

# **Towards Electronic Payment Interoperability: A Reflection**

**Arpita Baijal**

**PhD student**

Arpita Baijal, Phd student, RA Podar college , University of Mumbai

2101, Daffodils, Neelkanth gardens, Govandi, Mumbai.

**Ph no.:** 8427173424

**Email:** baijalarpita.92@gmail.com

**Dr. Vinita Pimpale**

R.A. Podar College ELC- O classification

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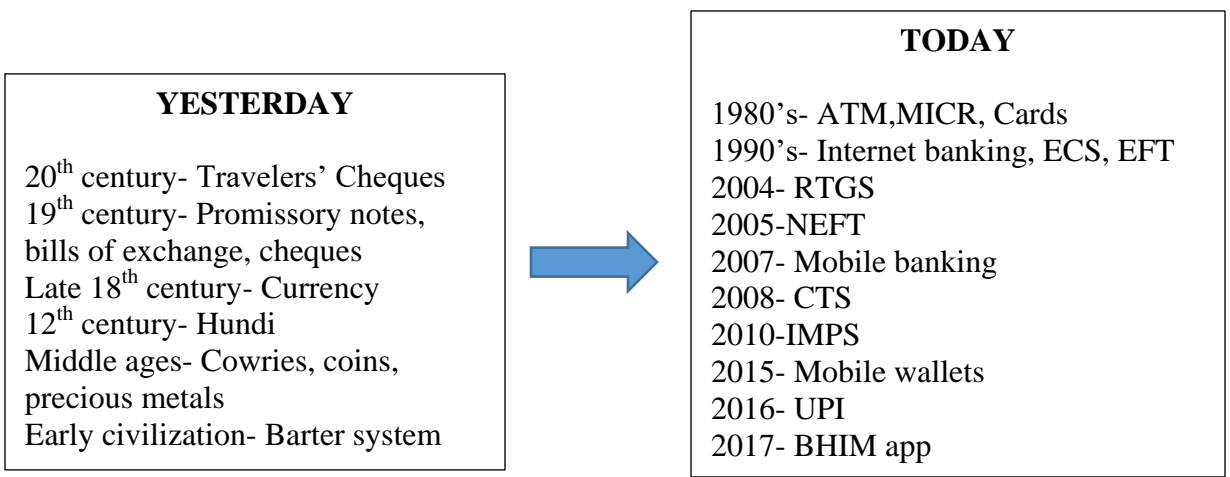
## **Abstract**

*Payment systems can be traced back to early civilizations where a need to exchange goods and services led to development of a barter economy. It was with the development of commerce and need of more sophisticated payment system, need of e-payment was realized. In this digital era e-payments is a common term, the next stage is to build an interoperable e-payment environment. It is an environment categorized by unrestricted flow of funds from one party to another in a*

*secure manner. This paper aims at identifying infrastructure requirements to build such a system and government's steps to promote the same.*

## **INTRODUCTION**

Payment Systems is a system to settle the financial transactions by paying consideration for goods and services. Payment systems have evolved over time from primitive to most advanced forms towards interoperability. In older times, barter system was prevalent where goods and services were bought and sold in exchange of other goods and services. This system of payment had its own draw backs as it was difficult to find a person who wants to exchange the same good or service as desired by the other person. Slowly and steadily over the years with the innovation in payment system new solutions have been designed. These sophisticated systems are more convenient and safe to settle transactions.



1. Source-<https://www.bing.com/images>

Electronic payments are cashless payments. These payments do not involve hard money. They are settled online in numbers by virtual transfer of money from one bank account or digital wallet to another. With the evolution of e-commerce in 1990's, e-payment is also gaining importance. E-payments have several advantages over traditional payment systems. It leads to convenience in payment, eliminates need to carry cash, reduces time and hassles of offline payments, encourages interoperable environment and provides good customer experience. However, there are some issues attached with such payments such as safety and security, authentication of payments etc. Examples- digital wallets, NEFT, RTGS, UPI etc.

This paper focuses on interoperability that can be defined as increasing acceptance. In e-payment systems, interoperability is increasing acceptance of different modes of e-payment over various available payment platforms. In true sense e-payment system interoperability can be achieved in the following way for example- patym digital wallet holder can pay ola money digital wallet holder easily by transferring money or SBI bank account holder can easily transfer money to Canara Bank account holder using Bank of Baroda m-commerce application.

## **REVIEW OF LITERATURE**

*Benson; Loftesness (2012)*<sup>1</sup> in the report submitted to CGAP, titled-“Interoperability in Electronic Payments: Lessons and Opportunities” - undertakes comprehensive study on the

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<sup>1</sup>

Benson, L. (2012). *Interoperability in electronic payments: Lessons and Opportunities*. CGAP.

electronic payment interoperability. It has been established in the report that the most important components in achieving interoperability includes- right and robust economic framework, effective regulatory bodies for implementation, interoperability in government payment to grow system and minimizing the effect of early dominance in the system. This article throws light on the theory of interoperability, serving as a complete guide to achieve the same.

*Narayana, Kumar (2016)*<sup>2</sup> in their article titled-“A Study on Financial Inclusion Initiatives and Progress with reference to Indian Banking Industry in digital era” has examined the present status of financial inclusion in India and effort made by ICT based financial services. This paper suggests that a determined government and its steps like PMJDY, adhar based payments and Rupay cards along with banks benefitting from technical advances, which are expanding reach, and reducing cost have played a great role in ease of payment. The study suggests five trends in this sector- Demographic dividend, Affordable smart phones, Advancement of ITC, JAM and e-commerce. The study has laid special focus on UPI that is enabling interoperability in the payment systems through single identifier.

*Manish Singh(2017)*<sup>3</sup> This paper-“ Digital India -The implementation” explains the concept of digital India along with the roadblocks in its implementation and suggestions. Two of the nine pillars of digital India includes universal mobile access and public interest access. These two

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Kumar, D. P., & Narayana, D. M. (2016). A Study on Financial Inclusion Initiatives and Progress with reference to Indian Banking Industry in digital era. *International Journal of research in finance and Marketing(IJRFM)*, 125-134.

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Singh, M. (2017). Digital India -The implimentation. *ORF Issue brief*.

pillars are very important from the point of view of digital payment economy and thus bringing interoperability. This step of the government is very crucial in building infrastructure of digital payments. This study also identifies obstacles in the path of digital India like Infrastructure deficit, lack of adequate knowledge etc. The author has also suggested remedies for the same. Remedies include new program for skill development, training should be given to people to make them digitally aware, customer problem redressal should be focused and youth should be involved to take digital India a step further.

## **OBJECTIVES OF THE STUDY**

Broad aims of the study are:

1. To analyze the present infrastructure for building an interoperable electronic payment system.
2. To study the steps taken by the present government to build an interoperable electronic payment system in India.

## **METHODOLOGY**

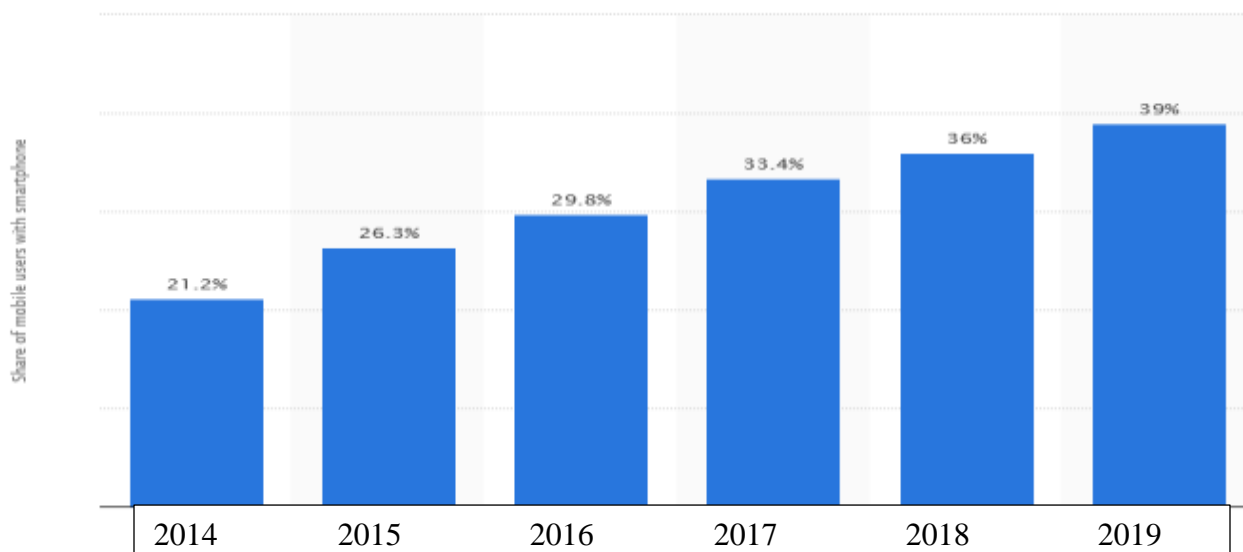
The research paper is based on secondary data obtained from various relevant sources including- Journals, Statistics available from authentic sources, reports etc. The data, information and statistics obtained from various sources have been put in a logical sequence to bring out this research paper.

## **ANALYSIS**

**Objective 1-** To analyze the present infrastructure for building an interoperable electronic payment system.

### ***Variables-***

- Smart Phone users- India has seen a growth of e-payment industry using mobile phones. Unlike western countries, India has adopted e-commerce and e-payments directly on mobile phone rather than moving slowly from personal computers to mobile phones. Smartphone is required to carry e-payments that will further lead to interoperability. According to the findings of a study carried by statista an online statistics and research portal-
  - The statistics is regarding the prediction of smartphone penetration rate in India from 2014-2019
  - According to the prediction India's share in global smartphone market will be more than triple between 2013-17



2.Source- © Statista 2017

Thus with more smartphone users as predicted by the study infrastructure facilities for e-payments will improve.

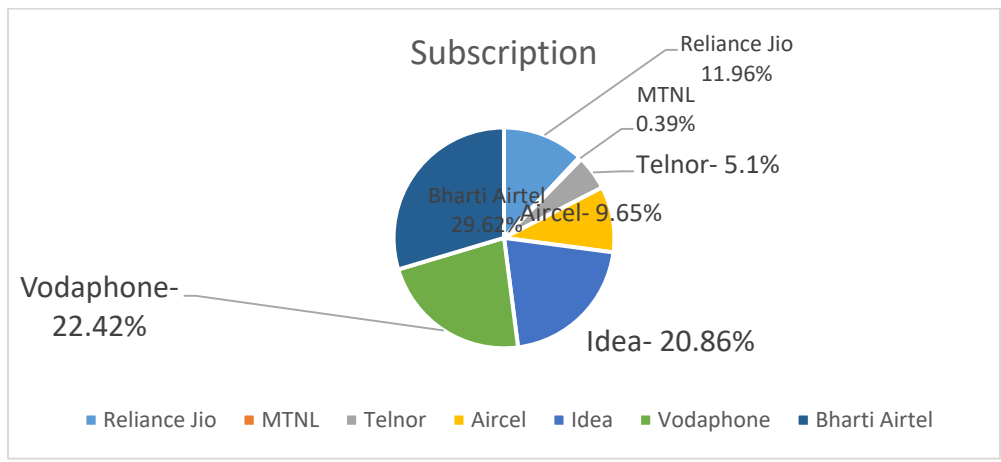
- Mobile phone subscribers- Government and commercial banks are working hard to bring out applications and digital wallets for building an interoperable e-payment environment. To get an access of these new payment methods access to mobile phones and networks is a must. Increasing number of mobile subscribers in India is a positive step towards a better infrastructure for e-payments in India.

According to the data released by Cellular Operators association of India (COAI)-

Fact sheet-

- There is an upward trend in the growth of mobile subscribers in India.
- By the end of May-Total no. of subscription- 940.72 million

Share of different companies-

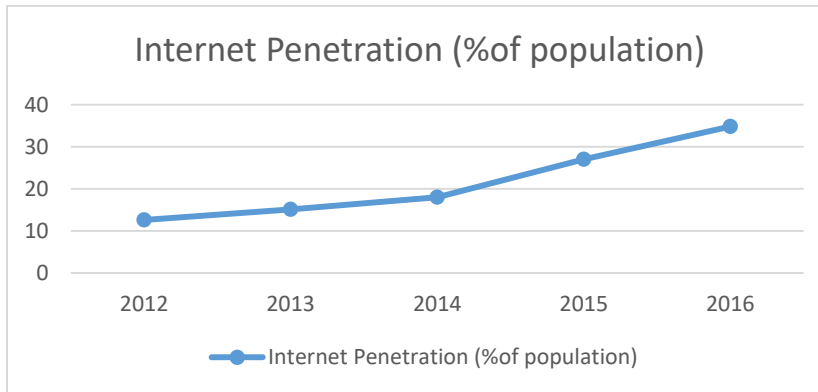
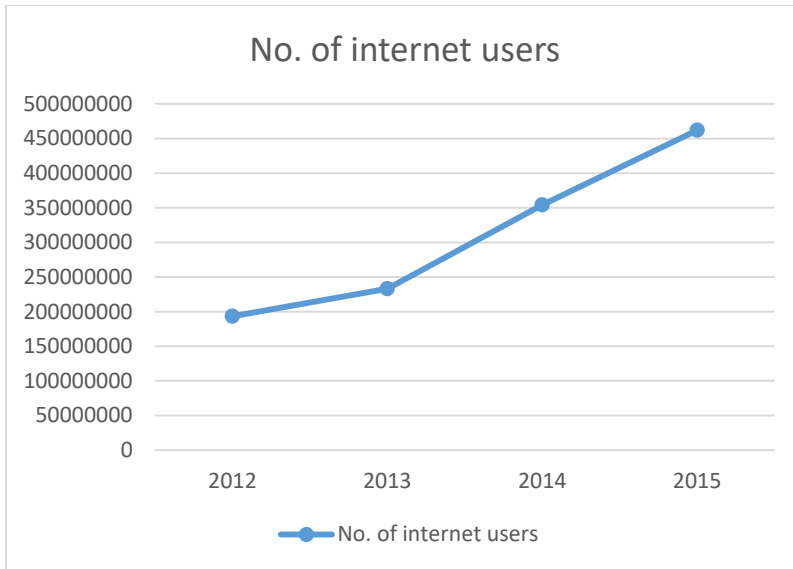


3. Source: Data compiled by COAI

- Internet penetration- It is another one of the most important components of e-payment infrastructure. Electronic payments will be possible only with the availability of high speed internet that will allow such payments. E-payments are not possible without internet facility.

According to the statistics available on internet live stats an internet statistics portal-





#### 4. Penetration

The trend obtained when plotted on a line graph is an increasing trend. It means that internet penetration in India is on an increasing scale, which is a positive for growth of e-payments hence, interoperability in India.

- **Internet Speed**– Along with the availability, high-speed internet is also required to encourage interoperability in e-payments. To study the status of internet speed in India, statistics’ from ‘State of Internet’ report for Q3, 2016 of Akamai (global leaders in content delivery network services) is used.

Global Rank	Country/Region	Q3 2016 Avg. Mbps	QoQ Change	YoY Change
1	South Korea	26.3	-2.5%	28%
2	Hong Kong	20.1	3.4%	27%
6	Singapore	18.2	5.3%	45%
7	Japan	18.0	5.1%	20%
18	Taiwan	14.9	-4.3%	48%
36	Thailand	11.7	-15%	42%
40	New Zealand	11.3	6.6%	30%
50	Australia	9.6	13%	23%
63	Malaysia	7.5	9.3%	53%
76	Indonesia	6.4	9.1%	115%
77	Vietnam	6.3	22%	85%
79	Sri Lanka	6.0	5.9%	18%
85	China	5.7	9.5%	55%
103	Philippines	4.2	-2.8%	49%
105	India	4.1	14%	62%

Figure 23: Average Connection Speed (IPv4) by APAC Country/Region

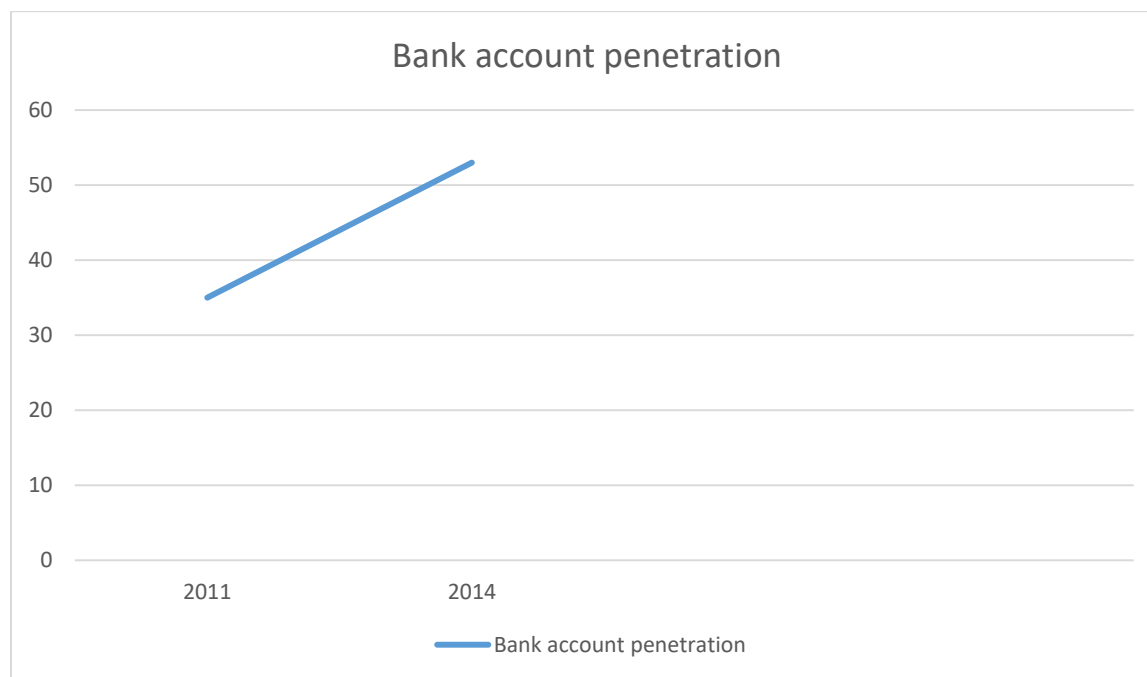
#### Fact Sheet:

- 30% of Internet Connection in India above 4 Mbps speed.
- 6.6% of Internet Connection in India above 10 Mbps speed.
- 2.6% of Internet Connection in India above 15 Mbps speed.

5.Source- <http://mrkt.co.in/2016/12/18/stats-internet-connection-speed-in-india/>

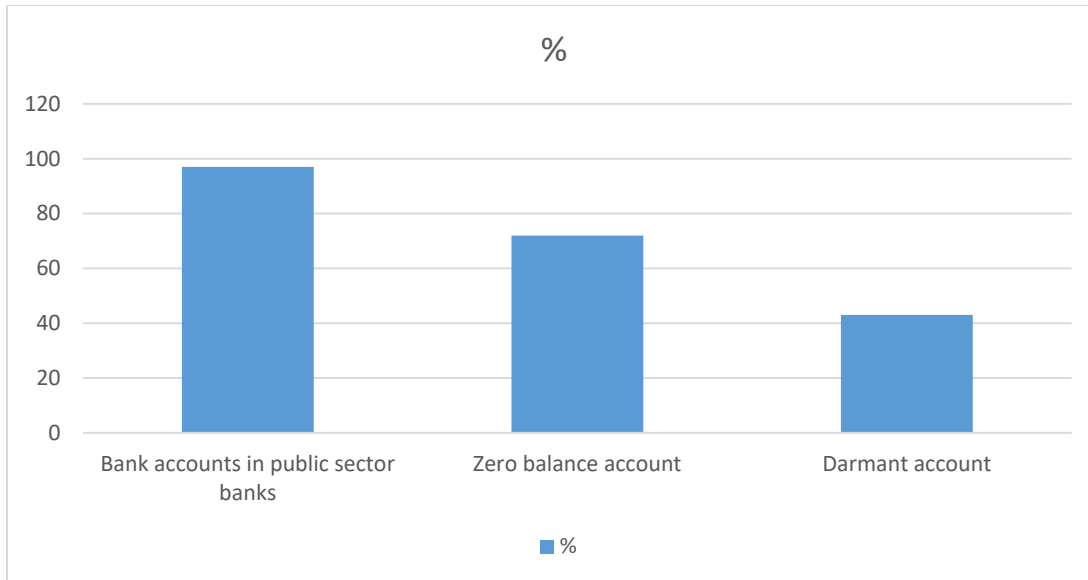
Based on above figures it can be said that there is still a scope to improve this part of the infrastructure facilities. High-speed internet is required to carry out seamless payments for a better customer experience and security.

- People who have account in banks or with any other financial entity can only do bank account holders\_ E-payments. In India bank is the most popular financial institution. Hence, increase in bank account holders will lead to increase in e-payments. In recent years bank account holders have increased which has led to the increase in online payments. But the sad part is a significant portion of bank accounts are in dormant state. Government and RBI is taking steps to improve this position. Nevertheless increase in bank account penetration according to a study carried by the World Bank is a good news for a better e-payment environment.



6.Source- World bank report

Bank account penetration in India increased from 35 per cent to 53 per cent between 2011 and 2014. Translated into absolute numbers, this growth in number of bank accounts means that 175 million in India became account holders between 2011 and 2014. -A world Bank report



7.Source- A world bank report (Current status in India)

- **Objective 2-** To study the steps taken by the present government to build an interoperable electronic payment system in India.

➤ 1.UPI- It is an initiative taken by government towards interoperability. National payment corporation of India launched UPI (Unified payment interface) a mobile based payment system with an aim to build an interoperable environment. Just like IMPS under UPI, micropayments can be made from one bank account holder to another. However, it does not require Bank account number or IFSC code of a particular bank. It only requires UPI ID/ Virtual ID, which an account holder gets on registration. Thus, any bank account holder can transfer money to account holder of another bank by just entering virtual ID ex-Phone no.@upi

- Bhim app- It is another initiative taken by the Modi government to simplify interoperable payment system. It is a payment system based on UPI. Most of the commercial banks own an app that enables m-commerce. Bhim app is one simplified user-friendly app that can be linked to any bank account and transactions can be made using UPI ID or mobile number. BHIM (Bharat Interface for Money) app also supports USSD payments, which can even work on simple phones without using any app. This is to include non-smartphone owners also and to deal with financial inclusion.
  
- 3.JAM trinity- It is an abbreviation for Jan Dhan Yojana, Adhaar and Mobile number. Government has identified these three pillars to create a strong central database and to include India's poor in the development journey ahead. Jan Dhan Yojana aims at tapping the unbanked population by opening their bank account and giving them debit/ATM cards. Adhaar aims at building a strong central database based on biometric identification, which is unique to an individual. Mobile number will help in making an informed connected society and making e-payments. JAM trinity along with its individual benefits also aims at building a strong infrastructure for interoperable e-payments.
  
- 4.Adhaar Pay- This payment method is based on the biometric identification that can be achieved by using Adhaar database. It makes transaction more secure and easy as authentication is done through biometrics.

- Post office and bank interoperability- India post that won the status of payment bank has asked RBI to allow interoperability of ATM with public sector banks i.e. ATM cards of India Post will be allowed to use at a public bank ATM. If this will be allowed it will lead to financial institution interoperability, which will be eventually, be allowed for online payments also.
  
- Bharat Bill Pay System (BBPS)- It is an interoperable bill payment system introduced by government of India with the help of National Payment Corporation of India (NPCI). Under this system all the kinds of bills will be allowed to be settled at one place using online or offline mode. This will reduce the hassle of paying different bills at different places through different modes. Online mode of payment will also encourage e-payment interoperability.
  
- Digital India- It is an initiative launched by the present government to provide all the government services digitally to the citizens of the country. E-payments have been encouraged under this scheme. This campaign provides an excellent environment for the development of e-payment system.
  
- Demonetization- Indian government demonetized 500 and 1000 rs. notes with an aim to curb black money. This initiative has not only affected unaccounted income but also encouraged e-payments due to cash crunch.

- PPI- RBI under Payment and settlement Act 2007 and Payment and settlement Act (Amendment) 2015 has given recognition to prepaid payment instruments by which purchases can be made against the value stored in such instruments. Digital wallets, which are widely used these days especially after demonetization is an example for the same. Open wallets are form of interoperable PPI's example- Paytm it allows holder to make payment anywhere sometimes also allows to withdraw cash.
  
- RBI Vision 2018\_ RBI has issued Vision statement 2018, regarding Payment and settlement Act. In this vision statement, RBI has emphasized on interoperability in e-payment systems.
  
- Social networking sites/apps and UPI- According to the recent news to take interoperability of e-payments to the next level, WhatsApp is in talks with UPI and SBI to integrate and allow payments through social network platform. This will help peers and even business people to settle such transactions via social media without accessing any personal information.

#### **Roadblocks in digital payment system interoperability-**

- Dormant account holders- According to the statistics shown above dormant account holders are a barrier to payment systems interoperability.

- Internet speed- As shown in the statistics above India needs to pay attention to enhance internet speed to realize the dream of digital India.
- Culture and mindset- Culture and mindset of people towards holding cash pose a serious threat on the payment system interoperability.
- Safety issues- digital transactions pose safety threats like hacking. To solve this issue innovative solutions like Adhaar pay and UPI should come up to enhance faith in digital payments.
- Digital literacy- It is one of the most important pillars of digital India program. Government is working hard to make people digitally literate to encourage them to use internet and various services.
- Awareness- Awareness has to be created among masses regarding the benefit and convenience of using e-payment system in an interoperable environment.

## **VII. CONCLUSION**

Interoperability lies in ease of operating on different platforms and increasing acceptance in a way to encourage smooth transactions. Interoperability in payment system can be achieved when there is a proper infrastructure and government regulations support the same. In an interoperable payment system settlement of transaction should be made easy by allowing easy and quick



settlement. However, there are some underlying challenges that are to be taken care of to encourage such systems and their smooth function.

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