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Swiping India into the future

Metamorphosis into a digital economy

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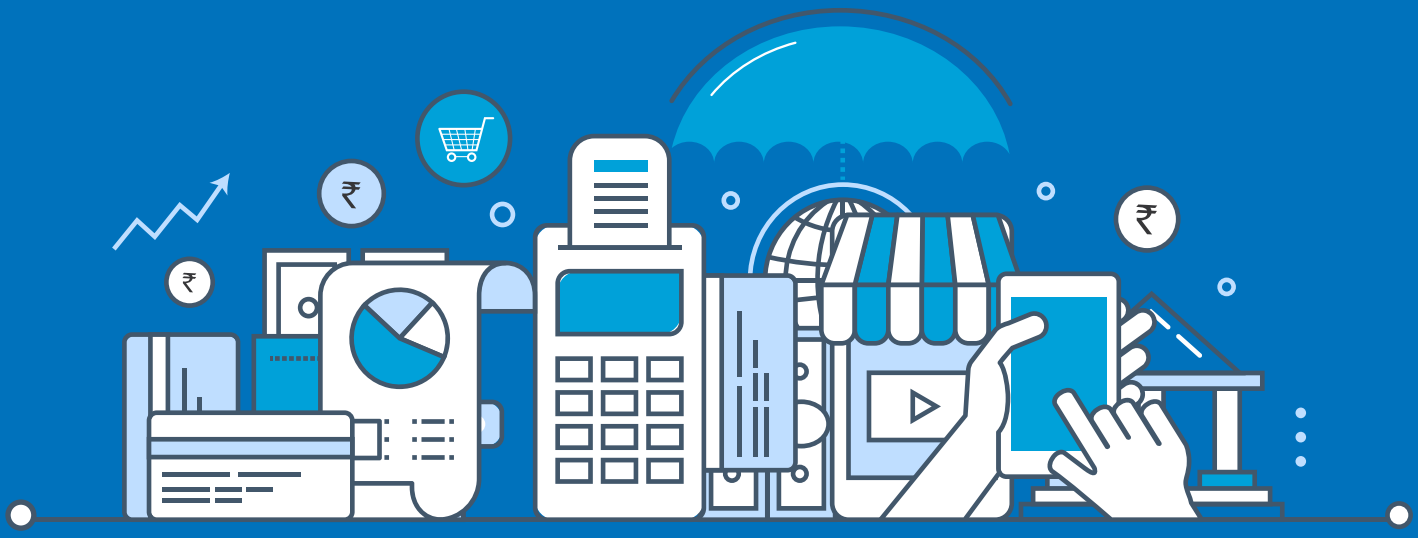
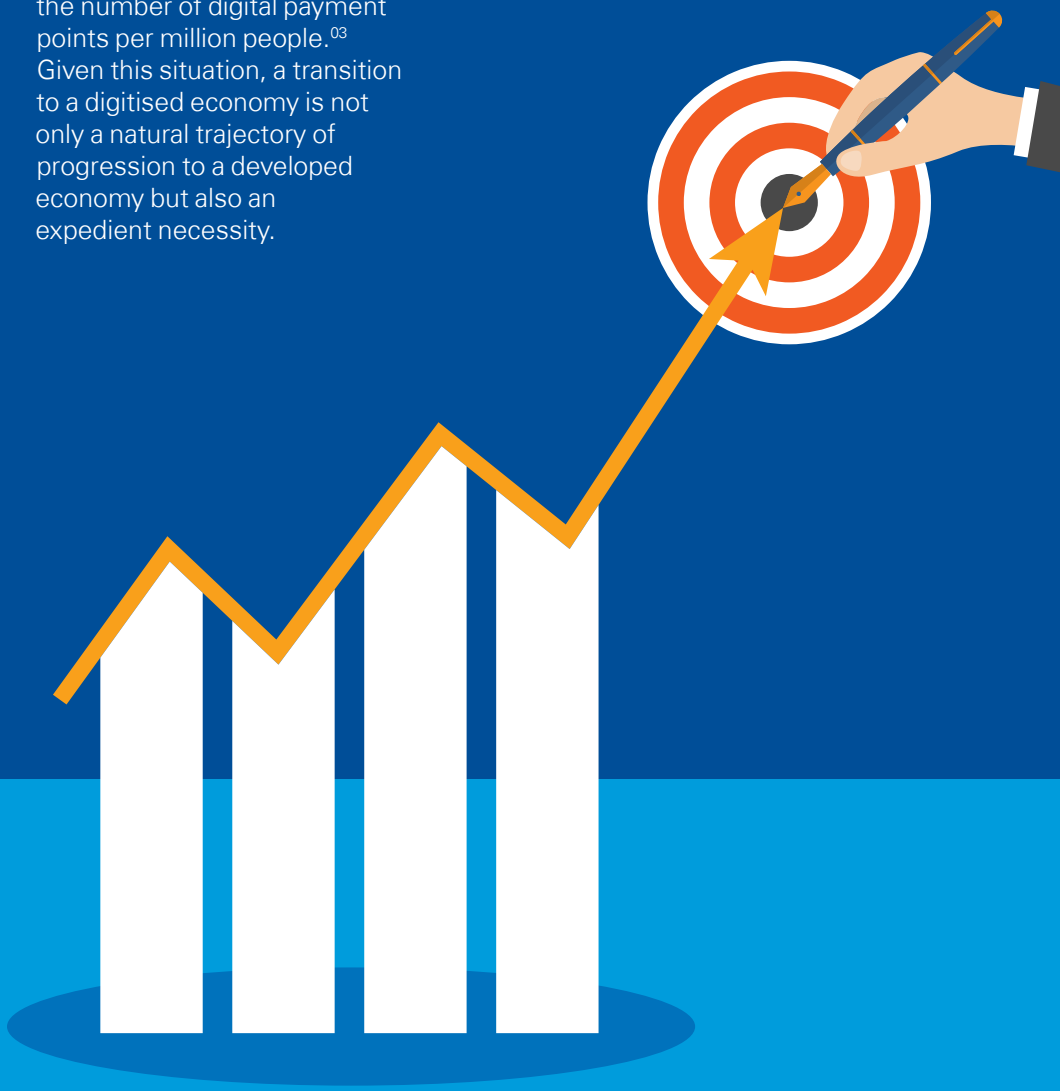


Introduction

The Indian payments landscape has undergone radical transformation in the last few years and it has gained further momentum after the recent demonetisation by the government. The current push by the government towards digitisation and start-up incubation programmes augurs well for the industry. Many innovative players like Paytm, MobiKwik, PhonePe, etc. have emerged in the recent past and disrupted the market quickly. The disruptions have led to market incumbents digging deep to match new competitors.

As per a latest study, the country's digital payment ecosystem is poised to reach USD500 billion by the year 2020[01]. Frictional inefficiencies associated with cash transactions could further propel digital payments. India's cash to Gross Domestic Product (GDP) ratio of 12.04 per cent is substantially higher than other comparable countries[02]. At the same time, India ranks very low in respect of digital transactions as well as the number of digital payment points per million people.[03] Given this situation, a transition to a digitised economy is not only a natural trajectory of progression to a developed economy but also an expedient necessity.



01. Digital Payments 2020, BCG-Google, published July 2016
02. Medium term recommendations to strengthen digital payments ecosystem, Committee on Digital Payments, published December 2016
03. Can India meet the target of 2,500 crore digital transactions in 2017-18?, livemint.com, published 30 March 2017

Developing a robust ecosystem

The first step towards developing an ecosystem is to dream big. Payment products or devices should ideally be able to:

- Receive or remit funds to anyone, anywhere
- Help in tracking the funds and also arranging the funds from the best source, including lenders
- Know the spending pattern of the consumer, suggest and effect the expenditure or investment
- Use all known technologies from Near Field Communication (NFC) to satellite communication
- Ensure transaction safety.

For such advancements to happen, there is a need for development of multiple supporting ecosystems. Such ecosystems help ensure the delivery of a robust, secure, user-friendly, highly available and easily accessible payment system.

The key factor is an innovative ecosystem and developing such an ecosystem is an academic-industry collaboration. A blend of free ideas at the academic level and inputs from the industry can lead to mushrooming of start-ups and start-up incubators. In any research organisation, there should not be any constraints during the ideation stage. Developing a culture of innovation needs tolerance to fail to a great extent. Only then fresh ideas can be expected instead of simple modifications to the present process and products. This also requires bonding and blending of different ages, genders and backgrounds and dismantling of any hierarchy in an organisation to ensure free communication and exchange of ideas.

Another critical element is the Financial Technology (fintech) ecosystem. There are three major players in the fintech ecosystems viz. banks, large IT companies and the fintech companies themselves. Fintechs in their early stages are mostly small seeder units to banks and IT companies and may not have the capability to grow on their own. There is a need for a collaborative environment to bring all the players together and allow them to grow together. There is also a need to enable policies for such a thing to happen, which is where the regulators must act proactively to help ensure that fintechs develop into a sustainable business by themselves.

Last but not the least, the cybersecurity ecosystem. Growing digitisation has brought in numerous cyber threats. There is a need for a well-established security system to counter the threats. The first layer of the system should be an internal policing system within the organisation to ensure protection at an organisational level. The second layer should be at the nationwide level with organisations such as the Reserve Bank of India (RBI), Computer Emergency Response Team (CERT), National Payments Corporation of India (NPCI), the Securities and Exchange Board of India (SEBI) defining policies, and design responses in case of a cyber-attack. Finally, there is a need for a strong cyber-judiciary, to develop and update cyber laws and punish the offenders. There is a need for security professionals, forensic experts, and auditors at each of these layers along with a creation of awareness from top to bottom in an organisation.

New generation banking: An amalgamation of finance and technology

One of the biggest changes that the payments industry has seen in recent years has been in terms of the channels used to make payments. Hand held devices have outgrown all other channels due to ease of making transactions and the accessibility that they provide[04]. Mobile numbers form an important node of the Jan Dhan, Aadhaar, Mobile (JAM) trinity which is aimed at connecting bank accounts, Aadhaar and the mobile numbers. To promote the usage of digital payments in urban locations and to accelerate penetration into the hinterlands of the country and develop trust among first-time users, the government and the banks have undertaken multiple initiatives. Digi Dhan Mela was one such mission, which ran for a period of 90 days and offered cash incentives to both the merchants and consumers on the usage of digital payments for retail transactions[05].

The push from the government also spurred interest from fintech companies who had the technology but were missing the momentum. With the collective efforts of the RBI, NPCI and the government, a robust backbone for digital payments in India has been created by systems such as Unified Payments Interface (UPI), Bharat Interface for Money (BHIM), BHIM Aadhaar, Bharat Bill Payment System (BBPS), etc. However, banks found themselves lacking the required skill sets to build, implement and integrate the solutions relevant to the use cases of the consumers. This combined with the perceived benefits of being the first movers led them to partner with the fintechs. This has led to the development of a unique ecosystem, an amalgamation of finance and technology where the fintechs rather than being competitors of banks have started acting as collaborators.

The collaborations have been on different fronts with the first of them being around building or developing ideas. Banks organise hackathons and similar events to source ideas for development. The second kind of collaborations are where banks share Application Programming Interfaces (APIs) in the public domain for the development of solutions that can address a specific consumer need. Such open sourcing is helping develop the payment ecosystem. The third kind of collaboration involves exclusive partnerships between banks and fintechs.

Such collaborations between fintech start-ups and the banks are bringing multiple synergies into play. Banks provide easier means to fintech companies to access financial systems and the fintechs, on the other hand, provide the much needed technological support to banks in order to reach a newer set of customers. The regulator's intent on adapting to the new realities of the digital ecosystem and framing policies to that effect is helping the process. Systems like e-KYC (electronic-Know Your Customer) and digital signatures have made customer onboarding completely paperless. As per RBI's amended Know Your Customer (KYC) rules, banks can open new accounts by simply using the Aadhaar number of the customer and a One Time Password (OTP) sent to the linked mobile number[06]. The millennials want convenience and easy accessibility of financial products and services. Such services provided by online marketplaces such as bankbazaar.com, ruloans.com and policybazaar.com have eliminated the need for financial and non-financial organisations to invest in building their own network to source and onboard clients. The collaboration between fintechs and banks is not just limited to onboarding, but also for effective customer engagement and servicing as well.

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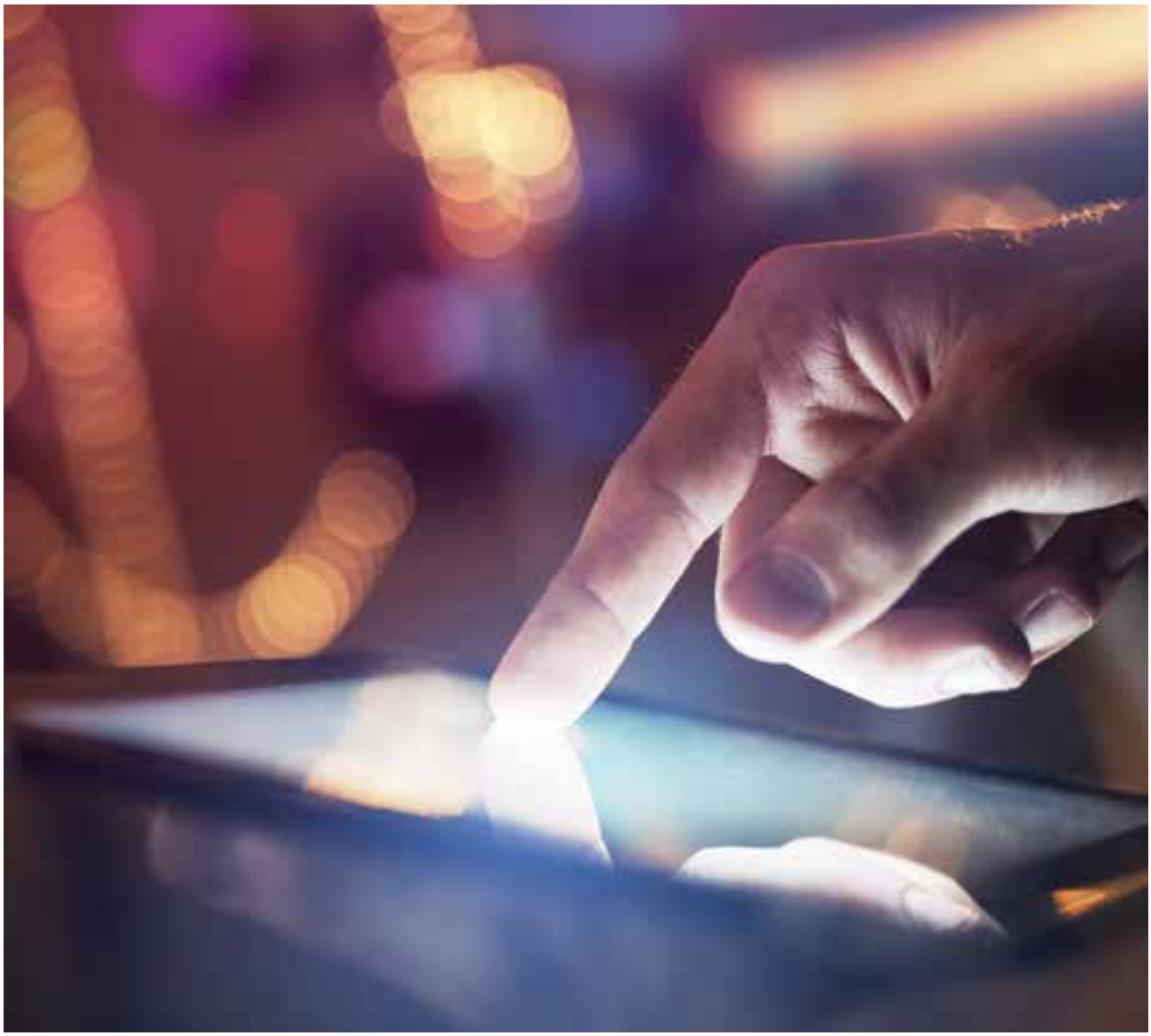
04. KPMG India analysis 2017
05. 90 Days of Digi Dhan Mela: Towards Making Digital Payments a Mass Movement, NITI Aayog, Press Release, published 30 March 2017
06. Amendment to Master Direction (MD) on KYC, DBR.AML.BC. No. 18/14.01.001/2016-17, RBI, published 8 December 2016

Over the years, form factors for various payment products have undergone drastic changes from cash to cards to personal devices to crypto currencies. However, the underlying characteristics of any successful payment product has remained the same. A payment product must be ubiquitous, secure, fast, efficient, and must have a value attached to it and should be able to provide a frictionless experience. Global mobile and internet giants like Samsung, Apple and Amazon have used this concept and technical prowess well to make headways into the payments industry by launching their own payment products. Google recently entered the market by launching its UPI based payment app in India.

Despite all these developments, structural issues still exist in a country like India. With only 34 per cent of the country having access to the internet[07], products like BHIM, PhonePe or Tez mean little until the infrastructure supporting the backend of such technologies is improved. Banks and fintechs should try and provide contextually relevant solutions to overcome such challenges. There are many developments that can be made possible using contextual use of technology. Financial inclusion should be at the core of any bank's corporate policy and shouldn't be simply a government-driven objective. Only a combination of passion from the fintech companies and a purpose from the bank's side can help bring an effective solution on to the hands of the people and make 'Digital India' a reality.



07. internetworldstats.com, accessed 23 October 2017

Where does India stand in the global payments scenario?

India has made significant development in the area of payments technology when compared to the global counterparts; though, the adoption has started picking up only recently. India is one among the very few countries in the world to have a live real time retail payment system like Immediate Payment Service (IMPS)[08]. With the launch of the UPI, one of the first of its kind in the world, India has entered into the elite group when it comes to payments technology. Some of the most developed economies of the world, like the U.S. and Australia, have been running on legacy systems and are only now looking to roll out real-time payment systems. The closest counterpart of the UPI is expected to come into existence in Europe only when the second Payment Services Directive (PSD2) regulations are enacted in 2018.

Bharat QR is the first interoperable Quick Response (QR) code-based payment system in the world jointly developed by Visa, MasterCard and RuPay, and to be joined later by American Express. Considering that 99 per cent of adults in India[09] are covered under Aadhaar, this has opened new possibilities for biometric authentication based payment services like Aadhaar-enabled Payment System and BHIM Aadhaar.

Indian regulators and statutory bodies are acting fast to ensure that legal frameworks do not become a roadblock in the process of digitisation of payments while ensuring that the security is not compromised with. India, in many ways, has become a benchmark for a number of developed nations for its advancement in payments technology.

08. The Global Adoption of Real-Time Retail Payments Systems (RT-RPS), SWIFT, accessed 23 October 2017
09. Aadhaar covers 99% of adults in India: Prasad, The Hindu, published 27 January2017

Cyber security for digital payments

India is at the turning point of a digital payments revolution, ushered in by the government's demonetisation exercise late last year. This has brought mobile phones at the centre of this revolution. The mobile phones involve flow of personal data of millions of users that is sacrosanct. To ensure that this data is not compromised in any way while people use different digital payment modes, robust security across devices is absolutely necessary.

The government aims to clock around 2500 crore digital payment transactions in FY 2017-18 via different payment modes such as Unified Payments Interface (UPI), Unstructured Supplementary Service Data (USSD), Immediate Payment Service (IMPS), Aadhaar enabled Payment System (AePS) and Debit Cards[10]. While these tools create a digitally-empowered society, one important element that could decide how successful these payment products are going to be is cybersecurity. As per data released by the RBI, there were 16,468 instances of cyber frauds during the financial year 2015-16 in India[11]. However, many of the breaches go unreported in India. Another figure reported by the Ministry of Electronics and Information Technology (MeitY) states that there were 27,000 instances of cybercrimes in the first half of 2017[12]. Cybercrimes are a concern not only for India but also for developed countries of the world. According to data by a leading American telecommunication company one of the most developed and educated societies of the world i.e. the U.S., accounts for 57 per cent of the total cybercrimes in the world.

The customer data which the banking system is holding has been classified as sensitive personal data as per section 43A of the Information Technology Act, 2011. Organisations have valid compliances on their books but are not compliant functionally as per the security compliance standards. There are cases where employees have successfully stolen data of their employers and have established companies of their own using the stolen data. Lapses in compliance of the National Cyber Security Policy, 2013 or Payment Card Industry-Data Security Standard (PCI-DSS) standards leads to such data theft instances. As a proactive measure, corporates should put in place reasonable checks and balances, to not only identify such instances but also report such instances as and when they occur in order to maintain data integrity and subsequent corrective action.

With a multitude of digital payment transactions happening via digital channels, the chances of a security breach exist, particularly when many mobile banking apps and banking transaction channels are not deploying hardware-level security to make digital transactions more secure. Security issues may include multiple fake accounts, psychological manipulation (phishing), weak device authentication, hacking of servers, and stealing of data, to name a few.

Organisations should put in place an indemnification clause in their agreements with service providers to fix the responsibility. However, the bigger question is who takes accountability for a cyber-breach, in case something goes wrong even after having PCI-DSS compliance – the consultant, the certifier, or will there be joint responsibility?

The issue of cyber security is dealt with different levels of seriousness at various strata of the Indian corporates. There are large banks and financial institutions where security is treated as an investment rather than an expense. These institutions have every kind of checks in place to keep their network and data safe. There are mid-size institutions who treat security as a compliance matter and having been forced by regulatory bodies such as the RBI and the SEBI. These institutions do just enough to be compliant with various certifications such as PCI-DSS and other regulatory requirements. Then there are fintech start-ups, who in their early stages are more concerned about getting their first business and cybersecurity is not on their priority list. It is not till their first encounter with banks and bodies such as the NPCI, that they realise the need for security standards.

10. Mission to increase digital transactions to 2,500 crore; 20 lakh Aadhaar Pay machines, The Economic Times, published 1 February 2017
11. RBI reported 16,468 instances of financial cyber crime in 2015-16, medianama.com, accessed 23 October 2017
12. 652 social media URLs blocked by govt till June 2017: MoS Home, gadgetsnow.com, accessed 23 October 2017

There are organisations including companies in the payments industry that provision budgets to pay ransom in case of ransom attacks. However, the biggest question here is – how are companies going to show the entry of the amount paid as ransom in their books of accounts, what entry will be passed - paid ransom? Is it permissible under the laws of this country?

In order to overcome financial liability of such cybercrimes, organisations must look at protecting themselves by taking appropriate cyber insurance policy. However, organisations should avoid taking off the shelf cyber insurance policy as they are of little help considering the complexity of cybercrimes. Organisations must take help of a good cybercrime lawyer to help them choose an insurance policy that best suits their requirements. Some of the points that needs to be considered while taking cyber insurance are – How the cyber insurance company is going to make good for the losses incurred by a particular organisation, what is the extent to which an insurance company is going to cover the organisation in case of an untoward event, and how the insurance company is going to make good for the loss of brand value or reputation?

There is also an emerging risk of shadow IT. Shadow IT is a solution developed and deployed within the organisation without the explicit approval or knowledge of the IT function of the organisation. This increases the likelihood of uncontrolled and unofficial data flow due to the negligence of the vendor and minimal or no oversight of the organisation's IT department.

Over a period of time, cybercrime has become a global business, with criminal enterprises mirroring normal businesses in their work practices. External threats are not the only factor in driving the need for a reliable cybersecurity policy. Today, organisations operate in a marketplace that is increasingly dependent on flexible collaboration and rapid omni-channel transactions. There is exponential growth in financial transactions from mobile devices, in particular, and that leads to growing concern about data security, as more and more information is exchanged across mobile and collaborative networks.

Financial institutions need to take the right action to close such gaps, compete successfully against criminals and keep their customers safe in an environment that is becoming increasingly unsafe.

The red-flag on security is not without reason. Globally, numerous events of hacking have already been noticed on email accounts, databases, and across social media platforms. In such cases, the financial privacy and security related implications for individuals, institutions and nations is enormous. As digital payment transactions soar, cyber-crimes are also expected to rise.

After the demonetisation drive that took place late last year, Indians have scrambled to undertake digital transactions. Given this scenario, cyber analysts have also warned of serious vulnerabilities in the digital payment systems used across the country. To address this threat, it's necessary to have security features embedded in the hardware and software as design, and not as add-on features or a compliance requirement; as the latter will be susceptible to hacking. Nonetheless, the benefits of digital and card payments are decidedly greater than those of cash. To minimise (if not eliminate) the risk in digital payment transactions, simplicity, security and ubiquity should be the watchwords for any payment system or gateway to succeed. To safeguard the details of users, such a system should have the ability to tokenise, encrypt and authenticate data before use.

The government has taken numerous measures in terms of regulation through bodies such as the RBI and the SEBI, and programmes such as Cyber Swachhata Mission, etc. to control the incidents of cyber breaches. However, there is a need for cyber awareness at the consumer end as well. From using a free public Wi-Fi to a shared phone number, many activities performed without considerations for security, act as a gateway for leak of critical data.

There is a need to consider a number of strategic risk parameters, many of which are directly connected to the regulatory requirements. This makes it necessary, not simply to safeguard information and transactions against cyber threats, but to be highly proactive in developing methods, processes and technologies, driven by an end-to-end, top-to-bottom strategic vision to stay a step ahead.

Financial institutions today operate in an environment in which risk is not just a primary concern, but also a multi-dimensional and highly complex issue. Several methods can be adopted to boost cyber security. In the tokenisation method, for example, the system or device does not store any account or card number details, but relies on tokens to undertake transactions. When a transaction takes place, the device transmits two sets of data to the payment terminal. The first set includes a 16-digit token representing the credit or debit card number. The second set includes a one-time cryptogram or code generated by the encryption key of the smartphone. The third safety element is authentication, with the user being identified by the user ID, fingerprint, or other code.

Today, Single-Factor Authentication (SFA) is clearly not as safe as a Two-Factor Authentication (2FA). Password-based authentication is the most common form of SFA. In 2FA, an extra layer of security is added to the standard log-in procedure, whereby the person accessing an account verifies its identity through a second question, or check-in procedure. Another benefit of such security systems is that, even if a person's smartphone is stolen, payments cannot be made from the device unless authorised through a fingerprint or the specific PIN created by the user during the setup procedure.

Although, the demonetisation drive has fast-forwarded India's digital transition, issues of payment safety and security have not kept pace with these developments. If repeated security breaches occur, apprehension in people's mind will slow down the pace of digital payment transactions and adoption in India. It is, therefore, critical that the issue of security is given paramount importance by all stakeholders. It is important that the digital payments industry also upgrades its systems to ensure the security and safety of data as well as funds of its customers. If that happens, stakeholders could potentially benefit – including the government, the digital payments industry and the customers at large.

The proliferation of mobile devices (smartphones, tablets, etc.) has given consumers more choices than ever before. In current card-based systems - be it credit or debit card - the traditional role of banks in issuing physical cards, that are dispatched to users could be substituted by new forms of intermediaries, such as trusted service managers, that make mobile devices capable of over-the-air provisioning. The time is ripe to drive digital payments across India using financial instruments that are backed by robust security solutions.

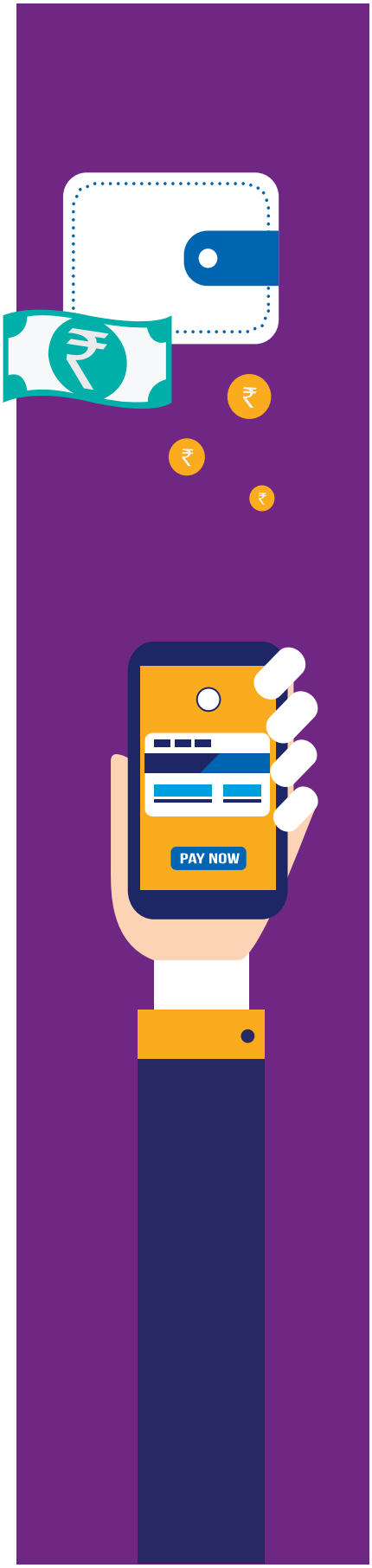
At a time when cyber threats are on the rise due to increased digital payment transactions and effects of demonetisation, banks and other stakeholders in the value chain of digital payments feel the need for good cyber insurance in place to deal with the liabilities arising out of cybersecurity breaches. Various cyber insurance covers are available for banks today, but the cyber liability insurance has seen more demand from banks.

Another important factor in securing the IT systems of any organisation is to put in place a robust cybersecurity culture at the heart of the organisation. Employees today use various tools that are available at their disposal. Though, these tools make their work easier, there is always a risk of cyber breach through the use of unmanaged devices. Traditional security measures employed by the organisations to make the systems cyber secure are often ineffective in securing the data that passes through these endpoints. Lack of poor company culture with respect to cyber security may lead to security vulnerabilities. Employees should be the first drivers of a robust cybersecurity culture, inside or outside the corporate network without compromising on the data security. The cybersecurity culture has to be built by the top management in the organisation that goes down to the bottom of the hierarchy in the organisation. Until and unless an organisation is not cyber aware – the organisation cannot become a cyber-secure organisation. The risk and compliance solutions should be designed to help banks and financial institutions:

- Deal with the growing threats from organised crime
- Manage the risk of frauds through greater collaboration
- Safeguard business from insider threats
- Maintain full compliance with constantly changing regulations
- Build trust with customers, regulators and partners alike.

One of the biggest risks to the payments industry comes from the industry itself, which does not take enough measures to handle cyber grievances. In the era of social media, even a couple of disgruntled customers whose grievances are not resolved on time could potentially malign the reputation of an organisation. Some of the steps, if taken, can help organisations address grievances and keep them from spiraling out of control. First, they must put in place an Online Dispute Resolution (ODR) mechanism for cybersecurity grievances. Second, they could provide an option for grievance resolution in the payment apps itself. The grievance registered by the customer on the payment app goes directly to the grievance redressal officer, who should be held responsible for resolution of the dispute within a defined time frame. Third, all payment apps should be available in regional languages for customers to help them from falling prey and being cheated on the pretext of dispute resolution.

Cyber risks are a natural consequence of increasing digitisation. Investment in security infrastructure alone isn't enough. Also, the most insidious attacks happen and bypass any infrastructure or awareness training. Companies should accept the eventuality of such an attack and should look at cyber insurance covers customised as per their needs. Finally, effective monitoring of risks, timely mitigation and a single and transparent communication on any breach can help reduce the impact while retaining the trust of the clients.



Aadhaar as a service delivery and financial address

Financial inclusion has assumed critical importance in policy level decision-making over the last few years. Taking into account the varied requirements of Indian society, various attempts have been made frequently to make people financially inclusive. However, a number of challenges have still kept real benefits of these efforts away from the common man. Some of the challenges that still plague financial inclusion in India includes:

- Bringing behavioural change in people to use bank accounts and debit cards
- Lack of financial literacy and awareness about financial products
- Lack of sustainable incentives to business correspondents to carry out services
- Poor network connectivity in tier 4, tier 5 cities and rural areas
- Possibility of fraud due to lack of financial literacy.

The three pillars of JAM - the Jan Dhan Yojana, the Aadhaar initiative and the Mobile number are called the trinity of reforms in India. The JAM trinity holds the key to one of the biggest reforms ever attempted in India i.e. Direct Subsidy Transfer (DBT). The JAM trinity allows the state to deliver direct benefits to the beneficiary in a targeted and less distortive manner.

In a country as vast as India, taking physical bank infrastructure to the last mile customer is a capital intensive and slow process. Historically, the expansion of card base has been slow and so has been the adoption of other digital payment modes. For this purpose, the government took steps towards exploiting the potential of 1.2 billion mobile connections in the country to bring bank branches close to every citizen in the country and making digital payments convenient, fast and safe[13]. Use of Aadhaar as a financial address, linking of Aadhaar to bank accounts and subsequent use of biometrics for authentication of transactions were some of the initial steps taken in this direction. The launch of Aadhaar-based payment services like AePS and BHIM Aadhaar, USSD for feature phones, BHIM app for smartphones are some of the other steps taken towards facilitating mobile-based payment services and bringing banking at people's fingertips.

India is making an attempt to transit to a less cash economy by using digital modes of payment. Individual consumers have several benefits in going less-cash and to aid this further, the government has also announced several incentives on digital payments. Revamped modes of digital payments have been launched such as BHIM app and USSD 2.0. Large-scale awareness campaigns have been organised, especially the Digi Dhan Mela in 100 cities for education and handholding of the public to adopt digital payments.

Given the enormous heterogeneity of India's population, the government has developed different options for different segments. There are more than 1.2 billion mobile phone subscriptions in the country[14] with a third (approximately 45 crore)[15] of them using the mobile internet. BHIM and UPI caters to the digital payments need of the segment who use a smartphone (approximately 30 crore)[16]. USSD, which can work on any mobile phone with a GSM network without the need of internet connectivity, which make up for nearly 66% of the total mobile phone users in India[17]. Apart from these phone based solutions, India has nearly 1.18 billion Aadhaar numbers[18] and more than 67 crore bank accounts that have been seeded with Aadhaar[19]. AePS and PoS solutions cater to these users, who have Aadhaar seeded bank accounts and also have debit/credit/prepaid cards. For closer handholding to senior citizens and less literate people, the banking correspondent model has been developed with a special focus on rural areas where a banking correspondent helps extend financial services.

13. Telecom subscriber base in India crosses 1.2 billion mark, livemint.com, published 14 July 2017
14. Telecom subscriber base in India crosses 1.2 billion mark, livemint.com, published 14 July 2017
15. 40% of Mobile Internet Users In India Are Still Hooked Up to 2G Network, dazeinfo.com, accessed 23 October 2017
16. Number of Internet users in India could cross 450 million by June, livemint.com, published 2 March 2017
17. Share of mobile phone users that use a smartphone in India from 2014 to 2019*, statista.com, accessed 23 October 2017
18. Govt savings through DBT touches Rs 65,000 crore: Javadekar, deccanchronicle.com, accessed 23 October 2017
19. Nearly 67 crore bank accounts seeded with Aadhaar: Ravi Shankar Prasad, economictimes.indiatimes.com, published 11 July 2017

Aadhaar – the national identity project was instituted on the principle of inclusion, an attempt to bring all citizens under a single fold. The project with its massive repository of biometric and resident data have been leveraged across diverse sectors in order to transform the way we function as a nation. In the payment and banking sector alone, Aadhaar authentication has been used in multiple ways in order to bring about financial inclusion and simplify the way we transact today.

As part of the endeavour to make India a less cash and more digitised economy, UIDAI (Unique Identification Authority of India) in collaboration with NPCI, RBI and banks introduced several initiatives to provide easy and efficient payment solutions to businesses and individuals alike. Today, the payment solutions supported by Aadhaar authentication includes AePS, Aadhaar Payment Bridge (APB) and the BHIM Aadhaar.

Considering the need for a simple and cost-effective payment solution and the one that does away with the requirement of carrying a card and Personal Identification Number (PIN) by the customer and builds customer confidence and trust in digital payments by allaying the concerns around compromise of PIN, solutions such as AePS and BHIM Aadhaar have been launched. While AePS allows P2P transactions, BHIM Aadhaar allows Person to Merchant (P2M) transaction using biometric authentication.

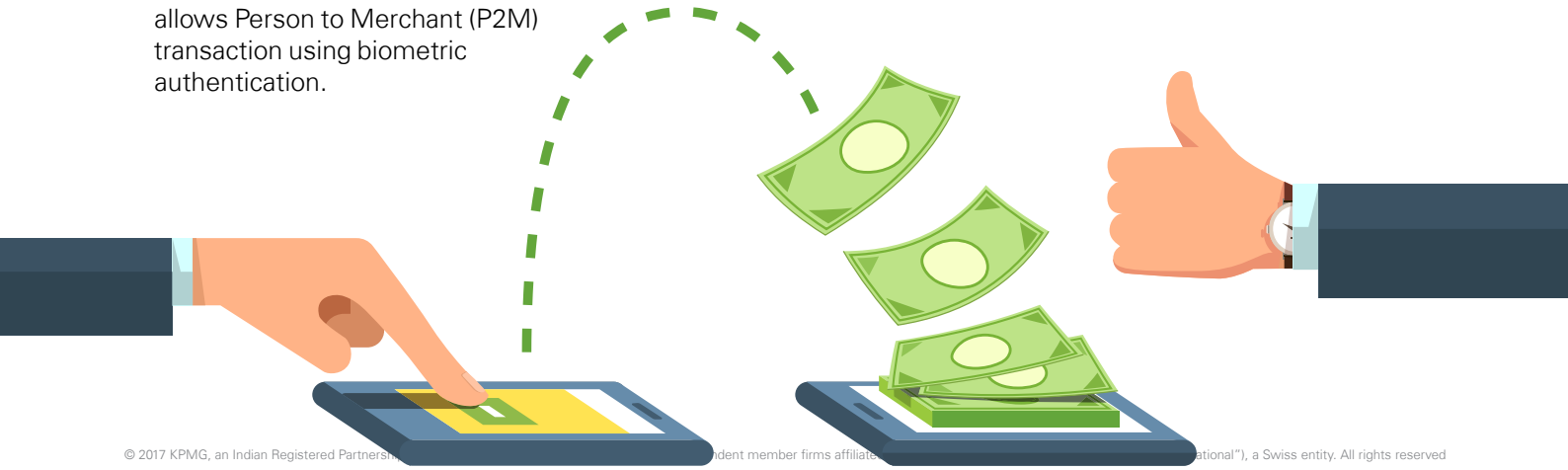
The government has taken several initiatives to foster an environment of financial inclusion in the country. These initiatives coupled with technology have helped in creating an ecosystem that allows the benefits of these initiatives to reach the un-banked and under-banked sections of the society. The JAM trinity has played a critical role in building this ecosystem that is conducive for the digital financial infrastructure:

- The Pradhan Mantri Jan-Dhan Yojana (PMJDY), touted as the largest financial inclusion initiative in the world[20], has been successful in opening more than 30 crore bank accounts[21], thereby ensuring that at least one member of each household in the country has a bank account
- Proliferation of Aadhaar to more than 1.18 billion[22] residents of the country have addressed critical challenges with respect to the delivery of financial services. Using the digital authentication process, Aadhaar based e-KYC accounts can be created at the click of a mouse
- With over 30 crore smartphones[23] in the country that is likely to grow to over 50 crore by 2018[24], India has already become the world's second largest smartphone market
- 67 crore Aadhaar seeded bank account[25].

The entire Aadhaar platform is built to connect all segments of the society under a unified identity system and payments is one of the biggest areas of impact that Aadhaar has brought about. Aadhaar has transformed the way we transact. Aadhaar-based payment solutions are built in such a way that it reduces the costs of providing financial services. For instance, AePS through Micro Automated Teller Machines (Micro ATMs) allows people in the remotest of areas to access banking services without the need to setup a full-fledged branch. Similarly, the BHIM Aadhaar removes the need for a PoS equipment at stores and merchant locations.

In addition, the sheer size of the Aadhaar programme with more than 99 per cent[26] (1.18 billion[27]) of adult Indian residents registered under the programme provides a concrete base to build and scale solutions that can have widespread impact.

20. Pradhan Mantri Jan Dhan Yojana (PMJDY),Launched by the Prime Minister Shri Narendra Modi on 28th August, 2014, Celebrates its First Anniversary, Press Information Bureau, Government of India, accessed 23 October 2017
21. pmjdy.gov.in, accessed 23 October 2017
22. Govt savings through DBT touches Rs 65,000 crore: Javadekar, deccanchronicle.com, accessed 23 October 2017
23. Number of Internet users in India could cross 450 million by June, livemint.com, published 2 March 2017
24. India projected to have 530 million smartphone users in 2018: Study, firstpost.com, accessed 23 October 2017
25. Nearly 67 crore bank accounts seeded with Aadhaar: Ravi Shankar Prasad, economictimes.indiatimes.com, accessed 23 October 2017
26. Aadhaar covers 99% of adults in India: Prasad, The Hindu, published 27 January2017
27. Govt savings through DBT touches Rs 65,000 crore: Javadekar, deccanchronicle.com, accessed 23 October 2017



Aadhaar is an IT enabled identity solution that has been used by various entities for business process re-engineering of e-governance services. The potential of Aadhaar is being effectively leveraged by institutions from the government, public sector and private sector to improve service delivery to the citizens of the country.

Andhra Pradesh became the first state in the country to implement AePDS (Aadhaar enabled Public Distribution System) in fair price shops[28]. Online authentication services provided by UIDAI (fingerprints, iris and photo for face recognition) are used for the sale of Public Distribution System (PDS) commodities to Below Poverty Line (BPL) beneficiaries in all fair price shops. This has improved efficiency and transparency in the system and enabled on time ration delivery to eligible beneficiaries.

The time is ripe for linking everything to Aadhaar, thereby, positioning Aadhaar itself as a virtual card that has the capability to serve all purposes, right from identification proof to address proof to financial address, etc.

28. Best practices from our state, NITI Aayog, accessed 23 October 2017

Redefining cards and payments

Digital is going to play a critical role in financial services as well by 2020. Currently, there are over 4.5 crore active internet banking users in the country. With increasing banking user base and digital footprint, this is expected to grow to 15 crore by 2020. After demonetisation, mobile wallets have shown steady growth with respect to pre-demonetisation levels.

Mobile phones are one of the most significant innovation with the capability of fostering financial inclusion to the last mile customer in semi-urban and rural areas. About 65 per cent of India's population, which is under 35 years of age[29], is comfortable in using mobile devices to complete person-to-person (P2P) financial transactions for a variety of purposes. The shift in usage patterns of mobile phones is expected to help in the uptake of digital banking.

The launch of UPI has empowered bank account holders to send as well as receive money using their smartphones without having to enter the bank account number and Indian Financial System Code (IFSC) of the beneficiary. The UPI allows both push and pull payments, thus making it more convenient for the customer as well as the merchant to make and receive payments. Merchants are not required to own a smartphone to accept UPI payments as UPI also works on both static and dynamic QR codes. Therefore, a sticker of a static QR code alone can allow the merchant to receive the payment from the customer. The UPI is getting its foothold in the market gradually and strongly, and various foreign countries like Brazil, Australia and Mexico are looking to replicate this payment instrument.

The UPI has merits over the m-wallets because of the limited cash-transferring abilities of m-wallets in comparison to the UPI. While there are speculations that it could put an end to the mobile wallet industry and debit cards, however, it doesn't seem to be happening anytime soon. In fact, wallet players have benefitted after the launch of the UPI as they have also tied-up with banks to add one more money loading option to their bouquet. Now that the UPI is also available as a mobile based real time payment system, competition has become intense in the category. The m-wallet players need to look for an interoperable model just like the UPI, which is bank-agnostic, in order to sustain themselves in the market and they should also work towards short sizing the payment flow and experience for their customers as it is a tedious job for customers to first load money and then pay.

On the other hand, the debit card is still the only option to withdraw money from ATMs as the current infrastructure of ATM machines does not support any kind of cash withdrawal process without the use of debit cards. Also, the UPI does not support international payments, therefore, it is not so easy to replace the debit card from the system. Going forward, the UPI may have cards available on its platform for making payments. Hence, the customer will be the king of the market and the ease of payments and diversified set of benefits and offerings could become key differentiators amongst cards, m-wallets and UPI apps in getting the major market share.

The future of the banking industry is likely to be driven by the younger generation of customers who expect customer service and innovative products as the primary factor for choosing a bank. With the increase of younger population in India, banks need to focus on these young customers and offer products on new-age platforms where these customers frequently visit such as social media, chat platforms, etc. The growing number of urban centers in India provide a massive scope and burden for banks to tap into these customers through conventional branch banking. Today, the banking needs of customers are 24x7, going beyond the branch banking timings, therefore, banks need to provide omni-channels to serve their customer needs which will differentiate them from the other banks.

29. India to supply over half of Asia's workforce: report, thehindubusinessline.com, accessed 23 October 2017

The major changes for the digital economy are being done at the grass root level. Under the Digital India initiative, the Government of India is working on creating digital villages where all the transactions and reporting will be done through the digital medium. The government is working on fulfilling infrastructural requirements for these villages such as internet connectivity, multi-lingual banking solutions, trained and skilled staff, etc. The government is also considering an incentive of 2 per cent over the applicable Goods and Services Tax (GST) tax rate in case of payment being made digitally where the bill amount is up to INR 2,000[30]. Various banks have also taken up this opportunity and they are using their Corporate Social Responsibility (CSR) funds to fuel this initiative and are adopting villages to transform them into digital villages. By doing this, banks are not only increasing their penetration into the rural market but are also increasing and driving the revenue of their products.

Even though there is a lot of noise around digital, it does not mean that ATM machines are going to vanish. The ATM is going to co-exist with the digital products as the size of digital transactions is less than 2 per cent in the overall financial transactions space. It is likely to take some more time for digital transactions to take over the market, and replace more than 2 lakh existing ATMs. Banks are also now working on Public Private Partnership (PPP) models for cash and digital medium by installing Aadhaar enabled ATMs, as these ATMs can work with and without debit cards using biometrics. These are portable ATM terminals which are kept at the merchant stores and can be used for various purposes such as cash deposit, cash withdrawal, payment to merchants, domestic remittance, etc. The cash replenishment/settlement is to be done between the bank and the merchant.

Despite the urge to go digital, the maximum usage of digital medium for transactions is in the urban areas, and primarily done by users through smartphones. For instance, the T-Wallet launched by the Government of Telangana is a state run e-wallet service for the people of Telangana. About 95 per cent of the total users of Telangana Wallet (T-Wallet) are smartphone users despite the solution being available for every type of user – i.e. users with a smartphone, a feature phone or ones without a mobile phone. There is a significant gap in awareness and acceptance among users which needs to be filled by the digital payment organisations as well as by the government. It is the responsibility of all the players in the domain to provide solutions which are as simple as it can be, contain no frills and require no major infrastructural changes, thus, making it a product or service that appealed to the masses and catered to a large section of the society.

The government should also incentivise stakeholders by reducing the charges levied on digital transactions as it will help promote digital payments. There is a need to spread awareness of digital payments rather than introducing newer payment instruments and end up confusing the customers. Payment instruments such as the UPI, BHIM Aadhaar, BBPS and Bharat QR have the capability to bridge this gap and educate the end-user to opt for the digital medium as the payment interface. Players in the payments industry should work around building tailor-made solutions for end users which serve their needs of varied payments. Industry-specific payment instruments can help ease the adoption of the digital channel. For example, a village with handicraft production should be provided with a payment solution which can be as close as possible to the understanding of the workers of that industry.

The Merchant Discount Rates (MDR) have grown significantly over a period of time and with the growing size of digital payments, the banks are not willing to let go of these charges as it brings them significant revenue. The launch of the BHIM app has made on-boarding charges very low and the operational charges are also on the lower side in comparison to the traditional PoS-based payment acceptance solution for merchants. The merchant only needs to have a sticker of a static QR code allocated to him by the bank in which he holds an account, with almost zero or minimal maintenance charges. By doing this, the merchant can move away from expensive PoS terminals and the charges levied on its transactions, which is favourable for smaller merchants.

All these initiatives have created a conducive environment for accelerated growth in digital banking in general and digital payments in particular. Leveraging the various technological innovations, fintechs are also bringing in new ideas and disrupting traditional financial services in a meaningful way. Several unique models have emerged over the last few years, which have changed the way digital payments are being done in India.

30. Govt mulling 2% relief on GST for digital payments, The Times of India, accessed 23 October 2017

A mobile wallet for Telangana

Post demonetisation, the country has aimed to go less-cash, if not cashless, and in the wake of this, the need for multiple digital payment options has become pertinent. To help citizens overcome the cash crunch created by demonetisation and with an aim to push digital payment transactions in the state, the Telangana Government came out with a new initiative and launched T-Wallet[31], a state-owned wallet that allows users to make payments to government as well as private services.

With this initiative, the Telangana Government became the first state in the country to launch an official e-wallet[32] that offers the anytime, anywhere platform for digital payments with no additional charge for citizens. The digital payment option is available across formats such as online web browser, smartphone, feature phone and also for people even without a phone.

The platform allows citizens to make payments not only for the services rendered by the government and private entities, but also facilitates the disbursal of various government entitlements viz. pensions, scholarships and Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) wages.

T-Wallet allows users to complete the transaction using 2FA either through Aadhaar and OTP, or Aadhaar and Biometric, thus taking care of both feature phone users as well as users who don't have a phone.

T-Wallet can be used through any of the 4,500+ MeeSeva centers ensuring that rural citizens without phones are also able to access the benefits of T-Wallet. More than 200,000 citizens have registered for T-Wallet within the first three and half months of its launch. This includes 7,000 plus web users, 194,000 plus smartphone users and 5,000 plus kiosk users. During this period, more than 72,000 users loaded approximately INR 25.80 crore in their T-Wallets. During the same period, more than 167,000 users have transacted for various services by making payments of over INR 5.34 crore. In order to popularise the T-Wallet, the state government has organized more than 100,000 Digithon campaigns to encourage the use of T-Wallet and proliferating digital literacy in rural areas[33].

With this wallet, the state government aims to deepen financial inclusion and increase digital transactions based on Aadhaar, with or without the need for a bank account. The wallet that has been built on one of the most advanced technology platforms, provides scalable performance and enhanced security, in addition to the options of Telugu, Urdu and English languages to the users. One feature that distinguishes T-Wallet from the rest is that the user can operate the wallet even without having a bank wallet.

The existing digital payment solutions are mainly built for smartphone users, and thus the focus is urban-centric with very limited options for feature phone users and those with no phones. However, the T-Wallet has been designed with a focus on feature phones and no phone users in rural areas. Since it is a government initiative, citizens are naturally more likely to trust this digital payment solution.

31. twallet.telangana.gov.in, accessed 23 October 2017
32. Govt mulling 2% relief on GST for digital payments, The Times of India, accessed 23 October 2017
33. twallet.telangana.gov.in, accessed 23 October 2017

The A-Z of loyalty in retail

Nowadays, it has become a trend for retailers to enroll their customers under loyalty programmes. The rationale behind this is to reward the loyal/privilege customers and to create customer stickiness by offering freebies and discounts. However, behind these superficial gestures, the actual play goes much deeper, encompassing some of the most relevant information of economics, psychology and data analytics related to consumers.

Data analytics excites organisations with the promise of completely automated customer experience programmes. By integrating an analytics tool with all the customer interaction points, including social media portals, one can keep track of loyalty programme enrolled customers and analyse how they behave, as well as what they think about their experience with the company's product or services.

Considering the time, effort and resources that go into customer acquisition, it becomes highly imperative for companies to retain these customers. This requires a system for customer approach, their behaviour analysis and segmentation, customer evaluation, Customer Relationship Management (CRM), loyalty and engagement channels. Hence, building a relationship with a loyal customer gives a strong foothold to the retailer to start in this direction.

Loyalty relationship is not just limited to traditional 'reward points' but goes beyond, with companies building a strong following of loyal customers through a data-driven approach for a more sustainable growth. Apart from being economically viable, loyal customers turn out to be far more beneficial to an organisation in not just one, but many ways. These include ease of retargeting, accurate and cumulative analysis, brand endorsement, word of mouth and increased brand equity.

Another important rationale to run these loyalty programmes is that the difference between the cost of customer retention and the cost they incur for a new customer acquisition is almost five times to 25 times. Various customer research studies have shown that brands which have more active engagement with their customers, end up generating 90[34] per cent more frequent sales, 60[35] per cent increment in the average ticket size and 5[36] times more likely visits to the store in future.

Targeted product recommendation is one of the most preferred ways to keep customers engaged as this helps retailers retain the customers towards their products. Building customer loyalty is a stepping stone for any organisation in the journey of building a brand. And it is even more important for the companies to establish right communication with their customers as this helps foster advocacy of their brand in the consumer's mindset, when it comes to a dynamic economic environment. Organisations have to ensure that their marketing communications and loyalty programmes are conveying the accurate message and to the appropriate target segment of customers in an effective and efficient manner, being viable in both the short and long term.

In order to build an overall customer experience and pitch for their offerings to the customer, there is a lot of buzz around innovation in the offerings by the retailers. The innovation has to be done with a motive to create a differentiated value offering backed by data analytics. By embedding technologies like customer analytics and big data, organisations are leveraging the benefits of new tools to enrich the customer experience and to smoothen the process of earning customer loyalty.

34. Infographic: Customer acquisition vs retention costs, mycustomer.com, accessed 23 October 2017
35. The Value of Keeping the Right Customers, Amy Gallo, accessed 23 October 2017
36. How Analytics Is Transforming Customer Loyalty Programs, kissmetrics.com, accessed 23 October 2017

Earlier, only a small sample of customer data was used to analyse and create plans for customer acquisition and retention at a single point of time, but now organisations are constantly tapping the pulse of their customers at the click of a button. Research studies have highlighted that early adoption of analytics provides an edge to organisations who are in the business of servicing and value creation. Once the organisations become proficient with these solutions and tools, they tend to widen the gap between them as leaders and the competitors as laggards for the next few years with a differentiated and customised offering for their customers.

Organisations can create loyalty and potentially benefit by concentrating on factors like:

i. Customer and communication - Concentrate on understanding and capturing the customer's pulse and direct all communication in a personalised and targeted manner to the appropriate set of customers.

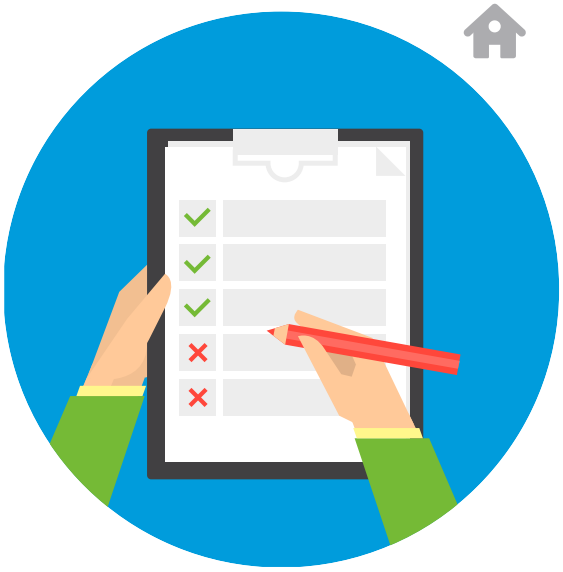
ii. Data domination and data democracy - Data has now become a key factor to drive business. How well one knows their customer is now being decided by the amount of customer data and information one collects, analyses, and uses the available data and information to design intelligence-based loyalty.

iii. Frequency - Knowing the data and knowing the customer is different. One may know the frequency or customer propensity models, but may not know the customer. Hence, a correlation between the two needs to be mapped and relevant models need to be developed.

iv. Platform - Organisations need to build a platform not only for customer engagement but also to capture the digital footprints of customers in order to bring the offering even closer to the customer. One also needs to create relationships between data platforms in order to create a detailed profile of their customers.

v. Relevance - Data analytics is very important, but the model one develops out of it should help the company develop a relevant product. Aspirations and innovation alone can't drive sales. The product should satisfy basic and relevant needs, else it will be of no use.

vi. Return on investment - Data crunching and analytics play a bigger role when strategies and decisions are to be formulated keeping the return on investment or profitability in mind. Hence, stipulated actions should reflect on profits as well.



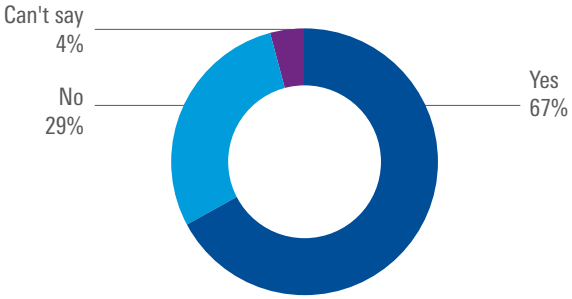
Survey inferences

In a survey among the participants of the first Cards and Payments Summit 2017[37], which had representations from leaders across diverse functional areas of the payments industry, industry veterans shared their experiences from the payments industry and also voiced their expectations to the drivers of change. Some of the views that came out strongly from the survey and have the potential to be a guiding force for the payments industry are listed below.

i. Zero or minimal transaction charges

The participants were of the view that transaction charges for the customers has to be minimal if the industry wished to bring more users under the ambit of digital payments. Participants also opined that the economics of the transaction fee can be worked out on the concept of economies of scale with lesser charges for users doing more digital transactions. This can help create a sustainable pricing model wherein transaction volumes are driven by transaction charges.

Is zero or minimal transaction charge in digital payment modes sustainable?

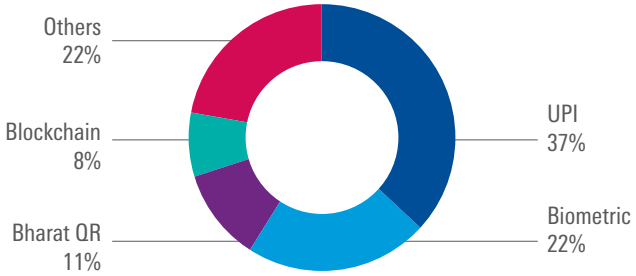


Source: KPMG and ET Survey, Cards and Payments Summit 2017

ii. Current market disruptors

Participants also opined that UPI is a revolutionary payment product and could potentially emerge as a disruptor in the Indian payments landscape, while blockchain is the upcoming technology to look forward to in the fintech space.

Which technology or product, in your opinion, has the maximum potential to bring about a change in the payment landscape in the country?

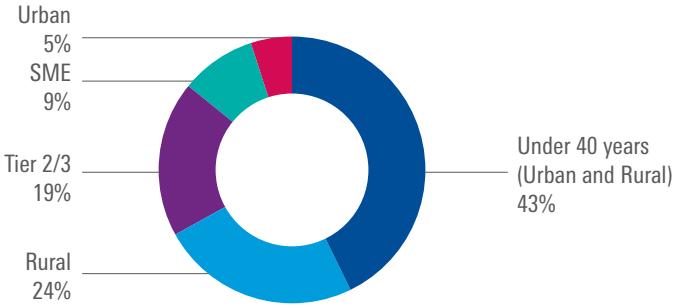


Source: KPMG and ET Survey, Cards and Payments Summit 2017

iii Target markets for fintechs

Participants were also of the view that fintechs should build their solutions around the challenges faced by people living in semi-urban and rural areas as these areas are often neglected by the mainstream financial institutions and are usually under-served by existing financial products. With more people becoming educated and tech savvy in these areas, there exists a tremendous scope for digital penetration as the younger generation is more receptive to experiment and embrace digital proliferation. There is a huge gap in the demand and supply of financial products that has to be bridged in these areas, and if served properly, the next big wave of business could come from the small and micro merchants who live in these parts of the country.

Which segment of customers should fintech companies target to take the lead from the established players?

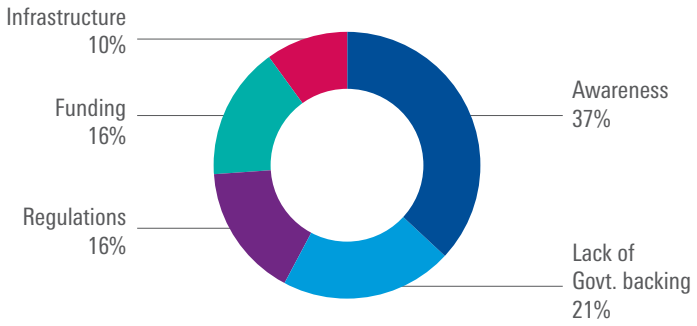


Source: KPMG and ET Survey, Cards and Payments Summit 2017

iv. Hindrances in the growth of fintechs

The key hindrances that are highlighted by the participants in the growth of fintech companies in India include the absence of required infrastructure, awareness and enforcement of cyber laws, lack of awareness and education about fintech as an industry and data security.

What are the factors that are hindering the growth of fintech start-ups in India?

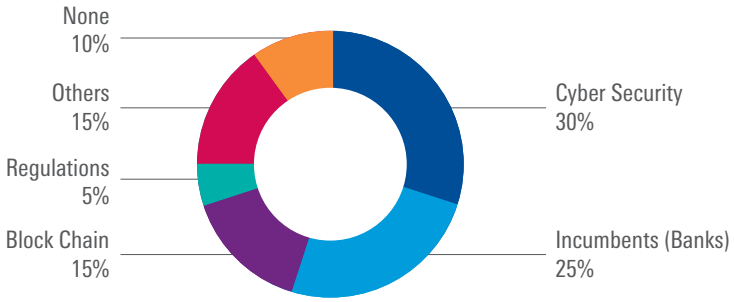


Source: KPMG and ET Survey, Cards and Payments Summit 2017

v. Threats for fintechs

The participants highlighted cybersecurity and cyber breaches as the real threats for fintech companies. In a world where data is the new currency and the most valuable asset, participants strongly emphasised the need to persistently maintain data security and integrity.

What poses the biggest threat to the fintech industry?



Source: KPMG and ET Survey, Cards and Payments Summit 2017

Conclusion

India is evolving on the global platform as a digitally active economy and post demonetisation there is an aggressive push for digital transformation of the payments system in India. India has made exceptional progress in digital payments and is one of the few countries in the world to have its own real-time payment system in the form of IMPS and UPI.

Today, the Indian economy is flooded with a bouquet of payment products involving UPI, IMPS, National Electronics Funds Transfer System (NEFT), Real Time Gross Settlement (RTGS), AePS, etc. apart from various m-wallet players like Paytm, MobiKwik, Freecharge etc. who are almost running an ecosystem of their own. The government is working towards creating a complete digital payments ecosystem where customers can pay or receive money through their Aadhaar number and also receive service delivery for various social welfare schemes. The government has set-up various entities and missions such as the National Digital Payments Mission (Digi Dhan Mission), to focus on redefining the way customers spend their money that involves cards, wallets, direct account debit services, etc.

States have also begun contributing towards this mission by launching their own wallets and payment instruments. The Telangana Government has launched a state run e-wallet known as T-Wallet which runs on smartphones, feature phones and is also available for people without a phone, through the use of biometrics.

Digital transformation is not restricted to payments only but organisations are also moving ahead with the application of big data and analytics in their core business to get a bigger share in customer expenditures i.e. a larger share of wallet. Organisations are devising various loyalty programmes which incurs a cost for them, but by doing so, they manage to get richer data which helps them devise better product offerings and business plans.

Today, most of the major innovations in the digital space are being offered through fintechs which are comparatively smaller organisations and which have the expertise of both the financial and the technology domains. These fintechs develop financial products which can be integrated or bundled with the financial products of banks and NBFCs to bring value addition and uniqueness to the product.

However, these fintechs are prone to a lot of challenges such as the absence of an ecosystem/ infrastructure for them to flourish, risks pertaining to the data and cybersecurity space, recognition of fintech as an industry, awareness and enforcement of cyber laws, etc. The critical requirement for sustainability of the digital ecosystem is a robust cyber security framework. This framework could help build trust among users and other stakeholders, which in turn could help shift a larger part of the population towards the digital payment mode and expand the digital payment landscape to reach the remotest parts of the country.

Glossary

2FA	Two-Factor Authentication
AePDS	Aadhaar enabled Public Distribution System
AePS	Aadhaar enabled Payment System
ATM	Automated Teller Machine
API	Application Programmeming Interface
BBPS	Bharat Bill Payment System
BC	Business Correspondent
BHIM	Bharat Interface for Money
BPL	Below Poverty Line
CERT	Computer Emergency Response Team
CRM	Customer Relationship Management
CSR	Corporate Social Responsibility
DBT	Direct Benefit Transfer
e-KYC	Electronic Know Your Customer
FPS	Fair Price Shops
GDP	Gross Domestic Product
GST	Goods and Services Tax
IFSC	Indian Financial System Code
JAM	Jan Dhan, Aadhaar and Mobile
KYC	Know Your Customer
MDR	Merchant Discount Rate
MeitY	Ministry of Electronics and Information Technology
MGNREGA	Mahatma Gandhi National Rural Employment Guarantee Act
NEFT	National Electronics Funds Transfer
NFC	Near Field Communication
NPCI	National Payments Corporation of India
ODR	Online Dispute Resolution
OTP	One Time Password
P2P	Peer-to-Peer
P2M	Person-to-Merchant
PCI-DSS	Payment Card Industry-Data Security Standard
PDS	Public Distribution System
PMJDY	Pradhan Mantri Jan-Dhan Yojana
PoS	Point of Sale
PPP	Public Private Partnership
PSD2	Payment Services Directive 2
QR	Quick Response
RBI	Reserve Bank of India
RTGS	Real Time Gross Settlement
SEBI	Securities and Exchange Board of India
SFA	Single-Factor Authentication
T-Wallet	Telangana Wallet
UIDAI	Unique Identification Authority of India
UPI	Unified Payments Interface
USSD	Unstructured Supplementary Service Data

About KPMG in India

KPMG in India, a professional services firm, is the Indian member firm affiliated with KPMG International and was established in September 1993. Our professionals leverage the global network of firms, providing detailed knowledge of local laws, regulations, markets and competition.

KPMG has offices across India in Ahmedabad, Bengaluru, Chandigarh, Chennai, Gurugram, Hyderabad, Jaipur, Kochi, Kolkata, Mumbai, Noida, Pune and Vadodara.

KPMG in India offers services to national and international clients in India across sectors. We strive to provide rapid, performance-based, industry-focussed and technology-enabled services, which reflect a shared knowledge of global and local industries and our experience of the Indian business environment.

About ET Edge

ET Edge, an initiative of The Economic Times, has been founded to empower multiple sectors, industries and segments through the dispersion of critical business knowledge through strategically developed conferences and summits. Foreseeing the tremendous potential which India has in store, ET Edge strives to bring together visionaries and key global leaders through its enriched knowledge platforms to aid the symbiotic relationship societies and businesses share.

We aim to channelize global business intelligence vide summits and conferences through fortifying lectures, workshops, panel discussions, roundtables and case studies. The forums would ensure that the senior decision makers are equipped with information to respond to challenges being faced from a global perspective. We have substantial expedients for the business & visualize it taking mammoth proportions while developing into a one stop destination for the stalwarts of the industry.

The plan is to formulate a focused holistic solution for key sectors which contribute largely towards the GDP of the nation. Extensive market research with core practitioners, experts, leading trend setters and policy makers is conducted to ensure that these platforms are unparalleled in the vertical they cater to. Visionaries and industry leaders contributing as speakers will only ensure that these platforms set themselves apart. Our delegates are key management personnel and decision makers who can further enrich the gatherings with their crucial insights and vast experience.

Retail, e-Governance, Real Estate, Infrastructure, Healthcare, Education, Technology, Rural & BFSI are some of the key sectors around which ET Edge aims to develop knowledge destinations.

Acknowledgements

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