

THE ECONOMIC TIMES

IN ASSOCIATION WITH



PRESENTS

TRANSACTIONS 2025



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DIGITAL IS THE PRESENT AND FUTURE



THINKSTOCK

Financial technology, commonly known as Fintech, is evolving at a pace unthinkable a decade ago. The novel applications of this technology are spawning an unprecedented number of new businesses and whole new business sectors.

It is bringing into the mainstream consumption market demographics hitherto untapped in Asia, Africa, Latin America and elsewhere. The intersection of mobile technology and financial services is bringing about the financial inclusion of nearly a billion unbanked people who are estimated to bring transactions into the global commerce ecosystem that could top \$3 trillion by 2025.

The revolutionary changes in the way global payments and transactions are conducted is a direct result of the fintech advancements. And we have just begun scratching the surface. The almost daily progress in digital technology and the scorching pace of internet data penetration and smartphones are the high-octane fuel sources propelling this

disruption. In markets such as India, the massive pull factor - consumer demand and adoption - is matched by the government's push - an almost single-minded resolve to make digital transaction the norm instead of dealing in cash. These forces are combining to make India the most exciting digital payments laboratory in the world. Even those consumers who have newly entered the financial mainstream expect, or rather demand, one-touch transactions. Ease and reliability of transactions are emerging as the key drivers rather than sops such as cash rewards and lower taxes.

THE TECH LEAPFROG

India's mobile penetration revolution has been well chronicled. Now what we are



witnessing is the next phase where dirt cheap data and faster connectivity is enabling those with a smartphone to access a whole new world of digital services. The number of mobile internet users in the world is likely to top three billion by 2020 from the current level of two billion. Nearly a third of these new users will be from India. Today even the less expensive smartphones have tremendous processing and computing power. The cameras are becoming ever more powerful. This will spur safe, fraud-resistant digital transactions that use facial recognition, biometrics and multi-factor authentication.

RIISING CONSUMER EXPECTATIONS

Not just in the hyper-connected First World, but also in emerging economies, consumers are demanding a seamless transaction environment. Even at this early stage of market maturity, Indian users are rejecting digital transaction services that are not intuitively designed and are cumbersome to use. Convenience is king and will continue to reign for the foreseeable future in the arena of payments apps.

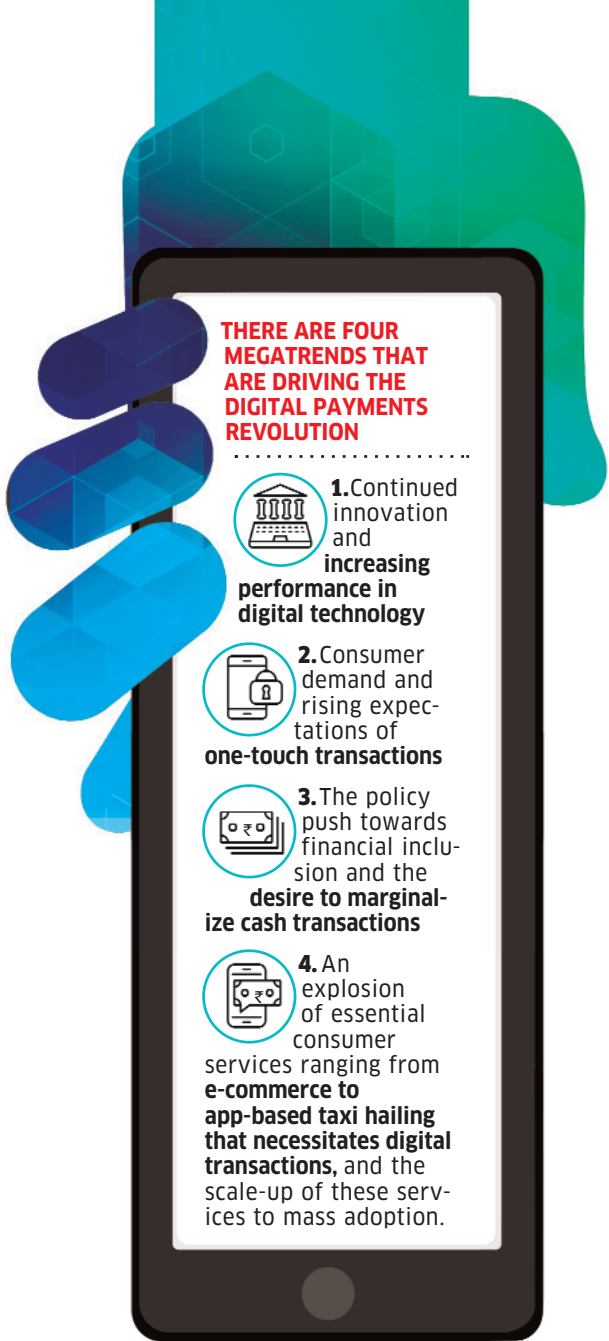
THE REGULATORY PUSH

Digital India, Jan-dhan banking accounts, Aadhar-based welfare delivery and a relentless drive towards formalization of transactions have been the cornerstones of the current government's policies. Demonetization, a bold and unexpected surgical strike on the cash-driven economy that abets tax evasion is perhaps the best example of the government's commitment towards digitizing the economy. Initiatives such as Digishala the National Optical Fiber Network

(NOFN), the introduction of the Unified Payment Interface (UPI) and the Bharat Interface for Money (BHIM) app are accelerating the move towards a cashless economy. This has given an impetus to the emerging digital transactions sector in India.

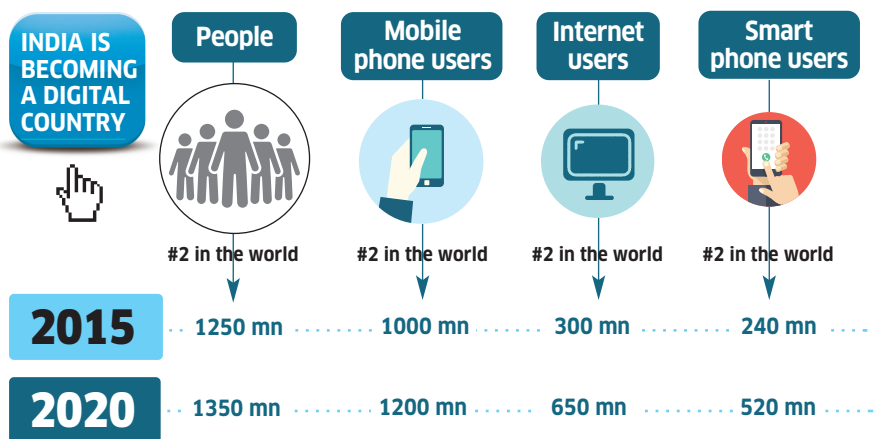
THE EXPLOSION OF NEW DIGITAL-BASED CONSUMER SERVICES

India has become the largest user market for social media giant Facebook with more than 250 million users, overtaking the US. This is testimony to the burgeoning mobile internet penetration in India. For businesses such as Uber or ecommerce companies like Amazon and Flipkart, connectivity to data is at the heart of their offerings. The ability to use digital conveniences is a big driver for people to switch to smartphones. The influence that Fintech is having on the market is growing and the long-term potential is even greater. Mainstream Financial Institutions are rapidly embracing the disruptive nature of Fintech and forging partnerships in efforts to sharpen operational efficiency and respond to customer demands for more innovative services.



THERE ARE FOUR MEGATRENDS THAT ARE DRIVING THE DIGITAL PAYMENTS REVOLUTION

1. Continued innovation and increasing performance in digital technology
2. Consumer demand and rising expectations of one-touch transactions
3. The policy push towards financial inclusion and the desire to marginalize cash transactions
4. An explosion of essential consumer services ranging from e-commerce to app-based taxi hailing that necessitates digital transactions, and the scale-up of these services to mass adoption.



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

THE NUMBER OF MOBILE INTERNET USERS IN THE WORLD IS LIKE LIKELY TO TOP THREE BILLION BY 2020 FROM THE CURRENT LEVEL OF TWO BILLION.

THE SIZE OF THE PRIZE: HOW DIGITAL TRANSACTIONS CAN TRANSFORM INDIA



THINKSTOCK

India is witnessing a growth trajectory in digital payments similar to the rest of the world. In fact, India is expected to be the growth engine by 2025. Demonetization and the cashless push have propelled the growth to stratospheric levels. India has the second largest mobile user base in the world with a billion connections. Of that there are in excess of 250 million smartphone users.

According to Morgan Stanley, with smartphone sales growing at a compounded annual rate a little in excess of 20%, this user base in India will likely double to 500 million by 2020. With mobile data getting cheaper by the day, nearly all devices are becoming internet enabled. Even before demonetization, digital transactions had been growing at 50% annually. ATM transactions are growing at around 15%. The usage of Aadhar as a Know-Your-Customer (KYC) proof has made banking and mobile banking more accessible. The Jan-dhan initiative of the government has added

270 million unbanked into the financial mainstream. In 2012, the volume of mobile banking transactions was roughly on par with that of mobile wallets and pre-paid instruments (PPI). According to a BCG report on digital payments in India, PPI transactions today are roughly thrice the volume of mobile banking transactions.

In the past, the banks had a monopoly on transaction services. Now with the emergence of new fintech companies and payment banks, the landscape is far more vibrant. Today telecom companies, banks, mobile wallet firms and payment banks are



ving with each other for customers and a slice of the market. With competition comes cheaper and more innovative services which will benefit consumers and further fuel growth.

Indians are now accustomed to a very seamless digital transaction experience. This is creating massive new avenues for consumer spends. India is today one of the most attractive markets for global e-commerce giants. The battle between Amazon and homegrown Flipkart has now reached such epic proportions that similar contests between multinational cola giants or FMCG behemoths today pale in comparison. App-based taxi hailing services such as Uber and Ola are making car ownership in urban India somewhat out of fashion. And the ability to transact digitally is vital to the growth of what is known as the 'gig' economy for a wide range of service providers from accountants to artists and everything in between.

The transaction ticket value pattern is an indicator of

“ The Indian digital payments industry is in the midst of transitioning itself into a true enabler for consumers and business alike. Customer centricity has emerged as the core focus for digital payment solutions in the market resulting in digital transactions doubling in the last year alone. From banks to fintechs and from government to payment networks rapid strides are being made towards making the payment experience as seamless as possible for the customer. While Blockchain, Big data and AI and human centric designs will continue to play a significant role in shaping the future of digital payments, it would be equally critical for industry players to collaborate and offer solutions that are aligned to the customers needs”

■ **Chavi Jafa**, *Head, Business Solutions, India and South Asia, VISA*

“ In the next five years, we see exponential growth in digital payments in India. Digital payments will percolate to the vast majority of India, in both online and offline modes. I believe that digital payments in India, in all likelihood, will grow by at least 50x in 5 years. With this meteoric rise in digital payments, a large segment of Indian population – both consumers and merchants - will start enjoying the benefits of digital payments and formal banking and financial services. We see India transitioning from its current cash dominant economy to digital payment dominance. We, at Paytm Payments Bank, are constantly innovating and leveraging technology to simplify consumer experience and provide best-in-class financial and banking services”

■ **Renu Satti**,

MD & CEO, Paytm Payments Bank

the way the marketplace is evolving. The average size of a mobile banking transaction is upwards of Rs 10,000. Indians spend an average of about Rs 700 through PPIs. It perhaps is a sign that people prefer PPIs for impulse purchases and depend on banking transactions for large ticket planned expenditure. There are some 90 million active wallet users compared to 70 million online banking users. As more Indians take to ecommerce, and as the ecommerce companies add product categories such as groceries to their merchandise mix, the share of wallets and the value of

the transactions will inevitably increase.

Going by the growth trajectory of India, the country by 2025 could be a \$1 trillion market for digital transactions. The cash to non-cash ratio in India by 2025 could be the exact reverse of what it is today. By 2020 itself, the merchant acceptance of digital money is expected to increase by a factor of ten. Smartphones will replace plastic cards and make PoS machines and the ATM network less important.

Payment service companies will soon have access to a mindboggling volume of consumer transaction data. This data can help everyone in the chain- from sellers, marketers, and payment firms- to tailor customized offerings. A customer can be sold relevant digitized gratifications such as discounted offers, coupons, and loyalty programmes.

This can work in tandem with merchant apps, creating a seamless omni-channel experience. Enhanced customer experience and the ease of transactions will be a new driver of consumer growth.

In India, cash has always been king. In 2015, nearly four in five transactions

were made in cash. The digital revolution will invert the cash-to-digital money ratio dramatically. By 2023, digital transactions will overtake the amount of currency notes changing hands.

In India, nearly 1.5 billion payment transactions happen every day. The majority of such transactions are person-to-merchant or P2M. This includes, grocery purchases, buying a newspaper at newsstand, mobile recharges, travel ticket purchases and suchlike.

The current user base of digital transactions in India is nudging 90 million. It could more than triple to 300 million by 2020 as the use cases for digital transactions grow. New users from rural and semi urban areas will enter the market along with the affluent citizens in cities who had mistrust of technology. The creamy layer or say the most affluent and informed 100 million users would contribute 70% of the digital transactions value. By 2020 net digital transactions would top \$500 billion and double itself to \$1 trillion by 2025. The digital payments industry itself would be worth \$5 billion by 2020.

INDIA HAS THE SECOND LARGEST MOBILE USER BASE IN THE WORLD WITH A BILLION CONNECTIONS.

THE POLICY PUSH: HOW GOVERNMENT IS DRIVING INDIA TOWARDS DIGITAL LEADERSHIP



THINKSTOCK

ew other governments in the emerging markets have shown the commitment and willingness of the current government in India towards a less-cash economy.

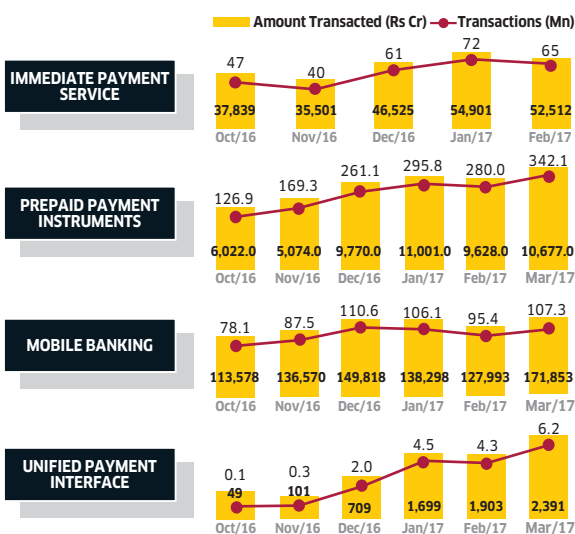
The Indian government and regulators have been at the forefront of digital payments innovations and financial inclusion. The Indian payment industry is an outlier that is driving above-average growth in non-cash payments. In 2014, the Prime Minister of India launched a financial inclusion campaign (PMJDY: Pradhan Mantri Jandhan Yojana) that generated 125 million accounts within six months. In addition, the RBI has established new guidelines for differentiated banks - institutions whose objective is to improve the state of financial access by providing basic

banking and remittance services to migrant workers, low-income households, small businesses, and other underserved sectors. The RBI has 'in principle' approved more than ten such institutions. Such initiatives have triggered the strong adoption of electronic payments and the rise of new market entrants. Mobile banking transactions tripled between 2012 and 2014, hitting 150 million in 2014. And mobile-wallet transactions have gone past m-banking transactions. Pre-paid payment instruments providers (which offer m-wallets) have been attracting growing interest from





DEMONETIZATION IMPACT ON OTHER MODES OF PAYMENT



- IMPS transfers declined in November, the month that demonetization was announced, but picked up thereafter
- Between October 2016 and January 2017, there were a jump of over 80% in both number of transactions and amount transacted through prepaid payment instruments (PPI Cards and Wallets)
- Mobile banking transactions peaked in December 2016. At 110.6 million, these were more than double of 44.7 million a year prior. Amount transacted almost tripled at Rs 149,818 crore in December 2016, compared to Rs 54,000 crore in December 2015.
- The UPI went live in August 2016 and got a huge fillip following demonetization. Growth appears to have been impacted by the launch of the BHIM app towards the end of December 2016.

consumers and have motivated banks to invest in their own digital payment offerings.

Over the past twelve months, demonetization has attracted mixed reviews. While a few businesses may have been impacted in the short to medium term, digital payments companies stand out as one of the most significant beneficiaries of the move. Post demonetization, there has been swift embrace of digital payments, and this medium should continue to see sustained adoption going forward.

One of the talking points of the digital payments story has been the phenomenal growth witnessed by new age instruments such as Unified Payments Interface (UPI), prepaid payment instruments (PPIs), Aadhaar Enabled Payment System (AEPS), along with well-established ones such as National Electronic Fund Transfer (NEFT), Real Time Gross Settlement (RTGS), (Immediate Payment Service (IMPS) and cards.

The government's push for the use of Aadhaar to authenticate transactions

over micro ATMs and banking correspondent (BC) outlets fueled the growth of AEPS over the last one year.

A few institutions have rationalized charges for NEFT, IMPS and RTGS to encourage the adoption of these systems.

The offline space has evolved into the most recent battlefield for payment service providers. Acquiring banks have deployed almost 29 lakh PoS terminals across the country, up by almost 95% from last year. This space has also attracted the attention of UPI and PPI players, and many of them have developed innovative solutions to assist large merchant outlets, micro-merchants, cash on delivery payment facilitators of ecommerce firms, etc., in accepting payments seamlessly over mobile phones. Customers facing issues with cash availability post the note ban began to experiment with these digital payment modes.

Quite a few players rolled out multiple solutions allied with digital payments, which further helped in their adoption.

A notable few were:

- ● INTEGRATION OF ENTERPRISE RESOURCE PLANNING (ERP) OF CORPORATES WITH THE UPI SOLUTION FOR REAL-TIME MANAGEMENT INFORMATION SYSTEM (MIS) UPDATES
- ● DISBURSEMENT OF INSTANT LOANS BASED ON THE FOOTPRINT GENERATED BY DIGITAL PAYMENTS

One of the most significant changes in the payments landscape is the push towards interoperability, with instruments such as UPI allowing transfers between 55 banks, independent of the acquirer payment service provider mobile app. The increasing adoption of the Bharat Bill Payment System (BBPS), Bharat QR and interoperability guidelines for PPI players will lend a further push to seamless, secure and interoperable payments.

Several payment processing firms and fintech companies leveraged demonetization to penetrate the market. In an effort to expand their market share, quite a few of them offered loyalty

points, instant cashbacks and referral rewards to users. While some observers may have doubts about the long-term sustainability of such offers, the promotional efforts definitely provided an impetus to users considering a switch to digital payments.

The growth streak of digital payments is virtually certain to continue in the future. The next push to the adoption of digital payments could come from relatively slow adopters such as the rural economy and the small and medium-sized enterprises (SME) sector. Government incentives such as discounts on digital GST payments and set-up of accelerator programmes will provide an added boost. A few specific use cases may emerge in the space of business to business (B2B) payments, Electronic Clearance Service (ECS) mandates, equated monthly instalments (EMIs), person to government payments (P2G) in smart cities, etc. These are likely to have a positive impact on transaction volume size going forward.

THE INDIAN GOVERNMENT AND REGULATORS HAVE BEEN AT THE FOREFRONT OF DIGITAL PAYMENTS INNOVATIONS AND FINANCIAL INCLUSION.

THE MEGATECHS INFLUENCING DIGITAL PAYMENTS



THINKSTOCK

AS CUSTOMERS TRANSITION FROM cash transactions to digital platforms, new challenges and opportunities are emerging for the existing players in the payments sphere. While payments providers understand this paradigm shift in business, most are unsure about the strategy.

The task of reinventing and repositioning legacy payments systems is in most cases daunting, but it is not impossible. The chances of emerging on top of this challenge are largely driven by a willingness to embrace and accept the digital revolution and to effectively adapt in time to gain competitive advantage. Payments players need to develop and execute a strategic roadmap to best position themselves for success.

Today, merchants are increasingly leaning towards solutions which make payments processing passive. In other words, they want the payments to happen instantly, invisibly and conveniently for consumers. Behind this evolution is the constant endeavor to make the purchase process fast and frictionless, and thus reduce shopping cart abandonment.

Examples of this trend are Visa Checkout, American Express ezeClick, LoopPay, Apple Pay or Apple Watch, etc. Convergence of offline and online PoS systems are evolving from mere

transactional instruments to context-aware "smart" machines. The PoS system of the future won't be a dedicated card-reading machine but a software solution capable of being installed in most smart devices, anonymously collecting comprehensive customer data (both online / offline purchase / search history) and performing real-time Predictive Analytics to provide various customized offers.

TOKENIZATION FOR SECURITY

The real threat of card data breaches and growing traction in mobile payments (NFC / QR code-based payments) have propelled the need for a future-proof security system. EMVCo and major card networks have released technical standards for payment tokenization solutions, which are poised to become hygiene factors in any payments service, and its adoption will soon become imperative. ACI Worldwide, a leading global provider of payment and fraud prevention solutions, advocates an all-in-one approach to



payment transactions that includes a fraud screen for payments of any value to protect both consumers and businesses from the costs of nefarious transactions.

The Internet of Things (IoT) brings consequences and opportunities for consumer payments and new commerce. The Internet of things (IoT) is the network of physical devices, vehicles and assorted appliances that are interconnected through the internet which enables these objects to send and receive data. IoT is growing exponentially. There are some 9 billion "things" that are already connected. By 2025 there are likely to be around 30 billion connected devices. The "things" that can be interconnected range from thermostats to automobiles to refrigerators to lightbulbs. For instance, cars can talk to each other, and the refrigerator can by itself place groceries orders.

Connecting more devices opens the door to developing new digital experiences for both consumers and businesses. One such experience is the payment transaction, including both the ability to pay and the ability to accept payment. IoT has the potential to dramatically alter the transactions landscape.

Digital payments continue to evolve, with the inclusion of payment-enabled IoT

devices augmenting the browser and mobile payment experience. Consumers can pay using a range of newly connected devices, including connected cars, household appliances, and most recently, wearables. In parallel, the IoT is also changing the retail point of sale to include a number of new touch points, including parking meters, fitting room mirrors, and vending machines.

As a result, financial institutions, payment providers, and technology companies can now create innovative capabilities that deliver increasingly frictionless, relevant, and secure payment experiences.

The IoT device uses a connectivity channel to trigger a payment

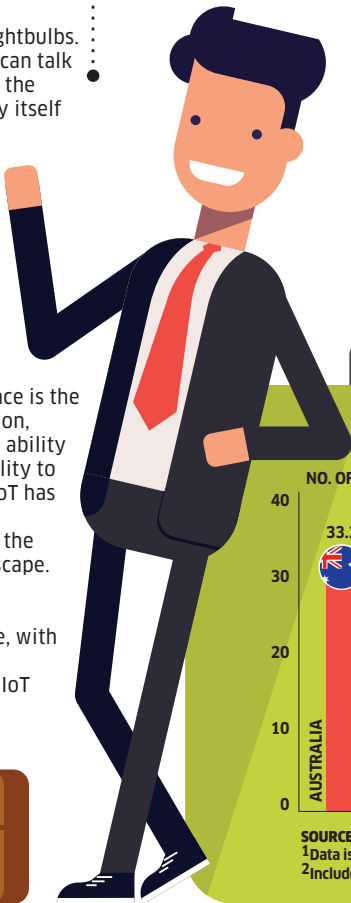
transaction, with technology depending on the environment. Payment credentials can be stored remotely in the cloud, or locally, in a secure element, depending on the form factor and payment use case. The consumer experience can vary; it ranges from pushing a button or using voice commands to a frictionless experience based on location or sensors. Data is secured using a variety of techniques to authenticate the consumer and transmit the payment credentials securely.

We are looking at an ecosystem of devices connected to the 'fog' network, which can connect and transact in real-time. For example, smart devices will sense low stocks in the freezer, ask for permission to order or automatically order the required stuff after checking for the best offers available. We will see use cases where the owner of a smart vending machine can change pricing dynamically from her smartphone based on a prediction engine, which calculates supply and

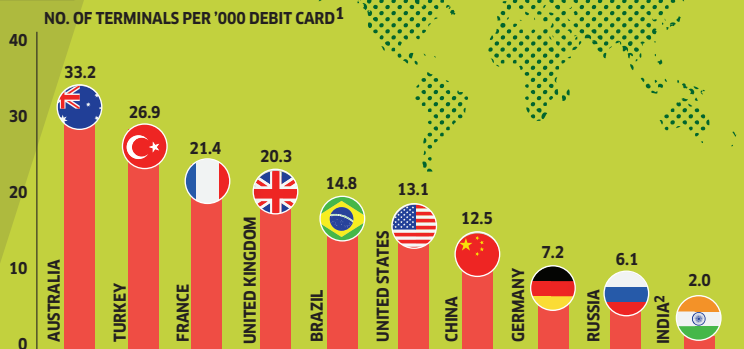
demand of present stock in the specified vending machine. The incorporation of internet capability into more devices, such as Apple Watch, will increase the number of payment endpoints that allow payments services companies to earn fees.

The emergence of cryptocurrencies and blockchain as a technology itself will be a game-changer in money transfers, remittance, and electronic commerce. Blockchain is well and truly moving out of the experimental labs to real life applications in the financial services sector.

Despite many incidents of security compromise, fraud, and volatile valuations, digital currency platforms are seeing increased acceptance. Not only businesses and merchants, but also payments intermediaries like PayPal have started making significant forays into the domain of cryptocurrency. This comes as a challenge to the existing payments services providers as cryptocurrencies offer a much cheaper way to make payments.



POS TERMINAL PENETRATION ACROSS COUNTRIES



SOURCE: Euromonitor 2015, BCG Payments Model 2015.

¹Data is for year 2015.

²Includes debit cards issued under Pradhan Mantri Jan-Dhan Yojana (PMJDY).

BY 2025 THERE ARE LIKELY TO BE AROUND 30 BILLION CONNECTED DEVICES.



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WHAT DIGITAL PAYMENT PLAYERS MUST DO

expect, and what brands and revenue streams will be - or can be - to banks and merchants in the future.

The forces shaping the payments market today are now beyond the control of any single organization (or indeed technology). However, there are steps that enterprises across the financial institution, retailer, and billing organization landscape can take, that will help them better prepare for - and respond to - these shifts to ensure that they make the most of the opportunities presented by global payments transformation. Here is what companies need to keep in mind:

- **Payments investment shows** no signs of slowing down and organizations of all types must keep pace. The rate of change in payments today in terms of form factor, channel, funding mechanism, associated technologies, data integration etc., means that payments is simultaneously becoming more complex and more critical. Investing in capabilities is no longer a 'once and done' proposition and organizations of all types must maintain a focus on their capabilities and at the least maintain a medium-term roadmap.

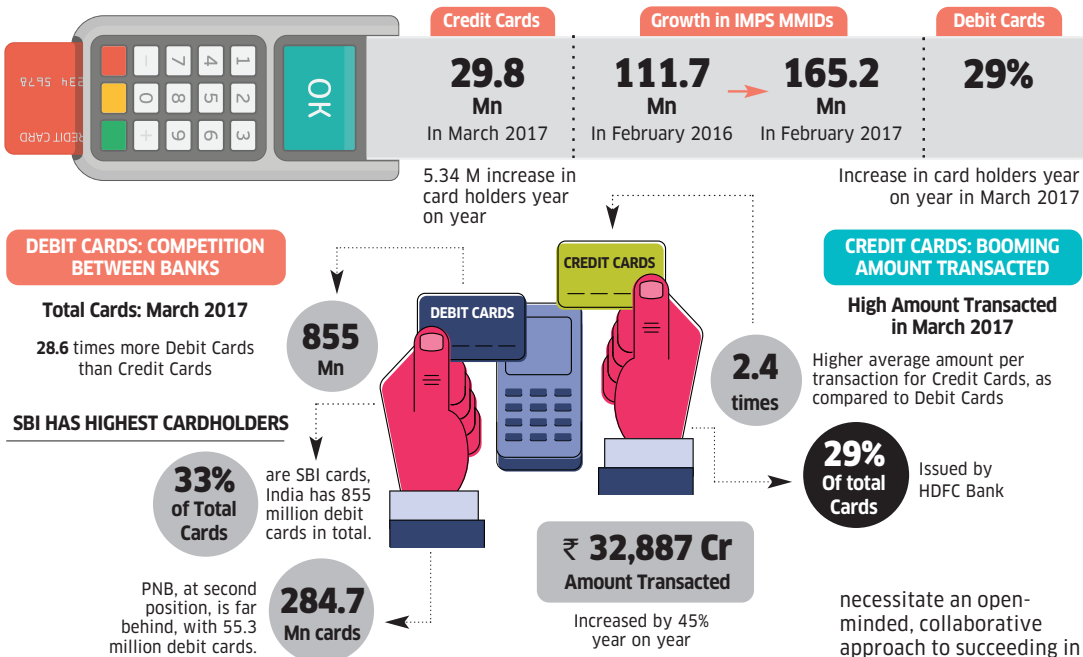
- **Strong payments** infrastructure is the backbone to all other services. Legacy infrastructure remains far too prevalent across all corners of the payments industry, and even where this can be pushed to accommodate new tools and services, risks diminishing the earnings benefits, and lacks the agility for long-term

TODAY, NEW TECHNOLOGIES HAVE EMERGED THAT WILL DISRUPT - AND ARE, IN FACT, NOW ACTIVELY DISRUPTING - THE COMPLEX NETWORK OF RELATIONSHIPS INVOLVED IN MOST RETAIL TRANSACTIONS.

Players like PayPal and Apple Pay straddle existing systems while offering a more consistent, more streamlined experience to consumers. Individual retailers in the US, such as Target and Starbucks, are using proprietary credit and pre-purchase cards, empowered with discounts and reward incentives, to reinforce their brands. Changing payment systems means deep changes to what banks and retailers fundamentally are to consumers, how and why these consumers shop and what they



DIGITAL PAYMENTS ARE GROWING RAPIDLY IN INDIA



necessitate an open-minded, collaborative approach to succeeding in the fast-moving payments marketplace.

continued development. Organizations must ensure they have the flexibility and agility to cope with today's constantly shifting landscape.

●● **The threat of card not present (CNP) fraud** is very real and must not be ignored. The success in recent years of diminishing in-store fraud risks is masking the challenge now rising in the CNP space. A balance must be struck between driving security and reducing payment friction.

With marked increases in digitally originated payments, criminals have also turned their sights from traditional channels to the digital world. The emergence of malware targeting mobile devices such as GMBot among others is proving to be difficult to combat without an investment in strong fraud detection technology and controls. However, organizations

that get this equation wrong will certainly face the consequences of this decision through significant increases in non-lending losses, erosion in brand reputation, and more importantly, trust in their payment services.

●● **Payments innovation** extends to new payment delivery and integration models. As more organizations seek to improve their payments capabilities, new means of enabling payments will provide a range of benefits. Security concerns must be kept top of mind, but SaaS options should be explored by all organizations. Likewise, better integration of payments and transaction data into Enterprise Resource Planning (ERP) and other systems hold the potential to drive significant business benefits at both a front and back office level. The opening up of APIs by financial service

providers in particular holds the potential to drive a whole new slew of payments innovation.

●● **Changes in the payments ecosystem** mandate a new day in thinking about partnerships and relationships for banks, merchants, technology providers and payments companies. Previously-held biases toward homegrown solutions and single-vendor technology approaches should be challenged by even the largest entities as new models of collaboration providing swifter time-to-market, lower operating cost, shared subject matter expertise and global experience can offer Indian companies of all stripes considerable advantages. Cloud-based services, managed IT infrastructure and domain expertise in the areas of payments industry standards, security and emerging tech such as IoT and blockchain

●● **Last but not least**, concepts like "consumer comes first" and "follow the customer" should not be forgotten while navigating through the digital mesh and implementing Payment instruments. At the end of the day a payment is a means to an end and the end target is to purchase fuel, pay for food, flag a cab, cross a toll way, top up a sim card, pay for online purchase or even pay a utility bill and not the technology or the payment process. Payment systems should be to a large degree designed as an all-inclusive eco-system incorporating as many players of our daily needs as possible. For example, enabling the end user to use a single mobile wallet from the start of his day until he gets back home to make all payments with the least friction possible is going to be a critical success factor in the future.

THE FORCES SHAPING THE PAYMENTS MARKET TODAY ARE NOW BEYOND THE CONTROL OF ANY SINGLE ORGANIZATION (OR INDEED TECHNOLOGY).

SECURING DIGITAL PAYMENTS



THINKSTOCK

AS THE WORLD GOES DIGITAL, cybersecurity is more critical than ever. Over the last few years, there have been cybersecurity attacks on industries that are giant storehouses of customer and transaction information such as e-commerce, healthcare, government services, aviation and financial services. With the proliferation of digital payments, cybersecurity will be the greatest business risk. Users of digital services access them primarily through mobile devices.

In India, as part of the digitization push, the government has unveiled a series of initiatives such as the Digital Locker, which eliminates the need for people to carry hard copies of documents issued by the government. While the upsides are many, this also poses a big

cybersecurity challenge. Vast amounts of consumer and citizen data will be stored digitally and a large number of transactions will be carried out online, by companies, individuals as well as government departments. That makes India a bigger target for cyber-criminals



and hackers. **By 2025**, it is likely that almost all transactions happen via mobile devices. Smart phones are vulnerable to the same kind of security risks as computers. But the problem with phones is that they consumers tend not to protect them with security tools as they do with computers. There usually are several apps on a phone that are 'cracked' apps. The cracked apps have access to multiple sources of information, including financially sensitive information-even one time passwords (OTP) across the device. The preponderance of open source mobile operating systems throw up higher security risks. Fraudsters usually hunt for vulnerable transaction trails. In the financial sector fraudsters use identity theft and phishing to accomplish their mission. But the means are now becoming far more complex and sophisticated. Malware infections, anonymous code executions from remote locations, exploitation of Zero Day vulnerabilities. In India, the most commonly used means are Trojan attacks and spear phishing.

Retail customers are lured by unbelievable 'online offers'. They are then forced to download an app on their phones to avail them. The malicious app can then make transactions without the users' knowledge.

A University of Florida analysis of popular Android-based mobile money apps in emerging markets including India found pervasive and systemic vulnerabilities spanning botched certification validation, do-it-yourself cryptography, and many other forms of information leakage that allow an attacker to impersonate legitimate users, modify transactions in flight, and steal financial records. These findings are a reminder that the majority of these apps fail to provide the protections needed by financial services. A thorough analysis of the service providers' terms of service by the researchers revealed that the liability for these problems rests on the shoulders of the customer, threatening to erode trust in branchless banking and hinder efforts for global financial inclusion. One of the biggest

Cyberattacks cost India an estimated \$4 billion annually. The actual numbers could be far higher because many relatively small incidents go unreported.

security concerns from a retail user perspective is the lack of second factor of authentication while transacting. This makes them vulnerable to system-level breaches as transactions can be system generated by a hacker without a password. Thus, technically, a hacker can make thousands of fraudulent transactions simultaneously.

But the good news is that digital forensics is keeping pace with fraudsters and making life difficult for them. The new digital tools can not only prevent the enactment of frauds but also identify, collect and store evidence of financial crimes in a manner admissible in

courts of law across the world. Cyberattacks cost India an estimated \$4 billion annually. The actual numbers could be far higher because many relatively small incidents go unreported.

The losses are not just on account of stolen money or ransoms but operational disruptions, loss of sensitive information, customer anger, legal fees and higher insurance premiums. By 2025, the annual cost of cyberattacks could top \$20 billion. A big handicap in tackling cyberattacks is the lack of awareness and the short shrift companies pay to matters of digital security. Most companies treat cybersecurity

Cyber criminals using Trojan can hack into the email communications of a client and a vendor. Having closely monitored the flow of communication, they impersonate the vendor and make the client make a payment to their account.



investments as expendable. Startups think of it as something that merits attention only when they attain scale. Not paying attention to cybersecurity today is simply not an option.

CYBER CRIMINALS USING TROJAN CAN HACK INTO THE EMAIL COMMUNICATIONS OF A CLIENT AND A VENDOR

**TOGETHER
TOWARDS
TOMORROW**



A GS Transact Technology Limited (AGSTTL), one of India's leading end-to-end payment solutions provider partnered with ACI Worldwide in 2016 to introduce Universal Payments Capabilities in India.

This collaboration uniquely enables AGSTTL and ACI to collectively address a critical need impacting the Indian financial services and retail markets to develop a 'one-stop-shop' platform for payments, fraud and transaction management capabilities. Backed by ACI's global technology lineage, AGSTTL offers a comprehensive multi-channel solution to increasingly capex and time-to-market-conscious banking and retail companies in India.

Established in 2002, AGS Transact Technologies Limited (AGSTTL) is one of India's leading end-to-end payment solutions provider with a wide spectrum of highly customized products instated with state-of-the-art technology for the Banking, Retail, Petroleum and Transit sectors. AGSTTL operates across 2200 cities and towns reaching out to over 2,00,000 customer touch points across India and boasts of an impressive footprint in South East Asia.

From the house of AGSTTL, YOUBANK is a mobile platform that enriches the entire customer banking experience like never before. With the convergence of mobile and Internet technologies, as well as the quick adoption of mobile devices in everyday life, customer behavior has evolved.

How would a business engage the new wave of

consumers in a meaningful way to give them the expected customer experience? YOUBANK empowers businesses to do exactly that.

Fastlane is India's first and only contactless fuel management and payment solution that ensures you get the right Quality and Quantity of fuel in your vehicle without waiting in a Queue. Fastlane provides automatic vehicle identification (AVI) using RFID technology to deliver paperless, cashless and cardless payment solution.

AGS Transact Technologies Limited along with its banking & technology partners powered India's first and unique ticketing system introduced by Kochi Metro. This Automatic Fare Collection System (AFC) uses a combination of Open Loop Smart Cards, RFID and QR Codes to collect fares from the users and provides a hassle-free commuting experience. AGSTTL also manages the operations for Electronic Toll Collection (ETC) across National highways on behalf of its partner banks.

AGS Transact Technologies Limited has been powering India's fierce retail environment with its state-of-the-art payment & automation solutions. These hardware & software solutions simplify complex processes across retail outlets resulting in an enhanced end-consumer experience.

The revolutionary and CCoE certified technology brings accountability and transparency to oil companies, fleet owners and individuals and totally wireless expertise brings significant cost savings.



Ongo is a leading alternate transactions ecosystem offering a wide spectrum of highly innovative and customizable fintech solutions for consumers, merchants, ecommerce and MSME's alike.

Ongo mPoS devices - BP50 & BP 5000 are devices enabled with the latest in payment technology designed to accept all forms of digital payments including UPI, Aadhar Pay & Bharat QR. The devices also ensure seamless card payment acceptance in-store & on-the-go from all the major credit & debit cards brands including MasterCard, Visa, RuPay and American Express.

ACI Worldwide, the Universal Payments (UP) company, powers electronic payments for more than 4,600 organizations around the world. More than 1,000 of the largest financial institutions and intermediaries as well as thousands of global merchants rely on ACI to execute \$14 trillion each day in payments and securities. Through our comprehensive suite of software solutions delivered on customer's premises or through ACI's private cloud, we provide real-time, immediate payments capabilities and enable the industry's most complete omni-channel payments experience. To learn more about ACI, please visit www.aciworldwide.com/india.

Here's a look at some of transformational products that enable our clients to be part of the digital payments revolution.

BASE24-eps: It is an integrated software solution to acquire, authenticate, route, switch and authorize financial transactions across multiple channels.

It provides a full range of functionality to support electronic payment transactions. This includes debit and credit at the ATM and point of sale, as well as branch and telephone banking, mobile commerce and internet banking, regardless of the payments instrument used.

BASE24-eps represents the **next-generation implementation** of ACI's world-class payments platform. It's the culmination of over three decades of experience in developing and supporting payments software, leveraging the input of a global customer base. BASE24-eps **improves the cost-efficiency** of payments processing by allowing a common set of transaction services

to support multiple channels and transaction types. This eliminates the cost and complexity of maintaining duplicate functionality and information for each channel while providing a single point of integration to back-office legacy systems. A powerful scripting engine can define application logic to quickly respond to potential fraud and risk threats (for example, to introduce new authentication rules) without the need to modify source code, resulting in lower cost and faster time-to-market for new products and services.

It helps ensure consistency of service levels and information across consumer touch points. The fault-tolerant application takes advantage of the best in systems software for reliability and availability.

Retail Payments with BASE24-eps is available on premise or in a hosted environment. ACI provides world-class hosted payment solutions and services to more than 4,600 organizations around the world to reduce time to market and minimize technical, operational and business risk. Hosted services help avoid unnecessary up-front expenses while freeing IT staff from day-to-day operational tasks, so institutions can concentrate on innovations and strategic technology initiatives.

ACI Proactive Risk Manager: This is a comprehensive enterprise level transaction monitoring and detection solution to identify and intervene in high-risk financial activity. It offers:

- **Highly accurate detection** via analytics, expert rules and behavior-based profiling across monetary and non-monetary activities.

- **Efficient workflow** management to ensure cases are managed quickly and effectively.

Flexible rules and alerting to more easily comply with evolving government mandates.

ACI's Proactive Risk Manager for Anti-Money Laundering is designed specifically to help you quickly and effectively uncover and prevent money laundering activities across the enterprise. Its state-of-the-art analytics, expert rules engine and advanced neural network technologies, together with its comprehensive workflow and alert management, ensures you always stay one step ahead of the criminals and your regulatory obligations.

Proactive Risk Manager for Enterprise Risk is designed specifically for today's fast-paced payments environment. It provides the visibility and expertise you need to uncover fraud quickly, reduce false positives and minimize losses, all while providing seamless customer experiences.

- Perform all fraud and AML monitoring - across all channels, geographies and lines of business - in real and near-real time to detect potential issues before they impact your customers or the bottom line.

- Proactively detect issues at authorization or authentication, before fraud occurs, to protect real-time payments.

- Profiles customer behavior to build a comprehensive relationship map, thus eliminating known behavior from the risk processes.

- Employ tailored workflows and comprehensive, centralized audit trails to leverage staff expertise, maximize resource efficiency and speed case resolution.

- Alert users to potential issues via SMS, text, email or phone, enabling them to immediately confirm or deny transactions and improving overall satisfaction.



FASTLANE IS INDIA'S FIRST AND ONLY CONTACTLESS FUEL MANAGEMENT AND PAYMENT SOLUTION THAT ENSURES YOU GET THE RIGHT QUALITY AND QUANTITY OF FUEL IN YOUR VEHICLE WITHOUT WAITING IN A QUEUE.

EXECUTIVE SUMMARY

The near total digitization of payment transactions is a certainty. Even in India, by 2025, cashless transactions are estimated to be around 80% with hard currency changing hands only once in every five transactions people make.

By 2025, the volume of digital transactions could be as high as \$1 trillion. Digitization and bringing the heaving mass of unorganized Indian businesses into the formal fold has been the cornerstone of the - current government's policymaking around upgrading the country's payments ecosystem.

Its initiatives such as Jandhan Yojana, Aadhaar, introduction of BHIM app and the emergence of UPI have driven financial inclusion across the country, and promise to change the payment scenario in India. Over the next decade the global payments landscape will evolve even faster due to mass adoption of e-payments and innovations introduced by new and disruptive market players. India will be at the forefront of this payments transformation. The current payments ecosystem will also be redefined by regulatory changes that will cover not only the new disruptive services of startups but also the evolving service bouquet of traditional players. In the near future, payment platforms will not just be commoditized solutions but also be cutting-edge platforms that will deliver to changing lifestyles of consumers. Demography, quantum leaps in digital technology, consumer demand for easier-to-

use services, the big policy push towards financial inclusion, the desire to marginalize cash transactions, and the explosion of essential consumer solutions ranging from e-commerce to app-based taxi hailing - all driving the need for digital transactions - will propel India into a leading position in the global payments landscape.

The threat of data breaches alongside the surge in mobile payments has heightened the need for a future-proof security system. Major card networks have released technical standards for payment tokenization solutions, which are poised to become hygiene factors in any payments service, and its adoption will soon become imperative. ACI Worldwide, a leading global provider of payment and fraud prevention solutions, advocates an all-in-one approach to payment transactions that includes a fraud screen for payments of any value to protect both consumers and businesses from the costs of nefarious transactions.

