



Smart City
MISSION TRANSFORM-NATION



सत्यमेव जयते

Promoting Digital Payments in 100 Smart Cities in 100 days Guidelines



**Ministry of Housing and Urban Affairs
Government of India**

July 2018



SMARTNET
Solutions Exchange for Urban Transformation of India

Contents

1. Digital payments.....	3
1.1 Evolution and growth of payment instruments.....	3
1.2 Payments ecosystem and stakeholders.....	6
2. Digital payments in Smart Cities.....	8
2.1 Introduction.....	8
2.2 Implementing digital payments in Smart Cities.....	9
2.3 How can Smart Cities onboard digital payments?.....	12
2.4 Enabling digital payments and way forward.....	14
Glossary.....	16

1. Digital payments

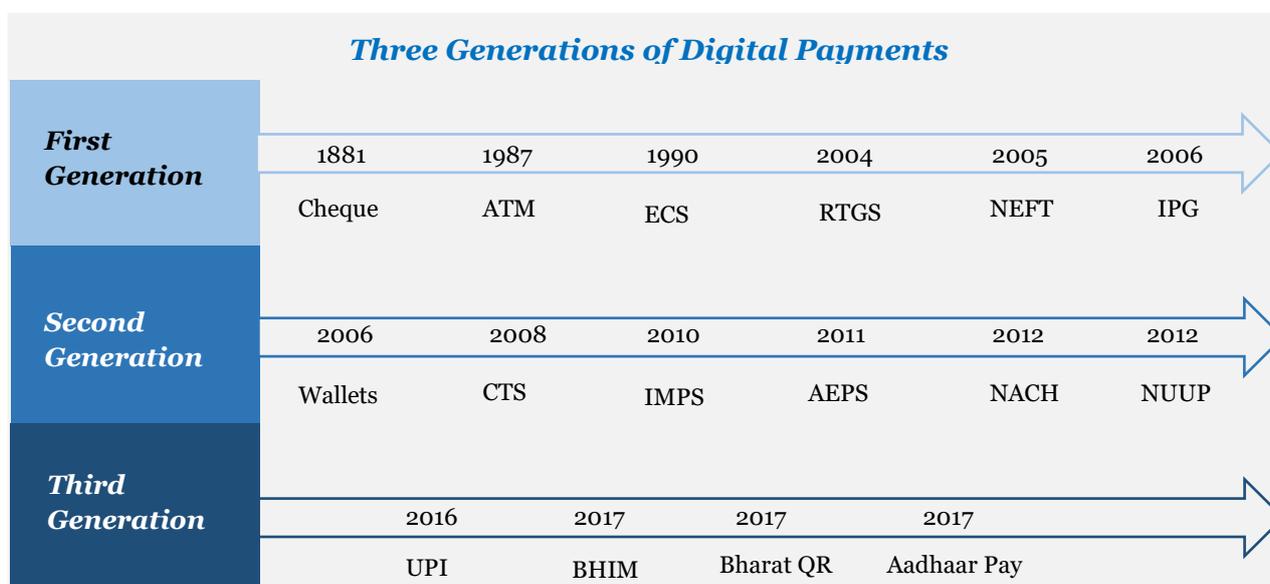
Digital payments is a crucial enabler for Smart Cities and could contribute significant benefits to citizens, businesses, Governments (central / state / local) and the economy as a whole. It helps in reducing cost of cash and inefficiencies, provides convenience, enables real time reporting and increases transparency in the payment transactions. Due to the efforts undertaken by the Government of India, digital payments have grown multi-fold in the recent past.

1.1 Evolution and growth of payment instruments¹

While first generation payment instruments like cash, cheques, RTGSⁱ, NEFTⁱⁱ continue to be the backbone of the Indian payments landscape, trends over the last few years have clearly indicated the propensity of Indian consumers to gravitate from traditional paper instruments (cash, cheque and ATMⁱⁱⁱ cash transactions) towards newer digital payment modes. This transformation is evident through the diminishing contributions of paper clearing transaction value to the overall retail transaction value (excluding cash), from 66% in FY'14 to only 38% in FY'17. For the same period, retail electronic transactions (comprising of ECS^{iv}, NEFT, IMPS^v and NACH^{vi}) have shown steady growth of over 38% and 47% in both value and volume respectively.

Digital payment is a way of payment in which both payer and payee use digital modes to send and receive money. It does not include cash, cheque or any other paper-based payment instrument.

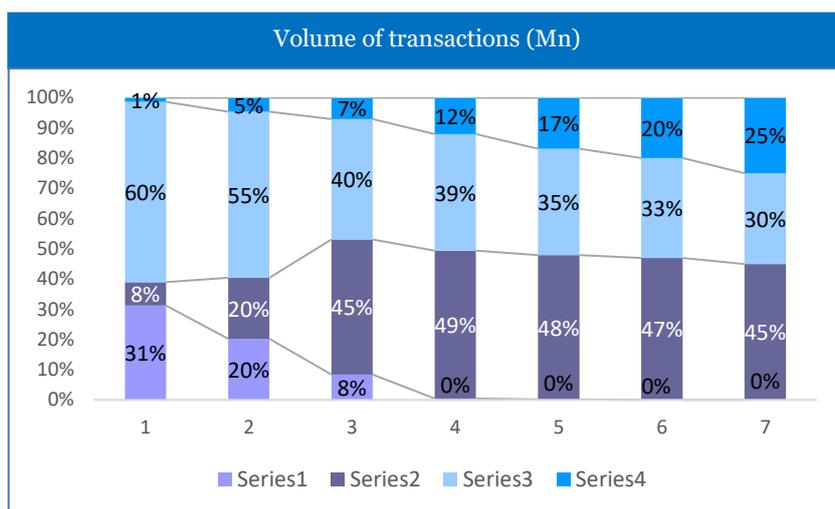
The dynamics within the retail electronic segment itself has been subject to a considerable amount of change over the past few years. Key instruments that were once revolutionary have been phased out gradually to be replaced by newer advanced payments instruments that bring with them convenience and efficiency. ECS (Electronic Clearing System) and NEFT (National Electronic Fund Transfer) dominated the retail electronic space between the years 2000 to 2010. In 2007, NPCI^{vii} introduced NACH, a faster and more efficient clearing platform. Although the complete adoption of NACH took time, with a transaction volume of over 2 billion transactions amounting up to INR 8000 billion in FY'17, NACH has contributed to over 40% of the overall retail electronic transaction volume holding a clear majority in



the present day.

¹ Data source: RBI and NPCI database

The IMPS story follows along on similar lines with transactions picking in post 2013-14, after a slow start from its launch in 2010. Unlike NEFT, where transactions are settled in bulk batches at pre-defined intervals during the day, IMPS is an instant service that is available 24*7*365, making it the emerging preferred mode of payment amongst customer looking options to transfer money. IMPS transactions have shown a tremendous growth from a mere 15 million in FY'14 to 500+ million transactions only 3 years later. With IMPS serving as the underlying platform for newer products such as UPI^{viii}, its overall share in digital transactions is expected to continue growing at a steady pace and reach 25% by FY20.



Source: RBI data, NPCI data

Consumers are exploring various emerging digital payment instruments for their everyday transactions. Newer payment instruments (Wallets, UPI, BHIM^{ix}, Aadhaar Pay and Bharat QR^x), focusing on customer experience and simplicity of transaction were introduced by Government of India, along with various financial institutes, to cater to this inundating demand for digital payments. As consumers learnt to transact digitally, average monthly transactions increasing considerably for a majority of introduced digital instruments. PPI^{xi} (majorly mobile wallets) and UPI are witnessed the major traction with the highest growth multiple on a month-on-month.

Citizens are quick in adopting the recently introduced payments instruments including wallets, UPI, BHIM and QR code-based payments

Over the past few years, India's digital payment story has boasted of a tremendous growth in the number of transactions. Urban and technically advanced users contributed to majority

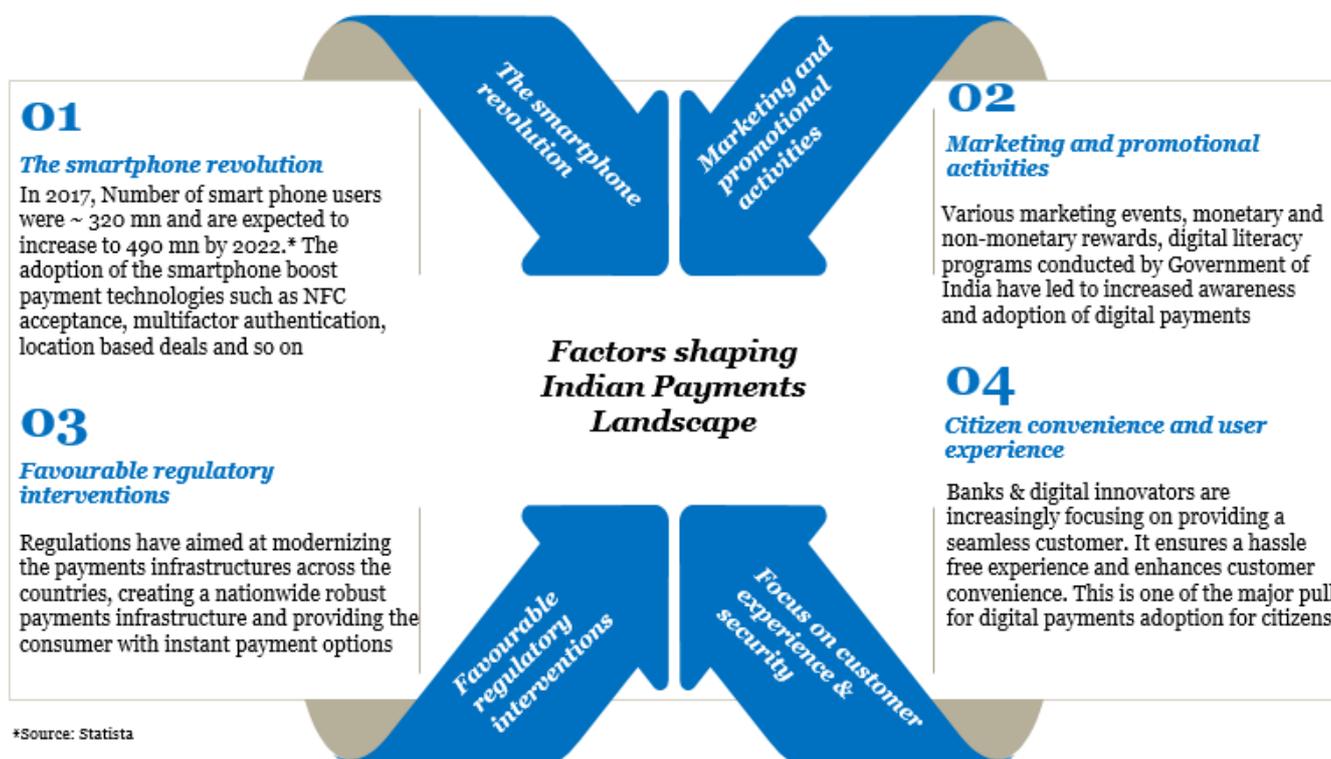
of these payments. In order to attain balanced growth across socio-economic boundaries and introduce the masses into the envelope of digital payment users, Government of India has introduced a multitude of payment products and initiatives specifically targeted towards the semi-urban and rural sections, with special focus on alleviating their unique challenges and issues. Most of these products were launched towards the end of second generation and they predominantly make up the third generation of digital payment products.

- The first set of these products were aimed at promoting customer adoption of digital payments, by introducing simpler and convenient ways to transact digitally. These included biometric based payments at mPOS^{xii} devices through AEPS^{xiii} and feature phone payments through NUUP.
- Soon after, judging by the success of AEPS and QR based wallet payments, the Government also launched Aadhaar Pay (the merchant version of AEPS) and Bharat QR in an attempt to boost acceptance infrastructure through increased merchant adoption of digital payments.

Government of India has introduced a multitude of payment products and initiatives specifically targeted towards the semi-urban and rural sections, including NUUP, AEPS, and Bharat QR

Growth drivers for digital payments in India:

Over time, payment instruments have developed their shape and structure through the influence of key driving forces. These forces are responsible for moulding India's payments landscape and propelling it towards a digitally first future



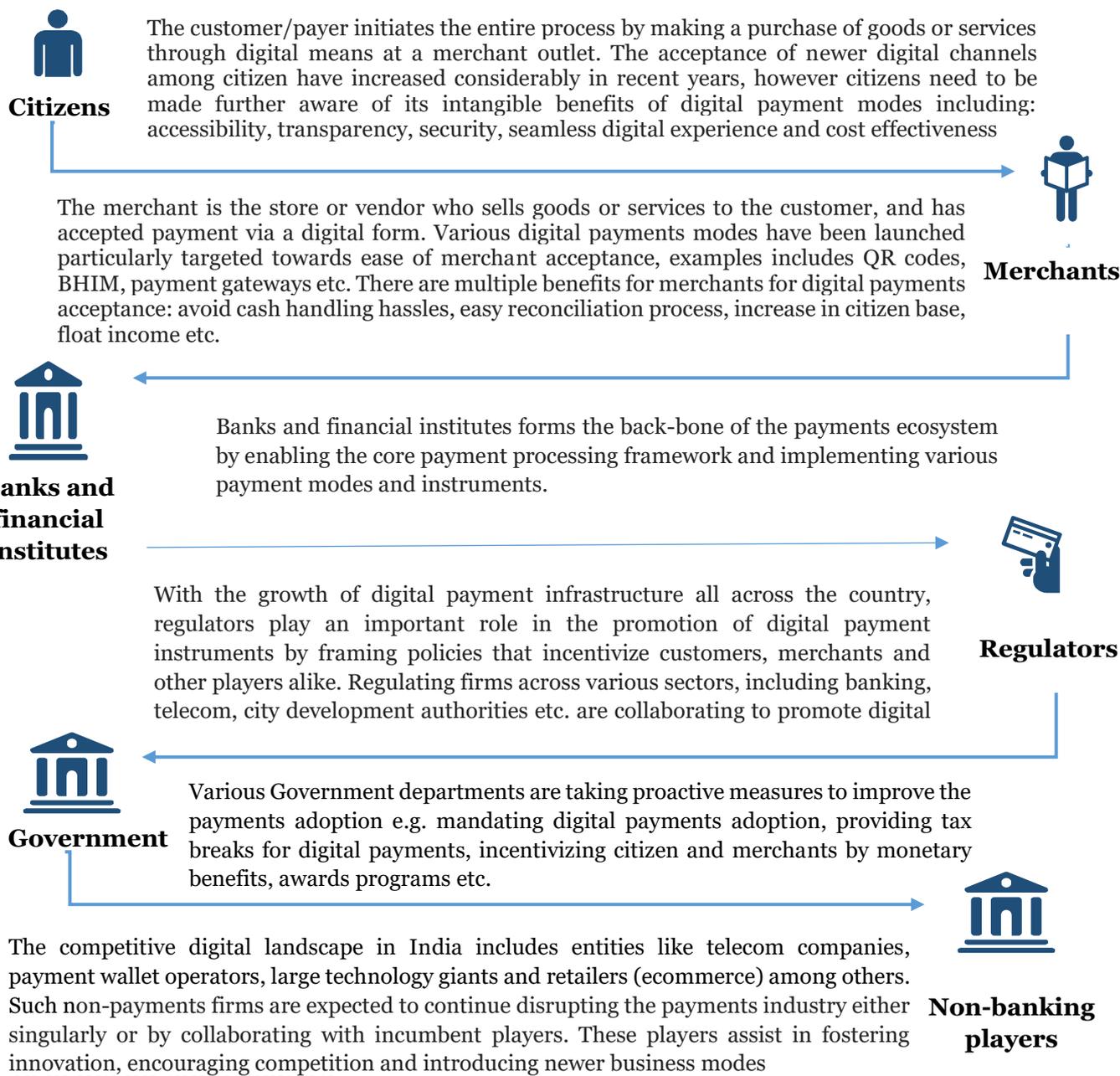
It is yet to be seen how various new payment instruments fare in an ever-changing ecosystem however given the innovation the Indian payment landscape has seen in the last couple of years, the future is undoubtedly promising with various stakeholders in the value chain (banks, regulators, merchants, payment technology firms) continuing to collaborate to unleash a wave of digitization. Digital payments are expected to ease the process of citizen transactions for various Government services and can result in significant cost and time savings for the citizens.

1.2 Payments ecosystem and stakeholders

Payments technologies are now evolving at a rapid pace with new providers, new platforms and new payment tools launching on a yearly basis. At the core of these changes however, are a network of participants – the payments ecosystem - who communicate financial information to one another, competing and collaborating to facilitate transactions of every form. These payment processes, although invisible to the average consumer, are becoming increasingly seamless, leading to a friction-free payment ecosystem between merchants and buyers.

'Payments ecosystem' with its many complexities, is one of those terms that typically evokes confusion among those seeking to fully understand it. To understand where the next big digital opportunity lies, it's critical to understand how the traditional chains work and what roles its stakeholders play.

The infographic below depicts the interaction between key stakeholders in the payments ecosystem, along with the key differences in their functionality. It also highlights the role played by various support entities and regulatory bodies in ensuring seamless digital transactions.



Citizens

- Overall transparency in the payments transaction process
- Convenience of anytime anywhere payments
- Cost effective and seamless experience
- Cash backs and monetary incentives

Banks

- Increase in the transaction volume
- Reduction in processing cost
- Growth in the financial inclusion business
- Penetration in tier 2 and tier 3 cities

Merchants

- Increase in overall business growth
- Reduction in cost of accepting payments
- Increased customer satisfaction due to additional payment modes

Regulators

- Opportunities for innovation to promote digital payments
- Reduce the cash from economy
- Growth in overall financial Inclusion

Non banking players

- Additional sources of revenue
- Business diversification opportunities, lower cost potential
- Opportunity to innovate and ensure customer stickiness

Government

- Improves ease of living for citizens and businesses
- Better control over receipt and collection of transactions
- Reduce human intervention in the entire payment process
- Improves transparency in the process

2. Digital payments in Smart Cities

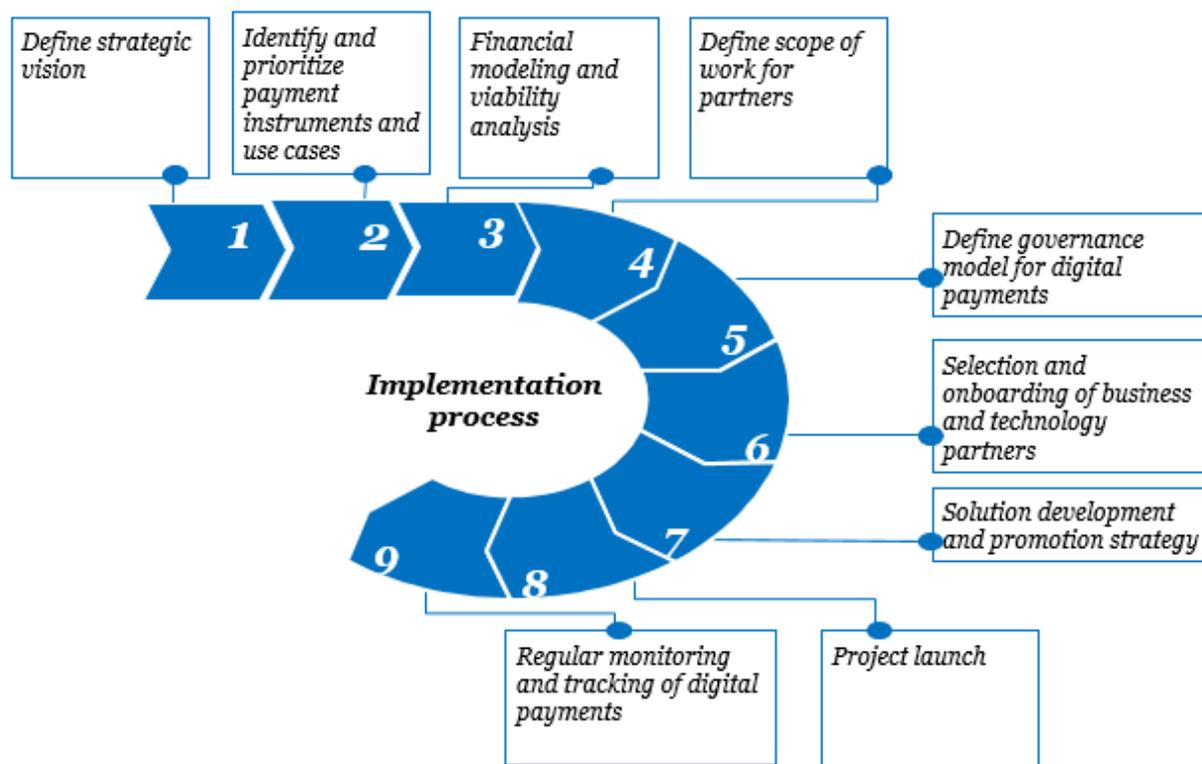
2.1 Introduction

A Smart City, by definition, attempts to attain progressive growth, alongside environmental sustainability, social inclusion and ease of living via implementation of various ‘Smart’ solutions. Payments, featuring in a majority of the basic services availed by citizens, form the core of every economic activity in a city. Accordingly, it is imperative for the Smart Cities to transform their existing payments framework into smart payments by inclusion of various digital payment modes across variety of payment transactions including G2C, C2G, G2B and B2G payments.

Receiver → Sender ↓	Citizen	Business	Government
Citizen	C2C (Citizen to Citizen) <ul style="list-style-type: none"> • Transfer / Remittance • Rents • Bill Splitting 	C2B (Citizen to Business) <ul style="list-style-type: none"> • Retail payments • Bills payments • E-commerce • Local transport 	C2G (Citizen to Government) <ul style="list-style-type: none"> • Taxes, Fees, Tolls • Railways, Education, LPG, PDS etc. • Tolls, Fuel
Business	B2C (Business to Citizen) <ul style="list-style-type: none"> • Salaries • Rewards 	B2B (Business to Business) <ul style="list-style-type: none"> • Commerce, • Retail Supply Chain / invoices • Vendor payments 	B2G (Business to Government) <ul style="list-style-type: none"> • Taxes, Fees
Government	G2C (Government to Citizen) <ul style="list-style-type: none"> • DBT^{xiv} payments, subsidies etc. • Salary / Wages 	G2B (Government to Business) <ul style="list-style-type: none"> • Vendor payments 	G2G (Government to Government) <ul style="list-style-type: none"> • Taxes • Subsidies, grants from central to state Governments

2.2 Implementing digital payments in Smart Cities

With the intent well in place to improve the payments ecosystem across various departments in Smart Cities, listing down few guidelines and step-wise implementation approach which each city can follow and/or customize as per their unique city requirements, in order to boost the digital payments:



- 1. Define Strategic Vision:** A strategic vision for the implementation of digital payment initiatives must include: Clearly defined goals, high-level business need, criteria for selection of technology & business partners, project execution, promotion and sustenance
- 2. Identify and prioritize payment instruments and use cases to be implemented:** The digital payments landscape in India offer a variety of payment options for consumers and merchants. It can range from the traditional channels including NEFT, RTGS and Cards to various innovative payment modes. Arrival of technology first companies like Google, Samsung, and others (Telecom companies, FMCG^{xv} players and payment processing companies) has led to the introduction of many innovative solutions digital payments, which includes wallet-based payment system, QR code based mobile payments etc. that can even be used by people without any bank accounts. Another example of innovations across acquiring, is the adaptation of the legacy PoS system to accommodate newer modes of payments such as QR codes and UPI. Similarly, Government of India and RBI^{xvi} backed payment technologies provide more options for promoting digital payments: BHIM-UPI, Bank specific UPI payment options, Bharat QR, UPI QR, Aadhaar based payments (biometric), viz. Aadhaar Pay etc.

Before onboarding payment service providers, Smart Cities need to clearly articulate the following:

- 1. Strategic vision, mission and goals of payments platform*
- 2. Payments use cases*
- 3. Financial modeling and viability of payments platform*

Given the amplitude of digital payment solutions available, an assessment need to be carried out to ascertain target audience in each Smart City, their preferences viz. a viz. cost to the Government organization that wants to implement the same. In addition, various use cases across departments need to be mapped basis the ticket size and transaction volumes and the suitability of each payment instrument for the specified use case. The out-come of such an assessment will help Smart Cities identify, prioritize and implement digital payment platforms that may support multiple payment systems in phased manner. Smart Cities need to deploy an in-house dedicated team to carry out the assessment or can onboard payment specialists (consultants, banks, technology firms) to finalize the strategy accordingly.

3. **Financial modeling and viability analysis:** The success of digital payments largely depends on a robust financial model to drive the project. Financial model will include the following elements:
 - Identification of revenue and investment sources (banks / citizens / Smart City funds etc.)
 - Transaction pricing models (flat fees, per transaction fees, slab - based pricing etc.)
 - Business models (partnerships, revenue sharing, profit sharing etc.)
 - Investment required on infrastructure, human resources, technology etc.

4. **Define scope of work for partners:** Detailed document is required to be prepared and handed over to all stakeholders (Internal and external i.e. vendors selected for the process) for their review and sign-off. Detailed business requirements document need to be prepared which includes description and 'As-is' and 'to-be' functional and technology requirements that the payment system is expected to deliver. Accordingly, system architecture and approach document would be prepared for IT teams and vendor.

5. **Define governance model for digital payments:** A governance framework is required to be in place for the safe and smooth implementation of any system, especially for payment systems as these systems and stakeholders involved are greatly impacted regulations and policies. The governance framework should include, but not limited to, guidelines for:
 - a) Appropriate use and control of the systems,
 - b) On-boarding and access rights for users,
 - c) SOPs^{xvii} for customer onboarding, creating, managing and closing requests
 - d) Data and information security

6. **Selection and onboarding of business and technology partners:** The common process for vendor selection and onboarding are **Request for Proposal Approach, Direct onboarding from empaneled vendors and partnership models (revenue sharing / profit sharing models)**. The selection of process largely depends on factors like:
 - How soon the system is required to be launched, e.g. NEFT, RTGS or payment gateway systems can be quickly launched with help one of the Banks with whom the Smart City is already having an account. Launching a new wallet or card may take anywhere between 2-3 months, however can facilitate additional user convenience.
 - Whether there is authorized payment service provider who can provide the system e.g. BBPOUs^{xviii} licensee w.r.t to the BBPS^{xix} payment system, PPI license holder for offering wallets / smart card based prepaid solutions
 - Gamut of payment services provided by banks or technology providers: While banks may facilitate most of the payment solutions, however few technology players specializing in particular type of payments (wallet solutions, POS, doorstep services etc.) can also be considered depending upon use case requirements
 - Competitive pricing structure provided by the vendors
 - Public private partnership (PPP) models can also be considered for payment projects requiring intensive investment. For e.g. few transportation authorities have entered into PPP model with banks to set up the AFC^{xx} system for fare collections under the National Common Mobility Card framework.

- 7. Solution development and promotion strategy testing:** The solution should have modular design and comprise of separate units each specified for user on-boarding, creation of services request, workflows to manage and process each request, transaction processing units, accounting units, databases, exception handling etc. The users and other stakeholders should conduct thorough testing of the system to check for anomalies and bugs before the citizen launch. The system should be tested for each module and its capabilities to handle large volumes, stress management, application security and fraud etc.

While launching the services / products, a promotional strategy is necessary to migrate end users on digital payment channels and prevent staff from slipping back to the old ways i.e. cash or cheque-based payments. This specially applies to citizens, those who are technology averse or not willing to pay convenience fee or invest money on purchasing technology like high-end phones and personalized cards for digital payments. Cashbacks, tax incentives, loyalty programs etc. are few effective ways for ensuring citizen stickiness via monetary incentives.

Apart from monetary benefits, promotional campaigns need to be designed towards educating citizens regarding ease of use of digital payments, hidden costs of cash, benefits and incentives for adopting digital payments etc. Promotions can be planned around festivals to digitize those payments.

- 8. Project launch:** Post UAT^{xxi} sign off the system needs to be migrated to production. The user needs to be provided with proper training and hand holding exercises to enable them function well in the digitized systems. Manuals and process flows are required to be shared with users and walk through programs are a must.
- 9. Regular monitoring and tracking of digital payments:** Government department's need to continuously monitor the progress and growth of transaction happenings through various digital payment modes implemented. Dashboards also need to be created for regular tracking of digital payment initiatives by senior management.

2.3 How can Smart Cities onboard digital payments?

S. No	Channel / Instruments	Details	Use case	Receipts (C2G)	Payments (G2C, G2B)	Preferred implementation partner	Preferred onboarding approach / other considerations
1	Payment Gateway	Credit cards, Debit card, Smart Card, Prepaid card Net banking, Wallet based payments at website	Tax payments, Smart card /Wallet top ups, bookings and payments for Government licenses, certificates etc.	Y	N	Banks, Payment Aggregators	RFP ^{xxii} process
2	EBPP ^{xxiii} , InstaPay	Payments at bank website with/without registering PMC as biller	Bill payments	Y	Y*	Payment aggregator	Generally facilitated by aggregators or banks as part of Payment Gateway offerings
3	IMPS	Electronic payment	For instant payments	Y	Y*	Banks	RFP (as part of the consolidated banking RFP)
4	RTGS/NEFT	Net banking	Large ticket transactions like G2B, B2G, G2G payments	Y	Y	Banks	Empaneled Bank
5	ECS, NACH	Customer mandate on Bank account	Recurring payments like payment of taxes, utility bill payments, vendor payments etc.	Y	Y	Banks	Empaneled Bank
6	Standing Instruction (SI)	Customer mandate on card/account	Online SI also facilitated by few vendors, recurring payments	Y	N	Payment aggregator	RFP (as part of the consolidated banking RFP)
8	Mobile Wallet	Electronic payment	All citizen initiated payments to Government, small ticket size transactions	Y	Y*	Fintech Companies, Payment Banks, Banks, Payment aggregator	Smart City need to apply for PPI license for offering its own semi-closed loop wallets, else they can offer third party co-branded wallets
9	Mobile online Banking	Electronic payment	Payment to Government Bodies, ULBs ^{xxiv} , Smart Cities for services and products	Y	N	Banks	RFP (as part of the consolidated banking RFP)
10	PoS payments	Credit cards, Debit card, Smart Card, Prepaid card	Retail store payments	Y	N	Banks, technology players	RFP for onboarding vendor to install and maintain POS machines
11	AEPS	Electronic payment	Biometric based payments, preferred assisted transactions in rural areas	Y	N	Banks	Banking RFP / empaneled bank

S. No	Channel / Instruments	Details	Use case	Receipts (C2G)	Payments (G2C, G2B)	Preferred implementation partner	Preferred onboarding approach / other considerations
12	APBS ^{xxv}	Electronic payment platform	Disbursements to citizens on account of DBT schemes (Women & Children welfare, Health benefits, education benefits, pension etc.)	N	Y	Banks	Banking RFP / empaneled bank
13	BBPS	Bill payments platforms	Payment of taxes, utility bill payments like water bill, telephone bill etc.	Y	Y	BBPOUs	RFP for onboarding BBPOUs
14	UPI (including BHIM app)	Electronic payment platform	Payment to Government Bodies, ULBs, Smart Cities for services and products	Y	N	Fintech Companies, Banks, Payment Aggregator / Bank	RFP (as part of the consolidated banking RFP)
15	Smart Card	Electronic payment platform/ Wallet	City pass / Common Mobility card, Transit payments (Bus, Metro, Railway), G2C payments in smart cards	Y	Y	Fintech Companies, Banks	RFP to onboard vendor for setting up issuing and acquiring infrastructure for card payments / PPP for co-branded cards
17	QR code payments (BHIM QR, Bharat QR)	Mobile based QR code reading	Preferable for small ticket transactions, e.g. retail store payments	Y	N	Bank based app	App can be downloaded by citizens on mobile phones for QR code reading, easy to implement for merchants

Y*: Limited possibility

Smart Cities can onboard payment service provider by one of following approaches:

- 1. Request for Proposal evaluation process*
- 2. Direct onboarding from empaneled vendors*
- 3. Partnership models (revenue sharing / profit sharing models)*

2.4 Enabling digital payments and way forward

There has been lot of push for digital payments enablement by the Government of India. However, to make digital payments work, private, public enterprises or their agents/ partners face multitude of challenges, which need to be addressed:

1. Lack of strategic vision:

Challenges: Due of lack of common strategic vision across various departments, most of the digital initiatives does not reap its potential benefits. There is lot of reluctance seen across employees across department and across various levels of hierarchy.

Mitigation planning: Organisations need to clearly define their short term and long term goals and accordingly align their digital payment initiatives to avoid a lack of direction and ensure a clear way. Employees across departments need to be well-versed with the need and advantages of the payments systems so that these can be percolated to all levels across organization. Various programs / trainings need to be conducted across the organization on digital payments.

2. Sustainable financial model:

Challenges: In certain cases, digital payment initiatives don't have proper financial planning which results in huge financial impacts. There are no separate budgets allocated for the payment initiatives, which leads to reluctance from senior management to implement such initiatives. Awareness regarding monetary benefits is lacking and most of the departments consider it as a cost center.

Mitigation planning: The development of a sustainable model to implement digital payments requires a clear vision on ways to generate enough revenue from digital payments services for all stakeholders so that the costs to drive the digital payments systems are paid off. The success of digital payments largely depends on a robust financial model to drive the project. Unless proper incentives are built in, the project may get stalled. Government departments can also learn from various digital payment success stories across India and their financial impacts.

3. Reducing reliance on manual processes:

Challenges: Manual processes can be reliable as long as volumes of service requests and processing payments are low. With increase in volumes the chances of errors increase and TAT for processing and delivering services may get impacted.

Mitigation planning: Various digital software would be required to reduce dependence on manual work for various payments and receipt transactions. It includes electronic billing systems, reconciliation system among others. A centralised system, which can digitize all processes, need to be implemented so that the billing systems can be automated. Similarly, reconciliation system would be required to reconcile transactions across various services / department / payment modes etc.

4. Lack of digital data:

Challenges: Currently most of the data and citizen records across various Government departments are available in physical format. Availability of data in digital form is primary requisite for any digital payment initiative.

Mitigation planning: Leading Municipal Corporations have undertaken dedicated projects wherein outside vendors have been on-boarded to convert the existing physical paper based data and information into the digital formats.

5. Lack of infrastructure:

Challenges: Infrastructure to support working of internet of things, telecommunications and network is currently limited, and the challenges are even more prevalent in urban peripheries. Unless there is availability of high speed internet connectivity, consistent mobile network and latest technology like smart phones and computer devices with accessories like POS, Finger print machines for biometric authentication etc., any digital payment initiative is short lived.

Mitigation planning:

Active participation from various supporting Government bodies is needed to ramp up the infrastructure availability. The Smart City along with such supporting Government bodies, as needed should immediately draw up a plan for the same and implement it within a given period of time

6. Lack of awareness and motivation of end users:

Challenges: Lack of awareness of financial concepts with consumer results in confusion, apprehension and obstacles that prevent people from availing products and services using digital payments. According to a survey by Standard & Poor's Financial Services LLC^{xxvi}, 76% of Indian adults are unable to understand key financial concepts, which is seven percentile points lower than the worldwide index. Currently, the awareness regarding the modes of digital payments and more so their ease of transactions is very limited, and it is even more prominent in semi-urban and rural areas.

Mitigation planning: A comprehensive digital literacy drive need to be taken up across all stakeholders especially the marginalized and underprivileged communities – by Government, by banks and by regulators. Joint efforts across various stakeholders in payments ecosystem will ensure that digital literacy reaches at mass level in all our Smart Cities.

Glossary

ⁱ RTGS - RTGS - Real Time Gross Settlement – RTGS helps in processing real time bulk payments, requires account number and IFS code for processing the transactions. Minimum amount which can be remitted through RTGS is INR 2 Lakh.

ⁱⁱ NEFT - National Electronic Fund transfer- NEFT is an electronic transfer facilitating one to one transfer. It requires account number and IFS code for processing the transactions with no minimum or maximum limit of amount to be transferred. Maximum amount per transaction is limited to INR 50,000.

ⁱⁱⁱ ATM – Automated Teller Machine – A Computerized Machine which handles financial and non-financial functions like cash withdrawal , balance enquiry , mini statement and few Value added services .

^{iv} ECS - Electronic Clearing system – Electronic mode of payment / receipt for transactions that are repetitive and periodic in nature. User needs to submit details like beneficiary (Name, bank / branch / account number, MICR Code of destination bank branch), date of payment in an input file through user’s sponsor bank. No Value limit on the amount of individual transactions.

^v IMPS - Immediate Payment Service- IMPS is 24*7, instant, safe secure, channel independent and convenient mode of payment. Sender needs to enter MMID (Mobile Money Identification Number) & Mobile Number or Account Number & IFS code or Aadhar Number. Maximum limit is INR 2,00,000 Per day.

^{vi} NACH – National Automated Clearing House – NACH facilitates high interbank volume, low value debit/ credit transactions which are repetitive in nature. NACH has various mode of payments such as NACH Credit / Debit and APBS. There is no limit to maximum and minimum number and amount of transactions.

^{vii} NPCI – National Payments Corporation of India (NPCI) – An umbrella organization for operating retail payments and settlement systems in India, Not for Profit Company with an intention to provide infrastructure to the entire banking system for electronic payment and settlement system.

^{viii} UPI - Unified Payments Interface – UPI is a system that powers multiple bank accounts into a single mobile application merging several banking features, seamless fund routing and merchant

payments into one umbrella. Each bank provides its own UPI app for Android, iOS and Windows mobile platform. This interface is developed by NPCI.

^{ix} BHIM - Bharat Interface for Money- An application which makes payments quick and hassle free. Payments or collections can be done using just mobile number or virtual payment address (UPI ID), additionally bill payment, ticket bookings and mobile recharge using BHIM Application. Users can send up to INR 20,000 per transaction and a maximum of 40,000 per day for one bank Account. No limit on receiving the money. BHIM app is developed by NPCI.

^x QR - Quick Response- A QR Code consist of black squares arranged in a square grid on white background, which can be read by an imaging device such as camera. QR contains the information about the item on which it is displayed.

^{xi} PPI - Pre-paid instruments – prepaid instruments facilitates purchase of goods and services against the value stored on such instruments. The Value stored on such instruments represents the value to be paid by holder, by cash, by debit to a bank account, or by credit card.

^{xii} mPOS - Mobile Point of Sale- A mPOS is a wireless device that performs the functions of cash register or electronic Point of Sale terminal .

^{xiii} AEPS - Aadhar Enabled Payments systems- AEPS is a bank led model which allows online interoperable financial transaction at PoS (Point of Sale / Micro ATM) through the Business Correspondent (BC)/Bank Mitra of any bank using the Aadhaar authentication. The user needs to link his Aadhaar number to his bank account and perform the transaction using his biometrics (Finger / IRIS).

^{xiv} DBT – Direct Benefit Transfer – DBT an initiative of Government of India to change the mechanism of transferring subsidies/benefits directly to the people through their bank accounts.

^{xv} FMCG- Fast Moving consumer Goods – FMCG or Consumer Packed goods are the ones sold quickly and at a low cost with a short shelf life.

^{xvi} RBI – Reserve Bank of India – RBI is India’s Central banking institution and is primarily responsible for monetary policy.

^{xvii} SOP – Standard Operating procedure – A SOP is a set of detailed step – by – step instructions complied by any origination to help people carry out complex routine operations . These instructions help achieve efficiency and uniformity of performance.

^{xviii} BBPOU – Bharat Bill Payment operating units – BBPOUs are authorized operational units who are responsible for bill payment and aggregation business in BBPS.

^{xix} BBPS – Bharat Bill Payment System- BBPS is an online platform developed by NPCI for utility bill payments.

^{xx} AFC- Automated Fare Collection - AFC is the collection of components that automate the ticketing system of a public transportation network. The ATF is usually the basis for integrated ticketing.

^{xxi} UAT – User Acceptance Testing – UAT / Beta testing is a phase of software development in which software is tested in the real world by the intended audience.

^{xxii} RFP – Request for Proposal - A document that comprises of proposals, made through a bidding process by any agency / company which is interested in procurement of a commodity / service / valuable asset to potential suppliers.

^{xxiii} EBPP – Electronic bill payment and presentment - EBPP is a process which companies use to collect payments via Card Not Present (CNP), ATM or any other electronic method. This service has applications for many industries be it financial or telecommunication or utilities.

^{xxiv} ULB – Urban Local Bodies – Urban Local Bodies (ULBs) are municipal bodies which administer or govern a city or a town of specified population.

^{xxv} APBS – Aadhar Payment bridge system- Aadhaar Payment Bridge (APB) System, one of the unique payment systems implemented by NPCI, uses Aadhaar number as a central key for electronically channelizing the Government benefits and subsidies in the Aadhaar Enabled Bank Accounts (AEBA) of the intended beneficiaries.

^{xxvi} LLC- Limited Liability Company- LLC is a hybrid entity having certain characteristics of both a corporation and a partnership or sole proprietorship, It is often more flexible than a corporation, and it is well-suited for companies with a single owner.