient way for a user to make in-store payments at merchants listed with the mobile wallet service provider. Recently, securities and exchange board of India (SEBI) allowed investments in mutual funds through e-wallets. Additionally, the market regulator has also allowed instant access facility in liquid schemes of mutual funds
- Bharat QR code - The Bharat QR is a streamlined system which reduces the technological problems that people suffer from card loss or card expiry problems. It is the easiest method of payments. Scanning the QR code through mobile helps in transferring money from one source to another. Payments made through QR code directly get transferred to the bank accounts. This is world's first universal QR code based payment solution, to enable seamless transactions across Banks by simply scanning Bharat QR code using any Banks application.

#### 4.2 Digital penetration in rural India

Rapid technology evolution has aided smart, consumer friendly, yet viable, financial inclusion options become a reality. The interplay of banking technologies with mobile technologies, that have much wider penetration, hold new promise of financial inclusion for the masses. As per (TRAI, 2019), the total tele-density in India in February 2019 is 91.86 percent with urban tele-density being 161.65percent whereas rural tele-density being 59.27 percent. Thus, if the mobile phone expansion and the rise of financial services go hand in hand to bridge the existing financial infrastructure gap, it is expected there will be tremendous potential for previously underserved groups to gain access to the formal financial sector.

Apart from simply leveraging mobile phones for basic and advanced banking, innovation in this area has reached to new heights such as:--

- M-PESA's mobile payment service introduced non-card based ATM withdrawals to meet the unique needs of certain customers (like withdrawal of salary, welfare payments involving large sums at the end of the month) that merchants could not meet easily.
- It allows mobile technology to transact through ATMs or using SIMs to operate credit/debit card POS machines on mobile networks.
- SMART Money co-branded debit cards to its mobile banking customers are issued to enable access to rapidly growing ATM and POS network across the country, offering great convenience and benefits.
- UIDAI's Aadhar project is using finger-print and iris recognition technologies to rollout unique identification for 700 million people in India. This has the potential of addressing the severe challenges associated with identification of individuals for financial services.
- Mobile ATMs are being adopted by several institutions and undergoing constant innovation.

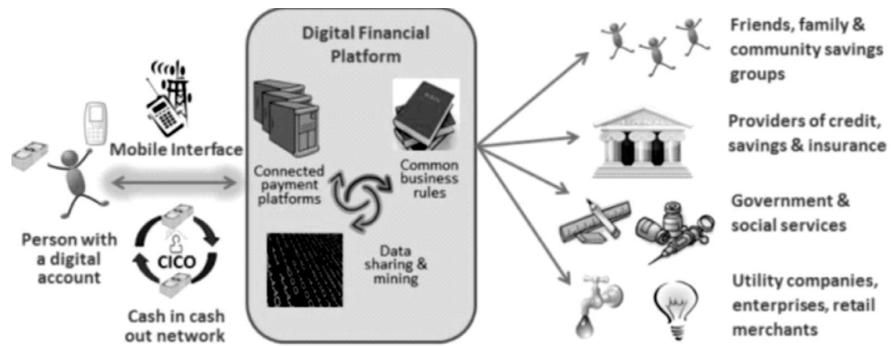
- RFID (Radio frequency identification) and Near-field communication (NFC) based technologies integrated with mobile technologies are evolving.

The need for coordination between the government agencies and providers of various financial products is necessary for achieving far reaching results of financial inclusive initiatives (Ogale and Mahal, 2017). A good example is rural housing. Powered by a government program that provides financial support and allows private sector participation, 70 million new houses have been built up in the last five years.

#### 4.3 Functioning of digital products to achieve financial inclusion in rural areas

The digital finance revolution is the greatest technological change in Indian banking system. The digital platform is acting as a link between the customers and service providers, is explained with the help of Figure 1. The banks are trying to extend online banking services even in rural areas by providing Rural Internet Kiosks to carry out the transactions. Digitalization of banking system helps in simplifying the lending process; it enables direct generation of loans which reduces the decision time. It also helps in reducing the bad debt and updates the credit rating information with the help of CBS. Cash-in/ cash-out (CICO) networks assists customers in converting physical cash to digital money and vice versa. Once customers are connected to it, they are able to transfer money instantly to friends, family, and others. Hence, it explains how digital payments can significantly enhance the rural customer well-being as well as enabling the broader ecosystem of banking.

**Figure 1.** Digital financial platform connecting poor people to their peers and a range of providers



Source: D. F. Radcliffe, Rodger Voorhies, A Digital Pathway to Financial Inclusion(2012)

#### 4.4 Impact of digital products on financial inclusion

In India initially banking and financial services were capital and labour intensive, limiting its focus only on few high net-worth customers who perform high value low volume transactions only. But with the development of technology banking has rapidly evolved and scaled. Now, all the way through digital products banking is allowed in remote areas anytime as well as it has formulated anywhere availability of secure financial services to become commercially viable (Rajasekaran, 2017).

The banking infrastructure comprising of digital products and services are bank branches, ATMs, digital kiosks, customer service points (CSP), business correspondents (BCs), point of sale (PoS) terminals and mobile ATM vans currently cover 5,69,547 villages out of the total of close to 6,60,000. In view of commendable penetration of digital banking services and sustained policy of financial inclusion, 80 per cent of Indian adults have a bank account today. Financial inclusion got a boost from the Pradhan Mantri Jan Dhan Yojana (PMJDY) that added 336.6 million new basic savings bank deposit (BSBD) accounts, expanding the base of such accounts to 536 million by March 2018 (RBI Annual Report, 2017)

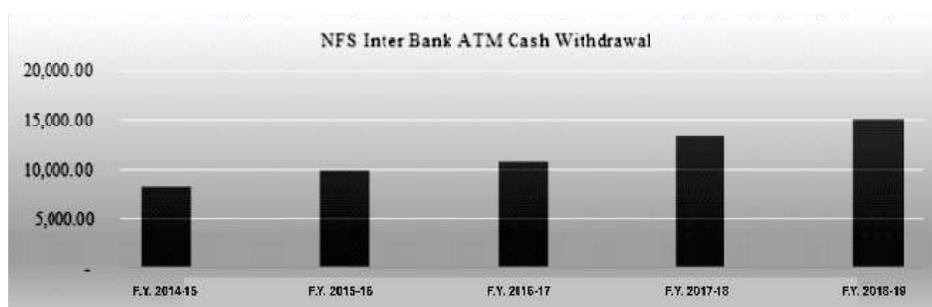
Information technology is acting as a bridge between last mile customers and service providers. (Gupta and Singh, 2013). The interplay of banking technologies with mobile technologies, has made much wider penetration in the rural market and holds a promise of financial inclusion for the masses. As per (Gopalan and Rajan, 2015), apart from simply leveraging mobile phones for basic and advanced banking, innovation in this space is reaching new levels such as allowing mobile technology to transact through ATMs or using SIMs to operate credit/debit card POS machines on mobile networks. Multiple technology

options available today aid in supporting financial inclusion at scale.

Adoption of digital products and services has helped banks to reduce their front-end and back-end cost significantly (Neelakandan and Maruthi, 2019), reduced costs lower the transaction and maintenance costs, which can lower lending cost, and thereby increases the viability of financial inclusion in rural area. The ATMs plays a key role in reducing the front-end cost, and has revolutionized the banking deliver chain. Banks are also using Rural Internet Kiosks in rural areas to carry out such transactions. Table 1 and figure 2 below shows the value wise contribution of electronic transaction is significantly higher and increasing gradually. The data represents the rise in usage of national financial switch (NFS) in Indian banking industry.

	F.Y-2014-15	F.Y-2015-16	F.Y-2016-17	F.Y-2017-18	F.Y-2018-19
	Value (in Bn)				
NFS Inter Bank ATM Cash Withdrawal *	8,311.67	9,993.22	10,818.39	13,357.49	15125.6173

**Table 1.**  
NFS inter bank ATM cash withdrawal 2014-19



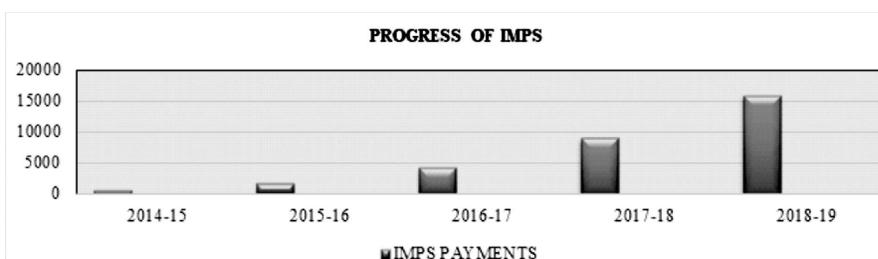
**Figure 2.**  
NFS inter bank ATM cash withdrawal 2014-19

Source: Retail Payments Statistics On NPCI Platforms

The Rangarajan committee on financial inclusion recommends the nationwide electronic financial inclusion system (NEFIS) that links bank accounts and allows govt. funds to be transferred into them electronically. The funds of Govt. subsidy, scholarships and schemes such as MGNREGS which is focused towards rural areas, can be directly transferred into bank accounts which is linked with national unique ID of the people under govt. direct benefit transfer scheme (DBT). This measure will help in reducing the burden of administration, cost and risk of misuse of public policy. By NEFIS, we would also able to extend the access of formal financial system to the under privileged and financial excluded section of the society. This point can be supported by the table 2 and figure3, which illustrates the progress of immediate progress system (IMPS) in Indian banking system.

	F.Y-2014-15	F.Y-2015-16	F.Y-2016-17	F.Y-2017-18	F.Y-2018-19
	Value (in Bn)				
IMPS	581.89	1,622.29	4116.24	8924.98	15902.57

**Table 2.**  
Progress of IMPS 2014-19



**Figure 3.**  
Progress of IMPS 2014-19

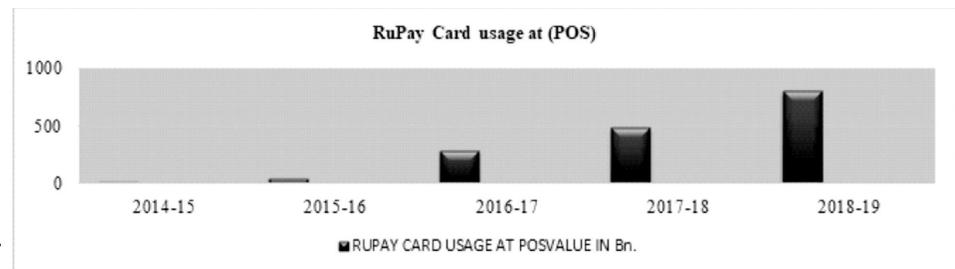
Source: Retail Payments Statistics On NPCI Platforms

According to the report of economic times (Nov.13, 2018) RuPay card has been expanding in the Indian market, riding on the back of the government. It is considered to be a policy of financial inclusion, as RuPay has made quick in roads into the hinterland. The data below (Table 3 and figure 4) represents the increase in the usage of RuPay at point of sale (POS) in Indian market.

**Table 3.**  
RuPay card usage at POS  
2014-19

	FY-2014-15	FY-2015-16	FY-2016-17	FY-2017-18	FY-2018-19
	Value (in Bn)				
RuPay Card usage at (POS)	10.76	44.74	289.95	488.23	808.23

**Figure 4.**  
RuPay card usage at POS  
2014-19



Source: Retail Payments Statistics On NPCI Platforms

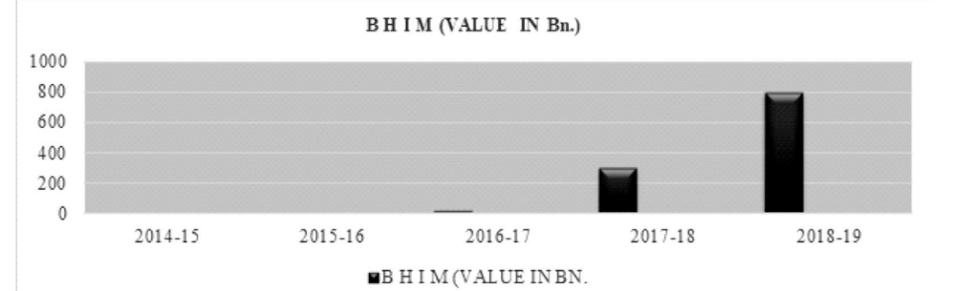
According to Gopalan (2015), information and communication technology (ICT) also plays an important role in controlling bad debt by linking it with citizen unique ID (Aadhar) and credit rating information. Credit reporting can be done electronically by recording all the transactions and sharing this with credit bureaus. Lender can use this information of past credit history for identifying appropriate borrowers and will be able to reduce provision of bad debt significantly.

To support Aadhaar-based payments as well government of India launched an application, bharat interface for money (BHIM). Bharat interface for money (BHIM) is one such app that is aimed at making Indians go cashless. BHIM lets users make simple, easy and quick transactions using the unified payments interface platform. The aftermath of demonetization drove a large number of people to switch to digital transactions for payments, as cash was not easily available at ATMs or bank teller counters for many months after the move. For ease of transactions, a lot of users switched to using UPI, which allows instant fund transfers directly from one bank account to another (Table 4 and figure 5). BHIM is different to mobile wallets such as Paytm and MobiKwik as it also allows sending money to people who don't have the app. The government has also rolled out UPI integration to USSD payments, which can work on feature phones and offline as well.

**Table 4.**  
BHIM data 2014-19

	FY-2014-15	FY-2015-16	FY-2016-17	FY-2017-18	FY-2018-19
	Value (in Bn)				
BHIM	0.00	00	18.04	300.18	796.34

**Figure 5.**  
BHIM data 2014-19



Source: Retail payments statistics on NPCI platforms

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Banks are taking technology initiatives such as Geographical information system (GIS), Global positioning system (GPS), General packet radio services (GPRS). GPS and GPRS are mobile based technology, with the combination these two banks can monitor the location of their BCs and direct them accordingly. GIS is web based technology having all details of existing braches, ATMs, business correspondent, state co-operatives. This helps banks to identify the financially excluded region, where expansion of services needs to be carried out.

## 5. Conclusion

The digital finance helps business innovations in transforming the lives of individuals in, and economic prospects of, emerging economies. It increases transparency and information about users generated by digital payments which can spawn new types of financial services. New credit-scoring models that assess user data can help lenders assess the credit risk of a broader set of customers. Peer-to-peer (P2P) lending platforms can also emerge. Borrowers submit requests that are automatically risk-assessed along with their profiles, and lenders can select the borrowers they want to fund. Text messages prompt borrowers when they miss a payment, and delinquency rates have been lower than at MFIs to date-providing lenders with double-digit returns. Other new apps and digital tools can help businesses analyze their digital sales to improve operations and gain access to cash advance facilities. Secondly, digital payments allow people to transact in small amounts. This creates new business opportunities based on so-called micro-payments. Examples already in existence include pay-as-you-go solar power for households, irrigation systems purchased on layaway plans, and school tuition fees broken into small, frequent payments.

Over the longer term, digital payments can enable development of e-commerce and on-demand services. Today, most e-commerce in emerging economies relies on cash payment on delivery. But digital payments can unleash more rapid growth, given their greater convenience. In turn, e-commerce can unlock consumer spending, particularly in areas where retail options are limited.

One of the biggest examples is India's Aadhaar biometric identification system, which greatly simplifies KYC processes, though it also raises privacy concerns. Another way governments can help in the expansion of financial inclusion is by supporting the establishment of cell towers into remote areas. There are many mountainous and island regions where digital financial services cannot yet penetrate due to lack of infrastructure.

It can conclude that, the awareness of digital finance services is low, but government is taking reasonable steps in this direction to educate rural Indian people about benefits of electronic transactions. Financial inclusion is no more a social responsibility of the banks rather it's a business opportunity for them, so with the help of digital products they are empathizing on achieving this goal. The banking digital products like IMPS, NFS etc. in the paper reflects their increase in usage from the last five years but still there is a lot to achieve in this direction. As digital channels are able to provide most of the banking services, but still they are unable to penetrate the products successfully in rural areas through digital platform due to lack of digital literacy. The digital finance benefits can go far beyond expanding access, driving down costs, and increasing the convenience of transactions. A digital-payment network is part of the basic infrastructure of an economy that enables individuals and businesses to transact with one another impeccably. If financial inclusion efforts are to be fully harnessed and taken forward, the regulator and banks will have to work in cohesion with local government agencies to educate masses on a large scale.

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