



#DigitalBanking

Banking on the go
Financial Services

February 2016

KPMG.com/in



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Executive summary



Digitalisation continues to offer innumerable opportunities on one hand, while simultaneously posing new challenges to banks globally. With each passing day, the banking sector witnesses at least one new breakthrough in some part of the world that has the potential to redefine how banking services would be offered in the coming years.

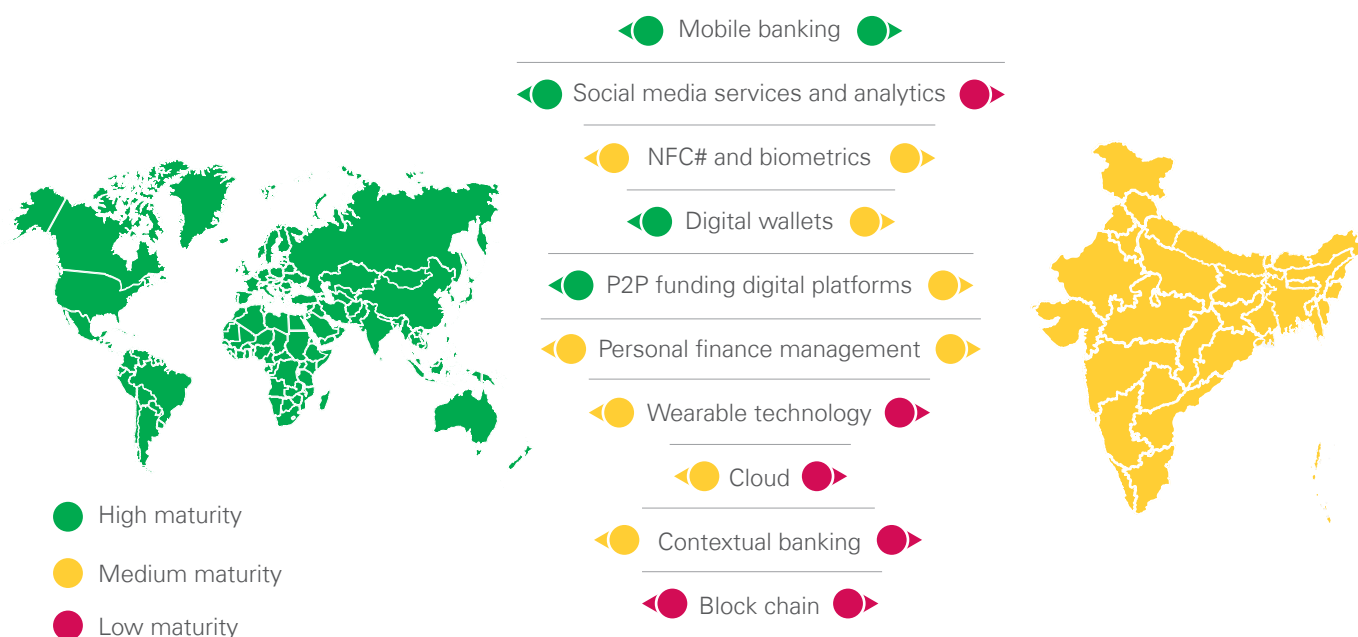
With the significant growth in user adoption, presence on digital platforms is a 'must-have' for banking institutions.

Between 2000 and 2015, the global internet penetration grew seven fold from 6.5 per cent to 43 per cent, while in India, internet penetration for individuals grew exponentially - from less than a per cent to 30 per cent.⁰¹ Moreover, the regulatory and policy push on financial inclusion and intense competition from banking and non-banking players, have further accentuated the need for banks to embark upon the digital journey.

Digital opportunity

We believe new pockets of digital disruption emerging in the banking space can not only provide more efficient channels to customers, but also help explore more cost-effective technologies for back-end operations and enhance customers' experience with unexplored value-adding services. Some of these digital initiatives were adopted a decade back and are quite mature while some are nascent technology and banks are still analysing their viability and usability. India is catching up fast with global peers in the digital innovations space, by rapidly adopting these digital technologies.

Figure 1: Digital maturity assessment for global and Indian banking sectors*



Source: KPMG in India's analysis based on industry discussions, 2016

* Maturity score is arrived at by considering two key aspects - 1. Banks' effort to use the platform/technology and 2. Customers' willingness to adopt those platform/technology. #Near Field Communications

Challenges in the digital journey

Despite several opportunities, banks face pressure from both external and internal forces that hinder full scale digitalisation. The complexity and width of digital initiatives vary upon the infrastructure, customer preferences and policy framework of the region. Digital skill gaps, lack of user awareness and adoption, regulatory restrictions and limited infrastructural support push banks to constantly modify their digital strategy.

Way forward

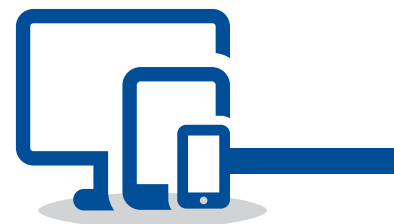
Moving forward, digitalisation could be perceived both as an opportunity as well as a challenge. The winner in the future is likely to be decided based upon path breaking innovation, planning and successful implementation of ideas. Banking shall soon become a real-time, context-driven and fully-automated service, based upon a robust digital roadmap. **The way ahead for banks to go to the next level of the digital era is to collaborate, integrate and automate beyond their core banking services and create an ecosystem of partners for growth.**

Digital skill gaps, lack of user awareness and adoption, regulatory restrictions and limited infrastructural support are the key challenges for banks in their digital journey.



Changing digital scenario

Digital innovation is a 'must-have'



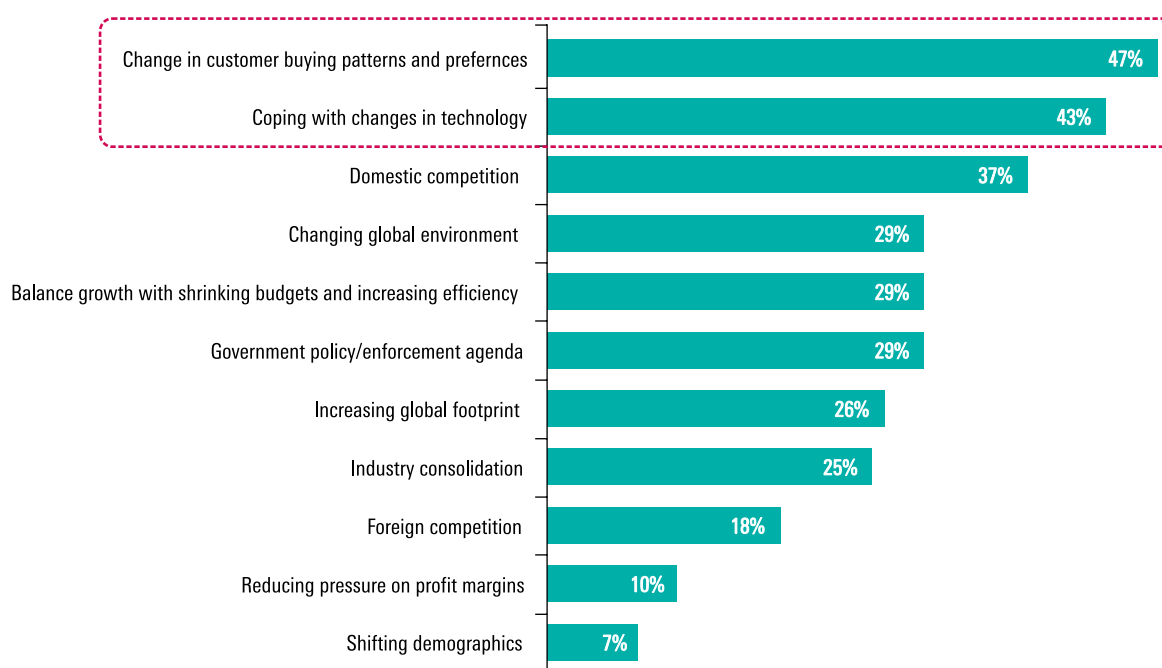
The current digital universe positions customers at the centre, imposing new paradigms. Today's customers stay connected through a range of digital platforms including the internet, social media, and mobile devices. These evolving customer requirements are gradually changing the dynamics of the market and disrupting existing business models, forcing companies to re-think and re-invent their traditional business strategies and stay relevant in the marketplace.

The global Banking and Financial Services Industry (BFSI) has witnessed significant disruptions, prompting players to use technology and technology-enabled platforms as pillars of their strategies. There has been an exponential surge in banking activity as reflected in the strong growth of the worldwide non-

cash payment volumes by 8.3 per cent y-o-y to USD389.7 billion in 2014.⁰¹ The growth has been consistently strong across different regions, pushing banks worldwide to respond with 'out of the box' measures. Further, the regulatory policy push for financial inclusion, and intense competition from existing and new players are some of the key factors contributing to the need for cost savings and cross selling among BFSI players.

We believe the 'banks of future' shall have to adapt to these mega-trends in order to remain competitive, enhance customer experience and create value for their investors and stakeholders. Ever-changing customer demands and fast-paced technological advancements play an increasingly vital role in a bank's overall strategy. According to a survey conducted by the KPMG US in 2014, changing customer preferences and technology figure among the top drivers of transformation programmes for banks (figure 2).

Figure 2: Key drivers of transformation for banks in the next three to five years

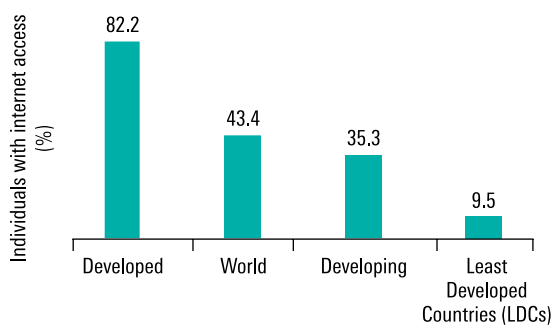


Source: 2014 Banking Industry Outlook Survey, KPMG in India's analysis based on industry discussions, 2016

⁰¹ World Payment Report 2015, Capgemini and Royal Bank of Scotland, October 2015

Implementing a digital strategy has also emerged as one of the topmost priorities for the period up to 2020 according to a survey of 208 bank executives conducted by the Economic Intelligence Unit (EIU) in 2015. One of the key reasons cited in the survey was the expected competition from the non-banking technology players which creates an environment of uncertainty for banks and hence, the need to create a robust digital strategy to face any potential disruptions from these players.⁰²

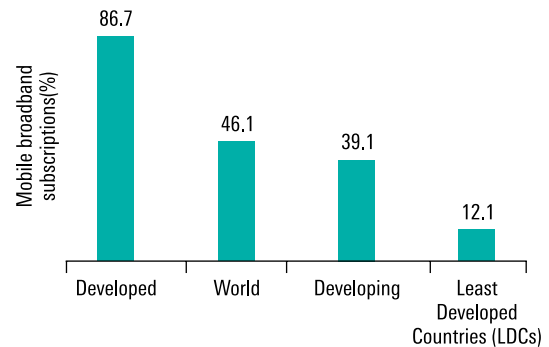
Figure 3: Individuals using the internet



Source: ICT Facts and Figures, International Telecommunications Union, May 2015

During the last couple of years, digitalisation has also been facilitated by improving the technology infrastructure and environment – both in India and globally. The number of mobile and internet users has grown multi-fold across the globe with India being no exception. Between 2000 and 2015, the global internet penetration grew from 6.5 per cent to 43 per cent; while in India it grew from less than a per cent to 30 per cent. With 375 million internet users as of November 2015, India remains one of the biggest markets worldwide (figures 3 and 4).⁰³

Figure 4: Mobile broadband subscriptions



Source: ICT Facts and Figures, International Telecommunications Union, May 2015

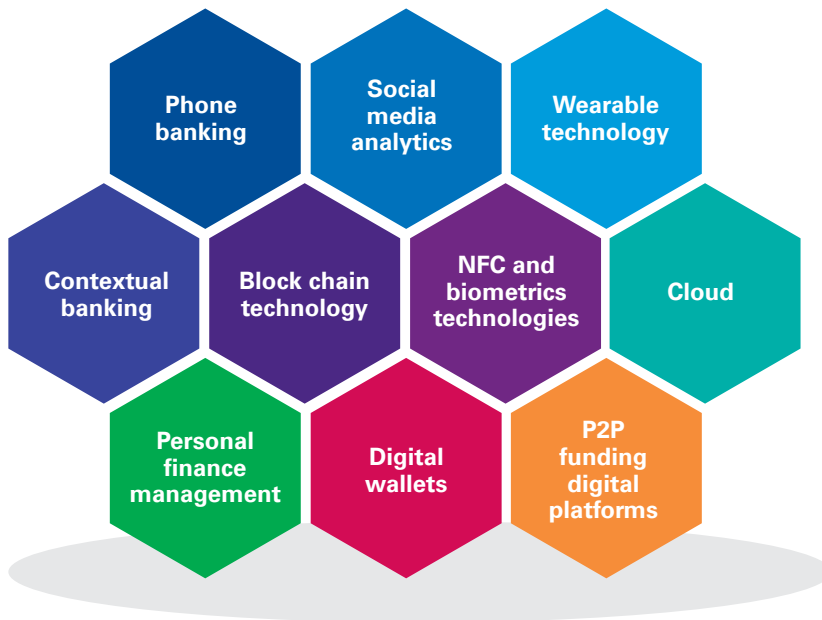
Since May 2015, although India has more than a billion mobile subscribers (approximately 77 per cent penetration) which is second only to China, the number of mobile internet subscribers lags far behind the number of subscribers in many of the developing countries with 83.2 million subscribers translating into a penetration level of 6.5 per cent.⁰³ However, a low penetration coupled with strong growth in the mobile and internet subscribers in India presents significant potential for banks to use these channels extensively to extend their wings in the Fintech space.

In the banking sector, digitalisation spans across a number of customer outreach channels. On one hand, there are some components which provide alternative channels for customers to approach banks and for banks to approach existing and potential customers (such as mobile banking, social media and wearable technology). On the other hand, some components of digitalisation include a few platforms which either make the existing processes efficient (such as cloud and contactless/biometric technology) or provide a platform to facilitate new services (such as P2P digital lending platforms and personal finance management). Figure 5 depicts these components.

02. "Digitisation replaces regulation as top concern for retail banks," Banking Technology website, 10 March 2015, <http://www.bankingtech.com/283661/digitisation-replaces-regulation-as-top-concern-for-retail-banks/>, accessed on 30 January 2016.

03. ICT Facts and Figures, International Telecommunications Union, May 2015

Figure 5: Major digital innovations in the financial services sector



Large banks must respond quickly to digital changes to survive, by swiftly identifying and deploying new capabilities from around the world, rather than just their domestic market.

- Ian Pollari,
Partner -
Shared Services
KPMG in Australia

Source: KPMG in India's analysis based on industry discussions, 2016

In line with the changing scenario, BFSI companies set aside high budgets for digital initiatives. BFSI players spent an average USD142 million on digital initiatives in 2014, second only to the telecommunication sector, as per a survey conducted by Tata Consultancy Services in 2015.⁰⁴

We believe digitalisation is an important enabler to serve the under-banked and unbanked both in India and abroad. Banks in India provide banking services using text messages to serve the people at the bottom of the pyramid who don't have smart phones. Biometric authentication plays an important role in verifying the credentials. Peer-to-peer(P2P) digital lending platforms have provided SMEs and start-ups access to finance which are otherwise not catered to by banks.

04. 'Cos To Spend \$100 Mn On Average In Digital Initiatives,' CXOToday website, <http://www.cxotoday.com/story/cos-to-spend-100-million-on-digital-efforts/>, accessed on 22 January 2016

Global digital landscape

What are the new hot beds for banks globally?



Digital disruption is gradually changing the way banking has been done in past few decades. World over, banks are moving towards 'branchless banking' and the 'all-digital' banking system is becoming popular among banks as well as customers. From the back-end operations to client-facing services, banking players across the globe are digitising the complete banking value chain.

We believe the future is about creating a multi-faceted seamless customer experience. To provide a seamless experience to their clients, banks are moving from the multi-channel to the omni channel approach, integrating disparate digital and physical channels into a unified customer journey. This helps customer complete a transaction using multiple platforms, without a hitch. In today's world, no banking channel can afford to operate in silos. The customers are expecting not

only a chance to choose a channel to execute a transaction but also an option to switch devices/channels any time during a transaction and yet receive the same experience and service.

The omni channel model helps enhance customer loyalty and satisfaction. As per the survey, 'Customer Loyalty in Retail Banking: Global Edition 2014,' conducted by Bain & Co. in 2014⁰¹, the Net Promoter Score (NPS) for omni channel users was 22 percentage points higher than the physical-only channel users and 16 percentage points higher than the digital-only users.

We believe banking technology is taking a leap towards digital innovation. Banks constantly introduce new services and technologies to improve connectivity, automate processes and provide unexplored services to their customers. Some digital initiatives were adopted a decade back and are quite mature while some are at a nascent stage and banks are still analysing their viability and usability.



01. Omnichannel: the key to customer loyalty, NCR website, <http://www.ncr.com/company/blogs/financial/omnichannel-the-key-to-customer-loyalty>, accessed on 22 January 2016

Figure 6: Maturity score for global digital innovations

● High maturity

● Medium maturity

● Low maturity

Maturity score is a qualitative assessment arrived at by considering two key aspects - 1. Banks' effort to use the platform/technology and 2. Customers' willingness to adopt that platform/technology.



Source: KPMG in India's analysis based on industry discussions, 2016

02. 'Mobile Banking Users to Exceed 1 Bn this Year', Juniper Research website, 13 October 2015, <http://www.juniperresearch.com/press/press-releases/mobile-banking-users-to-exceed-1-bn-this-year>, accessed on 30 January 2016

03. 'Majority of Banks Will Turn to Cloud for Processing Transactions By 2016', Banking tech website, 16 October 2013, <http://www.banktech.com/management-strategies/gartner-majority-of-banks-will-turn-to-cloud-for-processing-transactions-by-2016/d/d-id/12966417>, accessed on 30 January 2016

04. 'Next Gen PFM: Contextual Money Management', The Financial Brand website, 31 July 2014, <http://thefinancialbrand.com/41300/contextual-personal-financial-management-pfm/>, accessed on 30 January 2016

05. 'Robo advisory could change distribution t', Live Mint website, <http://www.livemint.com/Money/DOOnQjdoOqd38ijz30HgtGM/Robo-advisory-could-change-distribution.html>, accessed on 30 January 2016

06. 'Global Crowdfunding Market to Reach \$34.4B in 2015', Crowdsourcing website, <http://www.crowdsourcing.org/editorial/global-crowdfunding-market-to-reach-344b-in-2015-predicts-massolutions-2015cf-industry-report/45376>, accessed on 30 January 2016

07. 'Banks Investment In Blockchain Tech To Reach US\$400 Million By 2019', BTC Research website, 21 December 2015, <https://btcresearch.com/news/business/aite-group-banks-investment-in-blockchain-tech-to-reach-us400-million-by-2019/>, accessed on 30 January 2016

08. 'How Wearable Technology Will Impact Business', Salesforce website, 10 June 2014, <https://www.salesforce.com/blog/2014/06/wearables-business-impact.html>, accessed on 30 January 2016

Mobile banking

We believe mobile banking is rapidly evolving from transactional functionalities to experience-driven customised features. The number of users downloading financial applications is also increasing.

Key highlights

- Growth in mobile banking is the highest in Asian countries. China and India record the highest banking application users at 73 and 59 per cent respectively. Whereas in Europe and the U.S., banking application users are 38 and 39 per cent respectively. Mobile banking users in the U.S. are expected to grow by 157 per cent CAGR by 2018.⁰⁹
- Australian banks are among the most innovative in the mobile banking space and investing in next-gen technologies like augmented reality, biometrics etc.

Key examples

- A leading Australian bank's mobile banking app provides a range of services like tap and pay; lock, block and limit payments, execute cardless transactions at their ATMs and transfer money by just bumping two phones together.¹⁰

- Mobile apps of a few banks provide innovative authorisation process. For example, the fingerprint scanning functionality unlocks the mobile banking applications with a fingerprint scan and provides access to online banking.¹¹






The differentiation in mobile banking has been a difficult area and sustained differentiation is almost impossible. Many banks are adopting 'Mobile First' strategy, which provides a relatively better competitive advantage.

- Akhilesh Tuteja,
Partner and Head
EMA IT Advisory - Risk Consulting
KPMG in India



Figure 7: Evolution of mobile banking offerings

The basic offering...	To the advanced...	And the differentiators...
<p>Basic or the must-have services in mobile banking apps include:</p> <ul style="list-style-type: none"> • Account balance inquiry • Transaction history • Funds transfer • Bill payments • Search for ATMs  <p>Fund transfer and balance enquiry comprises the most basic and 'must have' services</p>	<p>Advanced features are present in a few banks and are good-to-have features:</p> <ul style="list-style-type: none"> • Display net balance • Maintain payee details • Future dated payments • Credit card balance display  <p>Advanced features include managing recipients, scheduling payments, etc.</p>	<p>Differentiator features are present in a few banks and these features makes them stand apart from their competitors:</p> <ul style="list-style-type: none"> • Image capture for deposit and payments • Social Media banking Apps • Cloud Storage • Mobile marketing • Real time alerts  <p>Apps using Facebook connections for payments, Remote Deposit, etc.</p>

Source: KPMG in India's analysis based on industry discussions, 2016

09. Mobile banking 2015, KPMG UK, August 2015

10. CommBank App, Commonwealth Bank website, <https://www.commbank.com.au/personal/online-banking/commbank-app.html>, accessed on 30 January 2016

11. Mobile services, Deutsche bank website, <https://www.db.com/en/content/company/Mobile-Services.htm>, accessed on 30 January, 2016

Social media services and analytics

The use of social media has been increasing manifold. Several banks today are connected to customers through various social media platforms. They are leveraging these platforms strategically to market their products and services, understand customer's behaviour and forecast business needs.

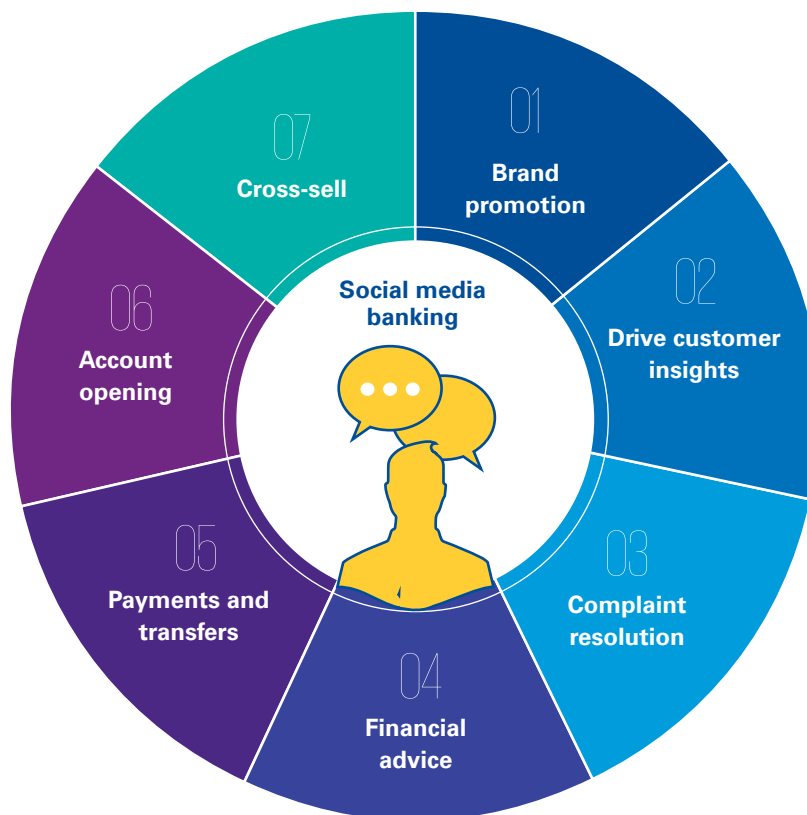
Key highlights

- As of January 2015, there are two billion active social media accounts of which 1.6 billion are accessed via mobile.
- An average social media user spends nearly two hours and 25 minutes per day on social networks and micro blogging websites. Thus, making it a potential platform to build strong customer connections.

Key examples

- Kabbage¹², an online financing technology based in Atlanta, reviews loan applications leveraging social media analytics, cloud-based technology and shipping history. It looks into correlations between shipping trends or Twitter followers for loan application review.
- FBanking by Bradesco¹³: A banking application for Bradesco customers to access account information, make money transfers, payments and mobile credit recharge, and request personal credit limit through Facebook.

Figure 8: Social media banking offerings



Source: KPMG in India's analysis based on industry discussions, 2016

12. 'How it works', Kabbage website, <https://www.kabbage.com/how-it-works/>, accessed on 30 January, 2016

13. Fbanking, Bradesco website, <http://www.bradesco.com.br/next/f-banking.shtml>, accessed on 30 January, 2016

Wearable technology

Since 2014, wearable gadgets have become popular among users for banking services, healthcare and fitness. Banks are coming up with innovative apps that can display account statements on smart glasses and enable payment transfers through smart watches. Many global BFSI companies have tested financial apps on Google Glass.

Key highlights

- Smart wearable devices are expected to approach 130 million by 2018¹⁴, 10 times higher than 2013 estimates¹⁵.
- Google Glass annual sales forecast for 2018 is more than 21 million units.¹⁶

Key examples

- App Bradesco para glass by Bradesco¹⁷: Through the application, the user can locate agencies, ATMs of Bradesco and receive directions and coordinates by Google Maps.
- Cash Tank by Westpac¹⁸: The bank has launched an app Cash Tank through which a user can see his/her full account, at a glance.

Digital wallets

Digital wallets have unfolded a new dimension in the payments landscape. They can be used to make purchases (online/in store), redeem coupons/loyalty points, execute P2P/P2B payments, transfers and store identity cards digitally. Digital wallets are used for money transfers, banking transactions, shopping, and bill payments and ticketing.

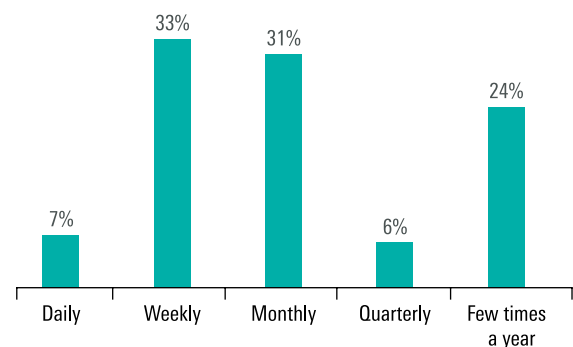
Key highlights¹⁹

- Growth in the mobile wallet market is estimated at nearly 30 per cent CAGR in the next five years from 2015-2019.
- Digital wallets are more frequently used for small ticket transactions. Nearly 70 per cent transactions executed in the U.S. are less than USD30, as per a survey conducted in 2014 Digital Wallet Usage Study, Thrive Analytics.
- Consumers are frequently using digital wallets for routine transactions.

Key examples

- A large technology player partnered²⁰ with companies across the mobile, financial, and retail ecosystems to launch a mobile wallet in 2011 which offers features like tap to pay in the store, online purchase tracking, low balance alerts, loyalty points and offers price comparison, etc.
- A US-based bank launched a mobile wallet in 2015 which provides a complete omni channel experience with in-store, in-app and online purchase options.²¹

Figure 9: Frequency of using digital wallets



Source: 2014 Digital Wallet Usage Study, Thrive Analytics, 'Big Gap Between Awareness And Usage Of Digital Wallets', Marketing Land website, 25 July 2014, <http://marketingland.com/study-big-gap-awareness-usage-digital-wallets-92853>, accessed on 30 January 2016

14. 'Wearable device shipments to reach 130 million by 2018', Information age website, 2 December 2013, <http://www.information-age.com/technology/mobile-and-networking/123457481/wearable-device-shipments-to-reach-130-million-by-2018>, accessed on 30 January 2016

15. 'Digital, Social & Mobile Worldwide in 2015', WearSocial website, 21 January 2015, <http://wearesocial.com/uk/special-reports/digital-social-mobile-worldwide-2015>, accessed on 22 January 2016

16. 'BI INTELLIGENCE FORECAST: Google Glass Will Become A Mainstream Product And Sell Millions By 2016', Business Insider website, 20 November 2013, <http://www.businessinsider.in/BI-INTELLIGENCE-FORECAST-Google-Glass-Will-Become-A-Mainstream-Product-And-Sell-Millions-By-2016/articleshow/26109893.cms>, accessed on 22 January 2016

17. 'Next Releases', Bradesco website, <http://www.bradesco.com.br/next/BradescoNext/Lancamentos/index.shtml>, accessed on 30 January 2016

18. 'Branch, Mobile and online', Westpac website, <http://www.westpac.co.nz/branch-mobile-online/apps-and-innovation/apps/cash-tank-for-iphone-and-android/>, accessed on 30 January 2016

19. 'Big Gap Between Awareness And Usage Of Digital Wallets', Marketing Land website, 25 July 2014, <http://marketingland.com/study-big-gap-awareness-usage-digital-wallets-92853>, accessed on 22 January 2016

20. 'Press releases', MasterCard website, <http://newsroom.mastercard.com/press-releases/google-citi-mastercard-first-data-and-sprint-team-up-to-make-your-phone-your-wallet/>, accessed on 30 January 2016

21. 'Chase Announces Chase Pay, Its Own Digital Wallet', Recode website, 26 October 2015, <http://recode.net/2015/10/26/chase-announces-chase-pay-its-own-digital-wallet/>, accessed on 30 January 2016

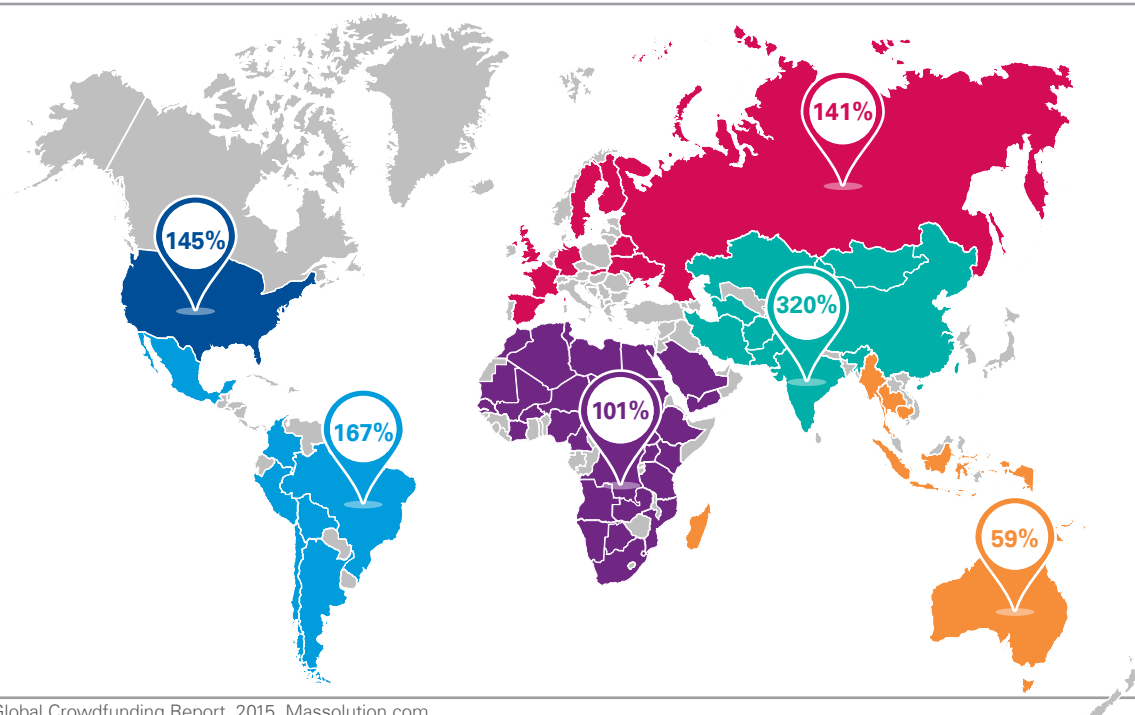
P2P funding digital platforms

The global unsecured retail and SME lending sector are encroached by multiple digital funding platforms underscoring the emergence of new scoring techniques and improved digitised P2P and P2B lending marketplaces. These online P2P lenders have disrupted the market with next-gen technologies which simplify the lending experience and reduce costs and time. Online P-2-P lenders are investing to create more efficient and faster decision making and application process. The U.S., U.K. and China have the most mature markets.

Key highlights

- Crowd funding platforms have grown exponentially with global volumes of USD16.2billion in 2014 and are estimated to almost double in 2015 to USD34.4 billion. Morgan Stanley forecasts the global marketplace lending to grow to USD150-490 billion by 2020.
- In the year 2015, volumes for crowd funding in the US was around USD9.46 billion (145 per cent growth); in Asia USD3.4 billion (320 per cent growth); and in Europe to USD3.26 billion (141 per cent growth). Further, South America, Oceania and Africa saw 167 per cent, 59 per cent and 101 per cent growth, respectively²².

Figure 10: Y-o-Y growth in volume for crowd funding, 2015



Source: Global Crowdfunding Report, 2015, Massolution.com

Key examples

- Prosper Marketplace offers smartphone applications²³ with functionalities like fraud protection and spending trackers. It is leveraging data for cross-selling its debt consolidation loans and other consumer loans.
- Market invoicing offers a platform for auctioning unpaid trade invoice²⁴ and receiving funds in close to one working day
- The large traditional banks are responding to these disruptors. In 2015, RBS collaborated with Funding Circle and Assetz Capital²⁵ and Goldman announced plans to launch its P2P lending platform²⁶ by the middle of 2016.

22. 'Global Crowdfunding Market to Reach \$34.4B in 2015, Predicts Massolution's 2015CF Industry Report', 2015, <http://www.crowdsourcing.org/editorial/global-crowdfunding-market-to-reach-344b-in-2015-predicts-massolutions-2015cf-industry-report/45376>, accessed on 22 January 2016

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25. RBS to refer clients to P2P lenders Funding Circle and Assetz Capital', Finextra website, 22 January 2015, <http://www.finextra.com/news/fullstory.aspx?newsitemid=26917>, accessed on 30 January 2016

26. 'Goldman Sachs Is Entering P2P Lending Becoming the 1st Bank to Launch a Platform', Lend Academy website, 16 June 2015, <http://www.lendacademy.com/goldman-sachs-is-entering-p2p-lending-first-bank-to-launch-a-platform/>, accessed on 30 January 2016

Contactless and biometric technology

Banks are increasingly investing in disruptive technologies to help create a differentiator for themselves and enhance the user experience. Such value add features are expected to improve the customer churn out and loyalty scores.

Contactless payments: Near Field Communication (NFC) technology is becoming an increasingly popular mode of payment among consumers and businesses for in-store purchases. Australian banks reported that 60 per cent transactions were done using NFC contactless payments in 2013²⁷. NFC is recently challenged by the upcoming technology Bluetooth Low Energy (BLE)²⁸ which in addition to payments, also includes direct marketing and proximity marketing initiatives.

Biometric: It allows users to make balance enquiries and transfers, locate branches and ATMs, using voice commands on mobile devices. It also includes fingerprint scanning to log in for additional security measures. Biometric services help combat the threat of identity theft. The biometric identifiers leveraged by banks include: fingerprint scanning, facial recognition, voice-based recognition systems, retina-based, skin-based or even mind-activity based recognition systems.²⁹

Contextual banking

Contextual banking is seamless banking where financial services/offers are made at the place and time of need. It refers to the combination of hardware, software and networks that observe, analyse and interpret human behaviours, intentions, emotions and purchase behaviour by way of creating behavioural graphs. Banks are still exploring areas where this technology can be applied.

Key examples

- A domestic player in the US, launched the contextual marketing app in July-2015 that leverages geo-location of

users to provide real-time offers. It features offers and financial tips, detects location automatically and allows business clients to make make offers to individuals near the merchants' locations.³⁰

- A leading payment service provider partnered with technology firm for a location-based card authentication service to provide an extra layer of security through geo-tagging. It leverages geo-location sensor technology. It enables card transactions for users only when they have their registered mobile device switched on in a specific geo-location, adjacent to the transaction location.³¹

Personal financial management

- Banks are increasingly using analytics to provide expenditure trends, marketing and fraud prevention alerts to enhance customer engagement and loyalty, instead of just providing 'push' customer services.
- Wells Fargo's My Map tool³² is an interactive tool that provides a dashboard view of SMEs' financials, expenditures and goals using data from their Wells Fargo accounts. It includes The Business Spending Report and Budget Watch

tools that helps manage business spending. Clients can access and review bar charts that show monthly spending by category, current savings and monthly spending versus budget goals.

- A leading Japanese bank launched a robo advisory service in October 2015 to create personalised investment strategies for investors through smartphones and PCs.³³

27. 'Mobile banking 2015', KPMG UK, August 2015

28. 'Bluetooth-enabled mobile services threaten NFC with take-off', Mobile Marketeer website, 18 September 2013, <http://www.mobilemarketer.com/cms/news/software-technology/16188.html>, accessed on 30 January 2016

29. 'Mobile Payments and Digital Wallets: Traversing Uncharted Territory', Thought Wave website, 13 August 2015, <http://www.thoughtwave.techendeavour.com/mobility/mobile-payments-and-digital-wallets-traversing-uncharted-territory/>, accessed on 30 January 2016

30. 'U.S. Bank Launches Contextual Marketing App', Blue Soho website, 13 July 2015, http://www.blue-soho.com/Trendspotting/U.S._Bank_Launches_Contextual_Marketing_App, accessed on 30 January 2016

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32. 'My Money Map', Wells Fargo website, <https://www.wellsfargo.com/online-banking/my-money-map/>, accessed on 30 January 2016

33. 'Robo advisory could change distribution t', Live Mint website, <http://www.livemint.com/Money/DOnQjdoQd38ijz30HgtGM/Robo-advisory-could-change-distribution.html>, accessed on 30 January 2016

Cloud

Banks are adopting cloud technology to implement virtualised banking and leverage big data in a more cost effective manner.³⁴ Cloud computing offers scalable and cheaper application portability across multiple devices instead of using in house servers and databases. The cloud is leveraged for CRM, data storage, application development, email, back-end services and virtual desks. Banks are also offering cloud services to consumers as an option to store banking-related documents.

Key highlights

- According to a survey conducted by the Cloud Security Alliance³⁵, 61 per cent of banks state- that the cloud is in the formative stages within their organisation. Approximately 40 per cent have plans for hybrid models, i.e. a mix of in-house IT, private, and public clouds, and 18 per cent have plans to use private clouds. Another survey by Temenos in 2015³⁶ survey states that 89 per cent of BFSI have at least one application in the cloud in contrast to 57 per cent in 2009.

- Cloud has stronger presence in the APAC³⁷ region with 41 per cent banks working on cloud strategy compared to 35 per cent and 28 per cent in EMEA and Americas, respectively.
- Cloud computing is expected to add EUR250 billion to the European GDP by 2020³⁸, according to a research conducted by International Data Corporation and European commission.

Key examples

- A leading U.K. bank's cloud enables users to upload documents and use custom tags to sort and manage them. They have a separate cloud for storing personal documents and business documents.
- BBVA, Atom Bank and Starling Bank are early adopters of cloud technology and are building business models to take advantage of big data and cloud for more scalable and cheaper solutions.

Blockchain technology

Blockchain is expected to revolutionise the back-end operations in the financial services sector, especially the global payment landscape. Banks and new start-ups are exploring the opportunities to leverage blockchain across various business segments – syndicated loans, trade finance, crowd-funding platforms, bonds and the private placement market. The initial phase of block chain technology adoption aimed at introducing automation in majorly paper-centric and contract-driven workflows, like clearing and settlement, transfers and trading activities.

Key highlights

- By end of 2019, spending in blockchain technology is expected to reach USD400 million — a manifold increase from USD30million in 2014 and USD75million in 2015.³⁹

- In September 2015, R3⁴⁰, a NY-based Fintech firm, initiated a collaborative effort to explore opportunities in Blockchain and encourage adoption across the financial services sector. The consortium currently has 42 top-tier banks from across the globe.

Key examples

- Nasdaq has launched Linq system⁴¹, a platform based on distributed ledger technology in December 2015, which facilitates issuance, cataloguing and recording of share transfer transactions to private investors without involving middlemen like clearing firms.
- Crowdaura, a UK-based crowd funding firm, uses block chain technology⁴² for trade, issuance, settlement and administration activities.

34. 'Digitalisation and the future of Commercial banking,' Deutsche Bank, June 2015

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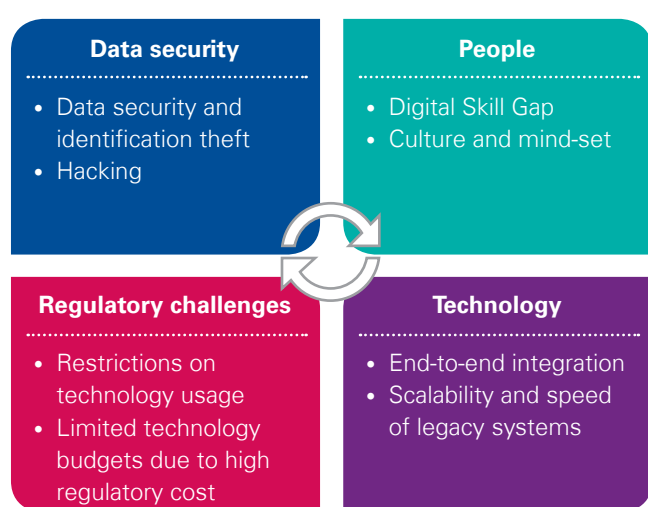
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Global challenges: Digital adoption is not an easy game

With all the benefits that banks have derived from digital transformation, a few challenges also exist. Digital adoption is facing pressure from both external and internal forces. We categorise these challenges broadly under four main heads: People, Technology, Regulatory and Process. These challenges are pushing banks to constantly modify their digital strategy.

Figure 11: Challenges in digital adoption globally



Source: KPMG in India's analysis based on industry discussions, 2016

People

To compete with the tech giants and challengers, banks require that their employees have strong technology skill sets. The scope for technology opportunities is vast; it includes data analytics, big data, digital marketing, social media usage and analytics and customer analytics. There are medium to high digital skills gap among the banks globally⁴³, as per a study conducted by Oliver Wyman in 2014. Due to a lack of strategy around digital training for up-skilling employees, banks are not able to innovate quickly and have started facing challenges from start-ups, tech giants and other sectors.

Besides there should be a mind-set among employees to usher in digital innovation in day-to-day customer service and product offerings. However, in many cases, banks are still to introduce a culture supporting innovation and digitalisation.

Technology

Integration of the customer-facing digital offerings with back-end operations and processes are imperative to help ensure the success of a digital strategy. Technology infrastructure is one of the important enablers for a successful digital transformation. It is important for banks to upgrade their systems to implement new technologies. There are still few banks who have not yet upgraded their systems from legacy processes to the new infrastructure which is required for

integrating front end digitisation to back end operations. Some of the programming languages (such as COBOL) that were used few decades ago, are still being used by the banks. Banks are also maintaining multiple customer-facing systems which cause duplications in the processes and also make the process inflexible, expensive and time consuming.

Further, the digital transformation programmes affect banks' internal processes during the transition period and disrupts the business as usual. During the trial and testing phase, and sometimes during final implementation, technical glitches hamper seamless offerings and create negative publicity. In late 2015, a major Australian bank⁴⁴ upgraded its online platforms to provide a similar look for all the digital banking platforms. However, after the implementation there was a major technical glitch due to which customers faced challenges while accessing their bank accounts. Customers also went to the bank's Facebook page to convey their dissatisfaction. This often proves to be a reputational risk.

Data security

Data security is one of the highest concerns for any banking player today. With the increase in digitalisation and ease of banking services, a new threat that banks are exposed to is cybercrime. These crimes are not only for monetary gains but also for the valuable information of individuals or institutions. The threats could be from inside or outside the organisation. In the last few years, banks in U.S. and U.K. have witnessed various cases of cyber threats.

Regulatory challenges

For banks to implement advanced technologies, government support is inevitable. However, banks are currently over-burdened by regulatory pressure. The compliance measures adopted by them to meet the growing regulatory requirements are eating away the capital investments budgets set aside for digital transformation. Adoption of Basel 3, for example, requires huge capital/recapitalisation.

Where legacy banks are facing challenges and pressure from regulators, start-up firms, P2P players and Fintech are enjoying incentives like tax holidays etc. which further adds to the competition faced by banks from the challengers in the market.

Regulators are also restricting the transaction size for certain digital payment services, for instance contactless in U.K. is capped under GBP 30 and in India under INR 2,000⁴⁵. Further adoption of technology such as cloud computing also face regulatory compliance around data confidentiality. In Europe, banks have to comply with the Union's General Data Protection Regulation while moving to the cloud⁴⁶.

43. 'Pity the CIO: The CIOs Digital Predicament in Banking,' Oliver Wyman, June 2014

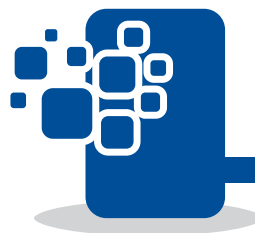
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Banking in India

Moving towards 'digitalisation'



The Indian banking landscape has witnessed significant transformational changes during the last two decades – from the entry of private players to increased regulatory surveillance to changing customer channels to implementing technology. All these changes have made the banking system more efficient, agile and resilient. The landscape in India is further changing which is evident from the emergence of payment banks and the changing focus of traditional banks towards the digital side of things.

India has seen significant growth in both the number of smartphone users and internet users over the past few years. Globally, India is ranked third in terms of number of smartphone users after US and China.⁰¹ Also, the number of internet users in India surpassed the population of the US in the second half of 2015 and India is ranked second on this parameter only after China.⁰²

We believe that the digitalisation of banking operations is another transformational change which could potentially affect the business models of the banks operating in India. The digitalisation efforts of banks in India have been further facilitated by improvements in various aspects and favourable demographics. The government has a focus on digital India and intends to move towards a cashless economy. It has plans to provide universal access to mobile connectivity, information for all, and public internet access programmes. The government is also focused on promoting e-governance. All these initiative are expected to boost the digitalisation efforts across sectors.⁰³

As an outcome of this trend towards digitalisation, several industries face disruptions from tech-savvy firms including banks. In the banking sector, legacy banks have started to

see competition from new players not only from banking but also from other technology-focused industries. The payment licenses have been granted to telecom companies, security market entities, postal service provider, bottom of pyramid players, payment service providers, technology companies, and NBFCs. The traditional banks are thus being forced to embrace the ongoing digital change.

Payments is an area which is experiencing innovative disruption. With the entry of new payment banks, the landscape is changing and payment solutions are being upgraded constantly to provide cost effective and scalable digital solutions.



Payment banks will appoint their merchants and users would be able to pay them electronically. This means, you could soon be using your mobile to transfer funds to a retail store or at a restaurant.

- Shashwat Sharma,
Partner - Management Consulting
KPMG in India



Licenses have been awarded for 11 payment banks, 40 prepaid payment instrument issuers, and over 10 payment aggregators to operate in India.⁰³

Although there are multiple digitalisation channels used by banks in India, these channels are at different stages of maturity. The following figure depicts the maturity pattern of various digital offerings.

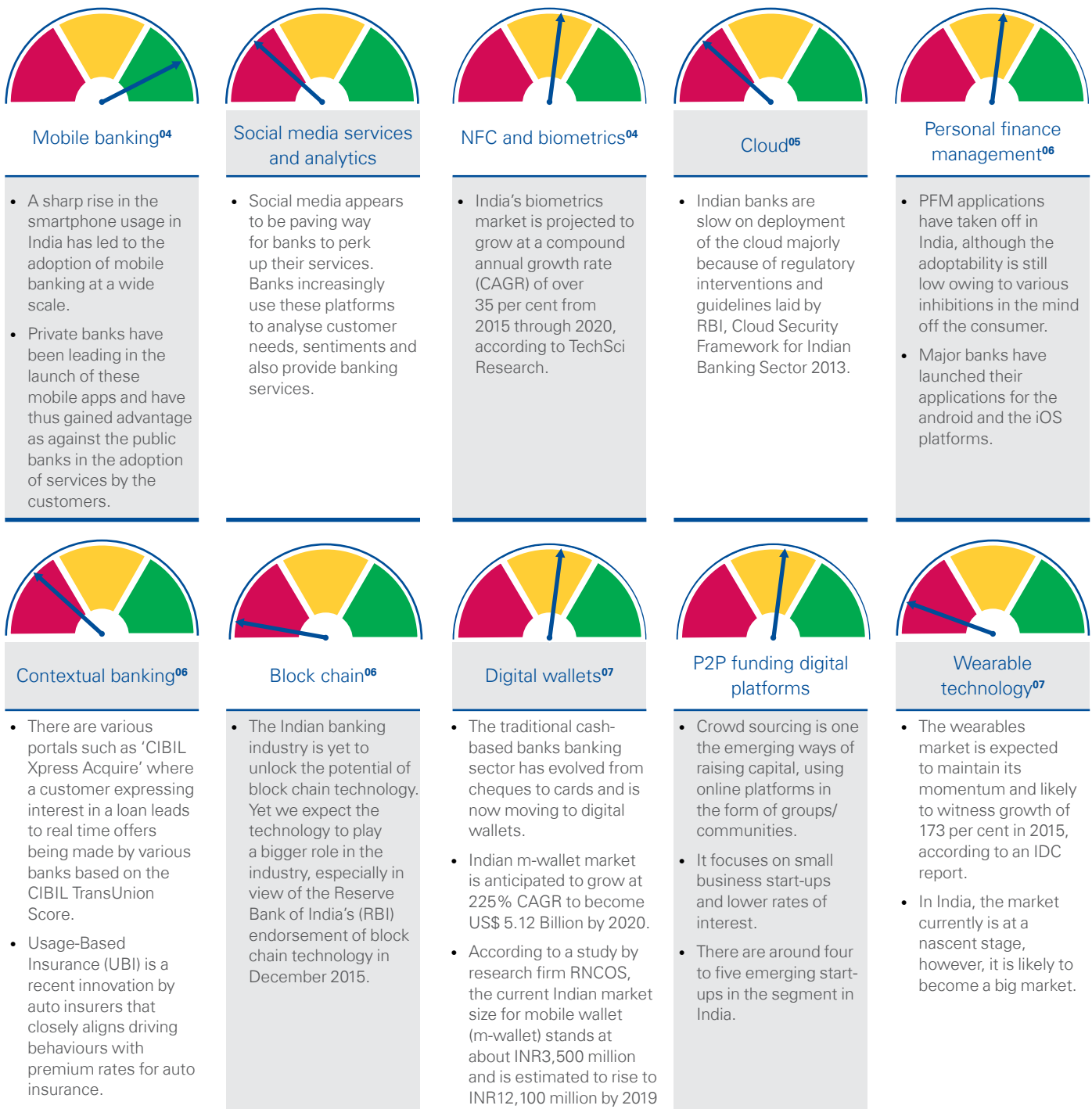
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Figure 12: Maturity score for Indian digital innovations ● High maturity ● Medium maturity ● Low maturity

Maturity score is a qualitative assessment arrived at by considering two key aspects - 1. Banks' effort to use the platform/technology and 2. Customers' willingness to adopt those platform/technology.



Source: KPMG in India's analysis based on industry discussions, 2016

Mobile banking

Key highlights

- Mobile banking offers many opportunities for cross-selling other financial services, but unwanted sales messages can 'invade', 'device intimacy' and leads to customer complaints, reduced usage or even switching to another provider.⁰⁸
- By October 2015, monthly volumes hit a record INR235.7 billion, over 100 per cent more than at the start of 2015. This is driven by factors, such as high mobile penetration, growing youth population and ease of transactions.⁰⁹

Key examples

- Most of the banks in India offer mobile banking services which include bill payment, fund transfer, customised offers, location-based services besides basic banking services. For example, mobile application launched by one of the leading foreign banks operating in India provides various offers on cards at places around the customer's present location.¹⁰

Social media services and analytics

Key highlights

- Social media banking helps in obtaining data about the customer which can be put through an analytics software to help serve customers better. Social data analytics could also provide banks with information about potential defaulters on loans.¹¹
- Many Indian banks now have accounts on social media platforms which helps them to continuously interact, educate and address customer queries.

Key examples

- One of the leading private banks in India offers a bank-agnostic payment service for Facebook to enable its Indian account holders to transfer money by choosing a recipient's name from their friends' lists.¹² Almost half of this bank's digital users have also linked their Twitter handles with that of the bank.¹³

08. 'Mobile banking users in India account for over 50 per cent of its population today, according to research by KPMG and UBS', KPMG website, 10 August 2015, https://www.kpmg.com/IN/en/Press%20Release/From_KPMGIndia_Press%20Release_Mobilebanking_10_07_2015.pdf, accessed on 29 January 2016

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Cloud and NFC technology

Key highlights

- The NFC payments are capped at INR2,000 in India without a separate pin authentication.¹⁴
- Biometric technologies are also fuelling innovation in the banking space. For instance, by scanning one's fingerprint and hitting the Aadhaar database, one's KYC (know your customer) is automatically generated, eliminating the need for photo-identification or having to carry a duplicate documents.

Key examples¹⁵

- One of the leading Indian private banks has launched the country's first contactless debit and credit cards that use the near-field communication (NFC) technology.
- India's first NFC technology-based mobile payments system was launched by a media and entertainment company. Customers can buy refreshments and tickets using their NFC smartphones at its cinemas.
- A leading telecom player in India set up self-service MMT terminals to enable its customers to make NFC payments.¹⁶

Personal finance management

Key highlights

- There are various applications, both by Indian and foreign players, that can be used by Indian users for personal finance management.
- The 'Money View' application shows a snapshot of all personal finance of its users. It also acts as an expense manager allowing users to set monthly budgets and keep a tab on them. It also reminds of payment deadlines of various bills.¹⁷

Key examples

- A robo-advisor in India takes information from investors through an online form and provides customised financial plans accordingly, and review them on half yearly basis.¹⁸
- Banks are also exploring the potential of robo advisors. In 2015, one of the leading Indian private bank's Securities division announced the launch of a robo advisory platform for securities tracking and investments management for investors.¹⁹

14. 'RBI allows low-value 'tap and pay' without PIN', The Times of India website, 14 May 2015, <http://timesofindia.indiatimes.com/business/india-business/RBI-allows-low-value-tap-and-pay-without-PIN/articleshow/47284790.cms>, accessed on 29 January 2016

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Digital wallets

Key highlights

- The Indian mobile wallet market is expected to be more than INR12 billion by 2019, a significant increase from approximately INR3.5 billion at the end of 2014.²⁰
- The user base is growing exponentially. MobiKwik's user base grew by 300 per cent in the financial year 2014-15 to about 15 million. Within 15 months of the launch, Paytm had a user base of 50 million.²¹

Key examples²²

- In early 2015, one of the leading Indian private banks launched an e-wallet called 'Pockets' which is a mobile

application used to send money, pay utility bills, book movie tickets, open a zero-balance account, and send gifts and share expenses.

- Some banks operating in India - both in the public and private sectors - have their own wallets.
- However, banks are facing significant challenges from the wallets offered by new entrants. These have a slight edge over those of banks as their core activity itself is of e-wallet as compared to those of banks which provide it as an additional service.

Wearables

Key highlights

- The concept of wearable devices is still at a very nascent stage in India with its primary use being in health-related devices. Banks can tap the opportunity created through 'wearable devices' to engage existing customers. Wearable

technologies are a growing trend in India but has not made its presence felt in the banking sector as only a handful of banks have started offering these services.

P2P funding/Digital platforms

Key highlights

- Crowd funding is one of the emerging ways of raising capital using online platforms in the form of groups/communities. It focuses on small business start-ups and lower interest rate.
- There are no regulations in India governing crowdfunding but there are certain guidelines. There is a cap of 200 on the number of investors that can participate in crowdfunding charge high interest rates.²³

Key examples

- Milaap Social Ventures, formed in 2010, has helped mobilise INR531.6 million across 41,850 projects and is a prominent player in India.²⁴
- Besides Milaap, there are a number of firms in this space including Wishberry and Ignite Intent.

The rise in the number of transactions through digital channels has been the sharpest for foreign and private banks. Digital channels have emerged as a lucrative option especially for foreign banks, which have found it difficult to get regulatory approvals to open new branches. We believe that the adoption rate of these channels is going to increase even faster given various schemes for mandatory e-payments (for example, direct benefit transfers) and need to reach out to the unbanked population where operating physical channels has its own set of challenges. Regulations and policy changes are expected to further facilitate this.

20. 'A guide to mobile wallets', The Times of India, 23 August 2015, <http://timesofindia.indiatimes.com/tech/computing/A-guide-to-mobile-wallets/articleshow/48641325.cms>, accessed on 29 January 2016

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Fintech start-ups: A disruption in the banking landscape

According to a report published by Merrill Lynch and Bank of America in September 2015, the share of mobile banking in India's payment market is estimated to rise to 10 per cent in seven years from 0.1 per cent currently, with the value increasing 200 times to USD3.5 trillion. A slew of financial technology (Fintech) start-ups in the digital banking space

have emerged to play a major role in this. These digital banking players have a distinct advantage of starting their services on a technologically advanced platform and thus fare ahead of the banking players in India.⁴² Below are some of the start-up payment disruptors in the Indian Fintech space.

Figure 13: Digital disruptive players in Indian Fintech space²⁵



01

Paytm (One 97 Mobile Solutions Private Limited)

- Paytm offers mobile recharge and utility bill payments and a full marketplace to consumers on its mobile applications.
- It is expected to launch 'sound pay,' a feature on its mobile application that allows money transfers and payments using ultrasonic sound waves.



02

Citrus Payment Solutions Private Limited

- Domestic mobile and digital payments company Citrus has launched SplitPay, the world's first automated marketplace payment solution.
- SplitPay lets merchants charge commissions for different sellers, release payments to sellers and takes care of settlements to the merchant's bank account.

25. 'Dwolla Unveils White Label Offering', Bank Innovation website, 2 September 2015, <http://bankinnovation.net/2015/09/dwolla-unveils-white-label-offering/>, accessed on 29 January 2016

By digitalising processes end-to-end, engaging customers on the digital channel for sales and transactions, and collectively working towards reducing the usage of cash, banks can achieve up to a 30 per cent increase in sales productivity, reduce administrative staff by 10-15 per cent and improve back-office staff productivity by 20 per cent.²⁶ Digital transactions lead to higher a Current Account, Savings Account (CASA) balances in accounts by as much as 20 per cent. Further, the use of information bureau and analytics based early warning systems can reduce the bad debt levels substantially and is expected to have a positive impact on the high level of non-performing assets (NPA).

The banking sector is going to witness 'white labelling' of banking products which will offer 'Bank in a Box' solutions to end clients. From traditional ATMs, white label solutions are going to find a huge application in payments services.²⁷

We believe that payment is a key step in online transactions. Robust and inclusive electronic payment solutions are important to enable participants to leverage their benefits for their businesses. To effectively tap into and benefit from this opportunity, the providers of electronic payments infrastructure need to understand the expectations of the users, address issues faced by them and have users understand and appreciate the electronic payment offerings. A simple, reliable and secure online payment system is expected to not only facilitate ease of payments but also evoke trust and paves way for rapid adoption of online ecommerce.



26. 'FinMin, RBI set up panel on reducing cash transactions,' Business Standard website, 1 June 2015, <http://www.efinancialnews.com/story/2015-10-30/mizuho-launches-robo-advice-service-japan-fintech,%2030%20October%202015>, accessed on 20 January 2016

27. DWOLLA website, www.dwolla.com, accessed on 29 January 2016

Way forward

Collaborate | Integrate | Automate



Digitalisation shall continue to be perceived both as an opportunity as well as a challenge. For banks, execution will be key in the future. This is a playing field where the winner shall be decided based upon path breaking innovation, flexibility to adapt and successful implementation of ideas.

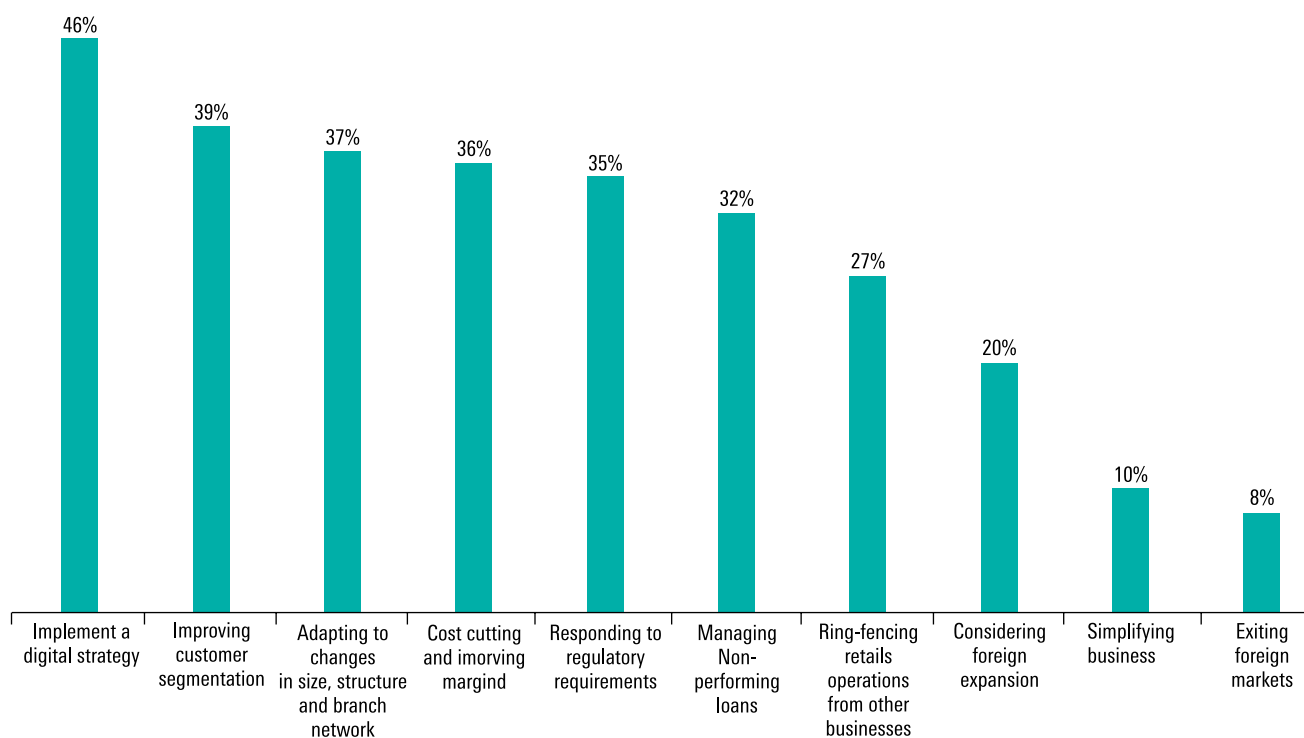
We expect banks to re-define their digital journey and fuse the silos created by various channels, such as mobile, data analytics, cloud etc. into a 'consolidated digital plan.' They need to come with strategic plans to educate and incentivise their customers to move to digital channels.

Implementation of a digital strategy will be the highest priority for the banks by 2020 with 46 per cent of respondents, in favour of the digital strategy, as per a survey conducted in 2014 by banking software vendor Temenos.⁰¹

Banks must 'adapt or die' in the digital world. Although many banks have already risen to the challenge and invested in new infrastructure and pioneering initiatives, others need to follow suit to keep up with the pace of change.

- David Hodgkinson,
Principal Advisor
KPMG in the U.K.

Figure 15: Key priorities for retail banks in 2020



Source: 2014 Survey, Temenos (<http://www.bankingtech.com/283661/digitisation-replaces-regulation-as-top-concern-for-retail-banks/>)

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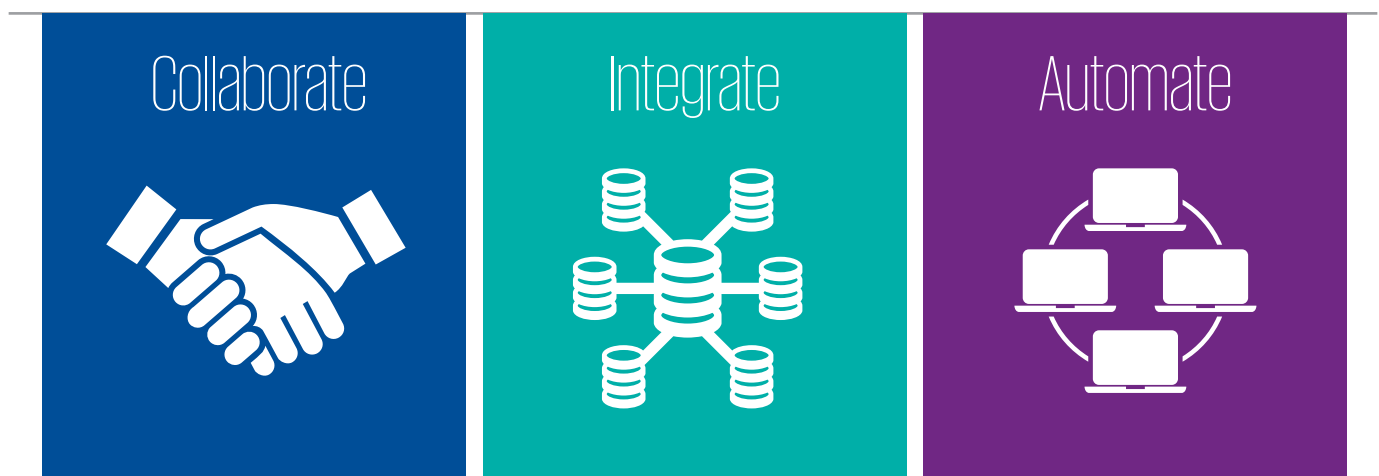
From India's perspective, [We believe](#) that a combination of growing smartphone adoption and internet penetration, increased access to banking products, and a focus on facilitating frictionless commerce through electronic payments will drive a truly inclusive 'Digital India' that transforms the livelihoods of millions of customers and small businesses.

Banks in India have implemented digital initiatives in a fragmented manner and in silos from their peers. Now that the banking sector in India is getting competitive with payments and small bank licenses, it will bring the unbanked masses

under the ambit of formal banking and also expedite financial inclusion. What needs to be ensured is that banking and payments players work in sync with regulators aiding this journey to digitalisation.

Going forward, banks are expected to follow CIA approach; i.e. (a) collaborate instead of compete with the challengers; (b) integrate and realign all their processes and systems; and (c) automate their processes and push their customers towards more self-servicing, intuitive and robotic channels.

Figure 16: Potential winning factors for future



Source: KPMG in India's analysis based on industry discussions, 2016

- We expect to see more alignments within and outside the organisation. Experience and competencies of a single player might not be the winning factor. Banks may consider collaborating with peer banks, start-ups, retailers and telecom companies to increase their market shares. The concept of shared economics will emerge where banks will collaborate and share in-house software and technological solutions to make the processes more robust.
- In the coming years, we foresee banks creating a complete digital ecosystem by bringing in the integration of processes, people and technology. Open Application Programming Interfaces (APIs) and simplified digital architectural designs may emerge for a seamless connection between interfaces, services and applications (apps), driving an uninterrupted flow of digital content.
- Another development is likely to be the introduction to robotics, automation and self-learning algorithms in order to limit human involvement and up-skill machines to offer self-

servicing channels. This will involve initial investments which will be capitalised in the long run in the form of reduced operating expenses, especially staff and rental costs.

The first phase of the digital journey of the banking sector has been to explore and invest in the pockets of digital disruptions.



Innovation has now become 'business as usual'. Going forward, banks will need to **collaborate, integrate and automate** to take their digital journeys, to the next level.

- Neha Punater,
Partner - Management Consulting
KPMG in India



Acknowledgement

We hereby acknowledge the efforts of the following professionals from KPMG in India, for developing the report:

Project team

- Menu Sharma
- Preetendra Panwar
- Richa Kumari
- Rishi Malhotra
- Saurabh Gupta
- Tapan Bhatia
- Vinkal Chadha

Production team

- Jiten Ganatra
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Printed in India. (045_THL0116)