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DIGITAL PAYMENTS 2020

THE MAKING OF A $500 BILLION ECOSYSTEM IN INDIA

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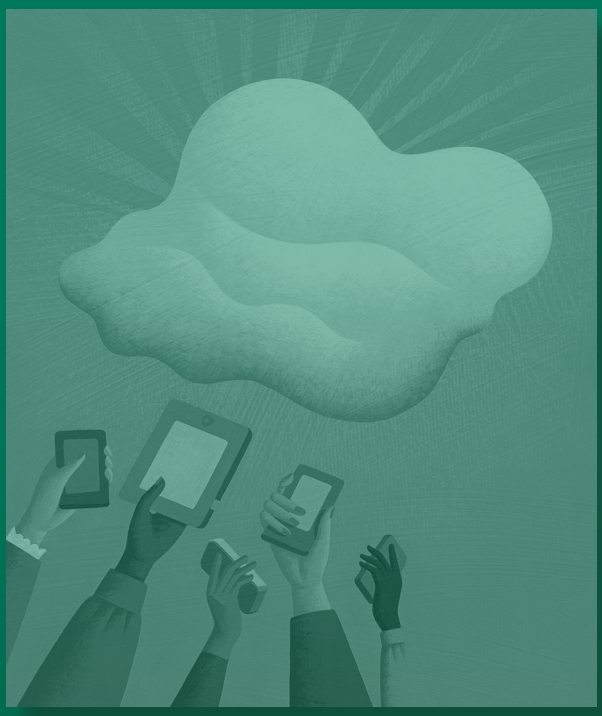

DIGITAL PAYMENTS 2020

THE MAKING OF A $500 BILLION ECOSYSTEM IN INDIA

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EXECUTIVE SUMMARY

THE GLOBAL PAYMENTS LANDSCAPE is evolving at a dizzying pace. The last twelve to eighteen months have witnessed heightened activity with four major shifts being observed in the global landscape. Firstly, the ongoing digital and technology revolution, led by the ever-increasing penetration of smartphones and internet on mobile, has revolutionised digital payments. Second, the payments space has witnessed the entry of several non-banking institutions offering payment services and solutions. Third, customers are becoming more demanding and expect instantaneous and one-touch payment solutions. Finally, there have been several progressive changes in the regulatory framework. Over the past few years, the payment landscape in India, too, has mirrored these developments, with digital payments displaying an exponential growth.

While different markets have seen different types of players and solutions becoming successful, some elements of winning models stay common. These include having a compelling value proposition, access to a large customer base, conducive infrastructure, supportive regulations and leveraging next-gen technology.

Primary research brings several interesting insights to the fore and validates India's readiness to adopt digital payments. Convenience emerges to be as important for continual usage as deals, discounts and cash-backs. Consumers seem open to using digital payment instruments for newer use-cases, gravitating towards offline points of sale such as organised retail, food and entertainment. Even so, the habit to use cash, complexity of digital payment instruments and limited reach pose significant barriers for consumers in adopting digital. Similarly, while 75 percent merchants believe that adopting digital payment methods will help grow their business, complexity and limited adoption hinder mass trial.

We expect the digital payments space to witness significant disruption in the days ahead. While the exact form and shape of disruption will only be unveiled over time, the crystal ball indicates seven trends set to transform the payments landscape in India over the next five years:

- **Technology will make digital payments simpler:** Smartphone penetration, ubiquitous connectivity, biometrics, tokenisation, cloud computing and the Internet of Things are a few trends that will shape the way consumers transact in the future.

- **Merchant acceptance network to grow 10X by 2020:** Mobile based payment solutions and proprietary payment networks will

drive merchant acquisition by offering low-investment solutions that will make economics more attractive for merchants and acquirers, resulting in over 10 million merchant establishments that will accept digital / mobile payments.

- **Payments will drive consumption—and not the other way around:** Payments will provide access to customer transaction data, enabling payment service providers (PSPs) to offer relevant deals, offers and coupons to consumers, thereby influencing their consumption decisions.

- **Consolidation will drive ubiquity:** Customers prefer fewer, ubiquitous payment solutions. Niche or limited use solutions will be forced to merge to offer near universal solutions.

- **Modified UPI will be a game changer:** Unified Payments Interface (UPI) provides a great platform for seamless interoperability of PSPs. Modified to overcome current challenges, it can drive large scale adoption of digital payments.

- **Digital identity to accelerate customer acquisition:** Using Aadhar for online authentication and confirmation of KYC data will boost growth of digital payment systems.

- **Cash to non-cash ratio will invert over the next ten years:** Digitisation of cash will accelerate over the next few years. Non-cash payment transactions, which today constitute 22 percent of all consumer payments, will overtake cash transactions by 2023. Digital payments instruments will drive the growth in non-cash payments.

Digitisation of payments presents a large opportunity in the Indian context. It is estimated that the total payments conducted via digital payment instruments will be in the range of USD 500 billion by 2020, which is approximately 10X of current levels. Person to merchant (P2M) transactions driven by digital payments at physical point of sale, followed by business to business (B2B) and peer to peer (P2P) transactions are expected to be major contributors of growth.

While Indian players have tried various business models to monetise the payments opportunity, few have attained scale or profitability. The primary focus hitherto has been on customer acquisition and monetisation models are yet to be fully evolved. We outline a ten-point agenda to accelerate the evolution of a successful and economically viable payments play in India:

- **Address true customer need:** It is critical for PSPs to look for a way to solve payment problems that customers face every day, instead of just offering a solution looking for a problem.

- **"Build for the base" with convenient, intuitive, easy to use and safe products:** It is imperative to build solutions that are "as easy as cash" to use, enable fast transactions, and yet provide adequate protection to customers' money.

- **Optimise the network effect by building a ubiquitous network:** The big push for digital payments in India will come from merchant payments. Hence, to drive ubiquity, it is imperative to build a large merchant acceptance network—a combination of both digitally enabled as well as offline merchants.

- **Partner, Partner, Partner:** Given the tight economic model of payments businesses, PSPs will need to extensively partner in order to lower customer acquisition costs, offer a broad spectrum of solutions and get access to a large distribution network.

- **Reduce entry barriers for customers—charge merchants and not customers:** PSPs need to find the right pricing model to drive adoption, wherein transaction charge is either levied on merchants (like discounting rate) or when money leaves the digital ecosystem.

- **Mine customer data to build additional revenue streams:** PSPs can carry out analytics on large volumes of transaction data to offer the most relevant products / services / discounts to the right consumer at the right time and drive higher consumption.

- **Look beyond payments—broaden financial services to consumption needs:** PSPs have an opportunity to expand their customer relationship by offering a full suite of financial services, and even other consumption based products, in order to optimally monetise the relationship.

- **Develop an ecosystem to accommodate customer needs:** PSPs can develop vertical or ecosystem based offerings that provide an end-to-end payments solution to customers in these ecosystems.

- **Exploit next generation technologies to build low cost and scalable solutions:** Technology will be critical not only to deliver solutions that are convenient, simple and secure, but also to ensure that the costs of customer acquisition, on-boarding and transactions are minimal.

- **Scale, Scale, Scale:** Attaining scale is critical to make the business model of payments business viable. PSPs that make bold moves and build scale have a good opportunity to build a profitable and valuable business.

Finally, in a market like India, where regulations are still evolving, it is imperative that the Government and regulators take a long-term view to building a sustainable digital payments market. Regulators need to emphasise awareness on cost of cash and incentivise the use of non-cash instruments, while the Government needs to shape policy that simplifies KYC requirements, making digital payment transactions more user friendly. Government investments in building merchant acceptance networks, setting up common payments infrastructure and developing a proper framework for grievance redressal are also essential.

GLOBAL PAYMENTS GOING DIGITAL

The global payments landscape has seen some dramatic changes and disruptions in recent years, especially with 2015-2016 being considered a watershed period in the payments industry. Led by the evolution of digital technologies, payments are no longer the forte of banks. Evolving customer behaviours, needs and preferences have led to new participants entering the arena at an exponential pace. Non-bank institutions are capturing the limelight and setting new consumer expectations (for example, one click payments), causing a shift in the value chain. The cumulative effect of all the above factors has a direct impact on the competitive advantage and value proposition of banks.

Four Seismic Shifts in the Global Landscape

Globally, the digital payments space is being driven by four mega-trends that are expected to dramatically impact the future of this industry.

- The ongoing digital / technology revolution
- Entry of non traditional players
- More demanding customer expectations
- "Enabling" regulations

The ongoing digital / technology revolution

The use of mobile internet is growing sharply. The number of users accessing internet services on mobile is expected to reach 3 billion by 2020, covering 65 percent of the world's adult population as compared to approximately 1.9 billion in 2015.

By then, it is expected that about 80 percent of all internet users will be accessing the internet through mobile handsets and 58 percent of such users will be using smartphones. Given that smartphone devices are equipped with powerful processors, substantial memory, high-resolution cameras, barcode scanning, GPS geocoding, NFC-based technologies, social networks and platforms for deals and offers, they now are potent commerce-enablers.

The evolution of smartphones is enabling new payment capabilities. This has revolutionised digital payments coupled with innovations in payment access and security technologies such as tokenisation of card details for reducing fraud, biometric-enabled multi-factor authentication, EMV standards for user authentication, NFC-capable readers at merchant stores, hardware-based secure element approaches etc.

Entry of non traditional players

The payments landscape is now seeing heightened activity across multiple player

categories, ranging from device manufacturers (Apple, Samsung), tech firms (Google, eBay, Alibaba), retailers (Starbucks, Walmart), telecom companies (Vodafone, Orange) and startups (Square, TransferWise). More disruption is expected as the number of FinTech startups has doubled to 1,000 in approximately 5 years with funding growing 6X to reach USD 11 billion in 2015 (Refer Exhibit 1.1).

Payment FinTechs span a broad landscape including wallets, integrated POS systems, P2P payments and cross-border transfers, and have attracted the largest share (35 percent) of the overall FinTech funding. Some startups Some startups such as Ant Financial Services Group (China), First Data, Stripe and Mozido (USA) and One97 Communications (India), have grown to over USD 1 billion in valuation.

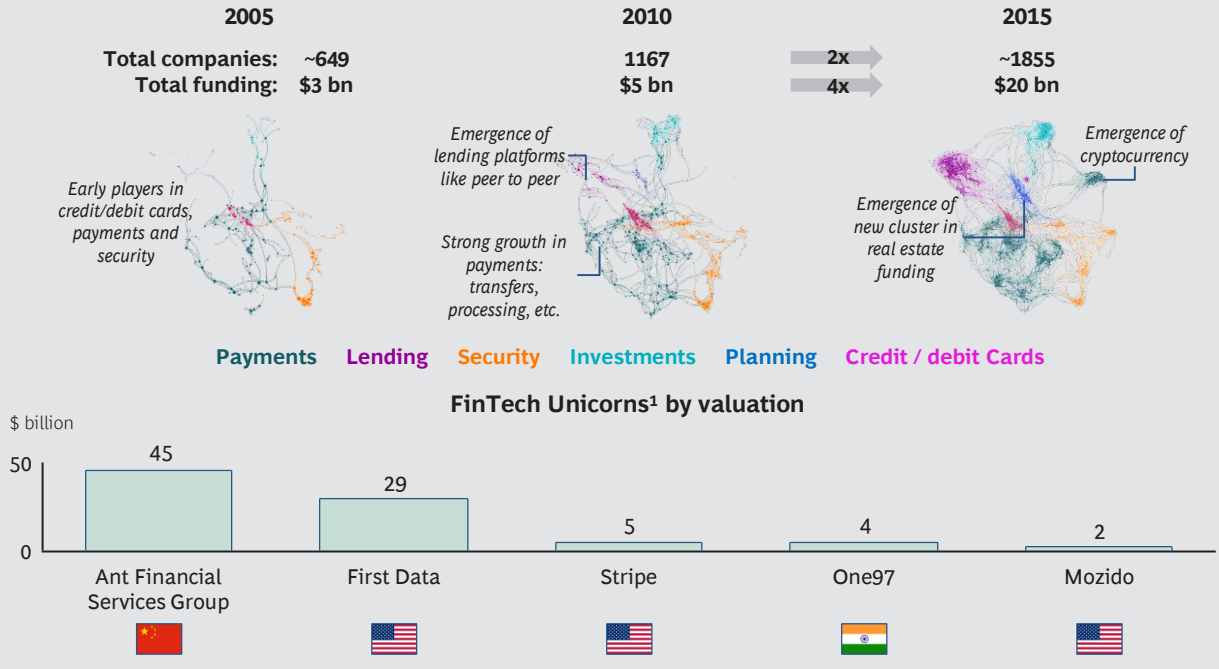
Recent case studies have lent evidence to the fact that digital payment companies dominate in specific-use cases. In proximity payments, we see Starbucks offering in-app payments and Apple Pay offering mobile wallets. For in-browser payments, Amazon's card-on-file is a success study, whereas PayPal and Alipay dominate the online wallet space. With iDeal being a preferred model for online bank payments, Zoomit in Belgium and BPAY in Australia offer bill payments and still others such as mPESA and Facebook offer P2P payments.

More demanding customer expectations

The advent of non-bank tech and retail players in the payments arena has exposed customers to a superior end-to-end customer experience. Customers' expectations from payment solutions have changed with many features such as biometric authentication from Apple Pay and integrated rewards from Starbucks, possibly becoming the new normal.

The consumer of today, and even more so, tomorrow, expects the best experience that companies can deliver, even in financial services. There is a growing need for an intuitive and frictionless user interface and design as provided already by players, along with the optimum use of smartphones and apps to deliver on evolving customer needs, both en-

Exhibit 1.1 | Number of FinTechs Tripled and Funding Grew 7x Over Last 10 Years



Sources: Quid, BCG analysis, CB Insights, Finovate March 2016. Quid, BCG / Expand / BCG Digital Venture / B Capital analysis.
Note: 980 companies related to retail banking were discovered with Quid and allowed to cluster based on similar products, technology, customers etc. Quid database includes companies who have received equity investment since 2011. Publically available information on product, business, funding etc. is then collected for the company lifetime.
[1]Unicorns are startups with valuations >$1 billion.

hancing and increasing customer interactions and building relationships.

"Enabling" regulations

Regulations play a critical role in determining the nature and success of payment solutions. With modernisation of the payment infrastructure occurring in most countries, payment service providers can take advantage of real-time systems to offer cutting-edge payment solutions to customers.

For example, the PSD2 (Revised Payment Services Directive) in Europe, exposes established banking and payment institutions to increased attacks that get at the core of their primary customer relationships such as accounts and payments. The directive is expected to create an open environment conducive to greater customer choice and price transparency.

In emerging markets, where cash still dominates, governments have been promoting electronic payments. United Arab Emirates has implemented a program aimed at achieving a cashless economy which includes the mandatory use of payroll cards for wages, the establishment of an electronic payment gateway for government payments etc. In China, the Central Bank and the China Banking Regulatory Authority are encouraging the development of digital payment platforms while strengthening regulations, anti-money laundering initiatives and payment account category management practices.

Rapid Evolution of Digital Consumer Payments

We are poised at the beginning of a new era in payments that is set to welcome innovative solutions such as third-party wallets, token that will replace traditional credentials, and the use of biometrics as an authentication and authorisation tool. Ubiquitous connectivity, biometrics, tokenisation, cloud computing, and the Internet of Things are just a few of the digital trends that will affect the way consumers transact and interact with their payment partners.

Digital consumer payments are evolving rapidly—from the traditional cash / card / cheque model at the turn of the century to "online single channel closed models" in the first few years of the century to "mobile multi channel, open and fragmented models" as we speak (and over next few years) to the "Internet of Things (IoT), multi device, social models" by 2020 and beyond (Refer Exhibit 1.2).

Fragmentation will continue and will differ by channel (POS, e-commerce, m-commerce and in-app). Most players will vie for domination at the POS which will see significant activity.

Beyond 2020, the rise of connected devices will fuel strong growth in in-app purchases. Mobile applications will become increasingly sophisticated and consumers will be transacting via a myriad of new devices (such as smart watches and connected cars). These dynamics, moreover, will spur new value propositions that, in turn, will alter the competitive landscape.

Digital payments nearly 20 percent of retail transaction value by 2020

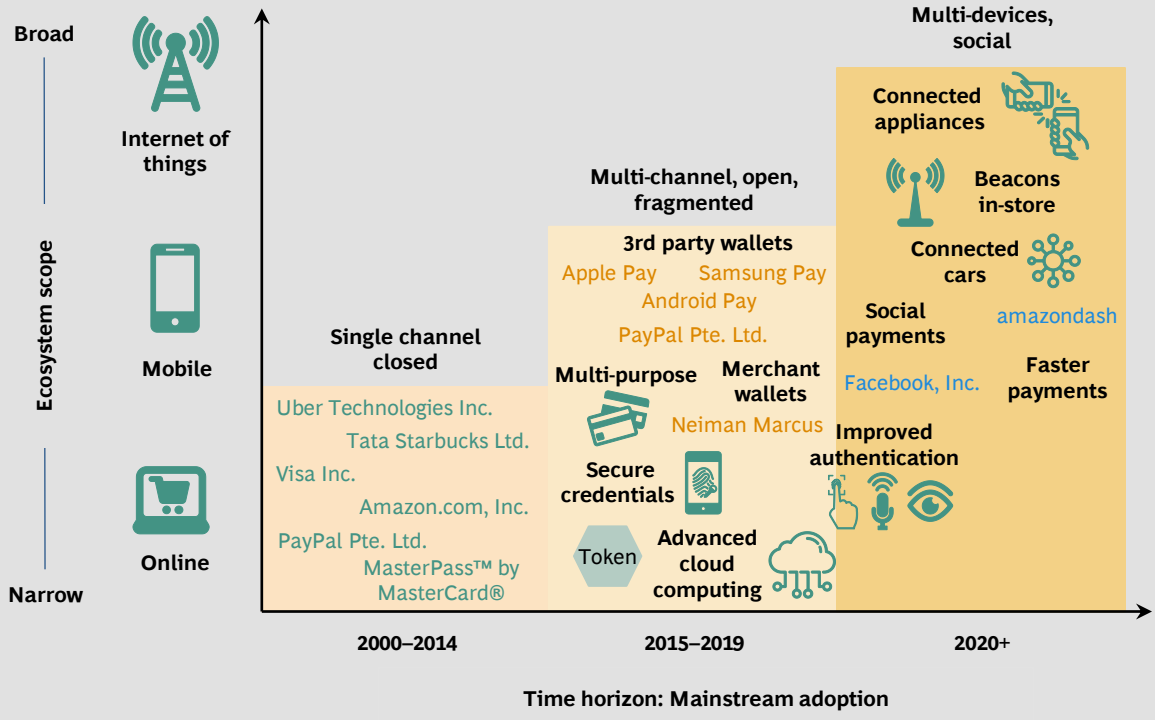
The total value of global retail payments transactions was estimated at USD 16 trillion in 2015. This is estimated to increase to USD 21 trillion by 2020. The estimation comprised consumer to merchant transactions across retail verticals such as food and grocery, apparel, consumer durables etc. Digital payments contributed to 8 percent of the overall global retail payments market in 2015 and the same is projected to increase to 18-24 percent by 2020.

In-app payments and proximity transactions are expected to be key catalysts driving growth in the days ahead. Assuming a momentum scenario, where digitisation continues at projected pace, a growth of 18 percent is likely, with market size scaling USD 3.7 trillion. However, in a breakout scenario, given a possible disruption by convenience, security and Internet of Things, the growth rate is expected to be 24 percent, prizing the market opportunity at USD 5.1 trillion.

One Size Does Not Fit All

Different markets have seen different types of players and solutions becoming successful. While there appears to be no singular success model seen so far, some common elements of a winning model can be identified, including:

EXHIBIT 1.2 | Evolution of Consumer Digital Payments



Sources: BCG experience and research.

- **Compelling value proposition (rather than just a cool technology)**—for example, Starbucks in-app payment
- **Access to a large captive customer base**—for example, eBay for PayPal, Alibaba for Alipay
- **Conducive infrastructure**—for example, NFC-enabled phones in USA for Apple Pay or a consortium of banks as is the case for iDeal in Netherlands
- **Supportive regulations**—for example, M-PESA in Kenya
- **Leveraging NextGen technology**—for example, tokenisation for security, biometrics for authentication by Apple Pay
- **Bundling payments and loyalty**—for example, Starbucks rewards loyal customers through its payment app

USA

The issues faced by small e-merchants acquiring accounts that permitted credit card acceptance, has enabled PayPal to gain significant traction. Launched by eBay, PayPal has aided peer to peer payments online, processing around USD 280 billion payments with revenues of USD 9.3 billion in 2015. However, the solution is largely restricted to online payments rather than proximity payment, leaving the POS field vacant for other players to come in.

Apple Pay, from device manufacturer behemoth Apple, has made POS payments convenient and quick for consumers. As a multipurpose wallet, it offers a convenient digital interface for existing cards and potential links for coupon use. Apple Pay is based on NFC technology and depends on customers having NFC-enabled smart phones.

One of the most successful in-app payment wallet centered on loyalty, is currently offered by Starbucks. Customers earn rewards for coffee consumption and avail of promotional offers on making mobile payments. Starbucks has been able to process 6 million transactions per month, offering high value to customers and having little need for payments

ecosystem coordination. As of 2015, 21 percent of all Starbucks transactions in the US have occurred through this mobile app.

Europe

In Netherlands, a group of Dutch banks have come together to offer a platform that facilitates inter-bank transfers for payments. The solution known as iDeal, has enabled bank account based payments for e-commerce and m-commerce transactions. Launched prior to the advent of PayPal, iDeal now enables 60 percent of online payments in Netherlands. This collaboration between banks has empowered a country-specific solution to assist online payments, impeding other payment players such as PayPal from making inroads.

China

In 2004, Alibaba, China's largest e-commerce player, created Alipay as an escrow based payment system to facilitate online payments. Alipay helped unleash massive growth in e-commerce by overcoming major barriers such as lack of trust between buyers and sellers, low credit card penetration etc. With 270 million active users, Alipay is believed to have processed more than USD 500 billion in digital payments in 2015, helping Alibaba capture 50 percent of all online transactions in the country.

Alipay has become a way of life with cool features such as 'ask your boyfriend to pay for shopping', 'crowd fund a movie', etc. Alipay's functionality has also been extended to bill payments, flight bookings and even to POS payments. It also supports offline payments at public transport, vending machines, convenience stores and more.

WeChat Pay, launched as a peer to peer payment solution by Tencent, another technology firm, tasted quick success, given its integration with WeChat, a messenger app. It allows users to make purchases without having to close their chat messenger. WeChat Pay has experienced aggressive growth in the last three years and has close to 700 million active users as of March 2016.

In China, non-bank entrants into the payments arena pose a significant threat to incumbents. Major e-commerce players such as Alibaba and Tencent, are rapidly expanding their financial-services portfolio to offer loans, insurance and wealth management as part of their future growth strategy.

Africa

Safaricom's M-PESA serves the unbanked / under-banked customers in emerging markets (20-25 million customers in Kenya or over 60-70 percent of adult population). Promoted as a safer way to transact than carrying cash which posed a security risk, M-PESA is a mobile money account designed to work on basic feature phones.

Given high mobile penetration, Safaricom has invested significantly in ATL / BTL activities to build consumer trust and rolled out a supporting M-PESA agent network. M-PESA's immense success in Kenya can be attributed to its robust design / strategy as well as a benevolent regulatory environment. Safaricom has been allowed to operate M-PESA as a payment system outside the provisions of banking law by the Central Bank of Kenya. It was a strong incumbent with nearly 80 percent market share and there existed a strong urban rural remittance demand in Kenya. With approximately 25 percent of Kenya GDP wired through this mobile money platform in 2015, it is difficult to replicate the M-PESA Kenya model in a different environment.

A New Strategy for a New World

With exciting times ahead for the payments space, all current and future participants will have to develop a digitally driven strategy flexible enough to respond dynamically to all key elements of evolution. Be it banks, telcos, device manufacturers, retailers, tech companies, startups or others, winning models will need to address real customer needs.

A clear value proposition, enabled by next generation technologies, supported by deep customer engagement and scaled up through strong partnerships, is what this industry will look like in the times to come.

INDIA PAYMENTS ON A SIMILAR DISRUPTION TRAJECTORY

OVER THE PAST FEW years, the payment landscape in India has mirrored developments occurring in the global payments arena, albeit with a time lag. Although the digitisation of payments in India is a recent phenomenon, the trend has displayed an exponential growth in the sub-continent, with rapid growth being witnessed in digital payment transactions.

India now represents one of the largest market opportunities for payments. With a population of over 1.25 billion eager to partake in rapidly evolving advancements in technology, India, as well as "Bharat", is poised to make the most of digital developments transforming the payments space.

Four Mega Trends Transforming India

The growth of the Indian digital payments space is expected to be driven by four trends that are also likely to impact how this industry looks in the future.

- India going digital
- "Favorable" regulatory environment
- Emergence of NextGen payment service providers
- Enhanced customer experience

India going digital

India is rapidly evolving into a digital behemoth. Rising smartphone penetration and internet access have ensured that Indian consumers stay constantly connected (Refer Exhibit 2.1). This is also reflected in the growth of digital banking transactions.

- **Mobile trajectory**: India currently ranks #2 in the world with over 1 billion mobile subscriptions. Of this, approximately 240 million consumers use smartphones and this base is projected to increase to over 520 million by 2020.

- **The internet network**: With increased 3G and 4G penetration even in the remotest parts of the country, the Internet network in India is rapidly expanding. The National Optical Fibre Network (NOFN) initiative by Digital India is set to provide broadband connectivity to cover 250,000 Gram Panchayats across rural India. While 70 percent of rural users currently access the Internet from their mobile handsets, the initiative is expected to increase the adoption of data enabled devices in these areas. With these developments in place, we expect around 90 percent of all devices to be internet enabled by 2017 and the number of internet users to double to nearly 650 million by 2020 from the erstwhile 300 million in 2015.

- **Banking on digital growth**: Over the last few years, digital transactions have shown steady growth of 50 percent Y-o-Y, followed by ATM transactions growing at 15 percent. Not surprisingly, branch-based transactions have reduced by almost 7 percent in FY15 as compared to FY14 (Refer Exhibit 2.2).

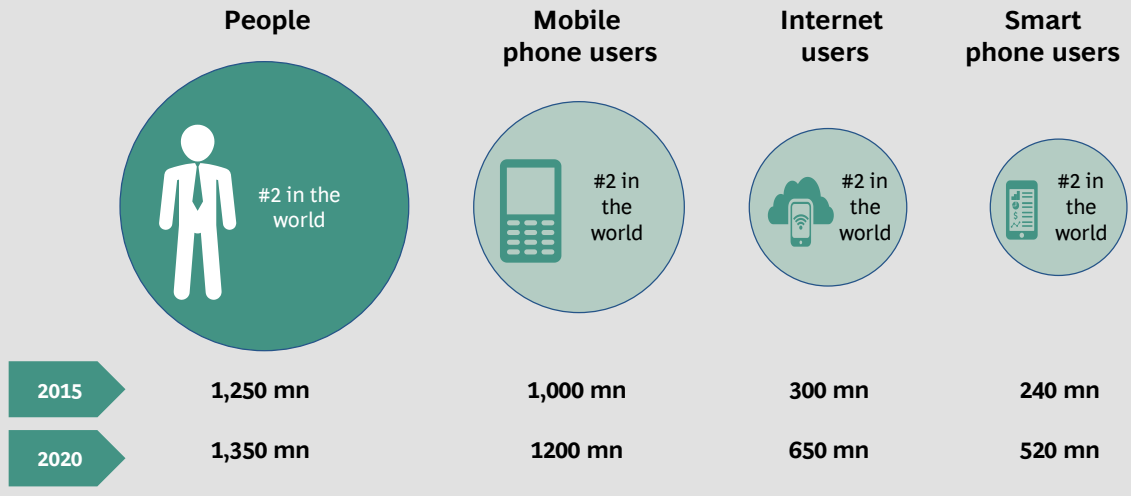
"Favorable" regulatory environment

A lot is changing in the payments world. The Government and concerned regulators have recognised this and have constantly kept pace with the rapidly changing environment vis-à-vis technology and customer expectations. However, this is still the beginning and lots more needs to be done in this space to make it conducive for payments businesses to succeed in the country.

Highlighted below are few of the key regulatory steps that are currently enabling digital payments in India.

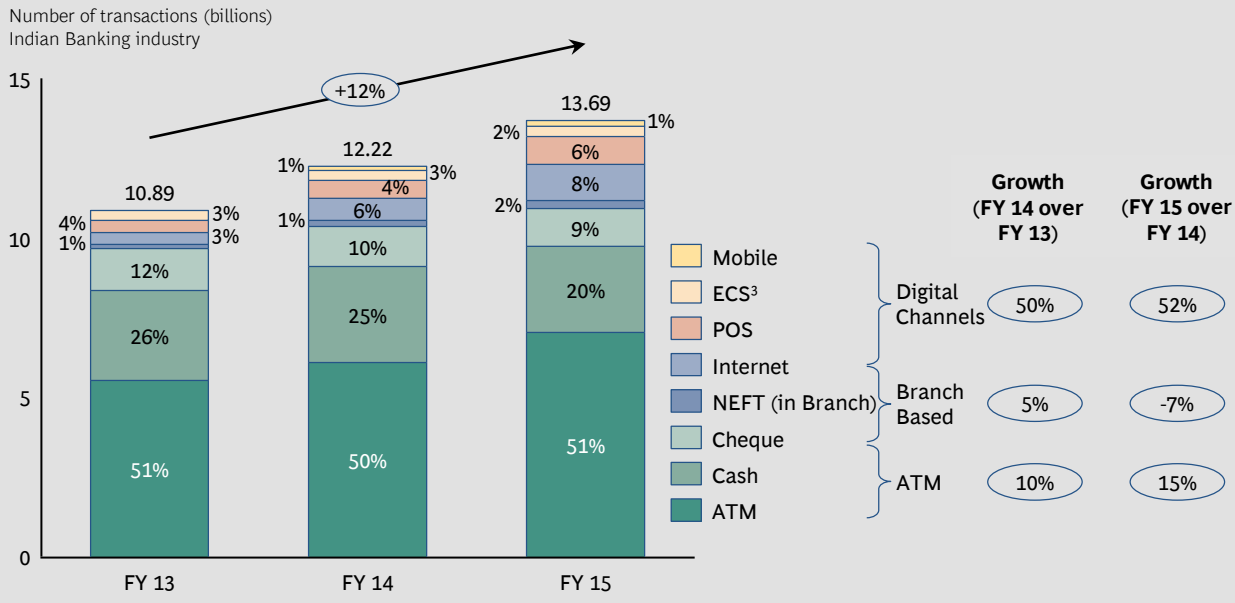
- **KYC relaxation for small transactions**: As per current RBI guidelines, there is no requirement for customers to undergo a KYC process for transactions up to INR 10,000 per month on prepaid instruments. This guideline makes it convenient for customers to just download the wallet of choice and use the same for transactions without the need for documentation, photographs etc. that are usually required to avail traditional banking services.
- **Exemption from Two-Factor Authentication (2FA)**: The RBI currently mandates the inclusion of a two-factor authentication (2FA) for transactions made with Indian debit / credit cards, irrespective of transaction value. While this requirement is necessary for consumer security, it also tends to be cumbersome, resulting in a payment process with a lot of friction, significant number of failed transactions and transactional drop-offs. A mobile wallet in comparison requires a customer to undergo the 2FA process only while loading funds from other bank instruments. Additionally, such wallets have limits on the value of transactions and tend to reduce exposure to frauds as they do not divulge any details of the customer's savings account directly.
- **Aadhar making KYC easier**: The advent of Aadhar as a national identity instrument has made the KYC process extremely easy. By linking a customer's mobile number electronically to his / her Aadhar account, the process is now much simpler and hassle free. The Jan Dhan Initiative has seen over 270 million accounts being opened. This has brought millions under the ambit of financial inclusion and has made biometric authentication a reality.
- **Unified Payments Interface (UPI)**: The Unified Payments Interface launched by

Exhibit 2.1 | India is Becoming a Digital Country



Sources: eMarketer, Ericsson, UN estimates, BCG research.

Exhibit 2.2 | Massive Growth in Digital Transactions



Sources: FIBAC Productivity Survey 2015; RBI; IBA; BCG analysis.
[1]ATM/CDM includes withdrawals transactions at ATM and deposit transactions at CDMs. ATM and Mobile transactions included are financial transactions only.
[2]Traditional channels include Cash and Cheque. Cash transactions refer to counter cash transactions within branch.
[3]ECS transactions can be initiated offline or through online channels but once set up.
[4]E-commerce transactions to include electronic transactions using debit and credit cards

NPCI is an integrated open architecture set-up that could fundamentally change the way customers manage payments. The UPI set-up proposes to stitch all services from Immediate Payment Service (IMPS), Automated Clearing House (ACH) to RuPay into one common platform. This would allow for seamless interoperability and the potential unlocking of multiple solutions. The inherent open architecture will provide access to all payment service providers (PSPs), be it banks, FinTechs, payment banks etc. It is also expected to provide users with the flexibility of accessing bank accounts through any PSP that is connected to the UPI set-up. Moreover, customers will be able to choose a virtual address in any format (mobile number, Aadhar ID, email ids etc.). This is expected to improve user experience and enable PSPs to provide easy and simple payment solutions. It is also expected to enable multiple use cases on the UPI platform—including peer to peer payments, person to merchant payments and business to business payments.

- **Bharat Bill Payment System** (**BBPS**): Bill payments form a major component of retail payment transactions. Cash and cheque payments continue to be predominant; particularly at the billers' own collection points. Existing systems do not fully address the needs of the consumers due to the lack of interoperability as well as the lack of access to electronic payments. Owned and operated by NPCI, BBPS is envisioned as an 'Integrated Bill Payment System' that is interoperable, accessible; cost effective and allowing multiple payment modes.

Emergence of NextGen Payment Service Providers

India has witnessed significant payments activity in the last 3-4 years. The competitive digital payment landscape in India now spans telcos, banks, wallet companies, e-commerce / tech firms and, in the near future, payment banks (Refer Exhibit 2.3).

Bank-led: In the past, banks have largely offered mobile banking apps with integrated bill payment solutions. However, customer

experiences with mobile wallets have proved to be far more seamless and quick, leading to customers preferring wallets for mobile recharge and bill payments. Thus, banks have now started offering their own mobile wallets in addition to the mobile banking apps. Few examples include Pockets by ICICI Bank, Lime by Axis Bank, PayZapp by HDFC Bank, SBI Buddy by SBI and Ziggit by IDFC Bank. While most of these apps do not require a bank account for their use, some of these do allow existing bank customers to log in using their internet / mobile banking credentials. Given that banks already have an existing captive base of consumers, they can monetise faster as compared to independent mWallet firms that will need to spend on customer acquisition.

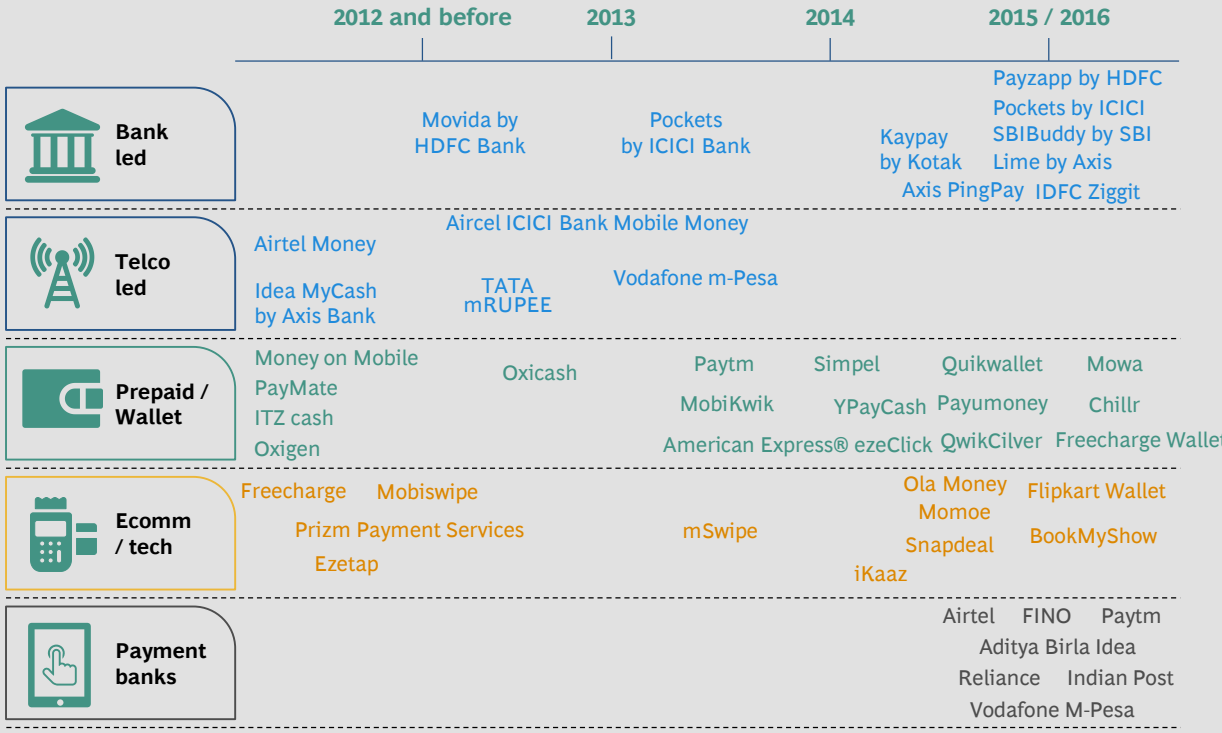
Telco-led: Large telcos such as Airtel and Vodafone launched mobile payments solutions, Airtel Money and Vodafone M-Pesa respectively, targeted at their own customer base. The solutions were initially USSD-based to ensure even non digital-savvy customers find it easy to use. The primary use cases for these solutions were largely mobile recharges and remittances. Idea Money from Idea Cellular, mRUPEE by TATA and Jio-Money by Reliance are other telco-led payment solutions, launched to help consumers conduct a variety of financial transactions conveniently.

Prepaid wallets: In 2009-10, the RBI had issued 26 prepaid payment instrument licenses (PPI). PPI issuers could now issue semi-closed wallets that enabled payments without 2F Authentication. As a result, two types of PPIs emerged:

- **Mobile wallets**: These are app-based stored value accounts, funded through credit / debit cards or via netbanking. Paytm, MobiKwik, Freecharge and Citrus Pay are some well-known mobile wallet examples. These wallets are primarily used for mobile recharges and bill payments.

Backed by VC funding, these companies spent heavily on customer acquisition through marketing initiatives. Soon enough, they diversified existing business models to

EXHIBIT 2.3 | Significant Payments Activity in the Last 3-4 Years



Source: BCG experience and Research.

monetise on the customer base through expansion of services. These included tie-ups with radio cabs (Paytm-Uber, Meru-Citrus Pay), offline use-cases such as POS payment (Paytm-More tie up), payment at fuel stations and educational institutions etc.

In order to reach unbanked or under-banked customers, wallet companies have now enabled cash funding of wallets through innovative solutions such as MobiKwik's cash pickup service and Paytm's tie-up with ICICI for cash loading at ICICI branches.

- **Prepaid cards**: Companies such as Oxigen, Itz Cash, Suvidhaa and GI Tech offer solutions with an agent-assisted offering to consumers who are not digitally savvy. Primary usage in such cases have been remittances and railway ticket booking.

Some of the PPI's were acquired by tech firms (e-commerce, radio cabs, entertainment booking) to offer in-house wallet solutions. For example, Snapdeal acquired Freecharge, Flipkart acquired FxMart to offer Flipkart money and Amazon acquired Emvantage. While Ola offers Ola Money, Bookmyshow too has its own wallet app to service customers. With growing popularity of such wallets, several other companies have now applied for such licenses with the total number of PPI licenses growing to 46 licenses in 2016.

- **Payment banks**: Keeping with RBI's stated objective of driving financial inclusion and enabling high-volume low-value transactions thereby reducing the dependence on cash, RBI provided in-principal approval to eleven entities to set-up payment banks in 2015. These entities include telecom players (Airtel, Vodafone, Uninor, Idea, Reliance Jio), tech-centric payment players (Paytm), next-billion focused players (NSDL, Fino, India Post) and NBFCs (Mahindra Finance, Cholamandalam). The scope of activities of a payments bank includes acceptance of demand deposits up to INR one lac per customer, issuance of ATM / debit cards, offering payment and remittance services, acting as a Business Correspondent (BC) to another bank and distribution of mutual funds, insurance services etc. These banks cannot undertake any lending activities or issue credit cards, accept NRI deposits or become a "virtual" bank.

However, the economic model for payment banks is challenging, given that they cannot earn lending revenues or high rates of interest on floats due to requirement of investing customer deposits in government securities. A few of the licensees such as Cholamandalam, Uninor and Mahindra Finance have already returned their in-principle approval to RBI.

Payment banks are well placed to capitalise on the payments opportunity.

Enhanced customer experience

Indian customers are now used to a superior experience owing to the popularity of e-commerce, and are demanding a similar experience from their financial services providers as well. This includes seamless access to bank accounts and payments, coupled with rewards, loyalty and offers.

- **Superior & seamless customer experience**: In the recent past, we saw India being swept by the online shopping wave given the arrival of e-commerce entrants such as Flipkart, Amazon, Snapdeal, etc. The convenience and ease of buying almost anything and everything online while sitting at home proved to be too good to resist. It is expected that the popularity of online payments will soon mirror the popularity of shopping online. This has been corroborated by the trends wherein the youth now prefer to use Ola / Uber rides instead of conventional cabs to avoid hassles of paying the exact amount by cash. Paytm's association with Uber and Ola Money by Ola have perpetrated the "get in-get out" phenomenon in the taxi industry. Thus, payments are now a background activity while the focus stays

on making user experience seamless. In the bill payment industry, for instance, payments on mobile banking apps involve multiple steps i.e. logging into the app, registering the biller, initiating the payment, two factor authentication and then final payment. In comparison, in the case of wallets, the customer has to just enter her mobile number followed by one-touch payment. In addition, internet and mobile banking applications have multiple security guidelines of logging out after inactivity etc. resulting in a sub-par customer experience.

- **Attracting customers with offers and discounts**: Since the concept of mobile wallets is still new in India, companies offer substantial deals, discounts and offers to woo customers and increase awareness. For example, in 2015, Paytm offered INR 8,000 as discount on iPhones and iPads, while in 2016, Freecharge offered significant cash-backs on minimum bill payments. Ola and Uber offer regular cash-backs of up to 50 percent of previous-ride bill value. Paytm and MobiKwik are known for their regular discounts on products, offered either as credit to the wallet or as discount coupons at partner-merchant outlets. These offers tend to encourage customer usage of wallets as a primary mode of payment.

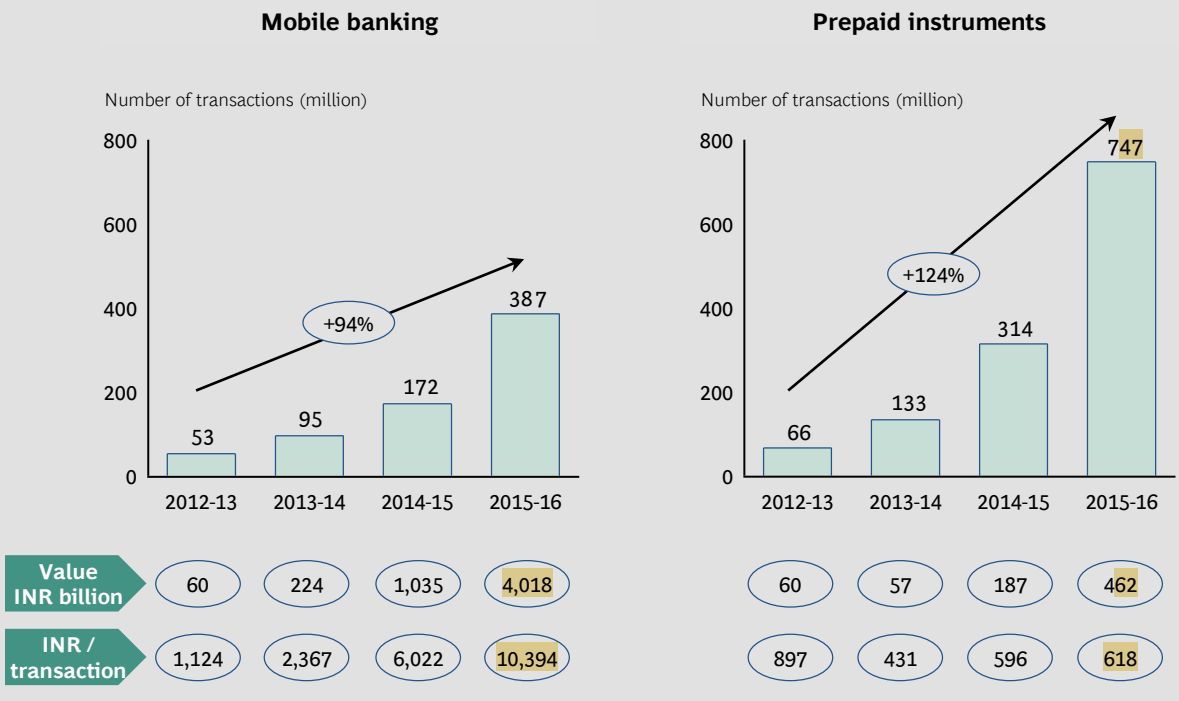
Rise in Adoption of Digital Payments

India truly seems to be going digital and this is validated by the exponential growth of its digital marketplace. The volume of mobile banking transactions in 2012-13 was similar to that of mWallet and Prepaid Payment Instruments (PPI) transactions combined (Refer Exhibit 2.4).

Prepaid instruments transactions almost 2X of mobile banking transactions.

Within the next 4-year span, PPI (mWallet and prepaid card) transactions have grown

Exhibit 2.4 | Prepaid Instruments Transactions Almost 2X of mBanking Transactions



Source: RBI Payment System Indicators, BCG Analysis.

much more rapidly to become almost double of mobile banking transactions in the same period. In the year 2015-16, around 747 million transactions occurred through mWallet and prepaid cards combined, whereas only 390 million transactions happened through mobile banking. This being said, the majority of transactions through mWallet are smaller with an average ticket size of INR 620, while mobile banking transactions are on an average INR 10,400 per transaction, notching up a gross annual transaction value of INR 4,000 billion. mWallet is largely preferred for micro transactions while high value transactions take place through mobile banking.

In terms of how many people use wallets versus how many actively transact through online banking, the number of unique active wallet users (80-85 million) has already surpassed that of online banking users (60 million).

Wallet users already more than mobile banking users and triple the number of credit card users.

This contribution comes from those users who do not use net banking but fund their wallets through credit cards, debit cards or cash. The number of wallet users is already 3X the number of credit cards issued in the country (24 million in 2015-16).

In the last six years (July 2010 to Jun 2016), if we look at the growth in internet search queries, we'll see that queries containing the word "pay" grew by 18X since July 2010. This has been taken as a surrogate for the demand for online payments. Queries regarding remitting, transferring or sending money grew by 5X in last 6 years, whereas queries for mobile wallet brands also grew by 5X since July 2010. Search queries for "pay / wallet / money transfer" grew much faster in the last year, at 3X rate, as compared to search queries for industries like e-commerce, credit cards and insurance.

The digital payment market in India is still nascent despite concentrated activity over the past 2-3 years. The landscape is dynamic and is rapidly evolving given changing use cases, customer propositions and business models.

Supported by a favorable regulatory environment and coupled with a young demography eager to try and test new digital technologies, the Indian payment industry is bound to grow multi-fold in the coming decade.

INDIAN CONSUMERS RARING TO RUN UP THE ADOPTION CURVE

Digital payments in India are not limited to being an urban and affluent phenomenon. Trends show that future adoption and growth of such services will be driven by the next set of low income users. Currently, users of digital payments lie across a wide spectrum of income, consumption profiles, attitudes, pain points and motivations. While some of these needs have been addressed with current propositions, the rest present a huge opportunity to include masses into the envelope of digital payments users.

Multiple-need profiles and user archetypes lie within and across demographic segments. For example, digitally and financially savvy users primarily need a digital payments solution to simplify their payments. Such users form a majority of the current digital wallet user base and usually have payments instruments like credit / debit cards and certain online banking experience. This segment is primarily driven by convenience (lack of 2FA, for example, Uber payments) and the appeal of bringing physical-use cases like bill payments online.

In addition, digital payments also cater to the segment of digitally unbanked users who mainly need digitisation of their money. This potentially large user base, while paid digitally, does not use any form of digital banking. They instead prefer to use their debit cards for ATM transactions and cash withdrawals. This segment also includes users who are paid or funded in cash—ranging from workers to 'dependents' in high-income households, such as students and housewives, who need their cash transactions to be digitised. Lastly, growth in this space is set to come from migrants and the next billion users, who are yet to be financially included. Thus, the potential implications of digital payments in this segment are profound and wide-ranging.

In order to better comprehend preferences, behavior and pain points of these varied user segments towards digital payments, BCG in association with Google, undertook a survey conducted by Nielsen aimed at understanding what it will take to build a successful payments play in India. The survey spanned 9 cities (metros and non-metros) and covered approximately 2,500 consumers and 920 merchants, who were aware of digital payments. Insights from this research, combined with industry interviews and knowledge from our existing client work have helped outline a set of initiatives that payments players should undertake in order to successfully unlock the potential of the Indian digital payments space.

The primary research brought several interesting and crucial insights to the fore. Contrary to popular belief, convenience

emerged to be as important if not more for continual usage of digital payments vis-à-vis price sensitivity or huge discounts and cash-backs. Consumers seem open to using digital payment instruments for new use-cases gravitating towards offline points of sale such as organised retail, food and entertainment.

Even so, the habit to use cash, complexity of digital payment instruments and limited reach pose significant barriers for consumers in adopting digital. Similarly, while 75 percent merchants believe that adopting digital payment methods will help grow their business, complexity and limited pull hinder mass trial.

Key Insights from the Consumer Research that Indicate India's Digital Payments Readiness

1. Users of digital payment instruments prefer these to other non-cash modes
2. Convenience is as important as offers in driving digital adoption
3. Prepaid mobile recharge and bill payments remain the most popular use-cases
4. Point of sale to form the largest use-case for digital payments in future
5. High frequency use cases driving usage of digital payments
6. Habit to use cash, complexity and perceived lack of value proposition key barriers to adoption
7. Security, identity theft and fraud are not big barriers in India
8. 3 out of 4 merchants believe digital will grow big, accelerating future sales
9. No clear benefits over other methods, proclivity towards cash and complexity are key barriers for merchant trials
10. Building a transaction ecosystem for merchants is critical

Users of digital payment instruments prefer these to other non-cash modes

Primary research indicates that 65 percent of customers aware of digital payments instruments move to the trial stage. 81 percent of users of a digital payment instrument prefer it to any other non-cash payment method such as credit / debit cards or net-banking, indicating high stickiness. Metros lead this transition, valuing the immediacy and 24X7 access that digital payments bring.

81 percent of users of a digital payment instrument prefer it to any other non-cash payment method

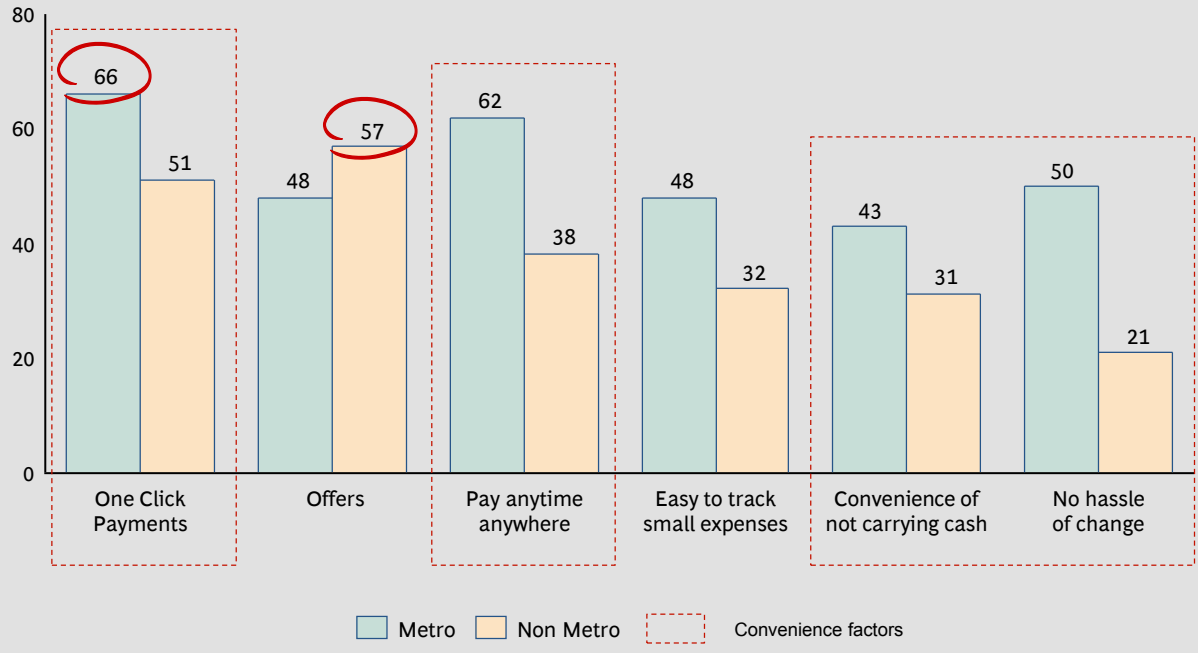
Convenience is as important as offers in driving digital adoption

Despite the recent push on cash-backs and offers, convenience is as important as 'offers' in driving digital payments adoption. Convenience encompasses not only 'one click' payments (the single largest reason for adoption) but also ability to recharge / pay bills anytime anywhere through mobile phone, convenience of not carrying cash and also no hassle of change (Refer Exhibit 3.1).

Even as consumers see value in digital payments beyond rewards; discount pricing, cash-backs and coupons have played a key role in breaking consumer inertia by incentivising non-cash payments. Going forward, such rewards can be used not just as an opportunity to catalyse adoption, but also to define and build customer loyalty. Creative use of incentive programs along with compelling product proposition can help drive mass adoption and continual engagement.

By leveraging rich transaction data and analytics, rewards can be personalised beyond blanket cash-backs, to co-market with merchants and to create loyalty programs. The creative use of such incentive programs can also help in driving and sustaining mass adoption and engagement, in association with other product propositions.

EXHIBIT 3.1 | Reason for Using Digital Payments



Sources: Google–BCG market study based on Nielsen consumer survey of 1,516 consumers, 2016.
Note: Figures in (%), Sample–Trialists.
Question: On the card are some reasons why people started using digital payments. Please select all those that apply to you.

PREPAID MOBILE RECHARGE AND BILL PAYMENTS REMAIN THE MOST POPULAR USE-CASES

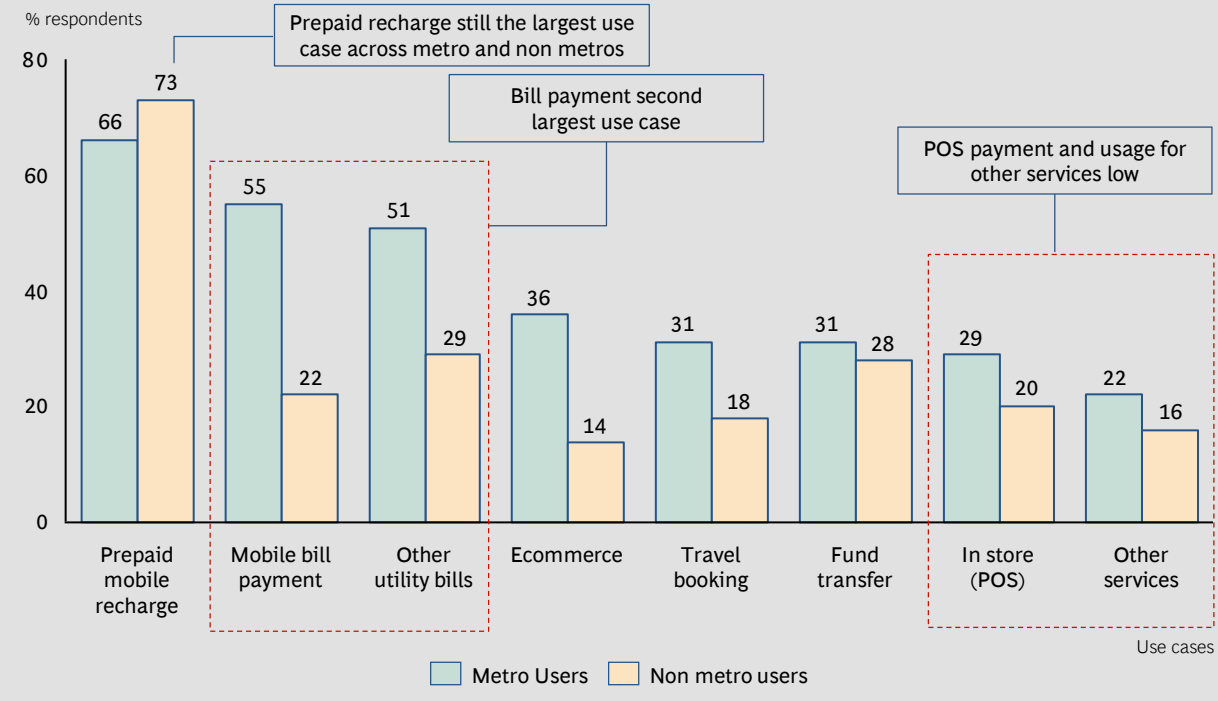
The digital payments landscape in India started almost solely on the single use case of prepaid mobile recharges and this is echoed in our research as well. Consumers are also using digital payments for bill payments (mobile and utility bills), e-commerce payments and travel booking (Refer Exhibit 3.2).

- **Bill pay shows large potential of tectonic shifts to digital payments:** Bill payments remain the most inconvenient of use-cases to fall under the scope of digital payments. Around 30 billion bills worth USD 103 billion are generated every year, of which, 70 percent are paid in cash. Bill payment is currently not interoperable and digital payments players have had to sign up with individual utility providers to facilitate payments. The top 10 electricity companies have just 2,000 cash collections centers in India. However, with launch of the Bharat Bill Pay System, a large inflection is expected as massive amounts of bill payments will get digitised.

- **E-commerce and travel booking:** Cash-on-Delivery is a necessary evil and has dominated Indian e-commerce payments, in face of insufficient consumer trust and inadequate penetration of credit cards or digitally active banking services. Most e-commerce players accept payments in cash, despite delayed payment receipts, logistical problems, higher supply chain costs, less control and high pilferage in cash handling. Of late, e-commerce websites have integrated with wallet players for seamless payments, and are beginning to see traction. Even online travel booking sites have started offering digital payments. However, 20 percent of online purchase transactions fail at checkout owing to customer abandonment, patchy networks and glitches in digital payment. Improved products that ease final conversion display a high potential in targeting online merchants.

- **Remittance / fund transfer:** Peer to peer transfers or remittances will continue to be an important use-case for digital payment instruments. Digital payment instruments like wallets and assisted payment service

EXHIBIT 3.2 | Use Cases of Digital Payments



Sources: Google–BCG market study based on Nielsen consumer survey of 1,516 consumers, 2016.
Note: Figures in (%). Sample–Trialists.
Question: For what all purposes have you ever used a digital payment instrument?

providers (Itz Cash, Oxigen, Suvidhaa etc.) help urban migrants send money home without the need for queues etc. as compared to banks. Thus, the adoption of digital payment instruments for fund transfers is expected to grow exponentially.

Currently there is limited usage of digital payment instruments when it comes to physical point of sale payments. This is because of limited reach and acceptance of such instruments at merchant outlets. However, this is likely to gain traction and become an important use-case for digital payments in the days ahead.

POINT OF SALE TO FORM THE LARGEST USE-CASE FOR DIGITAL PAYMENTS IN FUTURE

The digital payments landscape in India has long been in search of a "killer" use-case in its chase for ubiquity of acceptance. Until now, digital payment instruments and wallets have been popular for online transactions. However, the real growth in the usage of digital payments is expected to come from usage at physical points of sale. Point of sale P2M payments will form one of the largest use-cases for digital payments.

According to the study on potential use-cases, consumers have shown high willingness to adopt digital payment instruments for offline / physical payments, with food and entertainment and organised retail forming the top 2 potential use-cases (Refer Exhibit 3.3). Professional services, transport and unorgainsed retail are other potential use-cases for digital payments.

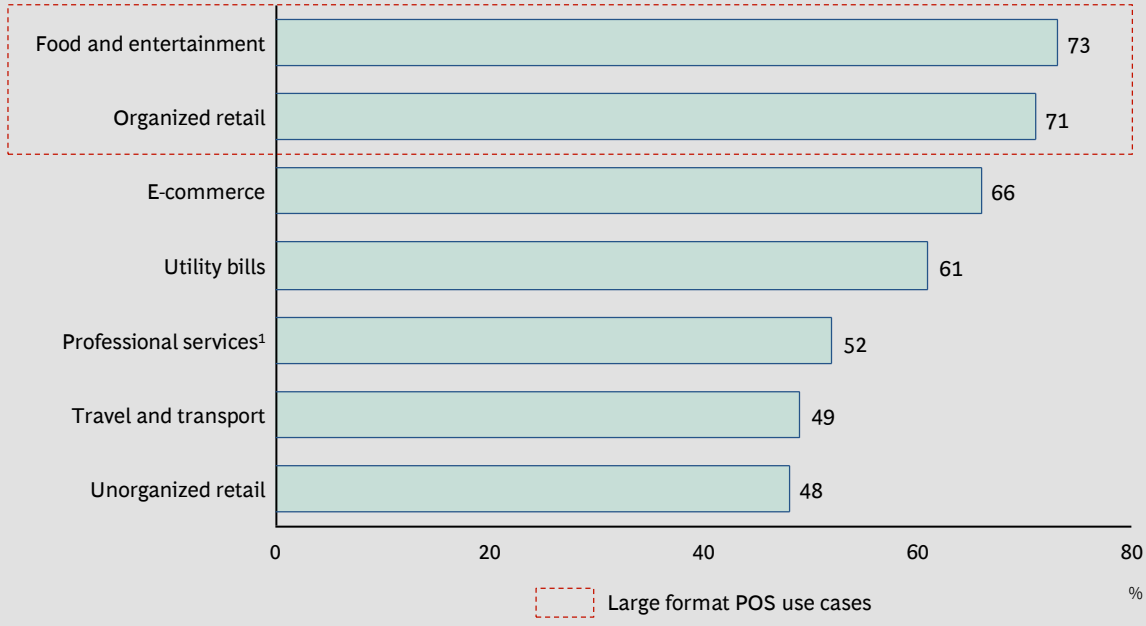
Consumers would like to use digital payments for physical point of sale purchases in future

As use-cases expand, the focus needs to be on being universal and providing services across multiple use-cases in order to earn maximum revenue per customer.

HIGH FREQUENCY USE CASES DRIVING USAGE OF DIGITAL PAYMENTS

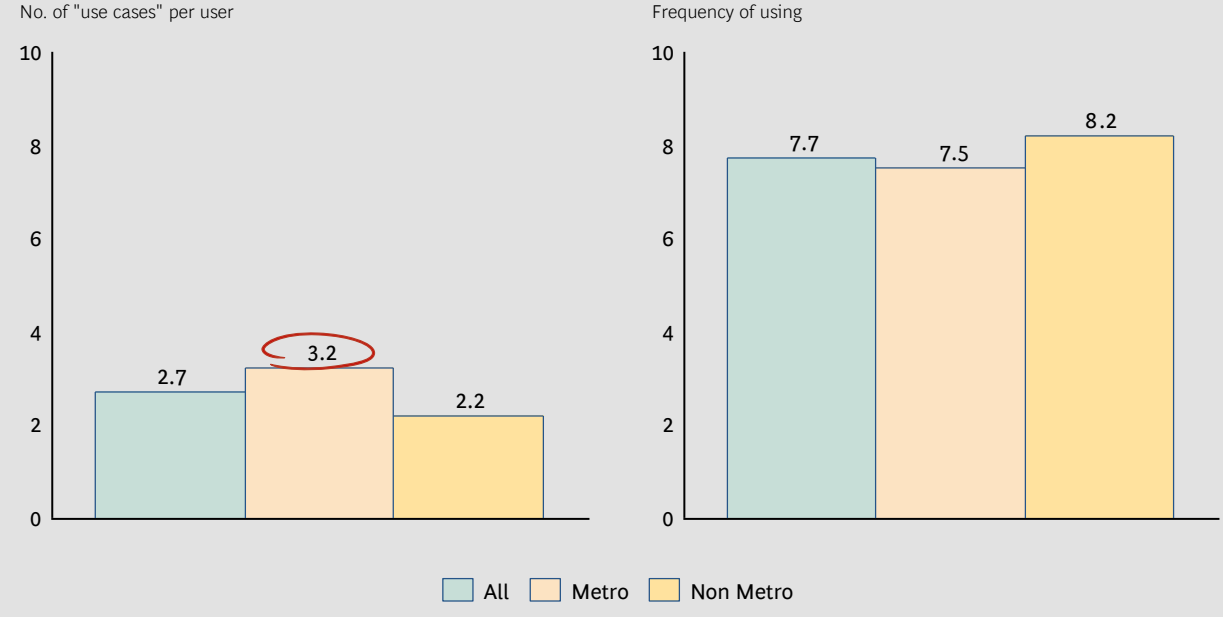
Consumers have hitherto been used to paying in cash. For digital payment instruments

EXHIBIT 3.3 | Consumers Open to Trying Digital Payments for Large Format POS Purchases in Future



Sources: Google–BCG market study based on Nielsen consumer survey of 1,516 consumers, 2016.
Note: Figures in (%). Sample–Total.
Question: Mentioned list of regular payments that we make during the month, please tell us which ones are you most likely to use digital payment instrument.
[1]Professional Services include school and tuition fees, milk vendor, LPG cylinder booking etc.

EXHIBIT 3.4 | Digital Payments: 3 Use Cases Per User; Used 8 Times Per Month



Sources: Google–BCG market study based on Nielsen consumer survey of 1,516 consumers, 2016.
Note: Figures in (%). Sample–Trialists.
Question: Please tell us approximately how many times have you used digital payment instrument to pay for the following products / services.

to achieve adoption and scale, they need to almost become a habit. Hence, frequency of using the instrument becomes very important. Much like cash, a digital payments instrument should be usable for multiple, high frequency everyday transactions. These may by very nature be small in amount. For example, online mobile recharge has been a predominant use case for digital payment instruments —small in value (so the new, unevolved consumer could trust), frequent (95 percent of telecom users have prepaid connections which they recharge 2-3 times a month), and a commodity product (no quality variations with location of purchase). Quite a few digital payment instruments got initial traction through online mobile recharge. Since then, the list of use cases of digital wallets has expanded to cover other frequent payment transactions like utility bills, e-commerce and local transportation.

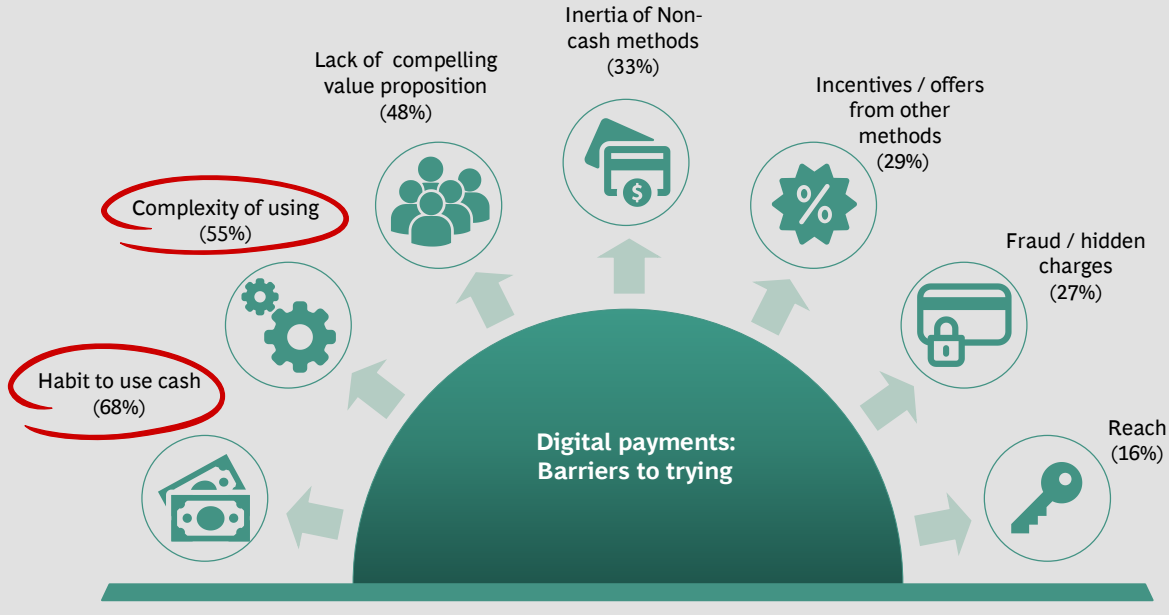
An average user of digital payment instrument today uses the instrument across stays three different use cases, and typically uses the instrument 7-8 times in a month (Refer Exhibit 3.4).

Habit to use cash, complexity and perceived lack of value proposition key barriers to adoption

While consumers have exhibited an enthusiastic response towards digital payments, they have also voiced several concerns that act as impediments preventing their shift to and belief in digital payment methods.

- **Habit to use cash:** A large percentage of the Indian population is still habituated to cash even when making online purchases with 68 percent of the surveyed consumers admitting to using cash as a means of payment (Refer Exhibit 3.5). This has led all leading national and international players in the e-commerce arena to include cash on delivery as an option to suit Indian consumers. Consumers also feel that spending money in cash aids in budget management and keeps spending patterns in check. Although they acknowledge that handling cash is inconvenient, they are satisfied with the way it works and are not enthusiastic about changing how they handle money very easily as it is so ingrained in their day-to-day life.

Exhibit 3.5 | Key Barriers for Adoption



Sources: Google–BCG market study based on Nielsen consumer survey of 1,516 consumers, 2016.
Note: Figures in (%). Sample–Non Users.
Question: On the card are some reasons why people do not use digital payments. Please select all those that apply to you.

- **Complexity of usage:** Product complexity is considered to be one of the biggest reasons behind non-usage of digital payments. 1 in every 2 non-users do not use digital payments because they find it 'too complicated' to understand. (Refer Exhibit 3.5). In fact, 1 in 3 non-users admit to not knowing how to use the product while 1 in 5 think it to be too complicated to try. As digital payments target heterogeneous user and merchant segments across the value chain product design needs to ensure that the solution is built for the base and communicated appropriately. This is critical for universal acceptance. In comparison, cash is still the most preferred instrument of payment, simply because of its absolute ease of understanding even though it is not the most convenient option. Payment innovations have to ensure increasing simplicity of the product. A large range of value propositions, standards and technologies are likely creating confusion and excluding unevolved users, unless they are communicated clearly and built for the base.

- **A Perceived lack of compelling value proposition:** About half of the users who had never tried a digital payment instrument, said that the reason they haven't used it is because they could not fully comprehend the benefits or value. It is evidenced in the fact that they have not heard a lot of people use or talk about digital payments. This does not give them a very strong motivation to alter behavior or adopt digital payments.

For non-users, the chief barriers to trial are habit of using cash, complexity, and lack of a compelling value proposition offered by a digital payment method. In order to acquire customers onto a digital payment instrument, certain key points need to be addressed by the payment service providers. The offering can be made more appealing through incentives and offers to enable adoption. In addition, the user interface needs to be intuitive and simple to ensure a seamless customer experience. To drive mass adoption by consumers, expanding merchant acceptance is critical. Providers can also look to educate customers and communicate the benefits clearly.

Inconvenience, low reach and possibility of making mistake arresting usage

Consumers who have tried using digital payments but have now shifted to other modes such as cash, card, online banking etc., say that inconvenience of remembering login credentials, insufficient acceptance, possibility of a technical or human mistake during a transaction and frequently running out of balance are the top reasons for lapsing (Refer Exhibit 3.6).

To win back churned consumers payment service providers need to address critical pain points. For example, introducing biometric authentication would eliminate the need of multiple user names and passwords. Furthermore, acquisition and integration of merchants under the system would increase the use cases and thereby increase acceptance of digital payments. High frequency transactions must be brought under the ambit of digital payments to urge consumers' movement in that direction. Auto-sweep features can aid in addressing low account balances and the maintenance of requisite minimum balances in the digital payment account.

Security, identity theft and fraud are not big barriers in India

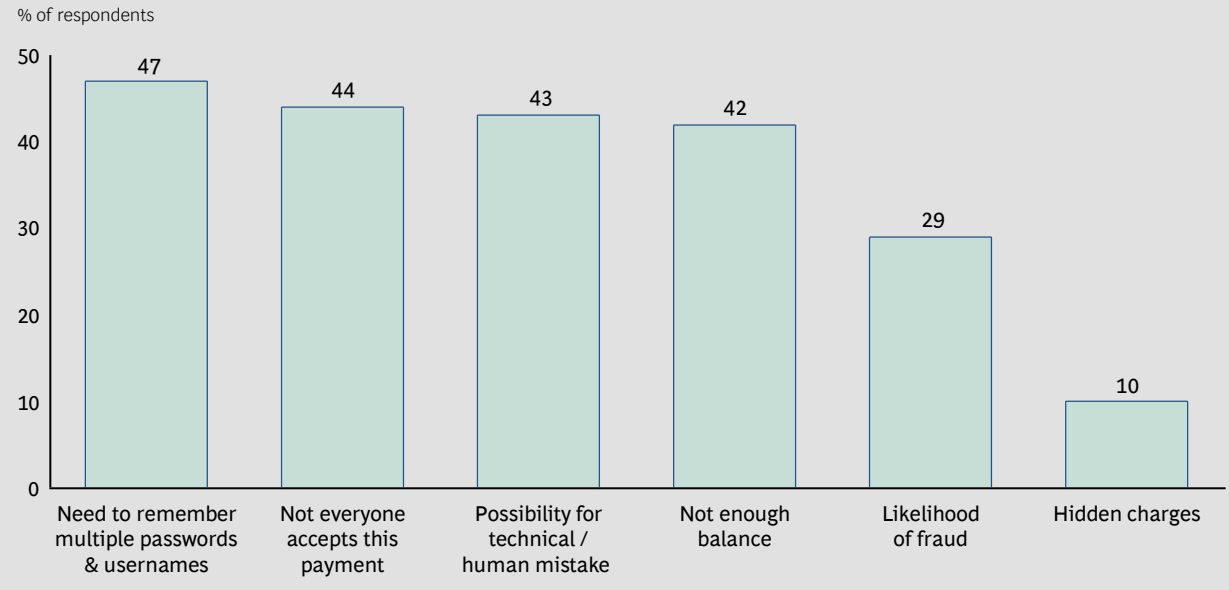
Primary research data indicates that fraud and hidden fees do not emerge as top reasons hindering digital payment instruments. In fact, 2 in 3 consumers who have never used any digital payments instrument, have no fear of fraud / hidden charges (Refer Exhibit 3.5). Even for those customers who tried and quit, the likelihood of fraud, identity theft and hidden charges did not feature as prominent pain points (Refer Exhibit 3.6).

Unlike global markets, security, privacy and fraud are not top of mind concerns

3 out of 4 merchants believe digital will grow big, accelerating future sales

According to 84 percent merchants participating in the survey, the most important driver for digital payment usage amongst

Exhibit 3.6 | Reason for Stopping Usage of Digital Payments



Sources: Google–BCG market study based on Nielsen consumer survey of 1,516 consumers, 2016.
Note: Figures in (%). Sample–Lapsers.
Question: Please tell us what are some problems you have faced with this type of payment? Please answer basis your personal experience only.

merchants, who are aware of digital payments, is convenience over cash. The research also highlights the fact that most merchants struggle with small change, with some literally paying money to obtain the requisite change to manage their day. Merchants value the avoidance of this struggle for change, the convenience of not having to store and manage cash, and the added benefit of being able to account for and track transactions.

75 percent of merchants believe that using digital payments would accelerate future sales.

The possibility of additional sales is another primary motivation that draws merchants to digital payments. 75 percent of merchants believe that the acceptance of digital payment instruments would accelerate future sales (Refer Exhibit 3.7).

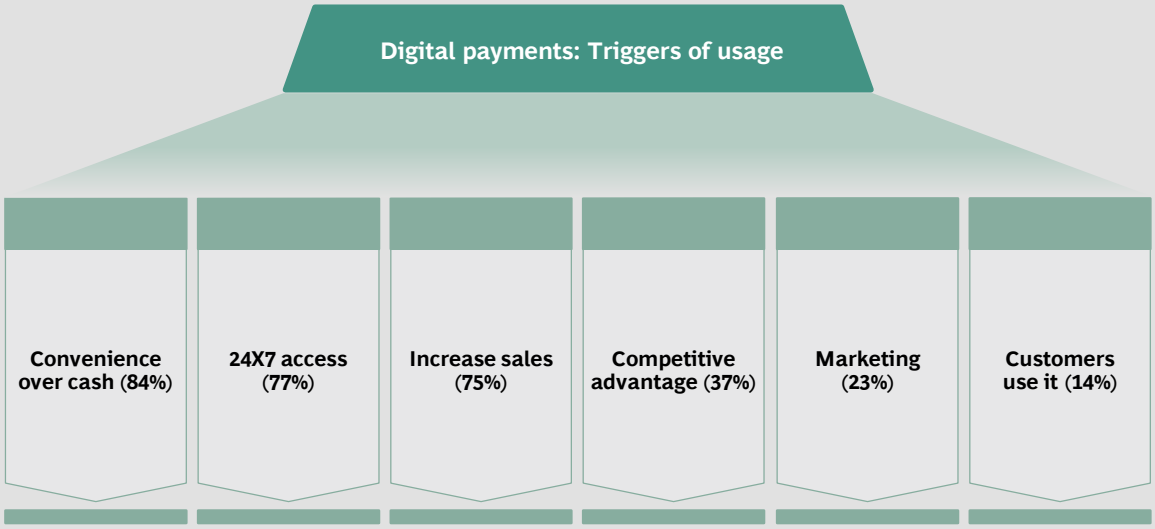
No clear benefits, proclivity towards cash and complexity are key barriers for merchant trials

87 percent merchants who have never tried digital payments state that digital payment instruments do not offer significant advantages / value benefits over existing methods such as cards. They are used to dealing in cards and believe that other methods provide better incentives and given many other options, there does not exist a catalyst to drive adoption of digital payments (Refer Exhibit 3.8).

Transactional speed is critical while competing with cash. Even though time saved in managing large bills in cash, finding change, or engaging in daily cash counts and bank trips is acknowledged, the loss of time in peak hours due to time consuming transactions and falling quality of customer experience given delays in accepting digital payments are perceived to be serious challenges. 78 percent merchants prefer cash.

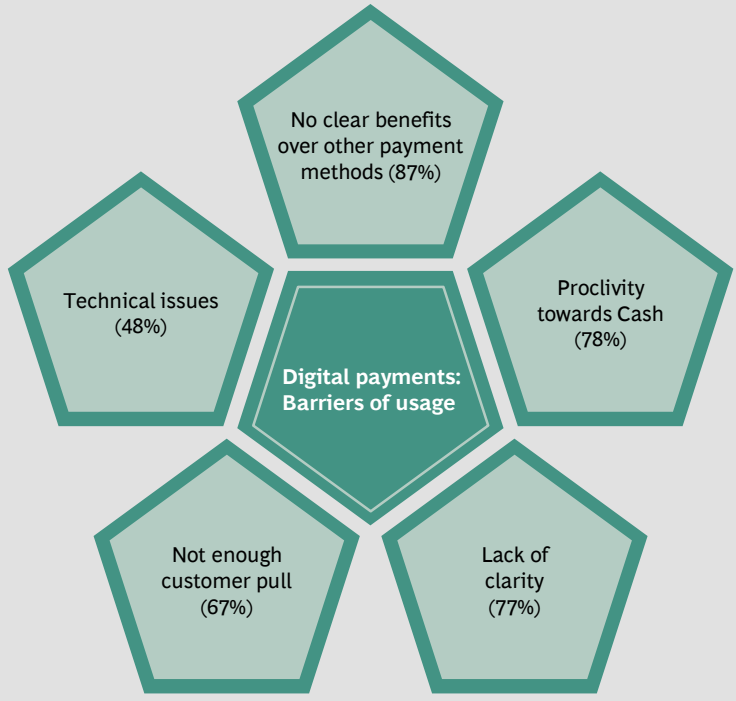
The complexity of use presents a problem for merchants—some merchants who don't

Exhibit 3.7 | Trigger for Digital Payment Usage for Merchants



Sources: Google–BCG market study based on Nielsen consumer survey of 1,516 consumers, 2016.
Note: Figures in (%), Sample–Trialists.
Question: On the card are some reasons why sellers / businessmen started accepting digital payments. Please select all that apply to you.

Exhibit 3.8 | Key Barriers for Merchant Trials



Sources: Google–BCG market study based on Nielsen consumer survey of 917 merchants, 2016.
Note: Figures in (%). Sample–Non Users.
Question: What are the reasons for not accepting digital payment instruments. Please select all that apply to you.

accept payments by wallets, are unclear of how it works or find it very complicated. They also feel that there is not enough pull from customers as not many customers currently ask to pay using digital payment instruments.

Proclivity towards cash, complexity and perceived lack of value proposition are barriers for trials

A real problem that is also presented by digital payments is the perception of inferior technology and poor supporting infrastructure. 48 percent merchants do not want to try digital payments as they are wary of technical issues during the transaction leading to them being stuck between the payment service provider and customer. Merchants would also prefer having a physical access point for managing disputes or for query resolution.

Education, in-store demonstration or workshops etc. would be crucial in on-boarding of merchants. Providing resources to merchants in seeking assistance and information on platform usage or queries would encourage merchants to invest in a good internet network, leading to seamless transaction speed and quality. It will help in retaining higher number of merchants in the digital system.

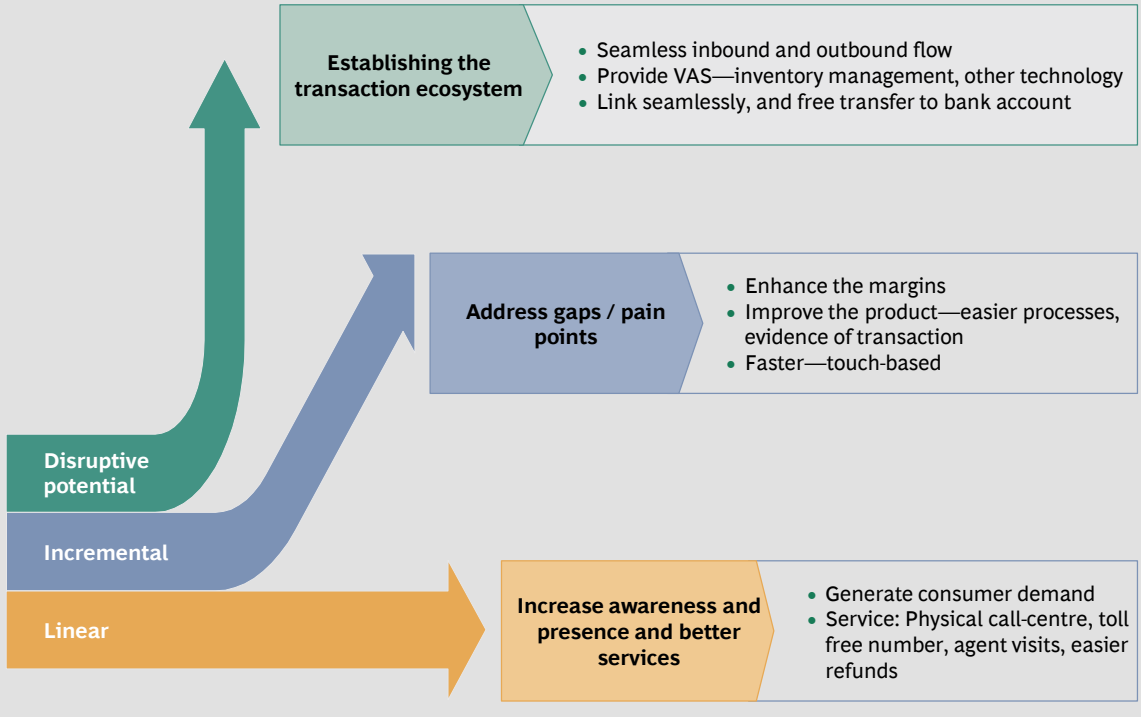
Building a transaction ecosystem for merchants is critical

Cash is deeply embedded in the ecosystem that small merchants operate in. Customers rarely ask to pay digitally and the upstream supply chain also demands payments in cash. To ensure universal acceptance is built, digital payments players need to ensure a gradual transition into customers and merchant transaction ecosystems (Refer Exhibit 3.9).

- **Linear adoption:** Increase awareness and presence and offer better support.

  The digital payments instrument must generate merchant demand by driving trials and adoption, as well as through a sim-

Exhibit 3.9 | Merchant's Ideal Digital Payment Instrument



Sources: BCG analysis, Google–BCG market study based on Nielsen consumer survey of 917 merchants, 2016.

ple and convenient merchant acquisition process. Both the on-boarding and the fee structure need to be kept highly simple, especially for the unorganised retailer. Further, payment service providers must ensure requisite support is provided in the form of call center / agent support, toll free numbers, and transparent processes (for example in case of disputes, refunds etc.). This will provide the required confidence to merchants to come on to the digital payments platform.

- **Incremental adoption:** Address need gaps and pain points.

  In order to drive merchant adoption of digital payments, it is imperative for payment service providers to improve the products offered—with easier processes, reporting, reconciliation etc. Digital payments should be faster—for example, touch based. Merchants are worried about long queues if that transaction takes time to complete. This has to be given disproportionate importance to drive large scale offtake. Further, digital payments players will need to develop more use-cases where digital clearly beats cash, to ensure momentum of changed user habits to carry through in situations where benefits of digital payments are not that differentiated.

- **Disruptive potential:** Establishing the transaction ecosystem.

  The acceptance of money in digital payments for merchants is directly linked to their ability to pay their distributors and vendors through the same instrument. Establishing this transaction ecosystem helping merchants manage their inbound and outbound transactions will be critical to drive universal acceptance.

Finally, while cost savings and convenience will establish value with merchants, globally the single most important reason which has driven traction with merchants is getting more sales, through co-marketing campaigns, rewards or incentives programs and leveraging the network and data of the payments player. Further, in primary research merchants have shown great interest in value added services such as integrating with payments platform to provide customer features, like order ahead, pre book etc.—providing value both to customers and merchants.

The digital payment offering of the future needs to combine the simplicity and universality of cash, with the security and convenience offered by digital payments. Intuitive consumer interface with option of vernacular languages and biometric authentication will drive mass adoption while complimenting it with greater coverage and acceptance at physical point of sale will lead to its sustained usage. The payments players would also need to ensure that unlike the present wallet, a completely fungible and interoperable system is created between the digital payment instrument and the customer's bank accounts. Not just would this provide added convenience to customers but would also lead to systematic tracking of money flows, better planning and even limits and alerts on money movement. In terms of monetary benefits, the amount stored in current wallets does not earn any interest whereas making wallets interoperable and fungible with bank accounts will make wallets a potential candidate for earning interest income. Not just this, instead of paying a fee for cashing out to bank account, merchants can utilise the data and insights from usage pattern to market customised offerings and grow their business (Refer Exhibit 3.10).

In summary, digital payments in India is in a unique position—given the nature of the product, ubiquity of acceptance is a must, and hence mass appeal which can harness the power of network effect and push the product universally is a pre-condition to success. At the same time, there is intense heterogeneity of the user, use cases, motivations, attitudes and barriers towards digital payments. The right product thus has to cater to both these seemingly conflicting needs—have mass appeal, and yet be able to cater to all these varying needs in a customised manner.

EXHIBIT 3.10 | The Future Digital Payment Instrument Needs to Offer Similar Functionality as Cash

Usage	Cash	Digital payments – current offering	Digital payments – opportunity
Simplicity	• Universally recognized • No language	• Too complicated	• Needs to be intuitive • Include product variants in local languages • Technology like biometrics for KYC and authentication
Universality/ Reach	• Accepted everywhere	• Limited reach – 50% users lapse due to this	• Cover both physical POS and online • Mass linkage of use-cases
Fungibility and Access	• Completely fungible	• Limited cash-in and cash-out points	• Interoperability amongst digital instruments and bank accounts • Shared infrastructure for fungibility and access
Speed	• Cash is fast	• Time consuming, especially at point of sale	• Use of technology like tap and go (NFC, QR codes) • Improving infrastructure connectivity
Ease of trial and onboarding	• No onboarding required	• Merchant onboarding for education and documentation	• Easy documentation, quick and hassle-free KYC processes will incentivize onboarding
Cost	• Perception of little cost—Cost of cash is implicit, not realized	• Merchants pay fee to cash out / transfer money to their banks • In PPIs—consumer losses interest and ready cash	• Communication of cost of cash • Payments Bank linked wallet will provide interest on wallet balance • VAS for merchants—data, insights, marketing and feature benefits to grow sales and save costs
Tax	• Tax management opportunity	• Systemic / policy change required	• Systemic / policy change required
Managing expenses	• Perception of control—helps manage costs	• While considered an impulse buy, does provide a record of expenses	• Better customized interfaces to enable users and merchants to see spend amounts, categories and options to plan better, put ceiling or alerts, etc.
Convenience	• Managing cash and ensuring ready change is a hassle	• Primary usage driver for both consumers (66%) and merchants (84%) already	• Integrating user interaction, consumption, payment • Use of geo-tracking, consumer analytics • Link with merchant platforms to provide pre-order type facilities to ease buying and payments
Customization	• Not Applicable	• Communication and offer based	• Technology addresses personal needs • Enhanced financial products basis consumer data
Security and risk	• Risky to carry	• Trust not a barrier	• Improve technology to increase trust • Call center, agents for grievance redressal • Consumer education

Source: BCG-Google analysis.

INDIA DIGITAL PAYMENTS – A $500 BN POT OF GOLD

Increasing smart phone penetration, greater access to the Internet, rise in consumption and the rapid development of payments infrastructure is set to drive the penetration of digital payments in India. We expect the digital payments space to witness significant disruption in the days ahead.

The Future of Digital Payments in India

While the exact form and shape of disruption will only be unveiled over time, the crystal ball indicates seven trends set to transform the payments landscape over the next five years:

1. Technology will make digital payments simpler
2. Merchant acceptance network to grow 10X by 2020
3. Payments will drive consumption—and not the other way around
4. Consolidation will drive ubiquity
5. Modified UPI will be a game changer
6. Digital identity will accelerate customer acquisition
7. Cash to non-cash ratio will invert over the next ten years

Technology will make digital payments simpler

Widespread adoption of digital payments will require such transactions to be just as convenient and safe, if not more, as cash. This is only possible with new solutions being developed to make digital payments easier for customers as well as merchants. Smartphones are expected to displace cards, ATMs and POS as an issuing and acquiring device. Ubiquitous connectivity, biometrics, tokenisation, cloud computing and the Internet of Things are just a few of the trends that will affect the way consumers transact and interact with payment service providers in the future.

Some payment innovations that could be relevant in the Indian context are:

- **Contact-less payments:** Near-Field Communication (NFC) has not been very successful in the Indian context on account of the high costs associated with embedding it in smartphones as well as merchant terminals. However, other forms of contact-less payments that have worked in emerging markets like China may be more appropriate. For example, the use of QR code technology can make point-of-sale mobile payments convenient. Customers will just need to flash the mobile app with the QR code at check-out, which can be read by the cashier and accordingly the amount can be debited from the

customer's wallet / account. Customers authorise the transaction using a simple 4-digit pin or biometric scanners.

- **Reduced dependence on mobile internet:** Even though penetration and usage of the internet on mobiles is continuously increasing, mobile data networks in the country are still unreliable and expensive for certain customer segments. Technologies that require only one of the two transacting parties to have access to mobile data can significantly drive up transaction success rates and further adoption of mobile payments.

- **Internet of Things:** We expect that the Internet of Things will fuel online transactions in the next few years. Automation and connectivity of gadgets and devices will become seamless. Customers will be able to initiate a purchase and / or payment from any electronic gadget at their home or office. For example, consumers could use an internet connected refrigerator at home to order groceries and pay for it real-time using a digital payments instrument.

- **Block chain:** Technologies like block chain could be used to create digital currency (like bitcoin) making peer-to-peer digital payments seamless and secure.

- **Voice based payments:** Banks and payments service providers could offer solutions that enable customers to log in and pay through voice-based authentication. This would mean that customers no longer need to enter a PIN or a password while shopping as the app can compare stored voice recordings to verify each transaction through a simple voice phrase. This will allow aged and illiterate users to easily access such services and drive acceptance / penetration further.

- **Biometric / Iris authentication through mobiles:** NTT Docomo has launched smartphones with iris recognition capability. This makes transaction facility on the phone accessible only to the primary user of the device. The cost of adding this feature to the phone is less than INR 500 and costs are expected to further decrease. In the future, a significant proportion of phones could be iris enabled, making online authentication simpler.

In summary, while the exact uptake and penetration of different technologies is unclear, it is obvious that technology will be a key disruptor and further developments will make digital payments simpler, more convenient and easier to use.

Merchant acceptance network to grow 10X by 2020

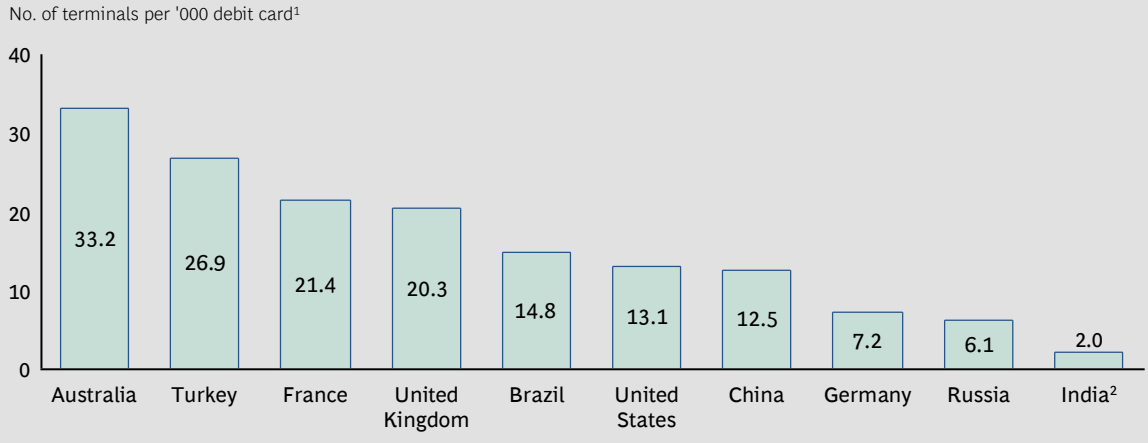
The merchant acceptance network for cards in India has by and large been stagnant for the last several years. With approximately one million POS terminals accepting card payments at an estimated 700,000-800,000 merchant outlets, it is one of the most under-penetrated in the world (Refer exhibit 4.1). The potential of this segment is estimated to be nearly 15 million establishments including unorganised retail and small "mom and pop" stores.

One of the key reasons for this low penetration has been the high cost of "terminalising" merchants. Despite the cost of EDC machines coming down significantly over the last several years, a certain minimum threshold of transactions is still required to recover cost of deployment and maintenance. Further, the current economics of the merchant acquisition business make it unviable for acquirers.

We believe that mobile based payment solutions will significantly drive merchant acquisition. The use of technology will create solutions that require nil or minimal additional investment on point-of-sale hardware. Use of proprietary or mobile based payment networks is expected to make economics more attractive for both merchants and acquirers. Primary research indicates that merchants believe accepting digital payments could help boost their sales, and are open to accepting payments through mobile provided fast and convenient solutions are available.

Offline is an indispensable channel to attain scale of digital payments. It also provides extensive richness of consumer profiles by be-

EXHIBIT 4.1 | POS Terminal Penetration Across Countries



Source: Euromonitor 2015, BCG Payments Model 2015.
[1]Data is for year 2015.
[2]Includes debit cards issued under Pradhan Mantri Jan-Dhan Yojana (PMJDY).

ing able to merge offline and online behaviour. An offline strategy should involve analysis of customer lifecycles for use-cases to identify points of value addition for customers and merchants. We believe that offline should, and will be a priority, for all payment service providers.

Take the example of China. Both Alipay and Tencent are leveraging offline, albeit in different manners, basis their strengths. Alipay is using its massive scale to challenge Union Pay (credit and debit cards) by signing up more Points of Sale (POS), partnering with large retailers (7-Eleven, In Time Retail), using strong promotional schemes (offering discounts offline of up to 50 percent at restaurants and supermarkets) and offering international shopping offers to high-end customers. WeChat (Tencent's instant messaging service) on the other hand, is using its chat platform to deeply integrate with user behaviour. Peer-to-Peer (P2P) transfers are encouraged through WeChat messenger, adding value to merchants with WeChat service accounts. Merchants can also engage with customers on WeChat, for food orders, store location services, reservations, customer service etc.

In light of all of the above point, we estimate that 10 million plus merchant establishments will accept digital and mobile based payments by 2020. This will be a key factor in driving the penetration of digital payments in the country. This 10 million is expected to come from the current 15 million universe, plus the potential use with "mobile merchants", for example, newspaper vendors, milkmen, cable TV providers, insurance agents etc.

Merchant acceptance network likely to grow 10X over next 5 years

PAYMENTS WILL DRIVE CONSUMPTION—AND NOT THE OTHER WAY ROUND

Digital payments will enable payment service providers to get access to customer transaction data, and will soon become a ubiquitous ecosystem comprising marketing, transactions and payments. Customer will be offered digitised valuables such as offers, coupons, loyalty points, rewards, etc. from multiple brands while enabling payment transactions through the use of data and analytics. It will work parallel to merchants' apps complementing them and engaging with users, thereby providing a seamless shopping experience and giving merchants a presence on customer's mobile device. Digital payments will pivot into an ex-

perience influencing consumption going beyond payments.

Consolidation will drive ubiquity

The last few years have witnessed the entry of several participants in the payments space, with many of these being non-bank entities such as PPI's, telcos etc. Some of these players have focused on providing niche or limited solutions. Most of these players have been subscale and have not been able to acquire critical mass with some even shutting down operations.

Primary research indicates that customers prefer ubiquitous solutions to using different payment instruments for different use-cases. Smartphones shipped to India are often stripped down versions, and have less memory, limiting the number of apps that can be downloaded and stored therein. Given all this, customers would prefer to have fewer wallets / apps with multiple uses than several single-use apps.

This will drive consolidation in the payments industry. Niche or single use case solutions / apps will get acquired by larger players, in the quest to develop universal and ubiquitous solutions. This is also likely to increase throughput or velocity of transactions happening through digital payment instruments.

Modified unified payments interface (UPI) will be a game changer

NPCI's Unified Payments Interface is aimed at enabling interoperability between financial instruments using a mobile interface. As outlined earlier, UPI is an open architecture system, wherein any payment service provider connected to UPI will be able to provide payment and payment management solutions to users registered on UPI. This would enable multiple use-cases on the UPI platform—including peer to peer payments, person-to-merchant payments and business-to-business payments. Furthermore, users will not have to remember cumbersome details like MMID numbers, branch IFSC codes etc. to make payments with only the UPI ID sufficing to carry out transactions. UPI will also have a two-factor authentication process to ensure security of financial transactions.

UPI is currently in very early stages, and hence, a few challenges are yet to be overcome. Firstly, NPCI needs to ensure the integration of leading banks, PPIs and other financial institutions on this platform. This is expected to be difficult and time consuming. Secondly, providing a seamless and consistent experience to customers across mobile banking platforms of varied banks will not be easy. Finally, ensuring that all users are able to generate UPI virtual IDs on their own, will be significant to the success of this initiative, especially for merchant transactions.

Despite these challenges, UPI holds the promise of being a game changer for the digital payments world. If suitably modified to overcome challenges, it can drive large scale adoption of digital payments in the country, in times to come.

Digital identity will accelerate customer acquisition

Using Aadhar, for online authentication and confirmation of KYC data, will boost growth of digital payment systems. Payment service providers will be able to acquire customers digitally, significantly bringing down customer acquisition costs and improving economics of the digital payments business. This will also transform customer experience as customers will be seamlessly on-boarded on to the digital payments platforms.

Cash to non-cash ratio will invert over the next ten years

Traditionally, India has been a cash economy. Cash lends itself to certain characteristics of universal acceptance, with no language barrier, simplicity of use and speed of payment due to which Indian customers have largely preferred dealing in cash. Currency in circulation in India accounts for 18 percent of the GDP versus 3.5-8.0 percent in mature markets such as UK, USA etc. India lags behind mature markets as well as key emerging markets such as Brazil and China in the move towards a cashless economy. In 2015, cash contributed to just 20-25 percent of overall consumer payments in developed nations, for example, US, UK, France and Germany as compared to 78 percent in India. Of the remaining 22 percent, 13 percent comprises digital (including NEFT, RTGS, internet banking and mobile banking), 7

percent are cards, and 2 percent are paper (cheques) (Refer Exhibit 4.2).

While India has traditionally been a cash-centric economy, the contribution of cash for transactions has seen a decline at a rapid rate. In 2015, 78 percent of all consumer payments were made in cash, down from 89 percent in 2010 and 92 percent in 2005 respectively. Over a 5-year period from 2005-2010, the rate of decline in cash contribution was 0.8 percent whereas from 2010-2015, this same metric was at 2.6 percent, indicating a rapid increase in adoption of non-cash instruments such as cards and digital payments (electronic / ECH payments, mobile wallets etc).

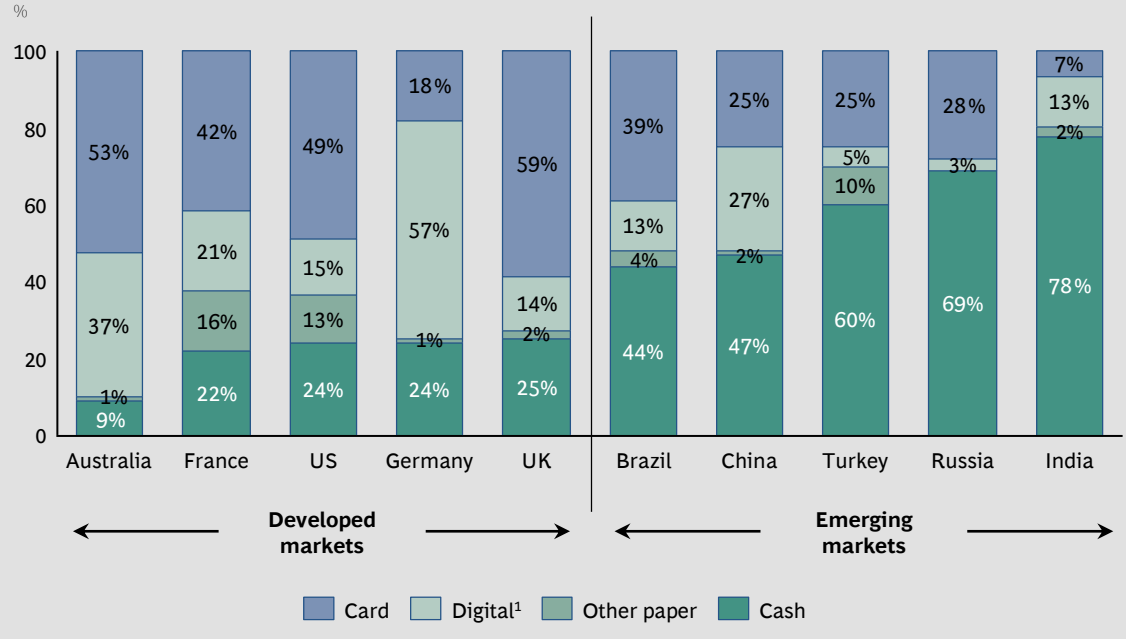
"Digitisation of cash" will accelerate over the next five years with non-cash transactions overtaking cash by 2023. We expect the trend of increasing penetration of non-cash payments to continue at a faster pace (Refer Exhibit 4.3) The increase in the contribution of non-cash payments would, inter alia, be significantly and substantially aided by the penetration of digital payment instruments. This "digitisation of cash" would be supported by several macroeconomic and demographic factors in India, along with the new developments expected in the digital payments space.

Proportion of non-cash transactions will overtake cash transactions by 2023

The non-cash contribution for payment transactions is estimated to increase from 22 percent today to 40 percent by 2020 and 59 percent by 2025. Within the pool of non-cash payments, digital payments are expected to contribute to an extent of 26 percent by 2020 and 37 percent by 2025 (Refer Exhibit 4.4). By 2025, cash contribution in India is expected to match current cash levels of emerging markets at 40-45 percent.

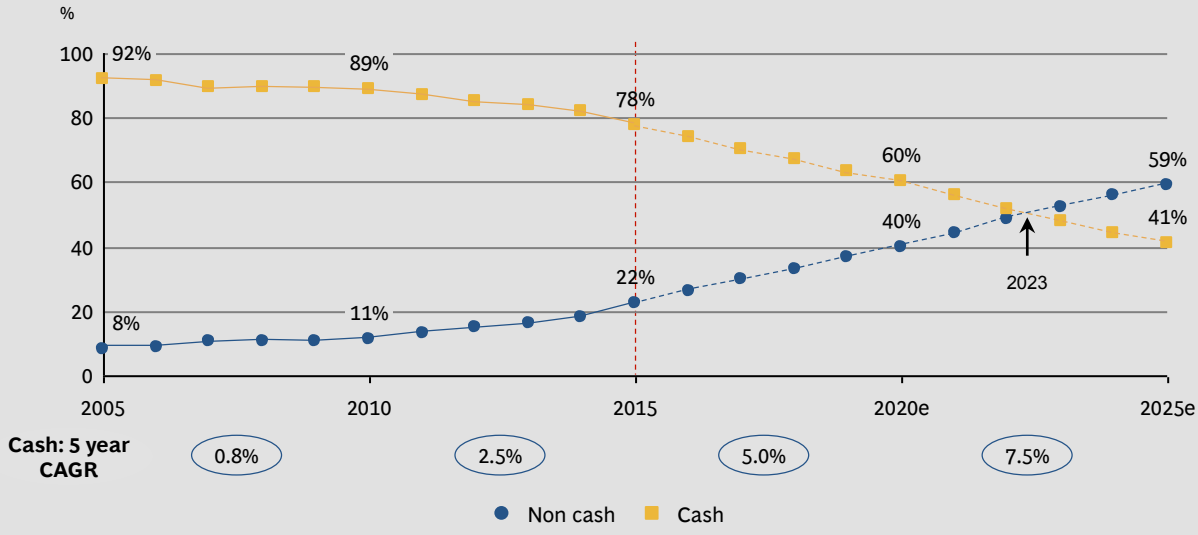
Alternate digital payments instruments will drive the growth in non-cash payments. Alternate digital payments have grown exponentially in the past few years. Stored

Exhibit 4.2 | Payment Instrument Mix for Countries (2015)



Sources: BCG Global Payments Model 2015, Reserve Bank of Australia Annual Report 2014, Euromonitor Passport, 2015
[1]Digital includes electronic payments direct/ACH, mobile based payments etc.

EXHIBIT 4.3 | Value of Consumer Payments — % Cash vs. Non–Cash (Paper, Card and Digital)

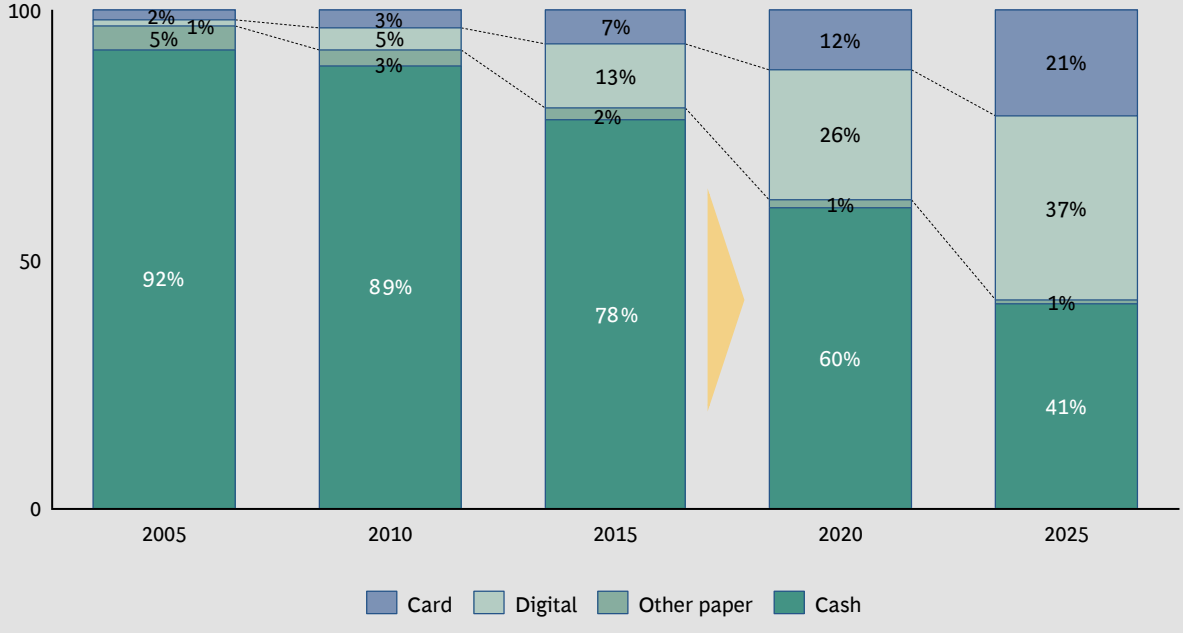


Sources: BCG analysis, Euromonitor Passport, 2015.

value instruments like mobile wallets (Paytm, MobiKwik, Freecharge), store credits, prepaid and gift cards etc. have made payments through internet devices convenient and easy. These instruments can be recharged with required value through cash, money transfers from bank accounts or even by debit or credit cards. The prepaid amount can then be used as per customer requirement.

Digital payment instruments can also store information such as the credentials of an ex-

EXHIBIT 4.4 | Digital Growth Journey from 13% in 2015 to 37% in 2025



Source: BCG Analysis, Euromonitor Passport, 2015.
[1]Digital includes electronic payments direct/ ACH, mobile based payments etc.

isting payments instrument, making the payment process at the point of purchase simpler. NPCI's Unified Payments Interface (UPI) is also expected to support interoperability in stored information as well as stored value instruments.

Digitisation of Payments is a Large Opportunity

The large spectrum of payment use-cases in India can be illustrated using two axes, one being the source or origin of payment transactions, and the other being the destination of the transaction. We have considered three types of entities—individuals (or Persons), business entities (or Merchants) and the Government and correspondingly classified payment use-cases into nine categories (Refer Exhibit 4.5).

Large size of prize in India

Volume: It is our estimate that approximately 30 billion payment transactions happen in India every month across these use-cases. This translates into almost 1 billion transactions per day. Of these, "person-to-merchant" or P2M transactions are the largest, contributing to about 16 billion transactions per month (nearly 530 million transactions per day). P2M transactions include food and grocery payments—both organised and unorganised, bill payments, mobile recharges, unorganised transport, organised transport (radio cabs, air and train travel), e-commerce, modern trade, entertainment etc.

User Base: If we look at the number of users in the digital payments instrument segment, estimates indicate that customer base is set to increase from 60-80 million users currently to 300 million by 2020. Digital payments users will comprise 50 percent of all internet users by 2020. While multiple heterogeneous customer segments such as urban affluent, mass aspirers, migrants and rural next billion exist today; the top 100 million internet users will drive more than 70 percent of value of transactions through digital payments instruments.

Value: Digital payments instruments can be used across the full spectrum of payments use-cases. We estimate the total payments on digital payments instruments to be in the range of USD 500 billion by 2020, up from

Exhibit 4.5 | Variety of Payments Use Cases

Payment Initiation \ Payment destination	Person (P/C)	Merchant / Business (M/B)	Government (G)
Person (P/C)	• Remittances – Domestic—migrant labor remittances – International • Seamless P2P transfers – Friends, family, etc. • Digital micro payments – Payments for services	Digital payment instrument for • Online merchant payments – E-comm, Utility bills, etc. • Proximity payments – In-store payments – Cash on delivery • Travel and transport	• Road toll • Tax • Payments for applications • Payments to semi government organizations such as educational institutions
Merchant/ Bus (M/B)	• Salary payments for daily contract workers • Reimbursements • Refund payments • Dividends	• Digital supply chain payments (Small business to business) – Retailer to distributor – Dealer payments etc. • Vendor payments	• Taxes • Excise duty payments • Toll payments
Govt. (G)	• DBT (Subsidy transfers) • Welfare scheme money transfers e.g. NREGA • Government employee salary	• Subsidies • Tax repayments	• Central government to state government transfers • Budget allocation payments to government agencies

Source: BCG analysis.

current estimates of approximately USD 40-50 billion. The largest contributors to this growth would be P2M (USD 200 billion), B2B (USD 150 billion) and P2P (USD 45 billion). On the other hand, we believe that G2B and G2G transactions will not utilise alternate digital payment methods significantly (Refer Exhibit 4.6). With a transaction fee on these transactions in the range of 0.50-0.75 percent (for B2B) and 2 percent (for P2P), the Indian digital payments industry could be worth approximately USD 5 billion in revenues by 2020.

USD 500 billion will flow through digital payments in India by 2020

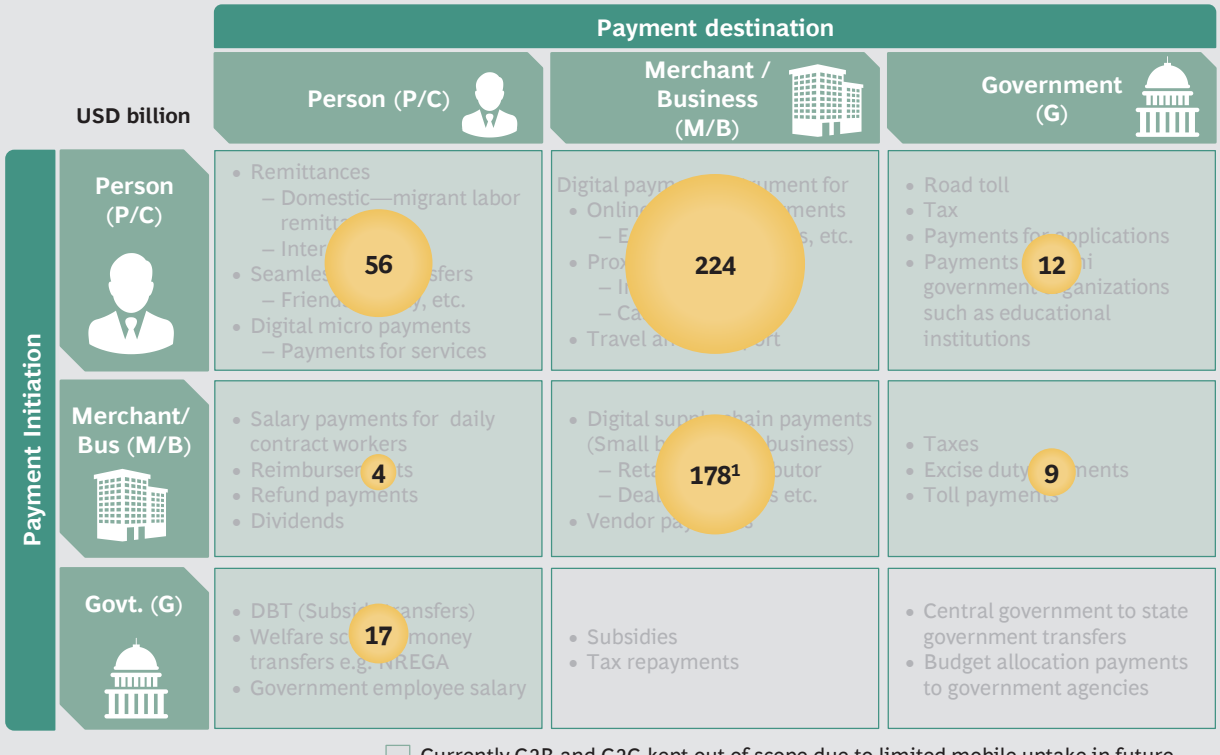
Merchant Payments (P2M) will be the largest use-case of digital payments

We estimate Person-to-Merchant (P2M) payments to constitute around 40 percent of total payments done through digital payment instruments. The universe for these payments is very large and even with moderate adoption estimates, this would translate to being the single largest use case for digital payments. Unorganised retail, rent and professional service payments (payments to doctors, school fees) and financial services payments (insurance premiums etc.) are expected to drive the growth in this segment. The remaining contribution in the P2M segment will comprise other use cases such as bill payments, organised healthcare, restaurants, modern trade shops, travel and e-commerce (Refer Exhibit 4.7).

Merchant payments will constitute 40 percent of digital payments

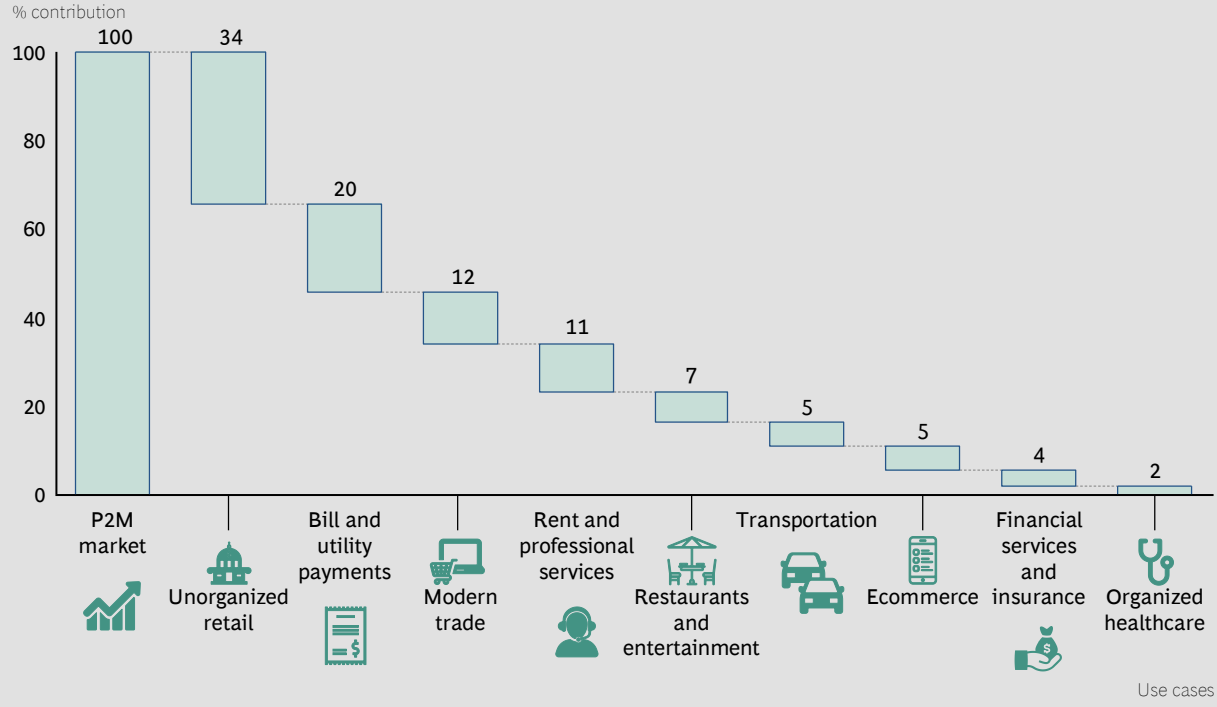
Micro-transactions (small ticket size of INR 100, high frequency transactions) are expected to form 50 percent of the total transaction value on digital payments instruments within

Exhibit 4.6 | USD 500 Billion will Flow Through Digital Payments in India by 2020



Source: BCG analysis.
[1]Includes only SME transactions and not large corporate.

Exhibit 4.7 | Projected P2M Sub Segments Share in 2020



Source: BCG analysis.

P2M payments by 2020. A critical criterion for digital payments' success is for them to translate into customer habits. Frequency of using the instrument, therefore, assumes great significance. Constraints of memory space in smartphones shipped to India cause any app that is not frequently used to be deleted. Therefore, much like cash, a wallet needs to be usable in multiple, high-frequency, everyday transactions to have relevance and consequence as these transactions by nature are small in amount. While there is large propensity for micro transactions to move to digital payments, a non-prohibitive fee structure will be important to render this into reality.

Business to Business (B2B) payments will gain traction

Another potential use-case of digital payments is the exchange of payments between small businesses and SMEs. Currently, these payments are largely made in cash or through bank cheques. As digital payment instruments gain prominence, we expect payment service providers to create customised solutions that cater to small businesses specifically. These could include supply chain payments, retailer to distributor payments, dealer and vendor payments etc.

The digitisation of supply chain payments could also play a key role in supporting the digitisation of P2M payments as retailers would be more comfortable accepting payments from consumers in digital currency. This would also enable them, in turn, to be able to pay their suppliers or distributors in a similar currency. We thus, expect B2B payments to become the second largest use-case for digital payments by 2020.

Digital Peer to Peer (P2P) payments to double by 2020

Remittances or Peer to Peer (P2P) payments through digital payment instruments have seen good adoption and growth over the past few years. We expect this trend to continue and estimate the penetration of digital payments instruments for P2P payments to grow from 15 percent currently to 30 percent by 2020. However, primary research indicates that there are certain challenges to overcome in order to make the digital remittance value proposition stronger.

A comparative analysis of prevailing modes of money remittances indicates that while traditional modes like banks, money orders and cash constitute top 3 modes, mobile wallets are the next preferred method. (Refer Exhibit 4.8). Digital payments offer convenience and 24x7 access to overcome issues related to timing, security and restricted usage synonymous with traditional methods. However, the fee incurred and limits on transaction amounts remitted via digital instruments act as deterrents to usage. Post offices, banks and cash remittances were perceived to be cheaper, though less convenient, while digital instruments, private companies and agents are perceived to be similar on charges.

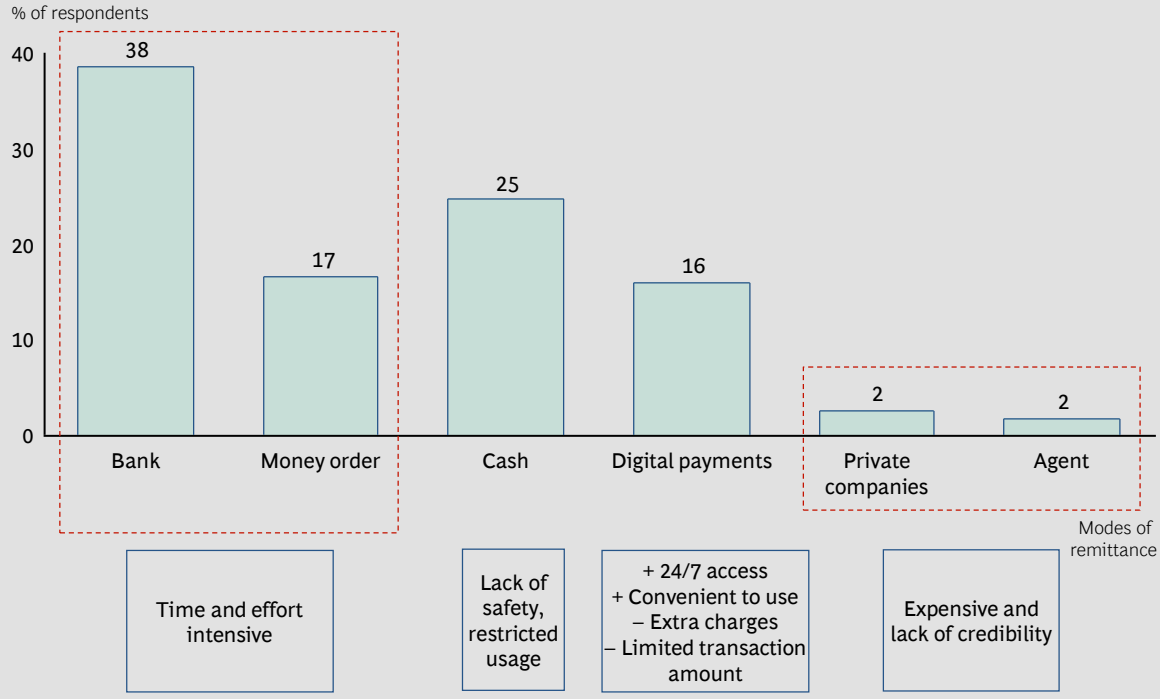
For existing remittance users, pain points include being habituated to cash, lack of product clarity and narrow reach leading to churn. In addition, concerns of not being able to access money in case of limited mobile network coverage or not being able to transfer money to bank accounts add to reasons why many customers have never tried a digital payment instrument for money transfers.

Payments service providers looking to acquire customers should invest in promoting the product and in educating the customer, equally.

Research also shows that the primary reason for needing such assistance is lack of product know-how and usage awareness as well as lack of understanding of English—both facets being progressively worse in non-metros. As digital payment service providers target users and sellers, the importance of customer education and regional languages is only set to grow.

In summary, the opportunity for digital payments in India is nascent yet quite sizable with trends being positive over the last two to three years. The seven key trends identified, we believe, will disrupt the payments space in India making it more digital over the next five years. This will include inversion of the cash / non-cash ratio for payment transactions over the next five to seven years. The erstwhile value of digital payment transactions could increase 10X by 2020 from current levels.

Exhibit 4.8 | Preferred Payment Methods for Remittance Users



Sources: BCG analysis; Google–BCG market study based on Nielsen consumer survey of 1,008 consumers, 2016.
Note: Figures in (%). Sample—Total base of remittance consumers surveyed.
Question: Which of the below-mentioned payment methods have you ever used to send money to your family/friends?

GRABBING THE OPPORTUNITY – THE WINNING AGENDA

Globally, we have witnessed the entry of several payments players over the past few years. However, only a few of them have really been successful. There are several success factors that we stand to infer from such successes and failures from addressing real customer needs or offering compelling customer value propositions, to leveraging next generation technology to deeper customer engagement.

Ten Point Agenda for Payment Service Providers

The past couple of years have witnessed many new entrants in the Indian payments space—though few have achieved economic scale or profitability. Players have experimented with various business models to monetise the payments opportunity. But the primary focus hitherto, has been on customer acquisition, reminiscent of the land grab models of the Wild West. Most PSPs are funded by PE money and currently focus on driving trials and usage—aided by deals and offers, promotions and zero-fee models. Hence monetisation models are not fully evolved in India.

The challenge faced by most is how best to clearly define an economically viable and sustainable model. Payments service providers need to take an end-to-end view of the payments opportunity in order to build a sustainable business model. In India, where digital payments compete with cash, which has no "visible cost" to the user, creative ways of monetisation will be required to make businesses viable.

We outline a ten point agenda to create a successful and sustainable payments play in India:

1. Address true customer needs
2. "Build for the base" with convenient, intuitive, easy to use and safe products
3. Optimise the network effect by building a ubiquitous network
4. Partner, Partner, Partner
5. Reduce entry barriers for customers: Charge merchants and not customers
6. Mine customer data to build additional revenue streams
7. Look beyond—from payments to broader financial services needs to consumption
8. Develop ecosystems to envelop customer needs
9. Exploit next generation technologies to build low cost and scalable solutions
10. Scale, Scale, Scale

Address true customer needs

Often, digital payments instruments have been akin to solutions looking for a problem, rather than a way to resolve existing problems faced by customers on a day-to-day basis. It is critical for payments service providers to identify pain points for specific user segments and address them.

There is no one customer segment for digital payments. Each segment and user archetype has different payment needs, different pain points, and different drivers of adoption. Hence, it is imperative that payment service providers must, first of all, be clear about the customer segment(s) that they are targeting. Moreover, it is critical to understand the specific need-gaps and pain points of such targeted customer segment(s) in order to resolve them and articulate value propositions to customers accurately. Generic solutions or solutions targeted at wrong customer segments have failed to work. For example, a remittance solution pitched to an urban, smart-phone savvy young customer by a leading telco did not gain critical mass, as it was not a relevant solution for the segment being targeted.

"Build for the base" with convenient, intuitive, easy to use and safe products

In a country like India that has largely been a cash economy, digital payment solutions are in constant competition with cash transactions. Hence, it is imperative to build solutions that are as easy as cash to use across all target user segments. This would entail selection of the right form factor, interface and user experience. We have seen some complex USSD based payment solutions that did not really succeed, as most customers found them too complicated to use.

Global experience indicates that pull-based solutions, where merchants "pull" the transaction from customers, are more likely to be accepted than "push" based solutions that require the customer to key in large strings of data on to their mobile phones.

From the merchants' perspective too, digital payments solutions should be designed such that the time taken to complete a transaction does not significantly increase as compared to current payment methods (cash and cards). This presents a major cause of concern for merchants who are apprehensive that the acceptance of these solutions could lead to customer queues at establishments.

It is imperative to build solutions that are as easy to use as cash

Finally, convenience should not come at the cost of safety or security. Primary research indicates that while trust and security do not pose serious impediments to the adoption of digital payment instruments like mobile wallets, they are still significant factors to reckon with. Certain reports indicate that instances of fraud on mobile wallets are significantly higher compared to other e-commerce platforms. Banks and payment service providers need to strike the right balance between ease-of-use and safety of customer funds.

Optimise the network effect by building a ubiquitous network

The digital payments business in India is still nascent with customers trying out multiple wallets and other payments instruments. However, primary research indicates that customers would like to consolidate transactions on as few instruments as possible akin to bank accounts. Global experience also highlights the need for "aggregator wallets", as customers want universal solutions.

Ubiquitous payments comprise three key elements—a) a broad set of use-cases, b) widespread merchant acceptance network, c) large number of cash-in, cash-out points.

Customers have varied use-cases, ranging from daily routine spends (for example, food, travel, groceries etc.), monthly utility payments, some annual spends to ad hoc transactions. Payment instruments that cater to varied use-cases or a large proportion of customer transactions are more likely to win.

The big push for digital payments in India will come from merchant payments. Per-

son-to-Merchant (P2M) payments will be the largest transaction pool by 2020. Hence, to drive ubiquity, it is imperative to build a large merchant acceptance network. Customers tend to prefer payment instruments that are accepted at a large number of outlets—both online and offline. Therefore, on-boarding of merchants is as critical for payment service providers as acquisition and on-boarding of customers. This would necessitate an organisation to acquire and on-board merchants, as well as to service them.

Prima facie, primary research indicates that merchants have specifically talked about the need for handholding as well as support, for example, through a call centre. As highlighted earlier, technology is expected to reduce costs of merchant acquisition and servicing, as dedicated EDC machines or POS terminals may no longer be required.

Further, success in digital payments will require players to build "hybrid" networks that optimally combine digital solutions and physical networks. This will provide last-mile connectivity to a larger universe of users, while keeping transaction costs low through a digital framework. This will also support physical cash-ins and cash-outs, thereby enabling even those who do not get paid digitally to participate in digital payments.

In the short to medium term, an extensive network of cash-in and cash-out points will be imperative for digital payments to be absolutely fungible. This network has to be created in a cost effective way, with no conflict of interest and clear retailer incentives and benefits.

Partner, partner, partner

Payments business economics will be tight. Combined with the fact that PSPs will need to offer a wide range of services, it is obvious that one cannot do it all. Partnerships will also be critical for the success of payment banks.

Partnerships may help payments service providers with one or more of the following:

- **Lowering customer acquisition costs by leveraging partner customer base:** Partnerships can enable payment service providers to acquire a large base of customers at a relatively lower acquisition cost. For example, a new payments service provider may forge a partnership with an e-commerce player, an organised retailer, or an organised transport service provider (including public transport utilities like a metro or monorail network) to provide a payments solution on their platform. This would give the PSPs access to an existing customer base. Payment service providers, including banks can partner with corporates and merchants to create customised payment solutions for specific use cases.

- **Offering a broad spectrum of solutions:** Independent payment service providers will need to partner with banks, asset management companies, insurance companies and retailers to name a few, in order to offer the full spectrum of payments, savings, investment and protection solutions to acquired customers. This will be relevant for payment banks, given they can only offer payment and deposit products on their own.

- **Access to a large distribution network:** Providers can also partner with entities that have large distribution networks like telcos, retailers and business correspondents to have last-mile presence for enhanced customer convenience.

While these enumerate some partnership examples, several options exist. The challenge and the opportunity lie in creating a viable operating model that successfully creates value for both parties.

Reduce entry barriers for customers: charge merchants and not customers

The transaction charge for payment transactions, especially for Person-to-Merchant (P2M) transactions should be levied on the merchant and not on consumers. Currently, merchants are generally used to paying Merchant Discount Rates (MDR) on card transactions. Moreover, 75 percent of the merchants covered in the primary research, believe that acceptance of digital payment instruments like wallets will increase sales. Hence, it is likely that a marginal transaction charge for use of a digital payment instrument may be acceptable.

All merchants, including large and organised businesses, need to realise and acknowledge the cost of doing business in cash. It is surprising that if one were to go to a railway booking office, airline ticketing office, or even a movie theatre, and pay in cash, there is no extra cost. In comparison, if one were to use a non-cash instrument like a debit or credit card, especially when transacting online, one is charged a "surcharge" or convenience fee. This implies that merchants are happy to accept cash, completely ignoring the costs of cash handling and cash management. It is imperative for banks and other payments service providers to drive awareness and educate merchants about the cost of cash and ask them to view the transaction charge for accepting a digital payment instrument in light of the same. Payment service providers can also offer value-added services to make the entire proposition more economical for merchants and to improve merchant acceptability of digital payments instruments.

Also, payments service providers can explore the possibility of charging users only when money leaves the digital ecosystem. For example, the current Peer-to-Peer (P2P) wallets and other payment service offerings are seen as expensive and hence, have not gained traction despite prevalent potential. An alternative model could be to levy transaction charges for P2P transfers or remittances only when the recipient "cashes out" instead of at the point of transfer. Similarly, merchants should be charged only when they take the money out from the account and not when they receive it. This will drive a multiplier effect in usage, promoting the use of digital money for a larger number of transactions. Of course, this would need a large number of online and offline avenues to be created where recipients of money can spend it so that payment service providers earn revenue as transaction fees on such spends.

Mine customer data to build additional revenue streams

Banks and payments service providers must look at alternate means to creatively monetise large volumes of customer and transaction data that they possess. BCG studies indicate that on an average 80 percent of the data created / generated by banks and insurers is not currently used. Payment service providers need to look at how to carry out analytics so as to offer right products / services to the right consumer at the right time by leveraging data to drive the transition from consumption driving payments to a scenario where payments drive consumption.

mBank in Poland runs a digital discount program utilising the bank's transactional data with automated redemption. The Bank analyses transaction data of customers on several dimensions like zip code, category, store, spend / trips etc. to create targeted offers that are then customised for the consumer. The offer is displayed on the bank's online statement, below a relevant purchase. The consumer can just click to activate the offer, and use a mBank payment instrument (credit / debit / prepaid card) at the point of sale to avail the offer. High relevance of offers and hassle-free redemption are reasons why consumers love the experience.

Urgent credit service could be another specific example. Enabled by an instant payment system and coupled with advanced underwriting, this can be done basis the customer and transaction data which the bank / payment service provider already has. For example, when a customer making a purchase on an e-commerce marketplace checks out using a digital payments instrument, he can be prompted to upgrade his purchase or insure the product. The incremental amount can be funded through an instant line of credit provided by the bank or payment service provider. Alibaba's MyBank is an example of one such offering. As an online bank with registered capital of 4 billion yuan, MyBank gives out loans to small businesses, entrepreneurs and consumers in China. It operates on cloud computing platform and uses data to calculate loan amounts.

Payment companies can drive more impulse purchases by adding a credit payment feature to their offerings. The idea is to transform the mobile phone into a credit card minus the payment strip. A customer could just tap, shop, pay and walk. Obviously KYC norms and credit risks will have to be fac-

tored into the thinking and development process. Payment service providers should also leverage analytics to better understand customer trends and preferences in order to provide customised experience to customers. This could include personalisation of services and interface, targeted offers etc.

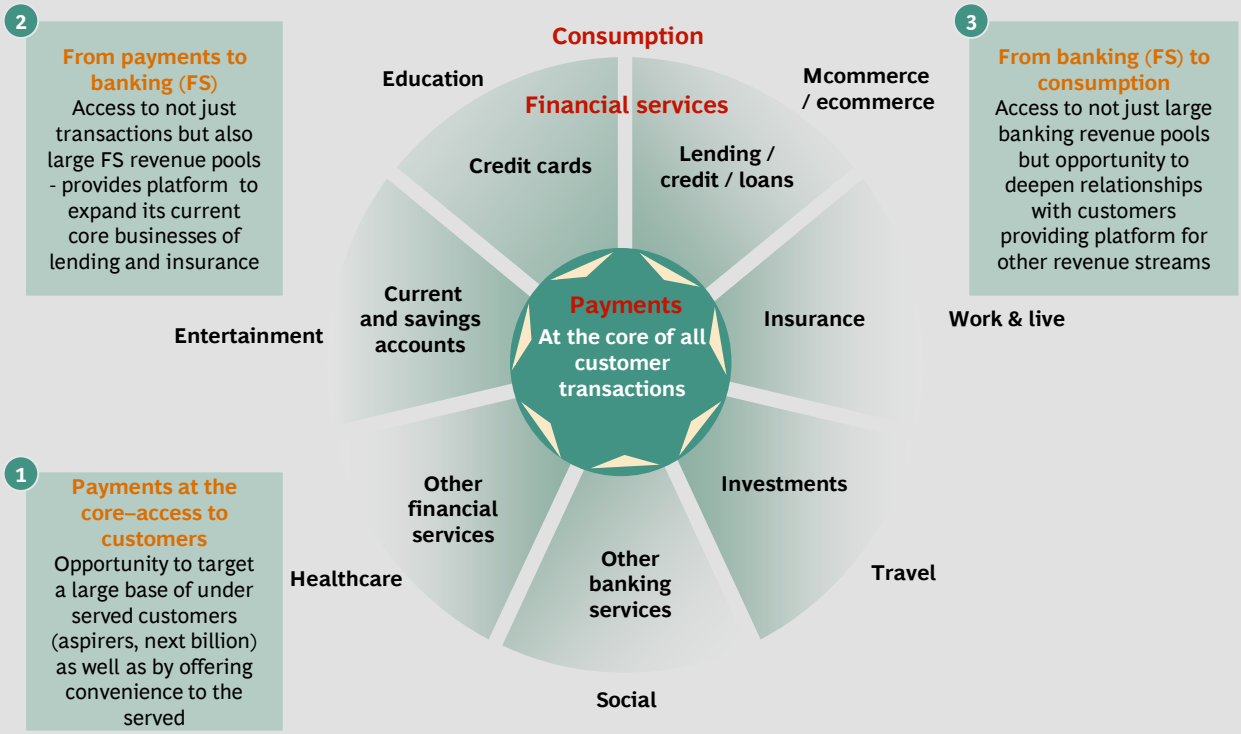
Look beyond—from payments to broader financial services needs to consumption

Payments form the core of all customer transactions. Banks as well as payment service providers offering payment services, have a great opportunity to expand customer relationships by offering a full suite of financial services to customers. These may include savings and checking accounts, loans and credit cards, investment products like mutual funds, insurance products and other banking services. While banks can offer most of these products and services directly to their customers, independent payments service providers like telcos, PPIs or even payment banks, need to forge the right partnerships to be able to offer comprehensive financial products to consumers (Refer Exhibit 5.1).

Furthermore, banks and payment service providers have an opportunity to deepen relationships with customers by leveraging the platform for other revenue streams. They can move beyond financial services to include consumption based products and services in order to monetise the relationship. Having access to customer data on payments, banks and payment service providers are well positioned to assess and identify customers' needs and behaviours in order to offer the right products and solutions best suited for different life stages.

If a bank or payments service provider is able to set up such new lines of business in order to expand customer relationships into additional revenue streams, it gives them further access to customers' consumption data. This in turn, can be leveraged to assess the customers' financial consumption need and potential, enabling banks / PSPs to offer them relevant financial service solutions. This would complete the circle of end-to-end customer ownership by leveraging the comprehensive potential of monetising customer relationships.

Exhibit 5.1 | From Payments to Financial Services



Source: BCG analysis.

Ping An in China is one such case in point. From being a traditional financial services player offering insurance, banking and investment products for almost two decades, Ping An is now pursuing an "Integrated Finance + Internet" strategy. Ping An has expanded its offerings to provide consumption related services including health, food, housing, travel and entertainment. By focusing on everyday needs of users, Ping An can access large amounts of active client consumption data, which in turn, provide insights into consumption needs, behaviours, and customer potential. This enables Ping An to carry out precise and targeted marketing of its core financial services products to customers (Refer Exhibit 5.2).

Finally, banks and payment service providers can also explore offering relevant value-added services to customers and merchants on the network, which in turn can be chargeable. For example, for merchants "acquired" by a bank or payments bank for accepting digital payments, the bank may also offer cash management solutions at a small fee. These value-added services will add to the overall revenue pool and increase profitability of payments service providers.

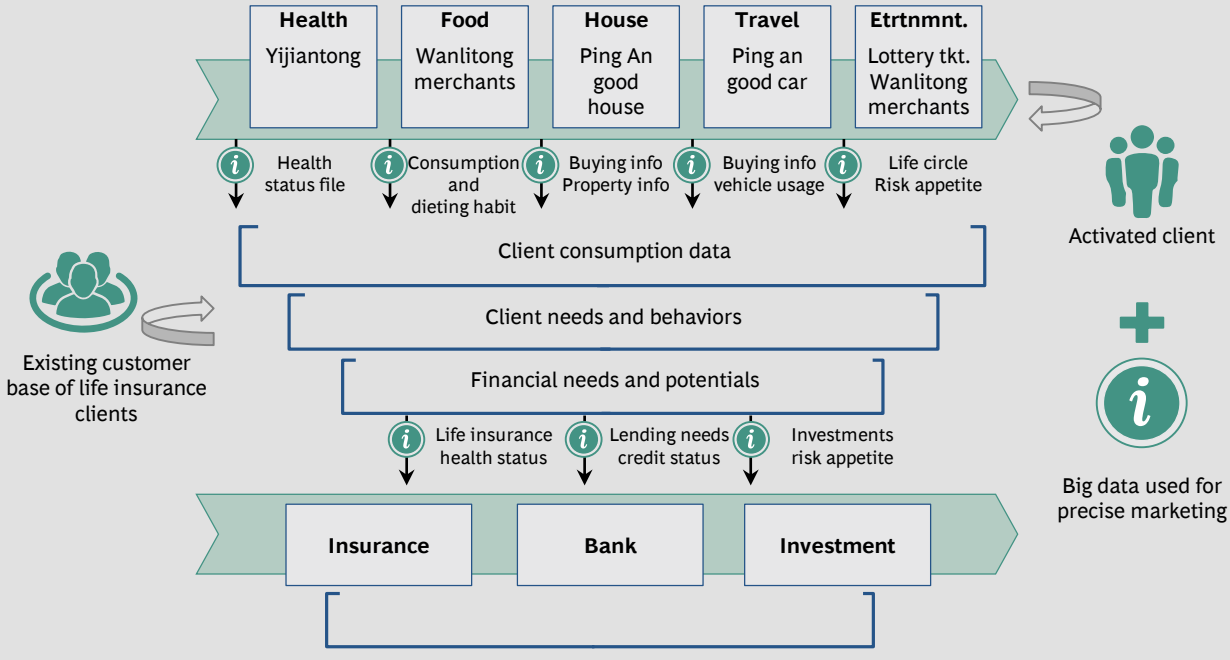
Develop ecosystems to envelop customer needs

Developing vertical or ecosystem based offerings that provide end-to-end payments solution to customers in these ecosystems presents an opportunity for payments service providers. These could include ecosystem-centric, community-based or hyperlocal offerings that are easily scalable.

One such example could be a hyper-local payments system built around the city transport system. This would translate into a payments solution accepted by the central transport network in a city, for example, metro and / or bus, as well as feeder networks i.e., taxis and auto-rickshaws. This can further be expanded to cover merchant establishments in and around metro stations, utility providers (water, electricity, education, telephone, and internet) as well as local vendors and service providers.

The objective should be to provide a ubiquitous payments solution to customers with

Exhibit 5.2 | The Ping An Ecosystems Model



Sources: BCG China's Digital Generations 3.0: The Online Empire; BCG research.

easy cash-in and cash-out points. This would present the payments service provider with an opportunity to on-board a large number of customers in a contained geography while offering a compelling proposition to merchants and service providers on the network—timely payments, cash management / handling and incremental business.

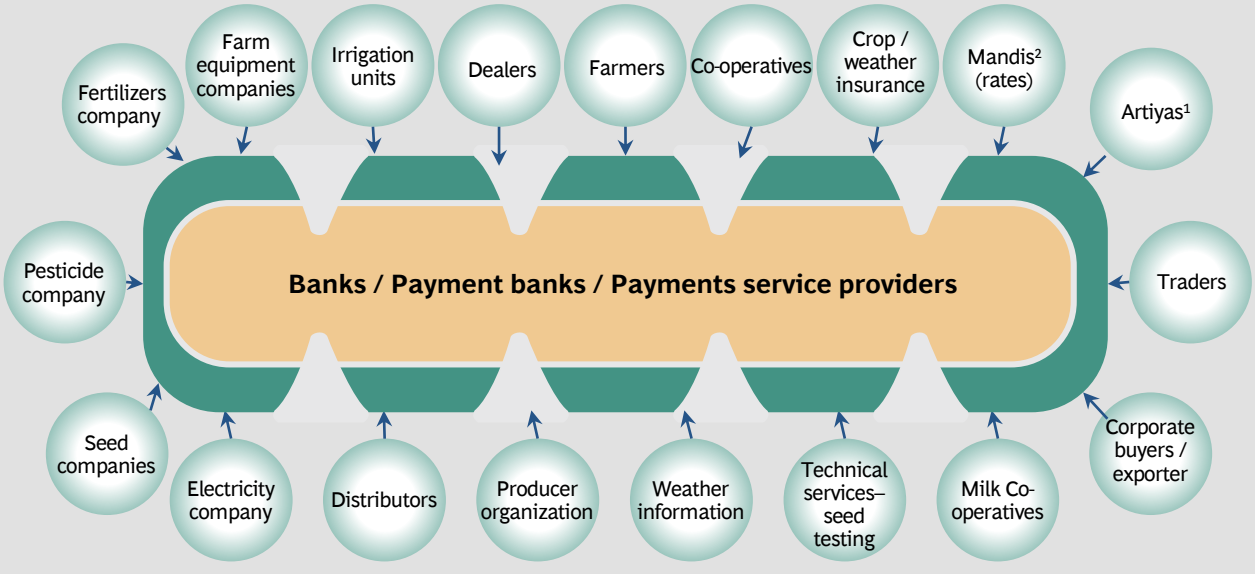
Building an agricultural payments ecosystem could be another example. Solutions offered should not, merely be a platform facilitating payment transactions, but should connect to all parts of the agriculture ecosystem seamlessly. It should perform as an end-to-end agricultural payments ecosystem providing information, enabling end-to-end transactions, MIS and tracking (for example, inventory management), while bringing buyers and suppliers together (Refer Exhibit 5.3).

The solution need not be restricted to payment transactions, it can also lend support to a wide spectrum of stakeholders including farmers, dealers, traders, distributors, fertilisers company, seeds companies, insurers etc. by bringing all of them on the same platform. The solution can also be used to provide information on prevalent prices, weather conditions, technical services, inventory management tools and other value-added solutions.

Exploit next generation technologies to build low cost and scalable solutions

Successful digital payments solutions need cutting edge technology platforms. Technology is critical, not only to deliver solutions that are convenient, simple and secure, but to also ensure that costs of customer acquisition, on-boarding and transactions are minimal. For example, while contact-less payment systems may be useful in expanding merchant acceptance networks, Near-Field Communication (NFC) based proximity initiatives may prove to an expensive proposition for India. Low cost technology solutions like app-to-app QR-codes or barcode readers may need to be developed and tested. Payment apps catering to lowest quality smartphones, weighing less in size and able to work on EDGE networks (or on no network at all!) may need to be designed.

Exhibit 5.3 | End to End Agriculture Payments Ecosystem



Sources: BCG analysis.
[1]Artiyas are the middlemen who charge commission from farmers for trading agricultural produce.
[2]Mandi rates are the wholesale rates for agricultural produce.

In addition to being super advanced, technology needs to adjust to evolving market requirements. For example, we need products that can work despite poor infrastructure and prevalent connectivity conditions in India. Apps need to work in no network areas—for example, basement parking, in planes for in-flight purchases etc. Such scenarios are causing players to explore and experiment with "show code" or OTP options that enable transactions even when both parties are offline.

Scale, Scale, Scale

Lastly, but most significantly, scale is critical to make the business model viable for payments. Building a world-class payments business requires significant investment in technology, infrastructure and partnerships with wafer thin margins. Hence, the model requires high volumes to be sustainable. Participating players must look to build sizable scale over the next few years so as to recover costs. As outlined earlier, the opportunity is potentially huge with the requisite scale translating to tens of millions of customers. Those who make bold moves and build scale, have a good opportunity to build a profitable and valuable business.

Those who make bold moves and build scale have a good chance to win

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Looking ahead, it is clear that all payment service providers, including payment banks, will need to identity and adopt sustainable models of monetising customers acquired by them, by offering innovative and differentiated payment solutions. Providers will need to take a broader view of the opportunity and think holistically to ensure economic viability of their businesses.

Call to Action for Banks

In order to maintain or defend their position as key payment providers and related value added services, banks need to take proactive action spanning several dimensions.

Payments are critical for banks as they help in multiple ways:

- Payments determine the primary bank for customers
- Cross-sell other products via access to spend patterns
- Drive lower cost to serve
- Access "new to bank" customers

Payments Determine the Primary Bank for Customers

Customers tend to keep more balances in accounts or payments instrument used for payments. If banks can fulfil all payments needs of existing account holders, they will be able to retain and grow their Current Account / Savings Account (CASA) balances. Else, they stand to lose these balances to independent payment service providers.

Cross-sell Other Products via Access to Spend Patterns

Payment transactions give banks access to their customers' transaction and spending patterns. Banks can then use analytics to cross-sell or up-sell relevant products to customers.

Drive Lower Cost to Serve

Migrating payments transactions to digital and mobile based platforms will reduce transaction costs for banks and bring down operating costs.

Access "New to Bank" Customers

Banks that take leadership position in offering digital / alternate payments, will be able to attract new customers—who are either unbanked or banking with other financial institutions. With new payment service providers / challengers acquiring the existing payment services customer bases, traditionally the bastion for banks, this could pose a threat and potential loss of customer relationships and possibly affect the CASA balance.

In the new world of payments, it is challenging for incumbent banks to create a compelling proposition for digital consumers. Banks

are constrained by regulations and a conservative risk-averse mindset and often find it challenging to develop customer-centric offerings that require a start-up like approach.

Our experience with banks suggest five additional areas that banks may need to work on, in order to keep pace with the digital payments opportunity:

- Create a "digital organisation"
- Understand customers—cannibalise pain points
- Build a two-speed IT capability
- Be innovative in partnerships
- Go creative in communications

Create a "digital organisation"

Banks need to build a digital payments friendly organisation, integrating flexibility, agility and innovation. Banks need to think like start-ups to develop payment solutions which are intuitive and customer friendly, allowing for easy KYC, simple on-boarding and hassle free transactions.

Understand customers—cannibalise pain points

It is critical that banks invest in understanding their existing customer base including needs, gaps and pain points in order to provide innovative solutions. Banks should also identify opportunities to provide relevant value-added services to customers to deepen customer relationships and build switching costs.

Build a two-speed IT capability

Banks are typically disadvantaged by their IT solutions legacy—these do not support cutting edge or agile digital payment solutions. There is a need to invest in the creation of a two-speed IT world, enabling them to run and manage core banking solutions while allowing them to offer technologically agile solutions that are customer friendly and intuitive.

Be innovative and partnerships

Partnerships are critical, both for banks and independent payments service providers. Banks should explore a wide spectrum of partnerships, be it with large merchants to serve as an anchor use-case for payment solutions, or with fin-tech start-ups to provide cutting edge capabilities in security, authentication etc.

Go creative in communications

Given that traditional channels such as branches etc. are not available to digital propositions for customer acquisition, banks need to ensure creativity in their marketing initiatives in addition to increasing spends.

Asks from Regulators and Industry Bodies

One of the consistent themes seen across successful payments case studies, is the pro-activeness and vision displayed by regulators and industry bodies in the respective markets. In a market like India, where the regulations are still to evolve, it is imperative that the Government and regulators take a long-term view to building a sustainable digital payments market.

Over the past few years, we have seen several progressive and forward-looking regulations that promote the proliferation of digital payments—prepaid payments instrument guidelines and payment bank licenses to name a few. However, these are initial steps and a lot more needs to be done on an ongoing basis. A few specific areas where Government and regulatory intervention can go a long way in ensuring sustainability of the digital payments industry, are listed below:

- Build awareness about cost of cash
- Incentivise use of non-cash instruments
- Policy for electronic transactions with government agencies
- Simplifying KYC requirements
- Making digital transactions simpler
- Invest in building acceptance networks
- Set-up common infrastructure
- Framework for grievance redressal

Build awareness about cost of cash

Cash poses huge cost implications for the economy both in terms of direct costs (printing / transporting notes, weeding out soiled notes, combating counterfeiting by several means including periodically introducing new series of currency notes and withdrawing existing ones, etc.) and indirect costs (loss of tax revenue, creation / prevalence of black money, etc.). Even so, cash still remains the only payment method that is not disincentivised. There is no visible cost of cash to merchants or consumers in comparison to all other payment methods.

Government / regulators / relevant industry bodies should lead the charge in creating a "cost-of-cash", which could include a "surcharge" to be levied on cash transactions above a certain threshold.

Incentivise use of non-cash instruments

Merchant Discount Rate (MDR) should be relative to the true cost of the payments instrument. The true cost of cash to the user (including government / RBI / banks / service providers / merchants / customers) has to be appropriately reflected in order to arrive at the correct merchant discount rate or MDR. Any situation that makes cash appear artificially cheaper should be corrected through regulatory means.

In addition, the RBI should ensure that MDR incentives are communicated adequately to stakeholders. For example, even though the RBI has capped MDR on debit card transactions in 2012 to promote usage in lieu of cash, most merchants are still unaware of the difference in MDR between debit and credit cards.

Tax benefits could also be provided to merchants, especially in cases wherein a certain minimum proportion of the merchant's transactions are carried out through digital payment instruments.

Policy for electronic transactions with government agencies

Certain government departments, PSUs and other organisations currently levy a convenience fee or surcharge on electronic or digital payments for essential commodities, utility services, petrol pumps, gas agencies, IRCTC etc. The feasibility of removing this charge should be considered by the Government.

Simplifying KYC requirements

Easy sign-up and on-boarding of customers is critical for electronic or digital payments to acquire scale. Regulators should continue supporting enablement of electronic KYC norms on a widespread basis—including relevant regulatory clarity where required. This may include using biometric or iris-based recognition on customer smartphones enabling Aadhar-based KYC for existing and new customers. Similarly, appropriate regulatory frameworks may be put in place for Aadhar or other identity-based eKYC for merchant use.

Making digital transactions simpler

As highlighted earlier, a large proportion of transactions conducted via digital payment instruments are expected to be micro in nature (less than INR 100). The regulator may consider waiving off the need for two-factor authentication process for transactions below a minimum threshold, say INR 500. This would increase convenience and further penetration of digital payment instrument usage.

Invest in building acceptance networks

One of key impediments hindering the rise of digital payments is the acceptance network. Customers expect universality of payment instruments and merchants will need suitable incentives to adopt acceptance of electronic payments. Once merchants realise the inherent advantages of electronic payments, they are likely to continue. The proposed acceptance development fund (ADF) should be operationalised soon and provided adequate capital to ensure that the merchant acceptance network, especially for electronic payments, can be expanded manifold.

Set-up common infrastructure

The Government should encourage public sector institutions and other industry bodies like NPCI to deploy common payments infrastructure that can be leveraged by payment service providers. The Instant Money Payment System (IPS), Bharat Bill Pay System (BBPS) and Unified Payments Interface (UPI) are great examples of such infrastructure,

which in turn, can revolutionise electronic payments in India. IMPS has already seen good success and the Government should continue to encourage and incentivise the build-out of such common infrastructure.

Framework for grievance redressal

The government and RBI should put requisite framework and policy in place, for customer protection and grievance redressal. For example, appropriate and customer friendly guidelines to deal with fraudulent transactions will boost customer confidence and promote usage of digital payment instruments.

In summary, for digital payments to succeed in India, it is imperative that enabling policy frameworks and infrastructure be put in place. While there have been several developments in the right direction over the past few years, the trend needs to continue and efforts need to be stepped up so as to provide a conducive and sustainable business environment for payment service providers.

FOR FURTHER READING

The Boston Consulting Group publishes other reports and articles on related topics that may be of interest to senior executives. Recent examples include:

FinTechs May Be Corporate Banks' Best "Frenemies"
An article by the Boston Consulting Group, July 2016

Global Retail Banking 2016: Banking on Digital Simplicity
A report by the Boston Consulting Group, May 2016

Customers Steer Digital Trends Driving Retail Bank Transformation
A report by the Boston Consulting Group, May 2016

Charting a Course to an Optimised Payment Platform
An article by the Boston Consulting Group, April 2016

Ensuring Digital Readiness in Financial Services
An article by the Boston Consulting Group, April 2016

The Power of People in Digital Banking Transformation
A focus by the Boston Consulting Group, November 2015

Global Payments 2015: Listening to the Customer's Voice
A report by the Boston Consulting Group, October 2015

Unlocking the Potential of Consumer Digital Payments
An article by the Boston Consulting Group, October 2015

FIBAC 2015—Inclusive growth with Disruptive Innovations
A report by The Boston Consulting Group in association with The Federation of Indian Chambers of Commerce and Industry (FICCI) and Indian Bank's Association (IBA), September 2015

The Changing Connected Consumer in India
An article by the Boston Consulting Group, April 2015

India@Digital Bharat: Creating a $200 Billion Internet Economy
A report by the Boston Consulting Group in association with Internet and Mobile Association of India (IAMAI), January 2015

The Mobile Revolution: How Mobile Technologies Drive a Trillion-Dollar Impact
A report by the Boston Consulting Group, January 2015

Retail Payments: Regional Diversity Is the Key
A report by the Boston Consulting Group, September 2014

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