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FINACLE CONNECT

Connecting the banking world

Cover Story

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ACCELERATING YOUR JOURNEY TO #TRULYDIGITAL BANKING

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Accelerating your Journey to #TrulyDigital Banking

There are two sets of factors that are contributing to the transformation of the financial service industry. The first being, environmental factors like sluggish global growth and increasing regulatory costs; and the second is banks having to deal with ubiquitous digitization caused by rapid evolution and adoption of modern technologies. Along with falling profits, stagnant growth, and stringent capital adequacy requirements, banks will increasingly need to explore newer revenue streams. And the very technologies that are disrupting the environment, will provide the opportunities for banks to do so.

In this edition of FinacleConnect, we explore how banks can mitigate these challenges, this year and beyond, by transforming from digital to #TrulyDigital. We kick things off with our cover story by Sanat Rao, Chief Business Officer & Global Head, Infosys Finacle, that examines how the banking wheel will be reinvented in 2017. The feature by Karine Coutinho, Deputy Managing Director & Head of Content, Efma, picks up from Sanat's cover story, and discusses what lies ahead for retail financial services and its biggest disruptors.

Blockchain is our technology in focus in this issue. The perspective article, "Blockchain Technology: From Hype to Reality", provides a deep dive into our recent report in this space. We also move beyond blockchain in theory, and talk to a few practitioners – Sampath Srinivasan, Senior Vice President, Strategic Projects, Emirates NBD, and Abhijit Singh, Head of Business Technology Group, ICICI Bank – of blockchain in our Inside Talk piece.

The opinion piece examines how banking is evolving as a platform for connecting consumers and service providers, instead of being just a provider for its own services and products.

This edition of FinacleConnect showcases some of the biggest trends that will enable banks to become a #TrulyDigital player in the open ecosystem. We hope that you will find this issue insightful and an interesting read. Do let us know your views.

Puneet Chhahira
Global Head of Marketing, Infosys Finacle
EdgeVerve

TURNING TRULY DIGITAL IN **2017**

According to the Infosys Finacle – Efma "Innovation in Retail Banking" report for 2016, 41 percent of banks are working with fintechs or start-ups as suppliers. In another survey, senior industry executives around the world ranked the use of Big Data, AI, Advanced Analytics and Cognitive Computing by financial services as the second biggest focus area for 2017[1].

Recently, a global consulting firm said 31 percent of profits of U.K. and European banks were at risk from digital disruption, and that number could shoot up to 50 percent by 2020[2].

Clearly, digital disruption is changing the face of banking forever. But although this will severely challenge those banks, which do not evolve their business models, operations and talent resources to meet the needs of the digital age, on the flip side, it will present very significant opportunities to those that do. In fact, 2017 may well belong to the banks, which take systematic and comprehensive steps to transform into truly digital entities that offer greater value to customers, employees, partners and the ecosystem in general.

Two factors, namely **macroeconomic conditions** and **digitization**, will be most influential in this transformation.

Macroeconomic conditions remain soft worldwide, straining traditional sources of banking revenues, such as interest, and fees and charges. For developed market banks, the major challenges stem from stagnant growth opportunities and legacy infrastructure. For their developing market counterparts, the biggest challenge is clearly the sharply rising bad loans.

But at the same time, technology is opening up new opportunities, including new revenue streams attached to products and services relevant to the current times.

However, to unlock these revenue streams, banks will need to entrench themselves within their ecosystems, either as lead players or participants. With so many ecosystems emerging, populated by both global giants and local entities, these truly digital banks need to choose their ecosystems wisely, and take particular note of the economics while doing so.

Revenue focus needs to be reinforced with a push on cost control. New technologies of the digital age, including robotic process automation, artificial intelligence and blockchain will help bring down costs from where they are today, and also improve utilization of human resources.

Banks will need to be highly flexible and scalable, and prepared to make changes in next to no time.

Truly digital banks will only be able to achieve this by going "cloud first" for new infrastructure and applications.

Next, they should become even more agile by simplifying technology architecture using enterprise componentization.

Digitization has created the most demanding consumer in history. With new-age competitors offering superior experiences, and exit barriers coming down, the fight for customers has turned fierce.

Gartner says that 89 percent of marketers expect customer experience to be their main plank of differentiation in 2017[3].

We have seen that truly digital banks, those which have evolved their purpose, offerings, operations, structures, and human resources to align with customer expectations, and deliver the best experience possible, have clearly won the battle for new customers. One example worth mentioning is DBS. DBS is Singapore's premier bank, and they have come up with a mobile-only, digital bank that is completely paperless. With this digital bank, DBS created a whole new segment of customers and created offerings that were tailored for this segment. DBS has managed to improve customer experience immeasurably by removing all paper that is usually involved in banking transactions. And the results are obvious – they have managed to accumulate 800,000 customers in just nine months.

Empowered people and a culture of continuous learning are also key factors of transformation. Banks need to prepare their staff to survive in the digital age, which will see many roles being lost to artificial intelligence/ automation. Rather than fearing or resisting this trend, banks should view it as an opportunity to amplify their human capital by deploying it into more rewarding pursuits such as problem solving, creative thinking and innovation.

Digital customers go wherever they receive the best service and experience. Hence, banking services delivery today is shared by an ecosystem of diverse players. As global tech giants, platform companies and Fintech start-ups penetrate further into this business, the position of incumbent banks as the central intermediary in transactions is coming into question. What's more, many countries are introducing regulations to encourage

openness in banking. In 2017, we expect truly digital banks to open up further with the help of initiatives around API.

At the same time, banks will also have to reckon with greater security threats, an unfortunate but inevitable outcome of digitization. IoT and open banking will introduce layers that never existed before, which must be secured at all cost. This will call for nothing less than a reimagination of security philosophies, policies, processes and infrastructure.

Customer-first banking, ecosystem driven business model, people empowerment and continuous learning, automation using artificial intelligence, and pervasive security – these are the milestones on the journey to transformation. Truly digital banks – or those aspiring to be one – will clearly have their hands full this year.

Sanat Rao
Chief Business Officer & Global Head, Infosys Finacle

Interview with Karine Coutinho

Deputy Managing Director &
Head of Content, Efma

Retail Financial Services in 2017 and what to Expect from the Year Ahead

Karine Coutinho, Efma's Deputy Managing Director & Head of Content, outlines the disruptive forces impacting those operating in the retail financial services industry and suggests strategies for a successful future.

What are the biggest disruptors in retail banking today?

One of the biggest disruptors is unquestionably the revised Directive on Payment Services (PSD2). This set of wide-ranging regulations is expected to bring sweeping changes to retail financial services in Europe. It will impact daily banking and drive the shift towards a more open banking landscape as banks will be forced to allow third parties to access customer account information through more open and standardised application programming interfaces (APIs) and allow payments to be initiated directly from the bank account. The challenges resulting from the PSD2 directive are compounded for traditional banks, who have to compete with neobanks such as Banco Original in Brazil or Solaris Bank in Germany who have already launched their API platforms.

How are banks leveraging disruptive technologies?

For the vast majority of today's banks, the biggest goal is to complete their digital transformation. This will not only enable them to reduce costs, but also allow them to compete with online banks.

In our recent *Innovation in Retail Banking* report, conducted in collaboration with EdgeVerve-Infosys, we found that disruptive technologies are helping to accelerate the digitisation of banking and are spurring changes to banking business models. We are only just starting to see the impact of these and expect that the changes will accelerate over the next 2 to 3 years.

> We are already seeing a large number of start-ups and established banks launch digital only banks which can operate off a much lower cost base and provide a very different customer experience.

Indeed, our report found that approximately 20 percent of banks are launching or considering launching a digital only bank. A small minority (approximately 5 percent) are acquiring or considering acquiring a digital only banking business.

What role do fintechs play in this disruptive environment?

Fintechs are developing many brilliant ideas. It is often difficult for banks to do the same internally because they lack the necessary agility. Therefore, it is easier for them to collaborate with fintechs in order to innovate and to be disruptive.

> Our Innovation in Retail Banking report found that 41 percent of banks are working with start-ups as suppliers and 32 percent of banks are making investments in start-ups.

Meanwhile, 27 percent are running accelerators or incubators, internally or externally.

How do new technologies have the power to disrupt and change future banking business models?

New technologies can bring new revenue streams, as is the case for big data. ZestFinance is a case in point here, which is turning shopping data into credit data, creating credit histories for over half a billion people in China who were without one.

Meanwhile, disruptive solutions like AI and robotics are changing the customer experience. Take RBS's AI system Luvo, for example. Developed with IBM Watson, it can understand questions and then filter through huge amounts of information in a split second before responding with the answer.

Luvo is unique in that a 'human' like personality has been created for it, making it easier for employees to interact with. Like humans, Luvo has to be trained when dealing with new subject matter, but crucially, it learns from its mistakes and its answers become more accurate over time.

APIs are allowing banks to bring together a complete offer of financial services provided by several providers. In Germany, two banks have set out to provide services to other innovative companies encouraging them to build services on top of the bank's open architecture: SolarisBank and Sutor Bank. Established banks like Capital One and BBVA are taking a lead in developing an approach for working with Open APIs and third party developers

Finally, new blockchain solutions are creating better operational efficiency for banks.

Investment in blockchain start-ups increased from zero in 2012 to US$496 million in 2015, according to CB Insights, and remained at a high level at the beginning of 2016.

While 21 percent of the banks feel blockchain/distributed ledger as a disruptive technology will have an impact in the next two years, over 40 percent feel it will have an impact in 3-4 years.

How are different countries leveraging these disruptive solutions?

There is a striking difference here with banks from low income countries not expecting a high impact from blockchain/ distributed ledger technologies, and generally expecting the impact of other disruptive technologies to be lower than banks from high or middle income countries. The banks from high and middle income countries are relatively similar in their expectations.

What advice do you offer retail banks today in order to secure a successful future?

Banks cannot take a wait-and-see attitude. From our point of view, banks which choose to focus on compliance and sit this out, run the risk of being relegated to becoming 'dumb pipes', disintermediated by third parties and other banks – where their offering is commoditized, their brand becomes less relevant, and they compete merely on price and operational excellence.

Financial services firms should learn lessons from companies in other industries such as travel, where the competitive landscape shifted, and firms without an open strategy found themselves left behind, reliant on demand from new digital aggregators and comparison engines.

However, for those banks that will move beyond compliance and act promptly – both organisationally and in terms of technology – we believe there's a unique opportunity to capture additional market share, fuel sustainable growth and remain at the centre of the primary customer-bank relationship. A more open and innovative ecosystem – aggregation platforms, data & analytics, marketplaces, mash-up services and comparison tools – could enable banks to stay relevant to their customers and develop new revenue streams, as banking becomes more seamlessly embedded in the daily life of the customer.

Inside Talk I: Emirates NBD

In Conversation with Srinivasan Sampath

Senior Vice President, Strategic Projects, Emirates NBD

ENBD has always been at the forefront for digital innovations in banking; what is in store on the digital front for 2017?

Our journey in digital innovation will continue at an accelerated pace. We will be collaborating with the community and tapping the fintech ecosystem to radically transform and create new business opportunities and enhance customer experience.

Our strategy is built on three key pillars of Culture, Co-creation, and Community in alignment with UAE's vision to be one of the most innovative countries in the world.

The main focus of our digital journey will be to meet the expectations of millennials with a multitude of online offerings and enable them to perform almost all transactions online without the need to visit brick-and-mortar branches. We will also look to automate our back office processes to improve our operational efficiency. The goal will be to achieve quick TAT and increase the percentage of Straight Through Processing. We will be implementing Robotics technology across several use cases to achieve accuracy, integrity and efficient processing.

We have recently launched our digital bank to address the banking needs of the growing millennial population, which prefers digital channels over brick and mortar branches. We will be continuously introducing new functionalities in this platform to shape it as a major lifestyle application with minimum banking transactions. The new digital bank will empower customers to take charge of their finances with the best possible customer experience.

In your opinion, which are the top three technologies that will have a major impact on the banking business models in 2017?

Banks are facing a very uncertain economic environment, and to counter this climate they will have to look at technology as an enabler for innovation. As part of our innovation work-stream we constantly invest in R&D and also study the market on new trends and areas where technology adoption is increasing. Out of various disruptors emerging in the market, following are the ones that are most relevant to our digital strategy and also in line with the trend picking up in the region.

Open APIs will convert banks as a platform for service delivery, and they will be able to partner with third party providers to create contextual offerings for their customer base. We will also see an increase in conversational banking on channels of customer's choice, such as chatbots on social platforms powered by AI. This will of course be built on the shoulders of data driven insights and will form an important part of delivering a true Omni channel experience from the banks' perspective.

We anticipate both blockchain and IoT to become mainstream, though it would need a couple of years before it truly matures and benefits are seen.

Security will no longer be a compliance measure, and will be pervasive across the organization. Behavior based biometrics will become an integral pillar of the banks' security strategy and identity management in this aspect. We are also envisioning frictionless experiences to become more prevalent. For example, touch-less methods such as NFC will see widespread adoption for physical access to payments use cases.

For some of these technologies we have already identified use cases; and they're being implemented in the form of either proof-of-concepts or a sample service in production. Our vision is to be more open and allow our partners, government entities, and corporates to utilize our services and also offer some of our services to their end customers.

Could you tell us more about the Emirates NBD-ICICI Bank-EdgeVerve partnership on the blockchain pilot network? What impact are you seeing post launching the pilot and how do you see this partnership shaping up in the future?

Emirates NBD is always known as a first mover to adapt new technologies. We realized that blockchain is one such technology, which is growing very rapidly and many global financial institutions are investing millions of dollars in researching to implement it. Emirates NBD started exploring blockchain to understand the architecture of this technology and applicable use cases for a financial institution. In order to develop and have a deep understanding of this technology, we invited several vendors to present their solutions and the functionalities. When EdgeVerve presented their solution and explained the use cases, we were able to relate our requirements to these use cases and wanted to examine it further with a sample transaction. Then ICICI bank expressed similar interest in one of our meetings; consequently, we initiated discussions between both the business and technology teams of ICICI. We had setup a very aggressive timeline to complete the POC. Since both the banks were using the same core platform, we quickly formed a team to setup the infrastructure, and install the blockchain application at both banks. And within six weeks we could complete a POC transaction on remittance and open account use case. Now,

after launching the pilot and seeing the transaction flow, both the banks are eager to implement this in production and start to execute transactions in real-time. In the initial phase value transfer will continue through traditional channels.

Your bank has also setup an Emirates NBD Future Lab. Tell us more about the objectives behind setting up this lab, and which areas are you focusing on with this lab?

Emirates NBD Future Lab is part of our Innovation journey to showcase new technologies. We have established this in partnership with our vendors.

Future Lab showcases future based scenarios using virtual reality and other partner solutions projecting the futuristic use of technology.

The objective of this lab is to drive our innovation strategy as explained above and to support our digital aspirations by tapping the potential of our own employees, and the external ecosystem.

Emirates NBD Future Lab will be a continuing space to exhibit futuristic and new technologies from our partner ecosystem.

Our plan is to create more than one lab and provide multiple opportunities for several vendors to exhibit their inventions.

Tell us about the top three initiatives that were immensely successful for Emirates NBD in 2016.

Emirates NBD Future Lab was a great success and we will be replicating this model into few more branches.

Emirates NBD Pay, which is an idea for contact-less payments has been another major success and with UAE being a tech savvy country, we are seeing quick adoption of this application by our customers.

The blockchain pilot, which has generated lot of interest not only within the bank, but also with several government entities and other non-financial institutions was a great success story.

And we are in dialogue with several departments with varied use cases to be implemented and processed through blockchain.

Inside Talk II: ICICI Bank

In Conversation with Abhijit Singh

Head of Business Technology Group, ICICI Bank

Tell us about the top three initiatives that were immensely successful for ICICI in 2016.

ICICI Bank has always been a pioneer in bringing technology-enabled products & services to customers. We continue to focus on leveraging the three key transformational trends in technology i.e. mobile first, digitization of payments and digitizing the core.

ICICI Bank was the first bank to launch an all-in-one payment collection app for merchants called **Eazypay** which is a **first-of-its kind mobile application** that enables merchants, retailers and professionals to accept instant cashless payments on mobile phones from their customers through multiple digital modes. Eazypay offers customers the improved convenience of paying by using their mobile phones through unified payment interface (UPI), any credit/debit card and internet banking, and 'Pockets', the digital wallet of ICICI Bank.

Beyond the above path breaking initiatives, the most remarkable innovations in the mobile space that we have invested in this year are **iMobile Smartkeys** and **Chatbot**.

Smartkeys is an industry first innovative new feature of iMobile that lets customers do mobile banking transactions using their smartphone's keyboard whereas Chatbots are computer programs that can have automated text conversations with users using artificial intelligence (AI) and natural language processing. This is an industry first feature and goes in step with the Bank's digital innovator mantra.

As an issuer, ICICI Bank wanted to move at a rapid pace towards cashless transaction. The Bank has always been aggressive in launching innovative products and channels on a regular basis and encourages the customers to adapt and use these channels for payments by giving them, offers and benefits. In 2016, ICICI bank paved way for **Contact-less payment** technologies by becoming the first bank in the world to launch mVISA. We have also introduced contact-less card payments using NFC technology in the form of Tap and Pay and became first financial institution in the country to leverage the Host Card Emulation (HCE) technology to bring forth Touch and Pay contact-less payment solution.

In line with the key technology trends, ICICI Bank was also the first in the country and among few, globally, to deploy 'Software Robotics' that emulates human actions to automate and perform repetitive, high volume and time consuming business tasks cutting across multiple applications.

ICICI Bank has deployed these software robots in 200+ business process functions across the organization including retail banking operations, agri-business, trade & forex, treasury, and human resources management among others. Software robots have reduced the response time to customers by up to 60 percent and increased accuracy to 100 percent thereby sharply improving the bank's productivity and efficiency.

ICICI Bank has always been a pioneer in leveraging modern technology to reimagine banking. What is in store on the digital front for 2017?

Digital continues to swiftly impact every aspect of banking. ICICI Bank has been evolving by adopting a 360° Digitization approach to manage the disruption in financial industry. This initiative not only focuses on the customers but also within the organization so as to be digital ready.

Digital disruption and demonetization has transformed the mode of banking in India, and with influx of Fintech ecosystem, 2017 will witness sharp increase in digital adoption.

ICICI bank will continue to focus on its bimodal architecture by building systems with robust backend and intuitive, user friendly front end. In line with the Mobile First strategy, we intend to build intelligent AI based apps which will have the potential to transform the nature of work and structure of the workplace.

Beyond the pilot carried out in October, we are working on building an enterprise ready blockchain solution that we will open up to our corporate customers for Open Account Trade and Remittance. We will continue to leverage enhanced analytics capabilities that will offer them the ability to learn about its customer base and make personalized offers. Beyond creating innovative digital solutions for customers, the field of analytics will help banks in client identification and Anti Money Laundering (AML) measures, in order to prevent money laundering and terrorist financing risks.

Additionally, we are working on finding the right mix of service, deployment, and operating models to address security and compliance concerns and embark our cloud journey for increased cost saving, high availability of business applications, focused approach on critical activities and streamlining infrastructure operations.

In your opinion, which are the top three technologies that will have a major impact on the business models for Indian banks in 2017?

Customers today are fundamentally different from what they were a decade ago and are harder to acquire, retain and delight

because of the adoption of digital technologies across the industry. Today, customers look for anytime, anywhere services from their banking partners. With the evolution of digital platforms and rapid change in demand of customers, banks are looking for opportunities to improve their performance and provide delightful customer experience and engage more efficiently.

Leading banks across the globe are realizing the need to stay connected with the evolving technologies and leverage them for developing and preserving business channels. Banks in India are dynamic and are looking out for opportunities to utilize technological advancement.

Digital will become mainstream wherein advancement in areas of Cloud Computing, Machine Learning/Artificial Intelligence and Blockchain will be on spotlight for enhancing customer engagement, improving internal processes, and adding value propositions for its customers by developing newer channels of engagement.

Could you tell us more about the Emirates NBD-ICICI Bank-EdgeVerve partnership on the blockchain pilot network? What impact are you seeing post launching the pilot and how do you see this partnership shaping up in the future?

After successful pilot in Oct. 2016, we are building an enterprise ready blockchain solution with Infosys that we will open up to our corporate customers for Open Account Trade and Remittance which will significantly cut down costs and time period for conducting business internationally through our banking partners. We are also exploring a micropayments and peer-to-peer payment product that offers instant settlements to merchants and requires minimal operational costs. We are also working on onboarding new partners to enhance the blockchain network.

Looking at the trends in the cryptocurrency and blockchain sector we realize that there is value that can be derived from this technology. Automating backend office operations, auditing, secure document sharing and transfer of assets across borders are good use cases for blockchain technology.

Regulatory bodies and financial institutions need to come onboard with benefits of blockchain. Regulatory bodies should be willing to explore and partner on blockchain networks as they offer visibility and transparency to them. Banks need to move on from or tweak existing technical infrastructure to accept blockchain solutions. Further, for blockchain to take off, the network needs to expand and entire ecosystem (both financial and non-financial entities like reality, auto, customs, taxation, logistics, etc.) should be part of blockchain network.

ICICI Bank has been the first bank in the country and among few, globally, to roll-out 'Software Robotics' in over 200 business processes. Tell us about the vision behind this initiative and what are your bank's future plans?

Robotic software allows configuration of a "software robot" to capture all the steps involved in an application process and simulate the same steps as robotic processes within applications, thereby reducing human intervention. We have envisioned to use Robotics Process Automation (RPA) technology as a productivity lever, in areas where people are performing high-volume repetitive tasks to improve the accuracy, cycle time and productivity, resulting in cost saving and manpower reduction.

While we continue to identify and automate business processes, we will be looking at building enhanced technology controls around this automation by-

- Setting a process for enhanced due diligence in identification of processes that are being automated, driven by the complexity and criticality of the process and the estimated business benefits
- Building security controls and audit trails to eliminate and manage any process discrepancies. Also have centralized dashboards for monitoring and controlling the automated processes
- Integration of Robotics Process Automation (RPA), Artificial Intelligence (AI) and Natural Language Processing (NLP) technologies to deliver maximum value to business
- Use of robotics for automated testing and defect management in critical applications

We will also be looking at building the core systems capability in order to eliminate some of the redundant automation done using RPA technologies.

BLOCKCHAIN
LEAVES THE LAB

2016 saw banks engaged in a frenzied race to explore blockchain and pilot applications based on the technology. Their efforts are yielding early indications of what a blockchain enabled future might look like. A race to production is now well and truly underway.

There is now consensus amongst banking and technology leaders that Distributed Ledger Technology (DLT) has great potential to bring in simplicity and efficiency in multiple business processes.

It is clear that DLT is one of many new technologies that will form the foundation of next generation banking. Cognitive Computing, Machine Learning, Cloud, and Robotics, alongside DLT, form the technology toolkit that will define the next evolution of financial services.

Transformational Potential

The transformational potential of DLT lies in its elimination of the need for individual books of record. As records cannot be changed once written, there is really no need for a custodian of trust in the ecosystem. Immutable data, which is distributed across participants in real-time, ensures that they reference and operate on a single version of truth. This alone has the potential to significantly increase transparency between market participants. As regulators can also participate in the DLT ecosystem, they can effortlessly access transactional data on demand. This can bring down banks' regulatory compliance costs as the regulators can access data in a frictionless manner, in real-time.

Financial institutions stand to benefit greatly from blockchain and similar technology. The distributed ledger can automate legacy processes and thereby eliminate the need for reconciliation. It can also improve inter-entity processes that suffer from inefficiencies as a result of a lack of trust. A major benefit of blockchain is the smart contract, which is based on "shared trusted" processes and contractual terms that are enforced automatically upon fulfillment of certain conditions. This greatly reduces counterparty risk in any transaction.

Legacy processes typically need intermediaries, who add to inefficiency and costs.

In contrast, processes running on new technologies, such as blockchain, not only bring down liquidity costs but also improve working capital management.

And that's not all, because the record of blockchain transactions cannot be tampered with, the transactions are protected against fraud. Last but not least, by forging direct, peer-to-peer connections, the technology eliminates the need for intermediary chains and a centralized supervisory authority.

Applications 1.0

Banks are approaching use cases based on whether they optimize cost or spawn off a technology-enabled new business line. Pilot projects show that opportunities exist in both areas.

Use cases abound in all three primary domains of financial services, namely, retail, trade and capital markets. While capital markets represent the biggest opportunity simply because of the value of traded assets, it might take four to five years for the use cases to hit production. This is because of the nature of the ecosystem, where all participants in the value chain, from Stock Exchanges to broker dealers to Asset Managers and Custodians, must agree to a common approach for the real benefits to kick in.

On the other hand, retail and trade finance use cases offer a much more realistic path to production. Remittances and trade finance, in particular, have some notable characteristics that make them very suitable for blockchain adoption: both represent significant revenue pools for banks, have processes that suffer from friction, lack a central counterparty, and have cost-and-inefficiency-creating intermediaries.

In both these areas, banks are already seeking to subvert intermediary costs (e.g. SWIFT) in high volume bilateral relationships. Today, they are doing this through peer-to-peer direct host connections between banks, typically implemented using custom protocols. Peer-to-peer custom arrangements are however not scalable beyond a limited set of partner banks and hence the efficiency gains are limited.

DLT democratizes these bespoke arrangements and enables banks to expand their partner network relatively quickly and with a standardized protocol.

While quick win applications do exist, the most impactful applications require a greater degree of collaboration between banks, technology providers and also regulators. Aligning competing interests to a common purpose, especially in the case of market competitors, is a key challenge. The good news is that regulators across the board are showing a growing appetite for DLT-enabled processes. Regulators in India, Dubai, Singapore,

Japan, U.K. and Russia are studying the technology closely and working with leading banks in their respective regions to examine practical implementations.

In the latest edition of the Infosys Finacle - Efma "Innovation in Retail Banking" study, 61 percent of the banks said that Blockchain/ Distributed Ledger would have an impact on emerging retail banking business models in the next three to four years.

Progressive financial service institutions are already on board with blockchain and are partnering with technology providers to improve current business processes and experiment with new technology-enabled business models. 2017 will be the year when blockchain projects come out of the innovation labs and make their way into production, enabling banks to address real-life problems, albeit in a small way and in simpler use cases

Pramod Krishna Kamath
Lead Product Manager, Infosys Finacle

BANKING ON
ANALYTICS IN 2017

From a sluggish economy to disruptive digitization, banks have managed to survive and evolve along with the current environment. Most of it has been possible due to progressive banks showing the way and adapting to the environment for a truly digital transformation. Of all the major trends for banking transformation, analytics has made a consistent appearance year after year; and it is no different in 2017. As the hype surrounding big data and analytics has matured, banks are looking at ways to implement technologies to be more effective in terms of return on investment (ROI) and business value generated from analytics.

In the past year, there has been an unmistakable shift towards fast & real-time data and its adroit management. Skillful manipulation of data has become more important in this day and age of rapid digitization and fast-paced consumer lifestyle.

Banks now have clarity in terms of where and how to use data; and this focus in terms of analytics implementation will be the foundation for disruptive technology, such as artificial intelligence (AI), internet-of-things (IoT) etc.

It is evident to banks that as data moves from being descriptive to prescriptive, a competent execution of an enterprise analytics strategy is required to leverage technologies for a complete banking transformation.

Analytics has become pervasive across all functions within an organization and there has been a definite move towards its democratization – i.e. all employees within an organization, partners, and customers get access to insights acquired from analytics. This in turn will allow organizations to serve their end-users better and create unparalleled business value.

2017 and beyond will see big data and analytics interweaved into every level within an organization.

These key factors – consumers, technology, and insights for all – will be the drivers for the next wave for analytics implementation in banks:

Consumer expectations and technology advancements will drive banks' analytics investments

As a result of the rapid digitization, consumers have become used to a fast-paced life and they expect personalized, contextual products or services instantly. The challenge that banks face at this point is that they can no longer depend on descriptive or diagnostic analytics to dwell on the whys. Now banks have to shift their focus towards the "hows" and use fast and real-time data that can predict the consumer journey and provide its consumers with relevant products or services.

With the latest technology in the form of AI or smart devices banks can look to provide personalized consumer experiences based on context and life-events to please even the ficklest consumers.

For example, imagine a banking application that understands consumers, their expenditure patterns, saving habits, and social preferences; now imagine this app will also provide a comparison between similar demographics and provide financial advice based on this comparison. This kind of tailored customer experience is now made possible, built on the foundation of analytics and will provide banks with an unbeatable competitive advantage.

A simple use-case for personalized customer experience may be in the form of banking apps that most millennials access from their mobile phone to carry out payments and other transactions. When a user logs in, analytics helps the banking application understand what the consumer is most likely to do, and creates a user experience on-the-fly that is optimal for this consumer at this point in time. This would be based on machine learning algorithms powered by predictive modeling, understanding the consumer's financial habits, as well as social preferences.

Themes based on personas can be another use case for analytics implementation for customer experience.

Analytics helps with understanding the life events of consumers. This is used to determine the optimal user experiences for them at a certain point in time.

For example, customers with college going children would see themes based on savings for higher education, whereas getting married would see themes related to travel and vacations.

Technology will be powered by analytics

It has started to dawn on banks that while analytics offers valuable inputs to humans for business decisions, there is a certain section of technology that benefits from it as well. And insights powered by data and improvement in automation have made sophisticated AI technology easily accessible – more so for institutions that weren't able to implement it initially due to lack of internal resources and dearth of R&D skills. With analytics and

process automation as the driving force behind it, the modern AI platform has the ability to transform traditional banking institutions for the digital era. Progressive banks are already looking to effectively leverage data and advanced analytics modeling that will put them in a position to capitalize on newer technologies such as machine learning and automation.

For example, Wealthfront utilizes AI capabilities to understand how consumers are investing or spending, and then provides pertinent financial advice to them. Sentient Technologies continuously uses AI powered by insights to create investment strategies for users. Banks such as RBS have implemented AI in the area of customer service in the form of Luvo. It is a smart assistant that supports service agents who are answering customer queries. Luvo can search at higher speeds through a database to provide faster answers; it can also continually learn over time from gathered data to be more efficient with each interaction.

Banks also have to be aware of the fact that it is not only the internal processes that need a facelift in the digital era.

With the number of smart devices flooding the market, there will be an increased need for newer model-driven analytics implementations.

As the number of consumers with connected devices increases, banks will get access to more data than ever. This, in addition to the payments data arising from a decided push towards cashless economies, will make it an imperative for banks to implement a unified analytics strategy across all functions.

Insights for all – every time, everywhere

Till recently the insights derived from data were available to only the top management. But with changing customer behavior and technology that is driven by data, it is important that data is made available to all for optimizing internal as well as external processes. If banks want to cultivate a culture of innovation with analytics, it is important that they implement an enterprise analytics strategy. This in turn means that everyone should be provided with significant data management capabilities, and a talent base within the organization that will assist in deriving insights from data. For example, a few bank leaders came together to find solutions for difficult policy issues through a crow-sourced effort to use new data sets. The Bank of England has hired a Chief Data Officer, and has established guidelines around the instatement of an advanced analytics group and a bank-wide data community within the organization. It has also created a data lab to understand how these various streams of data can be combined to form actionable insights.

And it is not only internal processes that can be improved with analytics. A case can be made for making analytics capabilities available for customers too. US Bank's Payments division had created an application, InfoApp, that allowed their small business customers to analyze their expenditures and other corporate payments. It provided the small business owners with a consolidated view of their finances, as a result of which this app was an instant hit.

This just goes to show, how democratization of analytics is just another avenue for providing a differentiated and personalized customer experience; and this in turn allows banks to stay relevant in today's digital world.

Even though the consumers, technology, and insights for all are the key factors for driving success with analytics, banks will need to understand that the ultimate goal of any analytics implementation is to simplify the consumer's life. To do this efficiently, all these initiatives will have to apply analytics models to create seamless connections between various solutions. A good example of this is Uber that has managed to integrate data obtained from location apps, real-time pricing analytics, and payment interfaces to provide a frictionless transportation experience.

2017 will be the year when banks will look towards gaining the competitive edge through investments in big data and analytics. While previously the cost of investment was one of the barriers for enterprise wide analytics implementation, it no longer is the case with open source technologies, such as Hadoop. As these open source stacks bring down the cost of investment, banks will start to see effective ROI with these investments in analytics. But it does not end with investments in analytics alone; banks will have to cultivate a robust, analytics driven culture within their organizations and foster a bent of mind that will be insight driven. The success of these implementations will of course depend on the competent execution of technology, employee empowerment, and democratization.

Venkatesh Vaidyanathan
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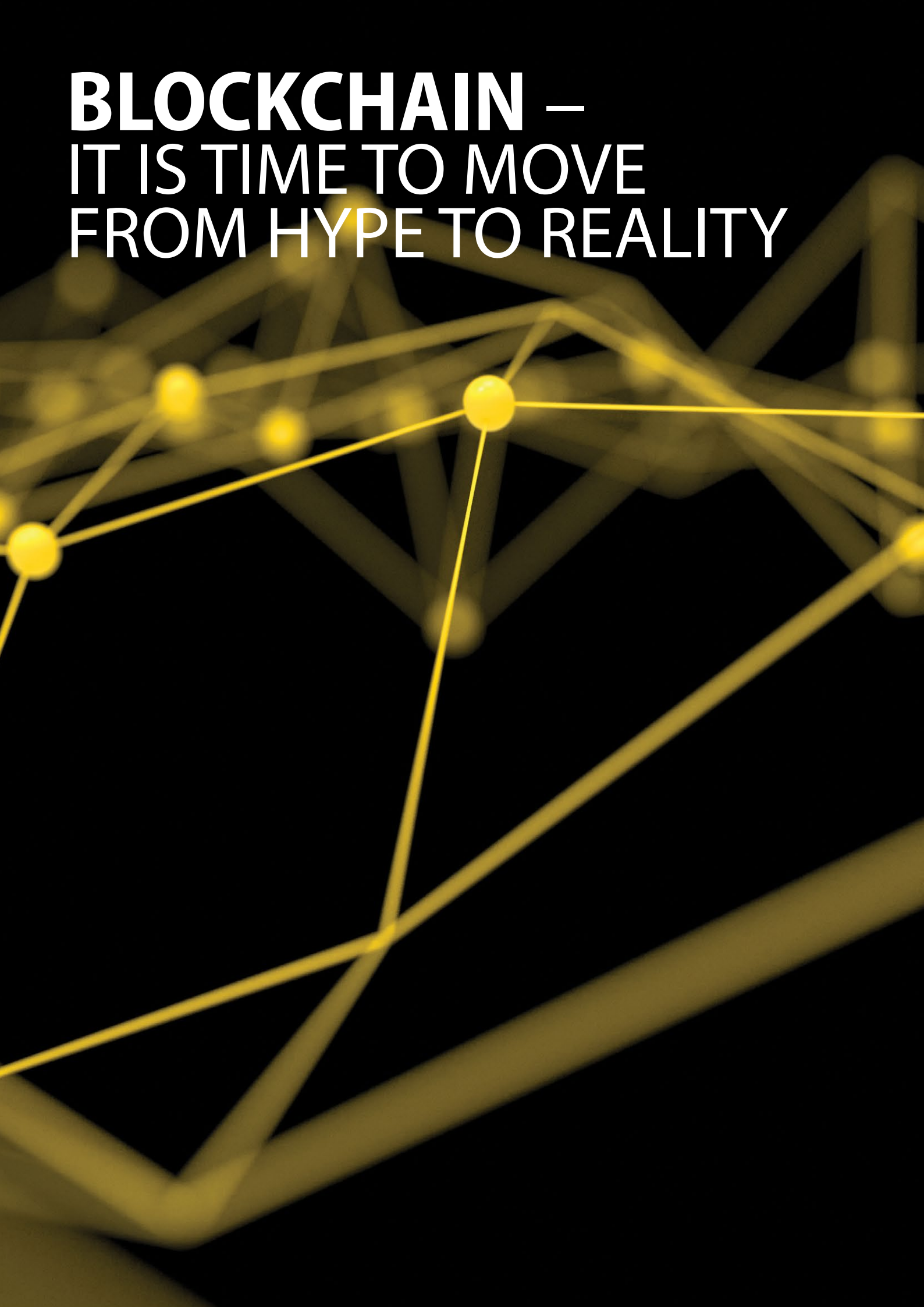
BLOCKCHAIN – IT IS TIME TO MOVE FROM HYPE TO REALITY

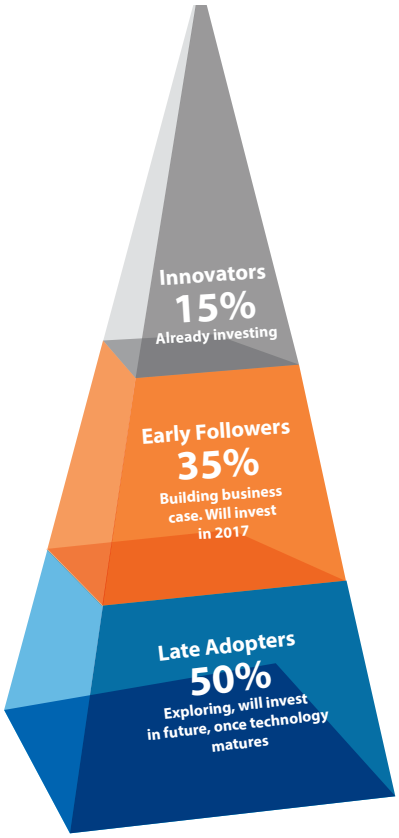


2008 marked the introduction of bitcoin, and with it the emergence of the underlying technology - blockchain. Since then, not a day has passed where there has not been an intense debate on the potential of blockchain in banking – be it at a conference, webinar, social, or digital platforms. These debates have made their way to the board rooms of both, global and regional banks.

According to World Economic Forum, more than ninety central banks have engaged in distributed ledger technology discussions worldwide[4].

Ninety plus corporations have joined a blockchain consortia, and more than 2,500 patents have been filed in the last three years.

All these debates and discussions have created a huge hype around blockchain. But the ground reality is a bit removed from this hype and has a more measured approach; while banking technology leaders are convinced that blockchain will be foundational for the future of banking, few have found answers to questions surrounding the practical implementation of this technology. The joint research by Infosys Finacle and Let's Talk Payments (LTP) (surveying more than hundred business and technology leaders from over seventy-five financial institutions) was conceived to answer all these questions and provide some clarity to banks looking for a blockchain adoption strategy[5].



In the following sections we expand on the details of our research:

Invest, invest, invest

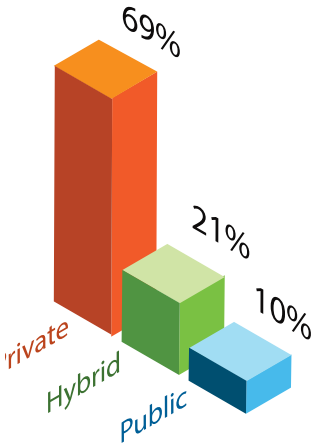
While 50 percent of the respondents in our survey indicated that they are waiting for the technology to reach a more mature stage, about 35 percent identified business cases for blockchain that are suitable for their organizational strategy and are looking to invest in the near future. About 15 percent, who are classified as true innovators, have already started blockchain initiatives in full scale with either dedicated teams, or through partnerships with technology start-ups or companies. Investments in blockchain projects in 2017 is expected to be US$1 million on an average.

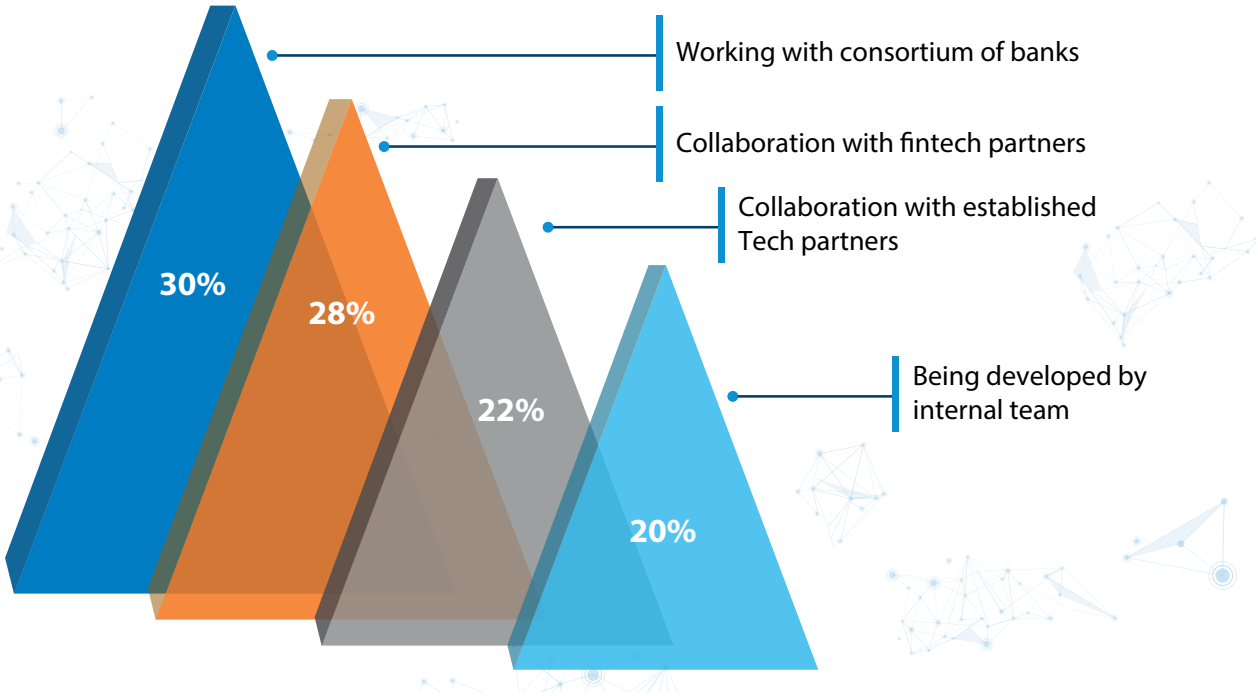
Innovators have already invested funds over US$10 million to support blockchain initiatives, and also explore use cases beyond the traditional realms of cross-border remittances, clearing, and settlement.

Many banks are still exploring how to effectively use blockchain to leverage its benefits that are relevant to their business. It is in the banks' best interest to start small, experiment with the technology in a controlled environment to discover the value it can add to their business; and only then commit towards production deployments. An example of a successful blockchain pilot is the one implemented by ICICI Bank Limited, India's largest private sector bank by consolidated assets, and Emirates NBD, the leading banking group in Middle East, using the EdgeVerve Blockchain Framework.

Preferences for adoption – Private blockchain vs partnerships

Banks have the option of choosing between public, private and hybrid blockchain for adoption. The public model completely decentralizes the consensus process, allowing anyone to join the blockchain network. Hybrid is the intermediate type of distributed ledger, seen in consortiums where the consensus process is controlled by a preselected set of nodes. Finally, the private blockchain allows the bank to define and restrict the rights to few users.





Our research only reiterated the most popular blockchain adoption methodology for banks, which is private permissioned blockchain. A clear majority of 69 percent of the banks were in its favor.

This seems to be a natural choice as the security of customer and transactional data is paramount for banks. Private blockchains also provide an added advantage of greater flexibility, dependability, and adaptability compared to public blockchain infrastructure. About 21 percent of banks are choosing to adopt, or planning to rather go forward with hybrid blockchain. But with the operational risks and security concerns, it does seem that private blockchain is a safer option.

Another popular choice for blockchain adoption is the partnerships route. About 50 percent of banks are either working with a fintech start-up or technology company to augment their blockchain capabilities, while another 30 percent are opting for the consortium model. This is a good option for banks that are burdened with legacy technology infrastructure and lack in-house talent required for blockchain implementation.

Commercial adoption will be a reality soon

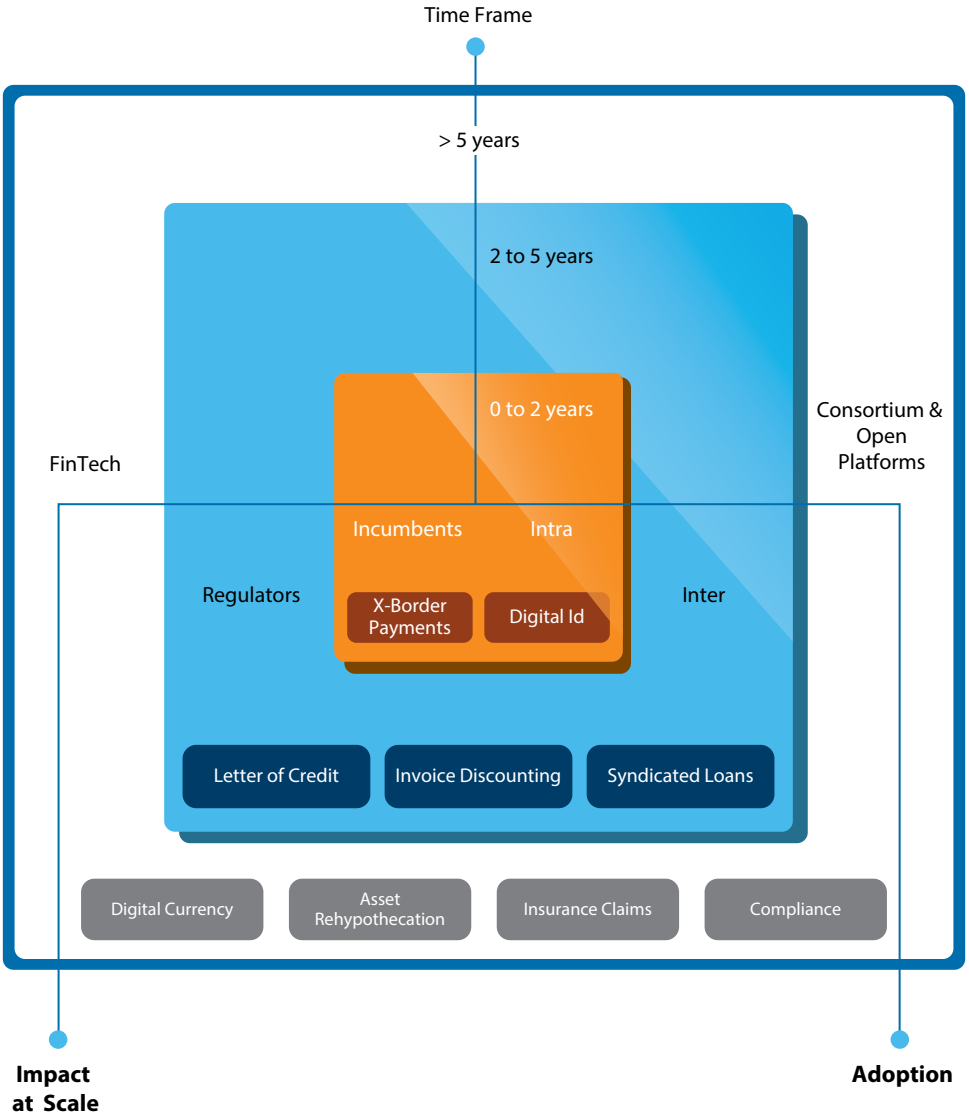
The World Economic Forum (WEF) has identified blockchain technology as one of its six mega-trends in a report aimed at defining the impact of software advancements on the digitally connected society of today. In this survey, 58 percent of the respondents expect that 10 percent of global gross domestic product (GDP) would be stored on a blockchain by 2025[6]. However, the groundwork for commercial blockchain adoption will be laid out much earlier.

According to the Infosys Finacle – LTP blockchain report, one in every three banks expects to see commercial adoption by 2018, while 50 percent of the surveyed banks expect to see commercial adoption only by 2020.

2017 will see a race to production among progressive banks, albeit in a small way and for simple use-cases.

Priority use cases and the logical way forward

The top use cases chosen by banks for implementation include the usual suspects, such as cross-border payments, digital identity and clearing & settlement. These are closely followed by line of business use cases like invoice management and letter of credit, and these use-cases round out the top five blockchain implementation priorities for banks. However, as with any technology implementation, banks will have to move forward judiciously. Banks should take into account their current business requirements and map out the areas where blockchain can help. Based on the outcomes of this research, banks should create an objective roadmap for blockchain implementation. It is important for banks to consider the fact that while blockchain offers a lot of opportunities in cross-industry and cross-functional collaboration, it is up to the bank to determine the area where blockchain fits best in their transformation strategy. We believe that only after banks have taken all of these factors into account,



they should initiate efforts to apply the technology in real-world processes.

The research has helped us to lay out a logical progression plan of use case implementation as shown in the diagram below. The first use cases that will see the light of the day in the next couple of years are intra bank use cases, or use cases, which can be tested with incumbent inter-bank relationships. These are most likely to be in the common areas of digital identification and cross border payments.

The next 2-5 years will see more of inter-bank use cases, and cases that involve regulators - such as trade finance.

Beyond five years, there will be widespread adoption of this technology in the financial services and banking ecosystem. By 2020, the adoption of blockchain based applications will increase in several businesses outside of the financial services industry.

The larger part of the ecosystem adopting this technology will include players like the government, corporations from other industries, and possibly even end consumers. It is at this point that the true potential of blockchain technology will be truly realized as a key driver for business transformation.

Based on the findings of this report, it is no longer a question of whether banks will adopt blockchain; but more of when and how they will implement it. This research reaffirms our belief that banks must experiment with the technology in a controlled environment, in the form of pilots, to discover the value it can bring to their business. Banks should take measured steps based on the outcomes of these pilots to commit towards production deployments for blockchain. We hope banks will find this report insightful while crafting their organization's blockchain adoption strategy

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IoT IN BANKING – ENABLING BANKS' DIGITAL FUTURE

Banking on Things

IoT is the interconnection of uniquely identifiable embedded computing devices within the existing Internet infrastructure. IoT is expected to offer advanced connectivity of devices, systems, and services that goes beyond machine-to-machine (M2M) communications and covers a variety of protocols, domains, and applications. In the financial services space, the interconnection of these embedded devices is expected to usher in automation in several legacy processes.

As IoT led digitization begins to take root, new business models and products are emerging. This is opening up new frontiers of innovation that can potentially reshape customer experiences, and throw up clear winners or losers in the financial services sector.

IoT Use Cases - Shaping Banks' Digital Future

IoT has the potential to impact traditional business processes in banking such as KYC, lending, collateral management, trade finance, payments, PFM, and insurance. Coupled with other emerging technologies, such as digital identity and smart contacts, IoT can create new P2P business models that have the potential to disrupt banking in a few areas. Listed below are 12 use cases that may be adopted in banking in a time span ranging from near-term to long-term.

1. Account Management on Things

As more devices acquire digital interfaces, the term "mobile" or "digital" banking will acquire new meaning and customers will be able to access their bank accounts from practically any "thing" that has a digital interface – for instance, from entertainment systems in autonomous cars or planes.

Banks will be aware of the context of the channel and can provide appropriate contextualized service or advice enriching the interaction experience. Biometrics – voice or touch – can simplify account access in these new "anywhere" digital channels. Processes requiring physical signatures could use "Wet Ink" technology, i.e. The customer can remotely sign through any touch screen device and the signature can be cloned onto physical paper with "Wet Ink". This will eliminate barriers associated with in-person, paper-based transactions and enable clients to conduct business even when they cannot be physically present.

2. Leasing Finance Automation

Real-time monitoring of wear and tear of assets as well as metrics like asset usage and idle time could provide important data points for pricing of leased assets. This could lead to introduction of a new *daily* leasing model for a wide variety of digitally enabled assets – effectively turning even traditional products into services. Terms of leasing could be simplified and automated as the bank wields greater control over the leased asset. For instance, in case of contract termination or default, the leased asset could be locked or disabled remotely by the bank.

3. Smart Collaterals

IoT technology can enable banks to have better control over a customer's mortgaged assets, such as cars, and also monitor their health. In such a scenario, a retail or SME customer could possibly raise short-term small finance by offering manufacturing machinery, cars, or expensive home appliances as collateral. The request for financing as well as the transfer of ownership could be automatic and completely digital. Enabled by digital identity for people as well as things, the transfer of ownership of an asset can be achieved in a matter of seconds. The bank can then issue the loan immediately, and monitor the collateral status in real-time without the need to take physical custody of the asset. The bank can remotely disable or enable the machine/motor anytime based on defined business rules. For instance, in case loan EMIs are not paid, the engine could be disabled. The quality of the collateral can also be monitored in near real-time.

4. Automated Payment through Things

When moving on to payments, integration of IoT and payment functionality will lead to greater number of payment endpoints.

Beyond the clichéd milk ordering refrigerator, we are already starting to see the beginning of the use of connected devices and wearables, for instance, payment through Apple Watch or the fitness band Jawbone. When machines are able to perform transactions with machines in real-time on a marginal cost basis, the traditional concept of payments will become obsolete in many use cases as transactions become automated and integrated into other services – virtually any "thing" could include an automated payment experience. Though the IoT raises certain security concerns, personal biometrics and digital identities could potentially increase security in payments, if done right. Eventually the opportunity extends not only to the end user, for whom automated payments will lead to greater convenience and smarter transactions, but to banks, payments companies, retailers, and technology manufacturers.

5. Risk Mitigation in Trade Finance

Tracking of high value goods delivery using RFID is already reality in the trade finance space. IoT will accelerate this to include fine-grained tracking of the asset, for instance, monitoring temperature of the container for shipments involving temperature sensitive goods such as pharmaceuticals and medicinal molecules. Alerts could be triggered if there is a chance of spoilage during the shipment process – say one of the parameters being monitored goes out of bounds. These implementations can result in risk mitigation and more informed decision making at banks for scenarios involving trade finance.

6. Wallet of Things

As an extension of automated payment through things, when more devices become digital and "smart", it will be possible to have wallets associated with each device. For instance, an autonomous car could potentially pay for parking, gas, rental or even maintenance service using its embedded wallet. Each and every home appliance or consumer equipment could eventually host an embedded, pre-funded wallet that is capable of managing its running expenses on its own.

From an owner's perspective, a digital identity based "wallet of things" might provide an integrated view of costs and expenses associated with owned or leased devices.

7. Contextualized PFM

Early incarnations of PFM focused on little more than expenditure categorization and generic insights for users – such as benchmarking finance management with "People like Me". The future generation of PFM tools can offer more contextualized alerts and advice by accessing IoT data from the customer's owned or leased devices. For instance, alerts on parking fees or air conditioner electricity consumption could be contextualized based on real-time data. These alerts could be based on the owner's estimated personal budget for electricity consumption or parking fees. This paradigm will enable usage of devices and services to be capped to a pre-defined amount and has the potential to facilitate better management of service consumption and operating expenses.

8. Frictionless Customer Onboarding and KYC

Banks crave holistic insights into customers' financial behavior. Having this information during customer onboarding can help them profile the customer correctly and cross-sell relevant products.

However, information available at the bank's disposal at this stage is scarce and does not provide a comprehensive view of the customer's financial behavior. In a world where all of the customer's devices are linked together with the customer's digital identity, having access to the customer's unique digital footprint might help uncover usage patterns of different devices and provide insights into financial behavior as well. People already use their Facebook / Gmail id to login to different Internet sites; this might be extended in the future to have a blockchain-based unique digital signature which is used for most transactions. This universal blockchain-based digital identity may also help with KYC processes in the future. Knowing about the financial inclinations of the customer through the digital signature, banks can offer relevant products at the time of onboarding – for e.g. offer a co-branded credit card designed with rewards from a particular petrol station that the customer frequents.

9. Tailor-Made Auto Insurance

Insurance Companies are already offering devices that plug into the on-board diagnostic port of cars and send driving behavior data back to them. Based on driver habits, the owner is eligible for discounts. However, innovative products, such as those from Tesla Motors, promise to take digitization to a whole new level in the automotive industry. Tesla Cars even have a Linux-based OS that automatically upgrades features "over the air". This digitization will throw up newer metrics that can be used to provide tailor-made insurance to customers based on driving habits, engine health and general wear and tear of the vehicle. Additionally, by overlaying GPS data on the actual speed of the vehicle in speed sensitive zones (such as schools or residential areas), insurance companies can gain critical insights into the likelihood of accidents and price insurance premiums appropriately.

10. Real-time Life Insurance

Companies across sectors are looking at connected programmable products and services that can generate customer-specific data, which can eventually be aggregated to build our digital twins.

While conventional thinking might lead us to believe this is intrusive, business models have begun to emerge that embed incentives for customers to share data willingly. E.g. Fitbit is offering integration with Wellcoin to enable users to purchase rewards based on sleeping habits, exercise routines, beverage preferences etc., with the Wellcoin virtual currency. All this may mean that while today it is almost impossible to issue life insurance automatically, IoT may empower users to do just

that. By combining health metrics from wearables with medical history and a biometric digital identity stored on blockchain, people will be able to request, and get life insurance instantly anywhere, anytime. Time required for underwriting could also be drastically cut from months to near real-time.

11. IoT enabled Smart Payment Contracts

Smart contracts are computer programs that facilitate, verify, or enforce the negotiation or performance of a contract. IoT, together with smart contracts and digital identity, can make payments partially or fully self-executing and self-enforcing. For instance, pay after a trial of 7 days for home appliances, or control access to a house based on timely payment of rent. This model of IoT-assisted smart contracts holds huge potential in terms of process automation and also mitigation of operational risks. More importantly, this can plausibly create new product options which offer better customer experience.

12. P2P Finance on Tangible Assets

Peer-to-peer models have proved to be a disruptive trend for banks in areas such as lending. A futuristic application of IoT might extend the P2P model to several new areas and impact traditional financial services products such as leasing.

In the future, it might be possible to lease assets to individuals or businesses through 100 percent online services that directly match lessor with lessee.

Leveraging digital identity, the leasing process can be completed in real-time as the ownership of the asset can be switched from lessor to lessee in a second after payment is confirmed. This has the potential to unleash a completely new business model, whereby any financial dealings based on digital objects can be carried out peer-to-peer, disrupting banks in areas such as leasing and mortgage.

IoT has the potential to reimagine banking as we know it completely. And it is more important than ever for banks to look at providing services and products on the channels that their customers prefer. In 2017 and beyond we will see progressive banks take it a step further and provide "banking on things" – which can be anything from a smart car, to smart walls.

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BANCOLOMBIA
TAKES A DIGITAL LEAP WITH ITS NEQUI PLATFORM

Profile

With assets exceeding US$60 billion as at 2015, and more than 1070 branches, Bancolombia is not only the largest commercial bank in Colombia but also one of the biggest in Latin America. The Bank is part of Grupo-BANCOLOMBIA, a financial services conglomerate with a footprint in eleven countries across its region. Apart from retail and corporate banking, Bancolombia's suite of services includes trust and asset management, investment banking, leasing, and brokerage.

Overview

In November 2014, Bancolombia decided to create a digital bank called Nequi to meet the emerging needs of the mobile oriented generation in Latin America.

Nequi would leverage Bancolombia's know-how in the market while maintaining operational, technological and commercial independence.

With Nequi, Bancolombia wanted to inculcate the culture of a start-up, supporting the bank's efforts in becoming an innovative and humane bank that would appeal to the new generation of digital consumers. Bancolombia aspired to get a head start in digitalization and reimagining of personalized financial solutions using innovative methodologies and new ways of working. In March 2016, Bancolombia went live with Nequi having Finacle Core Banking Solution as the technology platform.

Key Business Drivers

In 2014, Colombia's Financial Superintendence estimated that at 334 percent, the country was the fastest growing mobile banking market in the world.

A young population, with 40 percent below the age of 24 and another 40 percent aged 25-54, was creating strong demand for digital financial products and services. The Bank realized it was imperative to build a sound digital platform to power its digitization agenda. Thus, in November 2014, Bancolombia commenced the implementation of its digital platform, "Nequi".

Earlier, the Bank had deployed Finacle in its project titled 'Innova', for transforming key operations across Latin America. Hence Finacle Core Banking was a natural choice for supporting Nequi

Implementation Highlights

Nequi was setting up a service design for the bank using a human centric approach and adopting agile methodologies.

The new organization model focuses on user journeys through the use of personas. Based on the incremental development principle for Agile delivery, the overall delivery requirements for implementing Finacle Core Banking solution were broken down into sets of work items that would be completed in sprint cycles in a few weeks.

The project involved implementation of CRM, Transaction, CASA and ACH functionalities by way of 3 Transaction modules, namely, Intra-bank Transfers, Payments and ATM Withdrawals and one module each for the other functionalities, namely Customer Data Maintenance (CRM module), Customer Accounts Maintenance (CASA) and Inter-bank Transfers (ACH module).

A core team from Finacle with 4 members on average was deployed on-site throughout the project, supported by a larger team offshore. Bancolombia was keen to have a team that was equipped with both functional and technical expertise of Finacle Core, CRM, infrastructure and interfaces. Given that over 30 interfaces were involved in the development and execution, selecting resources with the right skillset was critical. Bancolombia's team comprised of 23 experts from 4 divisions viz. digital, IT, marketing and operations. In all, about 75 people were involved at the technology transformation at Nequi. Other vendors – of biometrics/identity assurance and fraud protection solutions, for instance – also contributed their particular expertise to the implementation.

Bancolombia faced a few challenges in developing the Nequi digital platform. One of the biggest was technology-related, and had to do with forging connections between multiple solutions, each from a different supplier. It was also a challenge to personalize the platform to Colombian requirements. Nequi faced many business challenges that included creating a digital financial platform without branches, securing digital money transfer and building services which connected to physical channels.

Infosys Finacle overcame these challenges with a structured, collaborative approach. The implementation followed an incremental development principle of Agile delivery, and broke down the overall delivery into work streams, which were completed in short sprint cycles, in a matter of weeks.

Leveraging Finacle services via MQ, the team managed to get a range of functions across applications to interact seamlessly without interruption with Finacle across several channels.

In November 2015, exactly one year after the project began, Bancolombia did a pilot run with a small set of users, and a few months later in March 2016, finally went live with Nequi.

Business Benefits

Nequi is a user-centric platform, designed after carefully understanding customers' need for convenience, speed and personalization.

The Bank hopes to build on that in the future to create new solutions that continue to respect customer-centricity. Clearly, technology, and banking solution suites like Finacle, will play a key role in this.

In the meantime, however, Bancolombia customers have already reaped several benefits from Nequi. Customers may open a bank account using their smartphone in under five minutes. They can also send money via mobile, even to recipients not using Nequi. It is possible to withdraw money from 4,000 ATMs without a debit card, and make digital payments at 9,000 outlets using QR codes.

With the success of Nequi, Bancolombia hopes to launch many other innovations in the future. The Bank has opened more than 20,000 accounts since going live on Nequi and aims to take the client base exponentially in the next couple of years.

Services offered by Nequi:

- Open a bank account with a smartphone in less than 5 minutes
- Send money to mobile contacts, even if they don't have Nequi. Receive and send money as if one is chatting
- Organize money with sophisticated but simple tools
- Withdraw money from more than 3000 ATMs without a debit card
- Digital payments in more than 9000 places using QR codes
- First Colombian financial institution to use mobile biometric authentication

STRATEGIC TRENDS
RESHAPING BANKING IN 2017

Banking is evolving continuously and in the coming year this change will be faster than ever. The change in the banking industry is driven primarily by the slow global macroeconomic climate, increase in regulatory, capital, and operating costs, and lowered interest rates and return on equity (ROE) in developed markets. There has also been a marked increase in non-performing assets in several growth markets; all of these factors have contributed to a weakened global economy and a drop in profitability levels for banks.

And it is not only the economic factors that are contributing to the drop in profits for banks. The new breed of fintech start-ups have managed to chip away at the more profitable niches for banks; in fact, it is expected that fintechs will impact the banks' profitability by 7 to 9 percent, leading to more than 70 percent reduction on traditional revenue streams.

Banks will have to reimagine their processes and transform into a sustainable truly digital business to counter these environmental factors.

We believe that there are six strategic trends that will help banks in reshaping their business and achieve a truly digital transformation in 2017 and beyond.

Customer experience will make winners and laggards

2017 will see the gap widening between those who understand how to use digital technologies to empower customers and enhance service experience, and those who don't. Historically, banks have always lagged behind in terms of customer experience; and with more than three billion smartphone and internet users around the world, this isn't an area that banks can afford to ignore any longer. 2017 will see progressive banks make strides in adopting technology that adapts to consumer behavior rather than the other way round.

Artificial intelligence and big data will be the primary drivers for providing contextual and real-time customer experiences.

Banks will focus on the customer journey to articulate its evolution in future and create offerings to add further value to their customers.

Economics of the business ecosystem will come into play

Ecosystems will be one of the primary drivers for banking transformation and economics will underpin a bank's ecosystem strategy in 2017. In recent years, with the advent of digitization, collaborative ecosystem has begun to emerge as the new universal bank and this will continue in 2017 and beyond. Banks will now have to elaborate on their ecosystem strategy in terms of their participation in global, regional, or local ecosystems. The second decision that banks will have to make needs more refinement – banks need to pick between building or nurturing ecosystems. All of these decisions will of course depend on the fundamental question of the profitability of ecosystems. In 2017, banks will lean towards ecosystems that ultimately add more to the banks' bottom-line. For example, progressive banks like Citibank, Goldman Sachs, and Bank of America are already investing in fintech accelerators to enable innovation for the open banking era.

Moving a step closer toward autonomous banking

In recent times, automation has taken a huge leap into the realm of self-learning systems that learn automatically as processes keep getting executed and they tweak business rules accordingly. We are heading into the future of banking wherein these machines will function without any human intervention and banking will be completely autonomous. With smart machines at the helm, there will be a gamut of smart services on offer – from investment advice, to threat detection, to personal finance management.

As these machines keep getting smarter with every customer interaction, or with every process executed, banks will relegate more and more business processes to these intelligent machines in 2017.

This will provide an opportunity for bank employees and machines to engage more effectively; and empower employees to focus on producing better business outcomes. In fact, usage of machine learning to improve efficiency, and raise the level of customer service is already prevalent in banks; Pepper is a robotic concierge at Mizuho Bank in Japan, which is used to assist customers. Another example of a self-learning machine is Bank of America's chatbot Erica that generates personalized recommendations for customers.

Security will be more pervasive, adaptive, and integral

2016 was characterized by some spectacular data breaches, with the tally amounting to 1.6 billion leaked customer records. In an era of a staggering number of security breaches, self-learning machines will hold the key to counter these attacks. These intelligent machines will be able to process data, with

a vast capacity, and learn to monitor every instance of data or application usage. They will be able to provide security in real-time and tweak surveillance accordingly. With this kind of adaptive security in place, organizations too, will have to change their approach to security in 2017.

Security will cease to be a compliance check-box and will be interweaved into every aspect of the organization.

Organizations will have to look at security that is pervasive across all application layers and not just around the perimeters of the organization itself. In 2017, security will be integral to all business units within an organization, and will be driven by smart applications that will learn to secure themselves.

You must bank on insights – Every time, everywhere

Analytics has come a long way from being diagnostic and descriptive, to predictive and prescriptive. Now real-time, fast data is the norm and banks will look to harness the power of data through open source technologies, such as Hadoop, and self-learning machines. Banks already see analytics as an enabler for innovation and according to the Infosys Finacle – Efma Innovation in Retail Banking report, 66 percent of banks are planning to invest in big data and analytics. 2017 will see analytics being built into the operational framework of the bank to enable smart systems in providing assistance with a variety of decisions - ranging from customer service, predictive maintenance, inventory management, to credit approval, etc.

Banks will have to implement an enterprise analytics strategy to empower everyone – from employees, partners, customers, to even the self-learning machines in the background – with the required information to provide contextual recommendations to users within the organization and customers as well.

Empower your employees for digital transformation

As banks look to complete a truly digital transformation and beyond, one of the biggest challenges that they will face is the talent crunch in terms of the workforce. To be successful in their transformation, banks will need the right people in place; people that work at the crux of business, technology, and value. To carry on a digital transformation, these people should also have the right mindset – these people will not be afraid to challenge the current status quo, and reimagine business processes. While such people are hard to find, banks can circumvent this challenge by partnering with fintechs and start-up firms that attract such kind of talent. A bigger challenge for banks would be the cultural transformation for digitization. This culture puts a high onus on design thinking, innovation, and customer focus.

Implementation of the Infosys's Zero Distance philosophy, and design thinking for customer problems will go a long way in transforming the organizational culture for digital transformation.

The overarching theme of this trend stems from instilling a culture of continuous learning within the organization, that will form the foundation of employee empowerment.

With regulations like PSD2 in Europe, and initiatives such as UPI in the Indian subcontinent it is becoming increasingly clear that banks can no longer keep operating under the traditional models. The disruptive environment in banking - in the form of a sluggish macroeconomic climate and increasing cost pressures - has made it increasingly clear that banks will have to reimagine their strategy. To compete against the new crop of fintechs and start-ups, and remain relevant in the age of digitization banks will have to look at the aforementioned strategic trends very closely

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TECHNOLOGY TRENDS RESHAPING BANKING IN 2017

In the past couple of years there has been a rapid evolution and adoption of digital technology that in part has been enabled by forward thinking regulators. This rapid digitization has also brought up a significant number of opportunities for banks to achieve operational excellence and provide a more sophisticated customer experience. With newer, more agile competitors coming into the mix and customer expectations rising with every passing day, it is imperative that banks embrace these technologies for achieving a truly digital transformation.

In 2017 and beyond, banking will be propelled into the new era of open ecosystems with technology, customers, and regulations as the main drivers.

There are six main technology trends, that we believe, will be the major drivers.

Unleashing innovation with open APIs and open banking

The future of #TrulyDigital banking lies with open APIs and open banking. And banks are becoming more and more receptive to this idea – in the Infosys Finacle-Efma Innovation in Retail Banking report, 67 percent of the banks considered that open APIs are already having an impact on banking. Open APIs and open banking will allow financial institutions to collaborate with third party developers and create offerings that are more relevant to their customer base; this will not only help banks stay competitive in the current environment, but will also enable them to grow their share of wallet. The future of banking lies in open innovation and collaboration with the developer ecosystem, and progressive banks are no longer waiting for the regulators to force their hand – for example, both RBL and BBVA have an API portal that exposes the banking APIs to the developer ecosystem.

In 2017 and beyond, open banking will be driven by open APIs, applications, app stores, regulations like PSD2, and the extended developer ecosystem.

Banking in cloud-first strategy

The disruptive technologies of today will be enabled by cloud. In 2017, banks will have to follow a three-step strategy for cloud migration. Initially non-critical environments can be moved to cloud, and following this all new applications will be launched "cloud-first" by design. Banks will have to move past just re-deploying older applications on the cloud, and these applications will be re-designed for cloud adoption. The new world and its open ecosystem is banking on the cloud and banks will have to get on to the cloud bandwagon. Cloud will have to be leveraged extensively for flexibility, scalability, business agility, and ecosystem requirements in today's disruptive environment. For example, Capital One is already using AWS for development and deployment of newer applications. Cloud can no longer be relegated to a second thought, but it has become an essential strategy for a bank's truly digital transformation.

Blockchain: The race to production begins

There has been a frenzied rush towards implementing blockchain pilots in the past couple of years in the areas of KYC, trade-finance, remittances, smart contracts, digital identity management etc. Banks are beginning to perceive blockchain as a disruptive technology and they envision blockchain having an impact in the next three to four years. In the latest Infosys Finacle – Efma Innovation in Retail Banking report, 61 percent of banks agreed that blockchain/distributed ledger will have an impact on emerging banking business models in the next few years. 2017 will see blockchain move out of the pilot phase and into production. The potential of blockchain has been partly validated with proof-of-concepts; and the promise of differentiation offered with collaboration through a blockchain network is too hard to ignore for banks. Banks will explore blockchain technology either through partnering with other banks or by taking part in a consortium.

In fact, according to the recent survey conducted by Infosys Finacle – LTP, 50 percent of the banks considered that blockchain would see commercial adoption by 2020.

There has been a push towards blockchain from some forward thinking regulators too – such as Dubai and the Monetary Authority of Singapore (MAS). It is no secret that the opportunities blockchain offers in the areas of cross-industry and cross-functional collaboration are massive, and it is time that banks start thinking of real-time implementations with this disruptive technology.

AI – Your sci-fi movie imagination is turning into a reality

Artificial Intelligence (AI) is changing the way that businesses operate in today's environment. From chat-bots to virtual assistants, the way that customers interact with businesses has been turned on its head. For example, Swedbank's virtual assistant Nina achieved a first contact resolution rate of 78 percent, which in turn would let the customer service team focus on priority jobs. Banks are beginning to see the potential that this technology offers and 2017 will see them implementing AI across

front, middle, and back office operations. Back office operations will be made more cost-effective and efficient by automating highly repetitive, high volume tasks that will free up the human workforce to focus on more value-added tasks. Security will also be strengthened riding on the backs of AI enabled self-learning programs that will offer real-time protection from theft and fraud. The success of all AI programs will of course depend on the banks' ability to execute and implement all things digital - big data, automation and cloud computing.

More things to bank on

Imagine getting access to banking on the walls in your apartment; this is the future of banking that the world is moving towards as devices keep getting smarter with each passing day. It all started with the humble mobile getting a facelift, and then offering banking capabilities on the move. Next came the virtual private assistants on mobile phones, which offered voice banking capabilities. And these features offered on mobile don't just end here – now many progressive banks are also offering immersive experiences through augmented reality and video. A few good examples would be the 'Near Me' feature offered by the Axis bank app, or video banking offered on mobile by Royal Bank of Canada. As technology capabilities keep expanding, banks have realized that they need to keep innovating at a break-neck pace to be present wherever their customers are.

This year progressive banks will take the lead and invest in omni-channel hubs to provide contextual offerings to their customers.

But the biggest challenge for banks will be the fact that even as newer channels for banking emerge, customers will not relinquish existing channels; banks will have to re-imagine customer journeys around all these channels – both old and new included.

Banking Architecture – Driving value with simplicity

In today's disruptive environment, the importance of having an agile technology foundation cannot be stressed enough. In fact, according to our survey conducted a few years ago, 79 percent of bankers felt that the biggest barrier to infrastructure transformation was the complexity of current IT systems. The simplification of the complex IT infrastructure will allow banks to innovate in an agile fashion and be more compliant with the current regulations. Banks can look to simplify their IT landscape in two ways – either by leveraging cloud technologies, or by rationalizing applications by leveraging enterprise class components. The issue of infrastructure maintenance can be resolved with a cloud-first strategy and this also allows banks to introduce demand elasticity into their technology framework. Enterprise components allow banks to increase their operational efficiency by centralizing all business operations across all product lines.

2017 will see more and more progressive banks move away completely from traditional monolithic architecture and invest heavily in componentized application design with an ever increasing set of exposed micro services.

This move will allow decoupling of back and front-end capabilities and allow banks to innovate rapidly as the environment around them evolves.

As 2017 progresses, we will see more and more progressive banks follow into these trends as they look to achieve a #TrulyDigital transformation. With newer, and more agile fintechs and technology start-ups causing disruption in the traditional way that banking has been done, it has become more important than ever for banks to march on ahead with their digital transformation journey; and we believe that these technology trends will be the key factors in providing banks with a much needed competitive advantage.

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FUTURE OF BANKING – THE PLATFORM TAKES OVER

Uber is arguably the most disruptive eight-year old in history. It has also inspired a breed of precocious companies that have uberized everything from hospitality to professional services. In financial services, glimpses of the same can be seen in the form of marketplace lending and open banking initiatives. But total uberization? In my view, banking-as-a-platform in its evolved form is still some years away, but definitely coming.

In fact, as of today, there isn't even a common understanding of banking as a platform. The authors of the book "Platform Revolution" describe it as –

"A platform provides the infrastructure and rules for a marketplace that brings together producers and consumers. The players in the ecosystem fill four main roles but may shift rapidly from one role to another."

The four main roles defined are: "Owners" of the platform that take care of the governance and IP; "Providers", who make it possible for the producers and users to interact via a common interface; and finally "Producers" that have the offerings for "Consumers" who use these offerings. Basically, the platform acts as the matchmaker that provides the right environment for the providers, producers, and consumers to interact seamlessly.

Clearly, the platform concept has been around for quite some time – think of your neighborhood convenience store that gave local community counter space to advertise their wares. Or the classifieds of yore that provided a platform for buyers and sellers to connect and advertise their wares. What has changed is that a number of powerful forces have come together to give platform businesses reach, agility and feasibility that they could only have dreamt of in the pre-digital days.

From the banking industry perspective, the first of these is plain economics. In the current interest rate environment, banks' core source of revenue has shrunk, particularly in the developed markets of the United States and Europe. Highly competitive offerings from non-banking players is likely to drive down banks' income further. Hence the proposition of a digital platform model, which runs on a really low operating cost and distributes risk among several parties, is hugely appealing to providers.

Secondly, consumers are flocking not to a particular bank, but to a particular value. Again thanks to technology shifting banks and opening new relationships have never been so easier. Today, customers will go to that provider who offers them the best, most relevant service and experience. Unlike the brick and mortar bank, which could only be personally attentive to a few, select customers, the platform bank with access to data and insights can personalize at scale.

Thirdly, a highly efficient platform bank can, at least in theory, reach any customer anywhere in the world over its digital channels. It can scale up at speed. And thanks to the open banking initiatives and ecosystems, it can also engage the customers of other banks in a servicing relationship, or by selling third party products. If the example of other platform businesses has taught us anything it is that eventually, couple of innovative players will rule the business. Every bank (and non-bank) wants to be the winning platform that takes all.

But it will take some doing to get there.

To start with, banks have to transform their ownership mindset (I will serve my customers with my products) with the clear realization that the only thing that matters is to give customers what's best for them, and if that means serving up a rival product, then so be it.

This is not a completely new phenomena. Even today, banks sell third party products such as mutual funds and insurance. However, the platform business will require them not to have third party offerings only to complement self-produced products but also actively cannibalize their product offerings with higher value yield offering from competitors. Think about Bank of America selling terms deposit of Citibank. Open banking initiatives such as PSD2 in European Union and Unified Payment Interface (UPI) in India are setting some foundational blocks for this future.

Besides, to deliver the right experience, banks will have to collaborate or co-innovate with larger ecosystem. For instance, they will also have to expose their APIs to allow third party developers to create the value added offerings or experiences on top of their platform. This will enable banks to leverage the power of ecosystem to monetize their platform offering and gain the ability to serve various customer segments effectively. Banks also need to shift their business focus from earning interest income to monetizing insights from data. For example, if the insight says that a customer should be offered a third party product, then the bank must charge a fee from that party for generating this lead.

These are massive changes, yet they are feasible and perhaps inevitable also.

A bank that makes the crossover safely will be able to differentiate itself from other banks purely on the strength of its quality of experience.

And if banks don't take lead, digital business giants and new-comers will tap on the opportunity. For instance, Alibaba's financial affiliate, Ant Financial recently announced its new open marketplace for third-party financial institutions, Caifu Hao. This new platform, which will be launched in June 2017, will enable detailed investment and risk profiling of the consumers and will allow them to buy financial goods directly from third-party institutions. The financial institutions participating on the platform will be able to offer post sales service and access customer insights to deliver personalized offers.

That being said, not all banks are cut out to make this shift. A platform mindset requires a certain kind of leadership and culture, which many banks will struggle to provide. Some of them might choose to become product manufacturing specialists, and distribute their offerings through platform banks or other entities.

We believe that the "platformization" of banking has already begun. The examples like Deutsche Bank hub for SMEs or LendingClub, and Licaitong by Tencent, are the early reflections on the new model emerging in the industry. And will there ever be an Uber-size platform among banks? With the industry being as regulated as it is and the rules for systemic risk around large banks, it looks rather difficult. Still, that is what the ambitious, progressive banks will aspire to. But Uber-sized or not, banks that succeed in their platform play will pull far ahead of their rivals. And those that don't might be relegated to the role of a backend utility. If they survive, that is.

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BANKING APP EXPERIENCE – MOVING FROM FRACTURED TO FRICTIONLESS

In 2015, Exicon, a mobile solutions provider and app developer, estimated that between them, the world's 15 largest banks had spent close to US$80 billion on developing 606 mobile apps[7]. Citing app proliferation among banks, a well-known research firm says some have built more than 20 apps to fulfil a range of customer needs[8]. Yet, mobile banking apps lag many others in innovation and quality of experience: an analysis of 140 apps from 35 top retail banks found that they were strong in basic functionality, but distinctly lacking in innovative features, such as personal financial management tools, chat and messaging[9].

Customers, meanwhile, are quite frustrated at having to switch between multiple apps.

When surveyed recently, 75 percent of 700 millennials said they were dissatisfied with their mobile banking experience[10].

The fractured experience provided by banking apps is at complete variance from one of banks' top priorities, which is to create a customer-centric organization. It is also a matter of huge concern because in a few years from now, 89 percent of marketers are expected to compete, not on product or price, but on the strength of their customer experience.

Banks are clearly in a difficult position. The retinue of apps costs a lot to maintain, but currently yields little or no return. Worse, because the apps are usually not integrated, they cannot match what customers enjoy with other providers - a unified, consistent, seamless and convenient user experience. A great example here is Uber, which has taken the API route to integration with a number of travel and hospitality apps, from Google Maps to Trip Advisor to United Airlines, to provide a complete travel experience to users.

Banks should accept that the future model of success is one of distribution, decentralization, and disintermediation, and adapt their app strategies accordingly.

Business considerations apart, there is a regulatory push towards a more open form of banking from initiatives such as PSD2 in Europe and UPI in India. Banks that fail to heed these signs could end up as utilities, and cede their customer relationships to their more progressive rivals, including challenger banks and Fintech companies.

Hence there is a need for a fundamental change in the approach to mobile banking apps. In future, app design should adapt to customer expectations and behavior, rather than the other way around. Banks must also focus on enhancing their apps so that they not only provide banking functionality but also improve their customers' lives in several ways. They can do this by visualizing the customer journey and designing apps that cater to various needs and add value at every stage; instead of offering a fragmented experience through various apps across different functions. The apps must also remember their interaction with customers, and use that learning to make relevant, contextual propositions.

If the ultimate goal is to eliminate friction in the banking experience, then banks need to ensure the following:

Apps are consolidated, differentiated, and highly personalized

A provider of mobile and Internet banking in the United States says that banking policies, procedures and (inadequate) communication are responsible for 70 percent of negative customer feedback on mobile banking apps.

Until now, banks have followed a bank-centric app strategy, designing and organizing apps by function or line of business and so on. This has imposed a very inconvenient experience on customers, who are forced to contend with a plethora of apps for their various banking needs. A cumbersome authentication process, and multiple passwords, adds to the frustration.

A frictionless experience requires banks to do the exact opposite of what they are doing today, starting with consolidating and integrating apps from a customer point of view.

And rather than offering the same apps at everyone, banks must target different apps to suit the needs of individual segments, for example salaried professionals and small business owners. This may well increase the total number of apps for the banks, but it would do the opposite for customers.

As banks are looking at increasing mobile capabilities to provide frictionless experiences, a new crop of users have become more commonplace. People who were not well-versed with smartphones earlier, are now increasingly choosing smart virtual assistants (SVAs) as a means to interact with their mobile phones. Banks are already looking at this channel as a means to offer products/services for these customers, and this channel holds a lot of promise for the future. For example, OCBC Bank has integrated Siri to offer banking transaction services through smartphones.

Apps provide functionality beyond transactions

Banks need to look beyond core functionality, such as account views and payment methods, at innovative add-ons that are a natural appendage to banking services. These add-ons could be financial in nature, for example wallets, or non-financial, such as educational content. The idea should be to fit the bank seamlessly into the various activities that a customer goes through in a day – shopping, product research, event planning etc. – at every life stage. Currently, very few banks do this.

A benchmarking survey of mobile banking functionality among 46 leading banks found that only six had installed an app-wide search engine to make it easy for customers to find what they needed[11].

Apps integrate with third-party providers in the ecosystem

In many parts of the world, regulators are encouraging open banking with directives such as PSD2 and UPI, which will open up banks' data resources to the ecosystem. This will create an opportunity for banks to partner with service providers, and in the process, access more customer data that they can use to personalize offerings and differentiate experience at the level of the individual customer.

Apps are compatible with a variety of mobile touchpoints

Today's customers move between a number of mobile devices and operating systems and expect their apps to follow. Hence banks should make sure their mobile banking apps work on different touchpoints, including wearable devices and tablets, and their respective operating systems. Here, they can draw inspiration from China's WeChat, which even caters to those who do not own smartphones.

The goal should also be to make it easier for customers to access even offline touchpoints, such as nearby branches and ATMs via geolocation apps. Here it is worth citing the example of an app from a leading U.S. bank, which has an inbuilt option to call the bank's representatives.

To conclude, banks must consolidate and integrate their mobile banking apps from a customer perspective, offer innovative additional functionality, integrate apps with other providers, and make them work on as many touchpoints as possible. But even as they make these changes, banks should not lose focus on earning a return on their app investments. Since apps are costly to maintain, banks must clinically eliminate those which do not perform, and balance investments between a limited set of successful apps and a strong mobile web, which would be cheaper to run. It is a good idea to invest small to begin with, and deploy further funds after figuring out what works and what doesn't.

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AN EXPERIENCE TO REMEMBER – TAKING THE FRICTION OUT OF BANKING

In December 2015, a study by a management consultancy reported that the top 10 retail banks in the United States could lose as much as US$229 billion worth of retail deposits and US$11 billion in retail revenues in 2016 because of friction and pain in their customer experience[12].

Friction in customer experience is defined as "interactions that inhibit people from intuitively and painlessly achieving their goals within a digital interface". Author and marketing thought leader Don Peppers says that when customers talk about excellent experience, what they actually mean is "frictionless". He demystifies frictionless experience by distilling it down to four attributes[13]:

- Reliability: The offering should perform as claimed without breaking down.
- Value: The customer must receive fair value for the price paid.
- Relevance: The provider must remember customers' individual needs and preferences.
- Trustability: The provider should be proactive in disclosing information, and put customer interest first.

But before banks can design frictionless customer experiences, they must identify the source and location of friction. And who better than the customer to turn to for help? There are two ways in which banks can gather their customers' perspective on friction, namely through dialogue and engagement, and observation of the customer journey.

Using dialogue and engagement to identify points of friction

Relevance is one of the four essentials of frictionless experience. Today's customers expect their banks to recognize their individuality and respond with products, services and experiences that are personalized to their unique needs. Since digital interfaces, such as mobile apps, are increasingly responsible for experience delivery, they should be adaptive, personalized and contextual. For that, applications need to be able to continuously engage customers in dialogue in different channels (or take feedback in other ways), gain insights from those interactions, apply it to update (individual) customer knowledge, and revert to their customers with contextual, personalized and relevant offerings.

Australian financial services group, Macquarie[14], takes a direct approach by conducting a "propensity survey" to understand what it is about the engagement experience that leads customers to recommend their services. Apart from undertaking such initiatives, banks should be looking out for points of friction in every customer interaction. For instance, if a customer with impeccable financial behavior calls yet again to request a temporary increase in credit card limit, the bank should learn from this and proactively raise the limit once and for all.

It goes without saying that customer-facing employees have a key role to play in delivering frictionless experiences. Clear communication and prompt resolution by attentive staff can take most of the rough edges off.

And with insightful support from systems that have remembered and learnt from each customer interaction, bank staff can actually elevate every experience into a delightful one.

Observing the customer journey to identify points of friction

A great way to locate experience-killing pain points is to observe customers as they go about their business, or better still, undertake the journey oneself. How convenient is it to use a digital interface, such as a bank's website? Does the bank impose a whole lot of technical and financial jargon – banking terms, network availability and characteristics, ISO codes etc. – on users, who while literate are not exactly financial wizards? Does it ask customers to choose a network, implicitly forcing them to reckon with things like cut off time, limit, type of processing, fees and charges, and so on? Here's yet another example of friction-ridden experience design – when queried, does the website display account balance in all its components, such as clear balance, lien amount, sanction limit, and drawing power, none of which make any sense to the lay customer?

Most times, the answer to these questions is yes.

The reason for this is that banks have always designed the usage experience from *their – and not their customers'* – perspective. Thus a payment transaction starts by asking customers to click the "fund transfer" menu option and choose a payment network, rather than asking whom they would like to pay (which is essentially what the customers care about). The way to mitigate friction of this kind is by taking a "lifestyle" view of experience – for instance, enabling a customer to finance a purchase in a manner that fits best (loan against FD, sale of equity, credit card, and so on) rather than giving a tedious presentation on loan products. This principle applies equally to basic customer experience elements, such as user authentication.

Banks should validate customers in a process that is an extension of their regular lifestyle as far as possible – for instance ask for biometric verification instead of multiple passwords, and a mobile phone-based second factor of authentication instead of a physical security token.

Forcing customers to derive, deduce or compute during a financial transaction also creates friction. Banks should studiously avoid this by doing all the background work and presenting only the final outcome to the customer. For instance, rather than asking a borrower to check if there are sufficient funds in his account to pay the next installment, the bank's system should reassure him when funds are available, and provide a timely warning when they are not. Another simple method of reducing friction is to require customers to key in very little information (remember they are mostly using mobile phones) and pre-populate documents with information that has been captured previously. Enabling customers to input information via a QR code is also highly recommended.

A global technology research and advisory firm says that 89 percent of marketers expect to compete on customer experience this year[15]. This offers banks an opportunity to learn from the kind of user experiences provided by industries that lead this race, such as hospitality and entertainment. For instance, some of the top hotels in the world are now allowing privileged customers to choose rooms, check in and even open the door, over a mobile app. Disney's Magic Bands have given millions of visitors to their theme park in Orlando an experience that is not only smooth but also personalized to their taste. Banks that draw inspiration from these companies and go on to create industry-leading experiences will gain a competitive advantage that will be hard to beat.

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