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FINACLE CONNECT

Connecting the banking world

The Fintech Revolution

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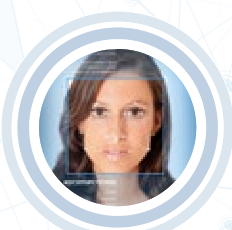
BIG
DATA
Value



Collaboration:
The way forward for banks and fintechs

Do fintech players pose a threat for banks or do they present an opportunity? Progressive banks are choosing the latter, and wisely so. It's the era of collaboration, and the ecosystem shall thrive. Businesses that isolate themselves will find themselves at the losing end, for today convenience is key and customers' loyalties are fickle. It's imperative for banks to collaborate with emerging fintech players that are trying to reimagine banking and offering services that simplify customers' lives.

In this edition of FinacleConnect, we are excited to examine some of the nuances of the emerging fintech-bank relationship. We start with a feature that discusses how banks can deal with their supposed fintech 'rivals'. The cover story picks up where the feature leaves off and goes on to talk about collaboration between the two and how both sides stand to benefit by coming together.

We have an interview this time with Stuart Lacey, founder & CEO at Trunomi, an emerging fintech player that helps its customers realize the potential of personal data through the power of consent, delivering compelling user experiences. The other featured interview with Sanjay Sharma, Head - Technology, Innovation & Customer Fulfilment, RBL Bank talks about partnering with fintechs from a bank's point of view. In an article by Amit Goel, MD & Co-Founder, Let's Talk Payments, LLC, he talks about initiatives taken by banks to foster open innovations and how the fintech collaboration platform offered by his firm supports these efforts.

This edition also carries some inspiring case studies on managing complex banking technology transformations.

I hope you enjoy this edition. Do get in touch to tell us what you think.

Happy reading!

Puneet Chhahira
Global Marketing Lead – Infosys Finacle
EdgeVerve

Fintech Face Off:
How Banks can Deal with Their Latest Rivals

A global consulting major says that banks could lose as much as 60 percent of profit and 40 percent of revenue to fintech competitors by 2025[1]. Fintech had a stellar year in 2015, attracting just over USD 19 billion in funding[2]. And while Francisco Gonzalez, Chairman and CEO BBVA, might be exaggerating when he says that in ten years only 100 banks will survive digital disruption[3], evidence of what small startups can do to big incumbents is all around us.

A global consulting major says that banks could lose as much as 60 percent of profit and 40 percent of revenue to fintech competitors by 2025[1]

No doubt, some of the hype around fintech is just that. But behind the hyperbole are some very real possibilities of deep impact. Most startup firms might not survive, but it will take only a few spectacular successes, such as mPesa, Alipay or WeChat, to open the floodgates for similar business models and change the way banking is done forever. Hence banks cannot stand by passively while little, innovative startups chip away at some of their most profitable niches. Small and mid-sized banks have the bigger problem, since fintech firms could seriously undermine their existence. For large institutions, it's a question of staying relevant and profitable.

So, while there is no need for panic, banks should certainly be wary. For as J.P Morgan's Jamie Dimon says, "Silicon Valley is coming."

While on the subject of Silicon Valley, banks need to watch out for its older citizens as well. Because even as fintech firms attack them selectively, technology giants such as Google, Apple, Facebook, and Amazon (GAFA) are on a bigger agenda that will eventually impact the traditional banking business.

Although the financial services business of startups and the GAFA combine both are yet to achieve scale, they are riding the wave of some very favourable trends. The first of these is consumer evolution. A new breed of connected, informed and empowered customers is making discerning choices of financial services providers based purely on the real value delivered. Often that is leading them to alternative providers such as fintech startups or technology companies. The second trend is the arrival of digital technologies enabling even small entrepreneurs to set up businesses that are founded on very innovative models but funded by very little capital. A great example is the newly licensed Payment Banks in India. The third, somewhat unlikely, trend is regulation. Regulators around the world, such as the Monetary Authority of Singapore and the Office of the Comptroller of the Currency in the United States, are viewing the growth of fintech as an enabler of the banking industry, and openly recommending that the two sides collaborate. Other regulatory dispensations – in the European Union, the United Kingdom and Japan, to name a few – are formulating policies encouraging the use of APIs that will benefit alternative financial service providers. India's recently launched Unified Payments Interface will enable customers to freely move between payment apps, regardless of whom they bank with. These three forces – customer, technology and regulation – are creating the right environment for both fintech and GAFA to grow.

However, both groups have very different agendas. fintech companies are clearly targeting niches – payments, lending, advisory and so on – aiming for excellence in their chosen area. Banks risk losing some part of their business and customer relationships to these entities. The GAFA giants have bigger fish to fry. Their target is not the banking business per se, but its customers. This is apparent from the behavior of Google and Apple, who are clearly trying to own the customer journey by making their financial services available exactly at the points of need – search, comparison, purchase, for instance. Here, the threat of losing customer relationships is far greater because it would be very easy for customers, who have ongoing independent relationships with the GAFA companies, to use their platforms for banking (even with the same old bank). If that were to happen en masse, banks would be relegated to the role of utility providers.

Our viewpoint on Truly Digital Banking, which we believe is the future of the industry, suggests several ways in which banks can deal with this competition.

Focus on the customer

The first of these is to make customers the primary focus of all activity, and integrate banking services into their lives to provide seamless user experience. Since Amazon, Facebook, Google etc. are already entrenched within consumer lifestyles, they offer a readymade platform to banks to do the same. So rather than fighting these companies from the outside, banks could look at partnering with them, offering their own services through Apple Pay and Facebook Banking for instance, to make sure they remain part of their customers' consideration set. Uber, whose app can be integrated within Google Maps, is an outstanding example of this.

Banks can also demonstrate their commitment to customers by always acting in their favor. Here is an example: When regulations such as PSD2 take hold a few years hence, banks will be forced to aggregate services from other providers. If they find that a rival

When banking turns "truly digital", the ecosystem, rather than the individual institution, will provide universal banking services.

product is better suited to a particular customer's need, they must highlight that straightaway. This would immediately elevate their trusted status in the eyes of that customer.

Forge partnerships through the ecosystem

When banking turns "truly digital", the ecosystem, rather than the individual institution, will provide universal banking services. Here again is an opportunity for banks to collaborate with fintech and other providers, which incidentally also allows them to remain within zero distance of those competitors. Take the example of Deutsche Bank in Germany, which has built a hub where SMEs can gather to exchange information, do business, and otherwise engage with each other. The bank has expanded its own vision, seeing itself as the curator of this platform and the facilitator of interactions taking place on it. In the latter role, the bank will not only provide the financial support but also the commercial and technical infrastructure required to make the dealings safe and secure.

We have created a similar solution in the EdgeVerve Commerce Network, which banks can use to help their small business customers create and manage their digital presence, sell online, network with other businesses and build an ecosystem. For banks, the benefits of using this network include additional

The second trend is the arrival of digital technologies enabling even small entrepreneurs to set up businesses that are founded on very innovative models but funded on very little capital.

While the fintech attack is direct, aimed at profitable niches, the GAFA threat is more subversive and threatens to undermine banks' relationships with customers over the long term.

revenue from the business transacted on the Network, additional insights into clients' businesses, and access to their customers.

Leverage data power

Another line of defense is to use analytical insights to improve customer engagement, or come up with new business models. Recognizing the value latent in merchant transactions, Commonwealth Bank of Australia innovated their POS terminal to build "Albert" to capture insights at the point of sale. Combining this with existing customer knowledge, the bank is able to offer retailers a more powerful value proposition.

Automate for efficiency

As mentioned earlier, banking is at risk of turning into a utility service. The key to survival then, is efficiency. Banks should prepare for that future by renewing existing products, services and systems to weed out inefficiencies. Truly digital banks would be at an advantage because their reliance on technologies, like automation and artificial intelligence, will make them operationally more efficient, productive, and agile than others.

To sum up

Competition in banking has never been as tough, or interesting, as it is today. Banks are fighting not just other banks, but also a significant challenge from non-banking entities, led by small fintech and gigantic GAFA. These cannot be wished away. While the fintech attack is direct, aimed at profitable niches, the GAFA threat is more subversive and threatens to undermine banks' relationships with customers over the long term. Both need to be dealt with seriously and decisively. But that does not necessarily mean confrontation. Indeed, many non-bank competitors are more deeply entrenched into consumers' lives than banks themselves. It is pointless for banks to try to upstage them. Instead, they should pursue a policy of collaboration with fintech and GAFA, to strike up partnerships for mutual advantage. This resonates with our view on the Truly Digital paradigm, where banks will have to integrate themselves with an ever-growing ecosystem of financial service providers. The future of competition is collaboration.

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Live and Let Live:
Fintech and Banks Chant the Collaboration Mantra

From unbundling to rebundling; competition to collaboration

40 percent of banks were willing to collaborate with startups, and a similar number were interested in taking them on as suppliers.

For all its recent hype, fintech is not a completely new phenomenon. Since the late 1990s, banking has seen many new technology powered financial offerings from startups ranging from cashless cards to payment solutions come and go.

But 2015, clearly, belonged to a resurgent fintech, with investments touching a record USD 19.1 billion[1]. This was accompanied by somber predictions of the unbundling of banking flowing from massive disruption and disintermediation. One report went so far as to say that 30 percent of bank jobs could be lost on account of fintech, by 2025[2].

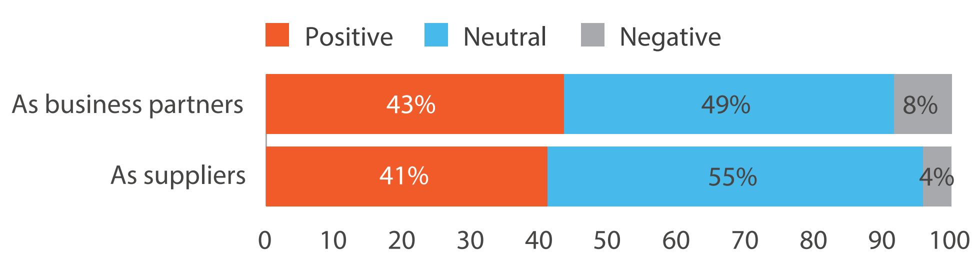
Why did banks, which successfully quashed the threat in the past, not do it this time around? A strong reason for that is a change in circumstances. A host of factors – affordable technology, consumer expectations, and regulatory support for new entrants – has made banks realize that the days of monolithic, dominant institutions are past. The latest edition of the EFMA-Infosys Finacle Innovation in Retail Banking study found that about 40 percent of banks were willing to collaborate with startups, and a similar number were interested in taking them on as suppliers. Most banks felt that such partnerships would both accelerate and improve innovation.

On the other side, even the fintech position has begun to soften. Industry observers say that startup companies are no longer viewing themselves as giant slayers. They are also being subjected to some regulation in parts, which is infringing on their ability to disrupt. Meanwhile, banks are opening up their business for better collaboration with APIs, refreshing existing products and services, and investing in modern technologies on their own. As they step into each other's shoes, so to speak, both sides are starting to believe that collaboration may offer greater advantage than competition – banks can gain from fintech's agility, innovation culture and expertise in technology; fintech can get access to banks' customer base, financial resources, and regulatory compliance experience.

Therefore, coming full circle, banks and financial technology startups are now increasingly choosing to

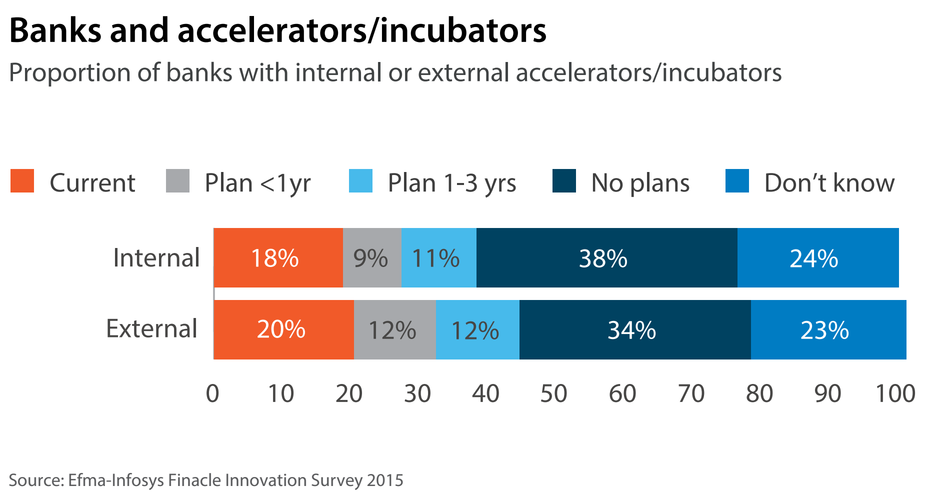
Attitude towards working with startups

Using a scale of 1 to 7, the categories are Positive (6 or 7), Neutral (3, 4 or 5), Negative (1 or 2)



Source: Efma-Infosys Finacle Innovation Survey 2015

Today, fintech-bank tie-ups can come in several formats such as incubators, accelerators, hackathons and other methods like corporate venturing.



work with each other. Many commentators believe this is a sign of the rebundling of banking.

The Finacle viewpoint is that collaboration between banks and fintech firms is not only desirable, but inevitable, for "#TrulyDigital" banking, where the ecosystem rather than the individual institution, will deliver universal banking services to customers. We believe tomorrow's universal bank will be an aggregator or "rebundler" of services, some of which it will own, and others that it will procure from a variety of third party providers, including fintech firms that are more competitive in those areas.

It follows from the preceding statement that banks have to now decide which services to build, which to buy and which to develop in partnership. Here, we will focus on the last two, which are collaborative forms of engagement.

The ways of collaboration

As fintech evolved, so did the approach to partnership. Today, fintech-bank tie-ups can come in several formats such as incubators, accelerators, hackathons and other methods like corporate venturing. In the EFMA-Infosys Finacle study mentioned earlier, about 1 in 5 banks already had an incubator, either solely owned (Sberbank in Russia), or jointly with external partners (Barclays, DBS and Citigroup). And 1 in 10 banks had put aside corporate venture funds to invest in startups. A good example is Citigroup, the pioneer of the corporate venturing model. Since launching Citi Ventures in Silicon Valley way back in 2010, the company has made more fintech investments than any other large bank in the United States.

Likewise for fintech companies – under pressure from their VC backers to show scale – collaborating with a bank is perhaps the best way to get there.

Then again, a bank could invest in an innovative startup to try out new concepts, but decide not to involve its organization. Or it could set up an incubator, equipped with an innovation space and other resources, and invite interesting fintech companies to innovate in there. Or it might acquire them outright. For example, acquisition of German fintech and challenger bank Fidor by BPCE, the second largest banking group in France. The collaboration may also involve several banks. For instance, three major European banks - Scotiabank, Santander and ING participated in about USD 135 million Series E funding in lending platform Kabbage.

Some of these relationships would be deeper collaborations than venture investments. An example is J.P. Morgan's deal with online lender On Deck Capital in the area of small business lending, where the latter will process applications faster and at lower cost. Similarly, there's also the tie up that BBVA Compass has entered into with FutureAdvisor to reach customers who are seeking low-cost, automated advice. A leading IT research and analysis firm predicts that in about two years' time, 65 percent of banks would have acquired startup companies to bolster bimodal IT and innovation.

And the whys of collaboration

Format, however, is secondary, a specific choice based on the bank's digital strategy and investment resources. What is more important is to be clear on the need to collaborate and the reasons for collaborating with a particular bank or startup company. For banks, a key consideration is owned expertise – they must know what their real strengths are, and then try to bridge the gaps with the help of a partner. Gaining access to innovation talent is clearly one potential benefit of tying up with a fintech firm.

Another is access to better technology or operational model. For instance, banks' conventional risk scoring methods are slow and outdated compared to those employed by fintech firms, and are also inadequate for assessing the creditworthiness of certain customers, such as young professionals, who haven't yet built a credit history. They can learn from online P2P lenders who even use customers' social media profile and behavior, among other data, to make astute credit judgments.

Likewise for fintech companies – under pressure from their VC backers to show scale – collaborating with a bank is perhaps the best way to get there. They can also benefit immensely from banks' experience

> It is fairly clear that while fintech is here to stay, it will not obliterate established banking institutions.

and expertise in managing risk and regulatory compliance, not to mention their deep pockets.

Having established the motives for collaboration, both partners must go about making it work. This might need some modification in mindset and behavior, for instance, greater emphasis on client development in the case of the startup partner.

Last but not least, is the choice of partner itself. History says 90 percent of startups fail. Therefore, banks need to spend time and effort to identify the likely winners, and enter into a partnership provided other crucial elements, such as timing and fit, fall into place.

For instance, our clients find in Infosys a partner who not only helps them forge collaborations with fintech, but also walks the talk itself. We have set up an innovation fund of USD 500 million at the group level to invest in startup firms working in the areas of Artificial Intelligence, Automation, Internet of Things, Cloud, Analytics and Design to build a flourishing global ecosystem of partners. Our partnerships span the range of options, from outright acquisition as in the case of Skava, a provider of ecommerce and shopping experience solutions, to collaboration with OneGini in the field of biometrics.

Good times ahead

The future of bank-fintech partnership looks promising, riding, as it is a wave of favorable market factors. What's more, bank-fintech collaboration has an unlikely supporter in regulators around the world, who are seeing fintech as an enabler, and not destroyer, of banks' future success. The Monetary Authority of Singapore and the Office of the Comptroller of the Currency in the United States are both champions of a collaborative approach. Japan and the United Kingdom have now laid down API policies to enable seamless interaction between banking systems and third party services. The PSD2 regulation in Europe is introducing new entities in the form of third party payment service providers (TPPs), who will gather and analyze bank account data to offer innovative services. While corporate firms and banks will fulfil this role to some extent, it is expected that there will be greater participation by fintech companies. In India, meanwhile, the creation of a Unified Payment Interface that allows customers to move from one payment provider to the other, whether owned by their bank or otherwise, will give a fillip to fintech providers.

In the past few months, the dust has settled in the fintech arena. It is fairly clear that while fintech is here to stay, it will not obliterate established banking institutions. The view – now shared by many fintechs – is that they are here to partner banks, not fight them. Banks must therefore look at startup companies as a vehicle to invigorate innovation, reach new customers, become more agile, and come up to speed with the latest technologies. With the help of fintech, financial institutions can clearly evolve into the truly digital banks of the future. Similarly, fintech can find much needed scale and resources by allying with banks. This is the time to reach out.

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EdgeVerve

Collaboration is the Way Forward

In conversation with

Sanjay Sharma,

Head - Technology, Innovation & Customer Fulfilment, RBL Bank

Q: Can you talk about RBL's growth journey from being a private sector bank in 1943 to the private bank that it is today?

A: RBL is a 73 year old bank. It was not really in the limelight, and was focusing only on Maharashtra and Karnataka. It was sometime in 2010 that the new management took over and the whole transformation journey began. As it happens in any transformation, you need to build people, process, technology, and the business model itself. We started re-building the technology, and that's where we adopted the Finacle core banking technology. It helped us manage our retail, corporate growth and also reach our universal bank aspiration. We created a technology and products platform, we started venturing out into retail banking, commercial banking, treasury, SME, etc., basically all the facets of banking that would help us become a universal bank. On the digital side, we already have e-banking, and are transforming that with Finacle now. Today we have almost 200 branches, 400 odd ATMs, and are present in 14 states. We have good technology infrastructure in place, we call it the op backbone. So today it is a full-fledged universal bank. We are one of the fastest growing banks with a CAGR of 45 percent PAT side and 51 percent on balance sheet base side.

About RBL Bank

RBL Bank is one of India's fastest growing scheduled commercial banks. It is continuously expanding its presence across India through a growing network of branches and ATMs. Established in 1943, RBL Bank undertook a transformational journey under a new management team in 2010. It embarked on an aggressive growth plan based on a robust platform of professional governance, relationships, technology infrastructure, high quality capital and geographic expansion. Today, RBL Bank offers specialized services under five business verticals namely: Corporate & Institutional Banking, Commercial Banking, Retail Banking, Agri & Development Banking and Financial Markets. The Bank currently serves more than 14,00,000 customers and has a total business size of over INR 31,000 Crores.

Today we have almost 200 branches, 400 odd ATMs, and are present in 14 states. We have good technology infrastructure in place, we call it the op backbone.

Q: With digital being the buzzword, what is RBL's take on how digital is disrupting banking?

A: Digital means different things for different people. For some, it is just about doing something on the channels. Very rarely do people talk about digitization of the entire organization where all the processes, be it front end customer facing or back end systems need to be digitized and should be able to create a unified experience across. Today it is really about giving a consistent experience on your mobile banking, internet banking, and also at the branch. For example if you are offering a one minute account opening experience online, you should be able to deliver that even at your branch – and that is true digitization of the organization. So digital for us means digitizing the organization as a whole. Today's generation does not visit branches as often, and human interaction is becoming sparse, the only way you can give your customers a good experience is through digital channels. It all started with e-banking, and moved on to mobile. Most of the banking today is done only on mobile and e-banking, so digital has really disrupted the banking system because the whole customer experience has changed.

Today if you are trying to launch any new product or service, like online account opening, onboarding or a simple card block, it has to be offered on the channel of the customer's choice. Processes have extended from the back office to front facing with more emphasis on self-service. Your customers want that empowerment, and want to bank at their own convenience. That's the power of digital.

The other side, where people don't focus so much, is corporate. Because of API economy, a lot of integration has been built. Corporates are also expecting seamless integration, real-time payments, response, and so on. This is more of a partnership which enables partners to do things in a mode that is more tightly integrated with the system.

The last category is assisted. This includes financial inclusion customers who are large in number, and don't want self-service. They want to be assisted. Our electronic transactions, remittance transactions which go through our bank are all partnership led. This is another paradigm that has emerged because of digital. On the financial inclusion side we work with business correspondents, customer service points – they use our infrastructure, they do large numbers of remittance transactions. I think to sum up, these three – partnership, self-services and assisted, are for three different segments of customers. That's the way digital is touching the lives of all segments of customers.

Q: What is the Opti channel experience that you have been talking about?

A: Banking started with a multi-channel strategy where it enabled customers to transact on multiple channels like the ATM, internet banking and so on. It then moved on to enabling an omni-channel experience where customers could have a seamless experience across channels without breaking the flow of a transaction. They could start a transaction on one medium and complete it on another one. This needs a very strong front and back end system. Now, here's the tricky question, do you really need all the transactions to be available on all the channels? For example, do you need all the functionalities that exist on the e-banking portal on the mobile app, or in the ATM? The fact is, it may be redundant. In many cases, there are several transactions that can be done at the ATM, but more than 95 percent of the transactions are mainly cash transactions at the ATM. Every channel needs to be optimized based on the channel and the customer need. The channel experience on each channel needs to be optimized. That's what we mean by an opti-channel experience.

Every channel needs to be optimized based on the channel and the customer need. The channel experience on each channel needs to be optimized.

So, digital for us means digitizing the organization as a whole. Today's generation does not visit branches as often, and human interaction is becoming sparse, the only way you can give your customers a good experience is through digital channels.

Q: Fintechs are all the rage today, with new ones being born every day. What is RBL's strategy to tackle competition from fintechs? Is collaboration the way forward?

A: At RBL, our strategy is always about partnerships. We strongly believe that partners bring a lot of value which

It is all about collaboration, I don't think fintechs will challenge the banking system, and banks will be out of business or vice versa.

you can't create on your own. Similarly with regard to fintechs, we believe that it needs to be a collaboration. And as a bank, we have partnered with a lot of startups, allowed them to grow with us, we helped them in creating banking products. The fact is, startups bring a lot of new ideas. Innovation doesn't always come from the enterprise or big players, it comes from the fintechs, the smaller companies, which are more agile.

It is all about collaboration, I don't think fintechs will challenge the banking system, and banks will be out of business or vice versa. I think both should co-exist and add value to each other. At the end, it's about the customers, and the benefits that you can bring to them. So, for us the strategy is about how you can create better value for customers, and collaborate with companies that have great ideas. We currently work with several startups like Novopay, Happay, TranServe etc. We are also actively part of startup accelerator programs.

Q: How do you see the face of banking changing in the next five years?

A: I think banking is going to become a lot more virtual. Take for example, mobile apps, the way they are evolving, and the non-banking players coming out with innovative models like lending based on machine learning, or start-ups coming out with wallets. Banks will exist with their own set of products, but many segments, like retail, will try to use virtual banks, and the banking reach will also be partner driven.

On the experience side, I think we are moving towards a truly digital experience. Banking will become more and more virtual with people hardly stepping into branches and preferring to do everything online. With the Government introducing the e-sign initiative using Aadhar and OTP, even account opening will move towards becoming virtual because it simplifies the identification mechanism. Iris recognition can also add an extra layer of security and make the whole virtual onboarding process foolproof.

Q: What does the future look like for RBL?

A: Technology has always been the mainstay for RBL. Fact is that we have to be ready both as a dependable and agile partner and also work on the niche spaces that exist for creating a mark in the market.

We have approached the same with a clear Strategy:

1. We are one of the first banks to offer our banking services on a platform and we intend to build on the same steadily
2. We are working towards delivering a good Omni-channel experience
3. Analytics is an area where we would focus and bring value.

Many of these are long term endeavors and we see it as a game-changer from a go-to-market perspective.

The Power of Customer Data

An interview with

Stuart Lacey,

Founder & CEO at Trunomi

Our goal is to help our customers realise the potential of personal data through the power of consent, delivering compelling user experiences.

Q: Tell us a little bit about Trunomi. What does the company do?

A: Trunomi connects financial service providers to their customers and delivers solutions that create, share and monetise customer data. Our goal is to help our customers realise the potential of personal data through the power of consent, delivering compelling user experiences.

We do this through our powerful consent-based data sharing platform, which makes it easier than ever for banks to onboard new accounts, personalise services, comply with data regulations and share information across the customer's financial ecosystem.

We also enable banks to monetise customer data – an important consideration in today's hyper-competitive market.

Q: You say you enable consent, that sounds interesting! How did this idea come about? What inspired it?

A: In the past ten years, globalisation and rapid advances in technology have resulted in the proliferation of digital personal data. This Digital Age brings both challenges and opportunities.

On one hand, many customers desire a personalised experience with brands, driven by relevant and timely interactions. Banks are expected to have sufficient knowledge of customers' actions and preferences such that they can deliver better services.

Conversely, the increase in digital personal data has led to an avalanche of data privacy concerns. While most people accept they make a trade off to share information in order to receive tailored content back, this relationship has to feel transparent and customer-controlled. That is where consent comes in.

Our solution is ideal for financial service providers that recognise consumers' want to enjoy the benefits of the digital age while retaining ultimate control of their data.

We were inspired to deliver the ultimate flip – the inversion of the centralised repository (aka big brother) model which, for so long, has dominated the industry. We consider this model to be full of flaws, including, jurisdictional data privacy risks, security risks, centralisation risks and inefficiencies.

Trunomi doesn't offer a cloud or centralised registry and we don't duplicate copies of ID sets, so data is completely secure. We take a customer first approach; our technology empowers the individual to be in control of their data. We are fully decentralised, and as a result, completely differentiated from any other offering on the market.

Q: How can mainstream banks collaborate with you and benefit from your solution?

A: Our solutions integrate seamlessly with banks' existing technologies. With Trunomi, banks can offer fully digital customer onboarding and data

Our solution is ideal for financial service providers that recognise consumers' want to enjoy the benefits of the digital age while retaining ultimate control of their data.

Banks can digitally onboard new customers using consent-driven rights management over personal data. This makes the experience smoother and increases completion rates.

management while streamlining businesses process to enhance the customer experience.

From the perspective of the bank these benefits are realised through an intuitive customer data digital rights management dashboard, which enables secure messaging and document sharing with consumers, and connects with third party identity and verification partners through an API platform.

There are a number of other benefits to our approach. Banks can digitally onboard new customers using consent-driven rights management over personal data. This makes the experience smoother and increases completion rates. For existing customers, banks can Know Your Customer Better (KYCB), personalise services, and generate new revenue streams. Our platform can help banks comply with data protection regulation, while reducing compliance costs in the process.

Q: How do consumers benefit with Trunomi?

A: The benefits of Trunomi for consumers can be summed up in two words: convenience and control. Consumers today want banks to offer an experience similar to that offered by the likes of Amazon and Facebook. When consumers apply for an account they need to be able to do it on whichever device they want, over whichever channel they want, when they want, and for the experience to be frictionless. With Trunomi, banks can provide the quicker, personalised and more convenient online digital experiences that today's consumers demand.

Second, there's control. With Trunomi, customer data is held digitally in secure personal data stores. Customers can therefore benefit from data portability, where they can use the digital identity set they've developed with their bank in any other scenario where they have to prove their identity. An all-digital communication channel also solves challenging consent scenarios like the incoming 'right to be forgotten', as customers can rescind the right to store and use their data far more easily.

Q: Do you think fintech startups pose a challenge for traditional banks? In your opinion, should banks and fintechs collaborate or compete?

A: Several years ago it was about disruption. Now we see the industry moving towards collaboration where financial institutions and fintechs can work together. This creates a powerful combination. Banks bring a trusted brand, great distribution and a well-established international customer base. Fintech firms can add cutting edge technology, UX, and innovation. Indeed, startups offer new business models and services capable of reducing risk, increasing efficiencies and enhancing service innovation.

Q: What does the future of Trunomi look like in the next few years?

A: We're at the centre of a seismic shift in attitudes towards customer data. Individuals are more aware than ever about how businesses manage and interact with their data and are starting to see the data they create as an asset, belonging to them. As this awareness grows, people want more control of their data and to see

Several years ago it was about disruption. Now we see the industry moving towards collaboration where financial institutions and fintechs can work together.

more upside from its commercial use – to potentially monetise their own data.

Our entire business model is about enabling this consumer-centric data ecosystem in a way that has a positive impact on financial institutions as well as their customers. We play a key role in helping financial institutions adapt to the age of the empowered customer, while also helping them stay on the right side of fast-emerging data regulations.

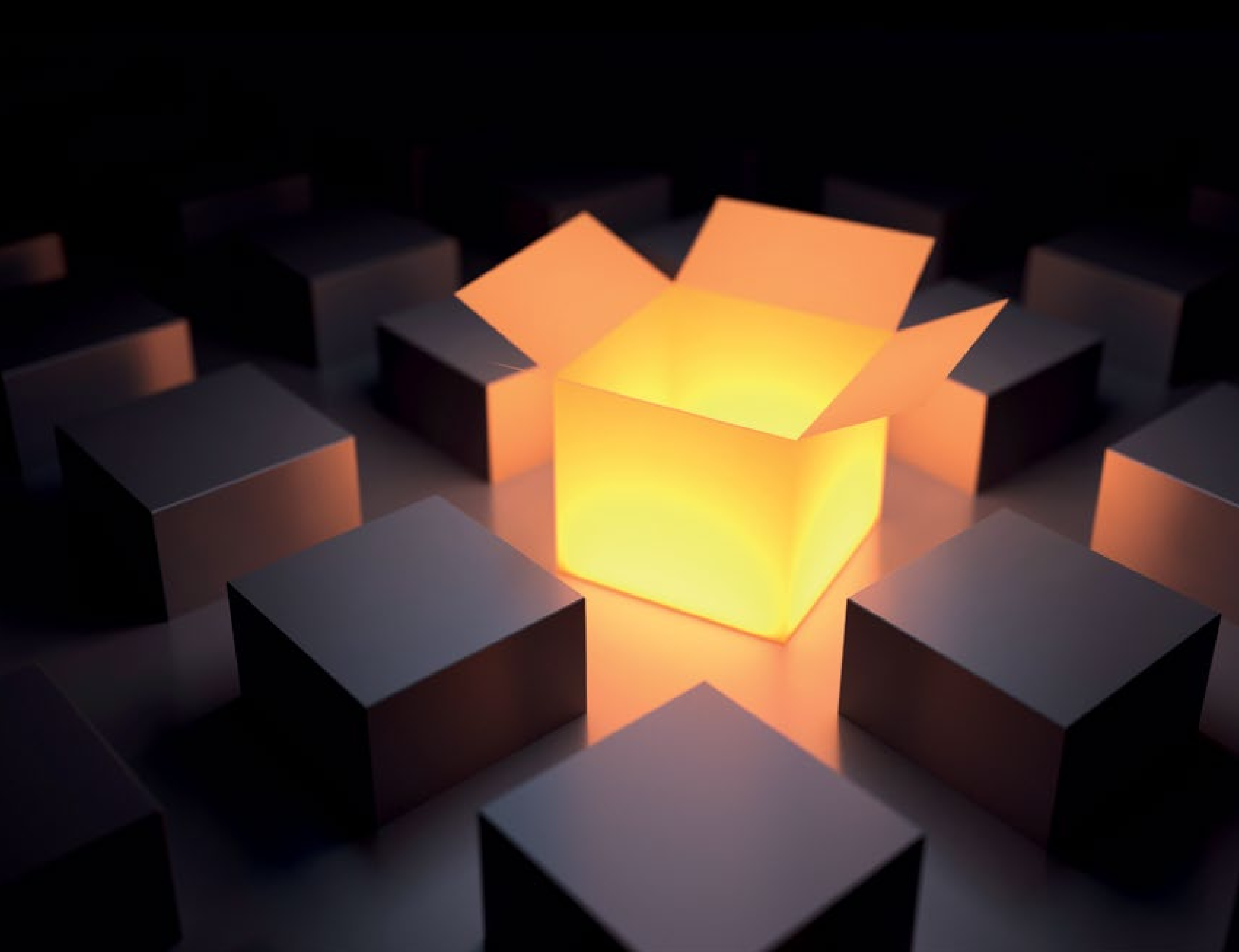
Q: What is your view on the growth of fintech? What will be the most important opportunities for them?

A: We're seeing lots of digital innovation coming from the fintech sector that is challenging the ways in which banks go about their business. I think that over the next few years we're going to see this innovation lead to a more efficient banking sector better able to meet the needs of its customers.

Ultimately, I think this change will occur through better collaboration between fintech companies and banks, where the former will help the latter adjust to the demands and opportunities of the digital age. In this process, the start-up community needs to focus on truly understanding the needs of financial institutions and their consumers to come up with transformational customer experiences.

How Prepared Are Banks for Open Innovation?

Amit Goel, MD & Co-Founder, Let's Talk Payments, LLC talks about MEDICI fintech innovation platform



Banks are exhibiting a willingness to transform themselves by working with the fintech ecosystem. They have adopted different ways to work with the new global fintech (ecosystem) and those initiatives largely fall into two buckets: internal programs and open innovation initiatives. There are various formats and ways of working with startups but it is very important to first understand why banks are doing it. What is the bigger objective? Is it only achieved by doing (in a rush) what a few others are doing or is there a more important reason and a more meaningful exercise (a pre-step) that leads to that?

Let's address some of those questions. In order to integrate a startup product into your offerings as a bank, you need to have a very well-defined and robust process internally. While working with banks, we understood that the following is the flow:

1. Why do we need to innovate? (Impact of digital, smartphones, Millennials, data opportunity, messaging, on-demand, real-time)
2. What should be changed or replaced in our current service offering to serve customers better?
3. In order to do #2, do we have the talent and internal know-how?
4. What will be the time to market vis-à-vis the competition if we do #3. What are the areas that need external support?
5. Should we work with IT vendors and large product companies for that?
6. What are the costs and timelines involved?
7. Are there areas where we need to make changes fast to respond to market needs?
8. Can we work with new fintech companies for that? What are the pros and cons considering all the above questions?
9. What are the areas and fintech startups we need to focus on? How do we engage with them?
10. How do we prepare our management and our engineering team to embrace this change?

In order to integrate a startup product into your offerings as a bank, you need to have a very well-defined and robust process internally.

Let's look at some current affairs. In 2015, Wells Fargo had selected three early-stage companies – Gridspace, Roostify and Splice Machine – for investments of up to USD 500,000 for Wells Fargo Startup Accelerator, a semiannual boot camp for innovators who are looking to shape the future of financial services. Banks have also put incubator programs in place that have created some innovative fintech companies which have helped banks to explore the latest technologies and to understand the best solutions that work in the market. For example, the winners of BBVA's OpenTalent Europe contest, Ever Ledger and Origin Markets, are working on solutions such as blockchain to fight against fraud and a marketplace for corporate bond issuance, which are areas of top priority or of high interest for banks. BBVA Compass has also partnered with FutureAdvisor to offer robo-advisor services to its customers.

Bank of America holds an innovation summit that draws 200 to 300 technology companies every year, with almost 17 percent of startups succeeding in having a relationship with Bank of America. At the

What are the areas and fintech startups we need to focus on? How do we engage with them?

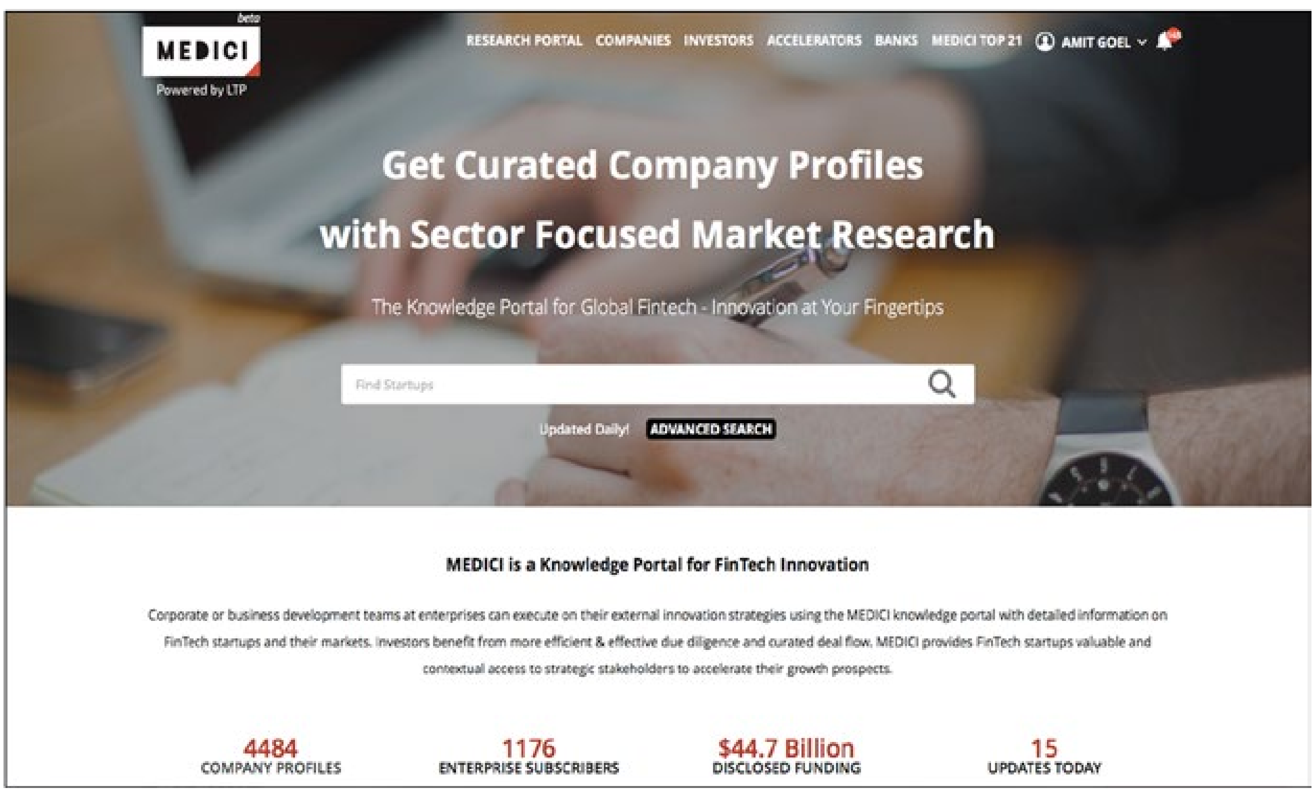
Bank of America holds an innovation summit that draws 200 to 300 technology companies every year, with almost 17 percent of startups succeeding in having a relationship with Bank of America.

summit, fintech entrepreneurs spend about 45 minutes pitching to Bank of America on their products and services, with the bank's employees making an immediate decision on whether to work further with the startup. We are also seeing that Bank of America's rivals are equally keen to work with fintech startups. JPMorgan Chase recently said that it will team up with OnDeck Capital to finance small businesses. Banks are also opening up their APIs for fintech Companies to innovate quickly.

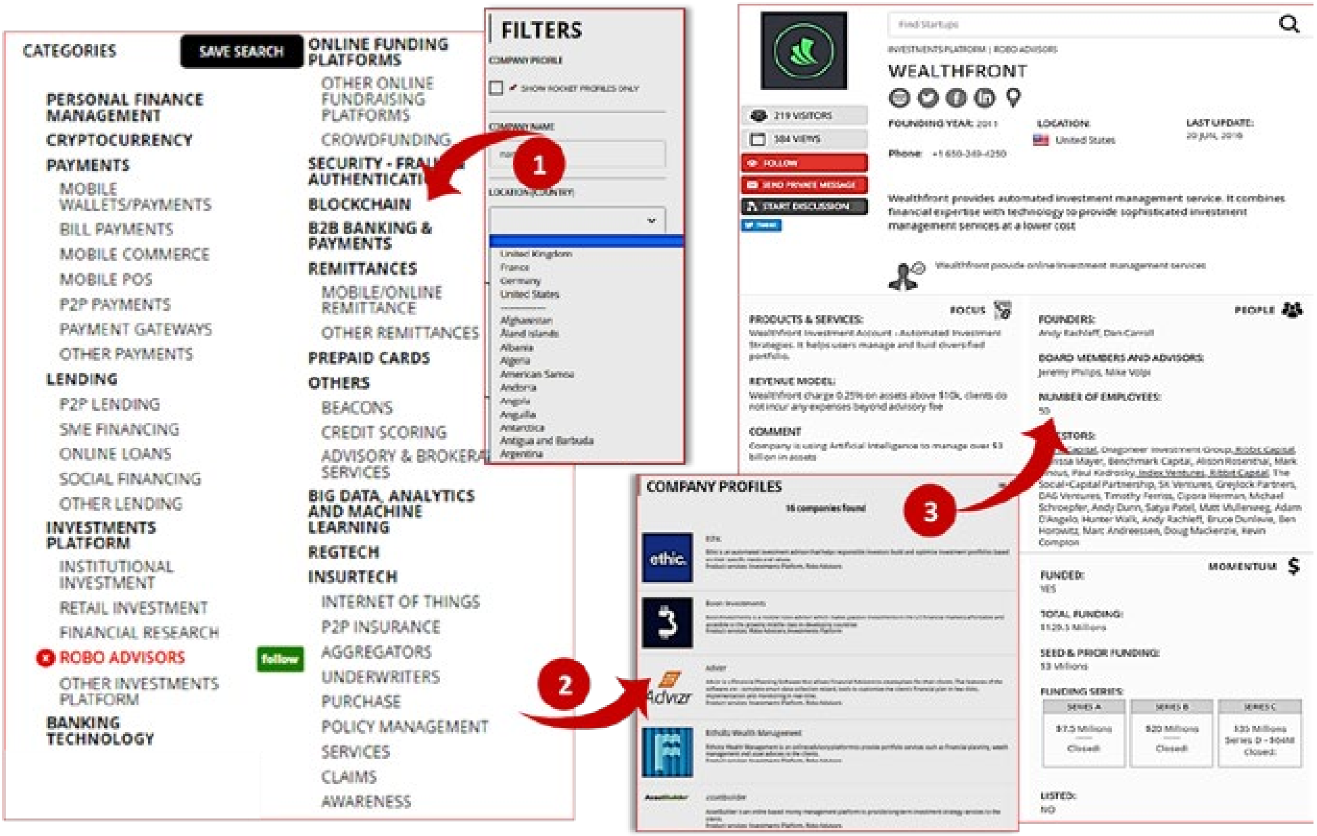
Not every bank is at the same stage. We had discussions with many banks in the last one year; some banks that we talked to are still evaluating how to work with startups. They have done some work but are not at a stage where they can run an accelerator of their own because they don't know what they would do with the selected startups and how to integrate them into their products/services. A lot of it has to also do with the lack of talent to run such programs and the culture (especially in emerging economies).

Looking at these trends, Let's Talk Payments (LTP) has also developed a fintech innovation platform called MEDICI which is the world's first fintech market network build to foster fintech partnerships between banks, startups and other stakeholders. Banks, FIs and insurance companies are using our platform for their innovation labs, accelerators, and startup contests. There are more than 4,500 startups spread across 35 fintech segments and sub segments and the platform already has 1500+ enterprise users.

Snapshot – MEDICI Home Page with search experience



MEDICI Filters



MEDICI provides 250+ Pieces of Research

Research Reports
Proprietary research with detailed insights for strategic planning

Segment Snapshots
Crisp segment-specific analysis with market sizing and trends

Value Chains
Visual representation of players in a Fintech segment

Strategic Insights
Curated insights articles from MEDICI analysis and industry players

Infographics
Rich visual representations of specific Fintech topics

Compiled Lists
Targeted lists of Fintech companies, investors or innovation programs

Company Profiles
Comprehensive review of a company by LTP analysts including detailed research

Digital Workshops
Knowledge sessions designed for innovators and strategists in Fintech

Example of a use case

1) Corp Dev and M&A team scouting for startups or Innovation team looking for technology partners in the form of startups.
2) Accept and curate applications on MEDICI for Accelerators and Startup Contests, which provides not only a streamlined workflow for the application process, but also a very contextual, data-rich environment for the startups, organizers, sponsors, judges and other stakeholders in the program to support the startups before/during and after the program with research, connectivity and engagement. Startups literally apply to accelerators with 1 click, and the other stakeholders can engage with them on MEDICI within the appropriate circles of trust based on the permissions.

Why Fintech Won't Break the Bank

Fintech is Peripheral, not Transformational

2015 was definitely the year of fintech with more than USD 19 billion[1] invested in that space. One of the most enduring images from last year is a graphic depicting the unbundling of a bank, immortalizing in color the inevitable fate of the hallowed institution[2].

But don't write the bank off just yet. Because once the hype is peeled away, the facts tell the real story, which is that the nascent fintech phenomenon, while exciting, is really not a threat to the venerable banking industry. In fact, veteran investor Christopher Flowers predicts, "Fintech will mostly end in tears". Think Ezubao, which raised more than USD 7 billion from investors for fake investment products and now has its executives in jail or Rebus, a claims management firm that collapsed just months after securing crowdfunding.

This is not to say that all companies will fail. A few will be spectacularly successful. But history shows that 90 percent of startups don't survive[3]. A well-known research outfit says startups typically live for less than two years after their last round of financing. There's no reason to believe it will be any different with fintech.

2015 was definitely the year of fintech with more than USD 19 billion invested in that space[1].

But even if we put this argument aside, there are a number of reasons why fintech companies will not replace traditional banks. Here's a quick run through.

Fintech is peripheral, not transformational

Financial technology startups have mushroomed in niches ranging from micro-lending and small savings to credit scoring and crowdfunding. But all of them, almost without exception, operate at the front-end of financial services delivery, where it is easy to make an entry and score quick wins. It is clear from this that fintech companies play at the periphery, unlike banks, which

A well-known research outfit says startups typically live for less than two years after their last round of financing.

straddle the landscape from end-to-end – back-office, channels, front-end applications, and all. On top of that, they only offer point solutions, designed to meet a single need – for a personal loan, for instance. Given this limited participation, it is hard to imagine how fintech firms could make a transformational impact on banking operations, let alone displace incumbent banks from their positions. Is fintech all about creating an 'easy app' to access the core applications? Customers are already complaining – too many competition 'cool' apps to choose from. Possibly something like blockchain has some appeal to fundamentally change the way banking is done but in a very limited business scenarios.

Banks are striking back

Jamie Dimon, CEO of JPMorgan Chase, admits that fintech can be competition, but is quick to point out that banks can also do a lot of things that fintech firms do[4]. He cites his bank's plans to build a real-time P2P (peer to peer) lending platform as an example. While banks were somewhat slow to board the financial technology bandwagon, they have picked up the pace, and are now investing in a number of technologies, including Blockchain, with a consortium of more than 40 banks collaborating with Blockchain firm R3 CEV. They have also intensified their investment strategy this year, taking bigger stakes or buying companies outright. A good example is BBVA, which has followed through its investment in Atom by buying out Finnish startup Holvi. Other banks are entering into close partnerships with fintech firms – JPMorgan Chase (with On Deck Capital) and BNP Paribas (with Smart Angels) being among them.

Several leading banks, including Barclays, Citibank and Wells Fargo, are running accelerator programs[5], and

With 20,000 developers, JPMorgan probably has more than any technology company in the world. Clearly, banks aren't taking things lying down.

many others have organized Hackathons or exposed APIs to developers to enter the fintech arena. With 20,000 developers, JPMorgan probably has more than any technology company in the world. Clearly, banks aren't taking things lying down.

No money, no time

While banks are clearly ramping up investments, there is no sign that their fintech competitors will be able to match them. If fintech companies are to emerge as a credible alternative to banks, they need to think long-term. This means creating a full technology stack à la banks by investing in "big" technologies such as enterprise platforms or Artificial Intelligence. On current form, it is rather doubtful that they have the resources or bandwidth to do this. Most fintechs also have a VC breathing down their neck for quick return on their investment. As soon as the 'cool quotient' dissipates with time, the fintech does struggle to show ROI. This is perhaps why fintechs can't do fundamental innovations.

Regulation will catch up

Recently, the Reserve Bank of India, India's banking regulator, made a move to regulate the country's fledgling P2P lending firms by proposing they be registered as Non Banking Finance Companies[6]. Fintech firms, which have enjoyed regulatory freedom so far, will soon see that advantage slip away as they are brought within the purview of banking regulations. Young and restless by nature and an offspring of a dynamic technology industry, fintech companies are used to thinking short-term. Dealing with regulatory change requires exactly the opposite, because the impact of a new law usually manifests over 5 to 10 years. When that happens, incumbent banks, who have decades of experience in managing risk and regulatory compliance, will gain the upper hand once again.

Customers will almost always trust a 100-year-old bank over a 6-month-old startup regardless of its offerings, potential or spectacular success.

In banks we trust

The head of a fintech firm offering distributed ledger technology solutions rubbishes prophecies of fintech "uberizing" banking by saying that entrusting one's life savings and taking a taxi ride are not the same thing. Customers will almost always trust a 100-year-old bank over a 6-month-old startup regardless of its offerings, potential or spectacular success. Also, when it comes to important or complex financial matters, customers would rather seek advice from a trusted bank advisor, sitting across the table, than a faceless fintech provider that only exists online.

Fintech lacks staying power

"Cool" is a good way to describe the fintech business model, which is centered on leveraging the latest technology to provide great customer experience. Unfortunately, that alone does not make for a sustainable business, which is the reason why so many startups fall by the wayside. Fintech firms also lack the resources needed to support the business over the long term. A good example comes from India, where the newly licensed payment banks are finding it hard to come up both with the necessary capital and a viable business model. Contrast that with the deep pockets and proven business model of a conventional bank.

The top 30 global banks alone have a combined market valuation of about USD 2 trillion, whereas the market cap of all of fintech is USD 100 billion[7].

And finally, the numbers say it all. The fintech story is compelling, but it's still too small to be credible. The top 30 global banks alone have a combined market valuation of about USD 2 trillion, whereas the market cap of all of fintech is USD 100 billion[7]. Banks are too big, too savvy, and too entrenched in their economies to be upstaged by upstarts, however smart. And unless fintech produces something that is as transformational or gigantic as Amazon, the threat it poses to incumbents will be little more than idle.

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Flight of Fintech:

Will Brexit Lead to Another Type of Exit?

The Bank of England has already committed to proactive regulatory engagement with the start-up sector, and if this can be combined with an even more attractive set of tax credits, grants and other incentives the landscape will retain its appeal.

For the past decade, London has consciously cultivated a reputation as Europe's hub for fintech. In that time it has become a lively hotbed of startups, accelerators and innovation labs for some of the biggest financial services firms. This has been achieved through a strong combination of UK public policy, incentives, and regulatory support. However, London's place at the heart of Europe's financial markets and access to a continent of talent have also played an enormous role. So what now for London's tech entrepreneurs as the UK begins a long and difficult departure from the European Union?

In some ways, the repatriation of full legislative independence will allow Britain to offer an enhanced set of supports and incentives for firms. The EU enforces strict controls on state aid as part of the terms of the Common Market. While continuing British access to this market will be a priority for their negotiating team, it is clear that the UK voted to leave in order to take control back from Brussels. Any attempt to bind the UK to EU laws from the outside will be resisted.

The Bank of England has already committed to proactive regulatory engagement with the startup sector, and if this can be combined with an even more attractive set of tax credits, grants and other incentives the landscape will retain its appeal. This should create a good supply-side set of circumstances, and if the companies are solely focussed on the UK domestic market, they will have continuing access to the world's sixth biggest economy. Britain may also look at ways to attract greater volumes of venture capital and other forms of investment. The Sterling has weakened since the June vote, and now represents good value for Euro and Dollar-holding investors seeking a return.

Of course, access to the UK's 60 million residents and a weak Pound are not a substitute for the EU's 500 million consumers, financial markets and skilled workforce.

While outside of the Eurozone, London has massively benefited from the introduction of the single currency and has become the largest foreign exchange market in the world (approximately USD 2 trillion per day or half of the global turnover), and the primary location for the trading and settlement of Euro-denominated securities. This will be a high value target for the EU, with centres, such as Frankfurt, looking to claim what they would rightfully see as their role as the main market for Europe.

London is also home to the European bases of a number of major international finance firms, such as JP Morgan and HSBC, both of whom have indicated a rebalancing of their European workforce to other countries in the wake of the referendum. As with local banks, membership of the EU has allowed these institutions to conduct business across the entire 28 member states through a process of 'passporting', using Britain as a base. This is unlikely to continue after Britain formally departs.

Of course, access to the UK's 60 million residents and a weak Pound are not a substitute for the EU's 500 million consumers, financial markets and skilled workforce.

The issue of immigration was also a key determining factor in the vote to leave. While highly skilled migrants were not the subject of this debate, there can be no doubt that technology firms have developed a heavy reliance on the wider European labour force. The ability of the domestic labour market to meet demand is unlikely, and instead there is a deep-rooted dependence on highly skilled, young and ambitious workers from Eastern and Southern Europe. These workers have boosted the potential of UK firms, and a block on the mobility of workers will be a significant risk.

The combination of reduced market access, the departure of a supportive ecosystem of large institutions and difficulties in securing sufficient talent may all work against London sustaining its growth in fintech, and worse for the UK.

Brexiteers have suggested that the skills gap could be overcome by allowing more migrants to enter the UK from outside of Europe, especially China and India; however, there is a very concerning undertone to the referendum vote around inward migration, and even this may be a challenge.

The combination of reduced market access, the departure of a supportive ecosystem of large institutions and difficulties in securing sufficient talent may all work against London sustaining its growth in fintech, and worse for the UK, could hasten a flight of activity. London will also lose its role as home to the European Banking Authority, which will also have an impact.

While a great deal remains unclear, including any specific timetable for departure, it is inevitable that the UK financial services industry will be one of the high priority targets for European negotiators. Many European leaders want the UK's departure to be sufficiently painful to discourage similar moves by other member states. Financial services is a particularly attractive target for this, especially as the European electorate will have little sympathy for bankers left to bear the brunt of harsh terms.

The UK fintech space will also come under specific competitive pressure in the interim. Germany, France, Ireland and Italy have already made clear overtures; indeed, the Irish inward investment agency issued a letter to client firms within 24 hours of the result promoting Ireland as a safe haven during the turmoil of the exit process. Given that the UK remains a member of the EU until such time as they formally trigger and complete the departure process, it will be easier for firms to move their business and people up until the final 'goodbye'. It will be interesting to watch the measures that these states will undertake to solicit relocation, and also what the UK does to retain them.

One inevitable conclusion is that firms will have a strong hand to play in terms of what they can extract from the UK and potential suitors.

It is also clear that we face an ever more connected, user-centric and personalised banking experience; this inexorable march will even call into question the nature

The UK fintech space will also come under specific competitive pressure in the interim. Germany, France, Ireland and Italy have already made clear overtures.

of money itself, and it will be driven by technology and innovation. The biggest challenge for fintech firms will be charting the highest potential route through the turmoil, seeking to maximise opportunities in the stormy seas in the short to medium term and ensuring they strike out on the right shore when the tumult abates.

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Innovation In Project Management

A Compilation of Winning Entries of Infosys Finacle Client Innovation Awards

Innovation In Project Management For Multi-Country Transformation

Winner: ING Bank

Simplifying multi-country transformations

The bank had chosen Finacle as the Global Account Management System and wanted to leverage its robust account management modules and multi-entity features to bring multi-country operations under one entity with a unified database.

Innovation drivers

In early 2013, ING embarked on an ambitious exercise to transform their commercial banking operations spread across 28 countries and 3 continents. The bank had chosen Finacle as the Global Account Management System and wanted to leverage its robust account management modules and multi-entity features to bring multi-country operations under one entity with a unified database. This would provide the foundation for all current, savings and deposit account processing in ING's banking network and standardize all offerings and solutions around the key program objectives of maximizing customer centricity and operational efficiency.

Innovation highlights

The ING transformation program combined Agile best practices like Scrum, iterative delivery and test-driven development with Infosys Agile concepts of risk management, function point estimation and the CMMI process model. The Proof of Usability model was also extensively applied to define the boundaries of scope and improve requirements gathering. Under this model, ING would share their future/end state business cases for the account management engine. Team Infosys Finacle would then configure these use cases to demonstrate the applicability as well as the best practices of solution processing in Finacle. The project involves 28 country rollouts and the replacement of different legacy systems in different countries, and is expected to be completed by 2018

Innovation benefits

The ING Commercial Banking Business transformation program has started with Ireland as the first country to go-live. The transformation program represents a major milestone in the pursuit of the target operating model for ING's commercial banking business as it involves the consolidation of new client services, operations, finance and the Agile methodology team. It also marks the centralization of the first of ING's many commercial banking markets into the harmonized product catalog operated by the bank's product management. The automation and simplification of processes as part of the transformation will not only enhance customer satisfaction but also increase operational efficiencies. The time-to- market for new innovations will reduce from months to mere days. The time taken to open an account is expected to drop from two days to ten minutes. The total cost of ownership of the transformation was reduced significantly by leveraging Finacle's out-of-the-box capabilities for delivering nearly 85 percent of the project's requirements.

The time-to- market for new innovations will reduce from months to mere days. The time taken to open an account is expected to drop from two days to ten minutes.

Innovation In Project Management For Migration

Winner: ICICI BANK

Innovative program management
for core renewal

BUSINESS NEED

ICICI Bank was using Finacle Core Banking version 7 for their day-to-day banking activities since 2000. The bank decided to upgrade directly to version 10, bypassing all intermediate versions. The migration would bring many functional and technological enhancements and new features like 24x7 architecture for extended operations, SOA, Finacle Integrator, Enterprise CIF and Signature Management etc. This was one of the largest and most complex core banking migrations in the region considering it involved average of 10 million transactions per day, a 25 TB database, concurrent users across 4000+ branches, over 910 processes, over 60,000 user test cases, around 100 interfaces, huge subsystems, downstream impact and multiple teams.

Innovation highlights

Conventional migration strategies typically require a downtime of 48-72 hours. ICICI Bank deployed multiple innovative program management practices to manage the migration within a window of 16 hours. More than 45 mock migrations were conducted to fine-tune and make the process of migration faster, efficient and foolproof. The team carried out mock runs to make sure that the migration window of 16 hours was met. The data migration strategy was then broken down into multiple parts, tested separately and implemented in phases. The project was managed smoothly thanks to a well-defined model for collaboration between various businesses, operations and technology teams along with partners and vendors for business and process transformation. The Program Management Office helped govern multiple projects that were running at various stages.

ICICI Bank deployed multiple innovative program management practices to manage the migration within a window of 16 hours.

With the implementation of Finacle 10.x, ICICI Bank now has the foundation from which to launch more innovative banking applications and services.

Innovation benefits

The complexities of the project had to be balanced with the imperative to minimize the downtime considering the 24x7 channel transactions and business hours of the bank. ICICI Bank was able to go live with the new version over a normal weekend. The transformation was complete without any adverse impact on business activities or performance across online channels. All regulatory and customer service related requirements were also met. With the implementation of Finacle 10.x, ICICI Bank now has the foundation from which to launch more innovative banking applications and services.

Innovation In Project Management For Migration

Runners-up: State Bank of India

Innovative project management practices for core banking upgrade

State Bank of India leveraged the Agile Implementation Framework extensively to pull off a big bang upgrade across their operations in 20 countries.

Innovation drivers

State Bank of India runs overseas operations in 25 countries on the Finacle Core Banking Solution. The bank undertook a massive exercise to migrate from the existing Finacle core banking solution version 7 to the next-generation solution on version 10. The complex project involved the alignment of existing products and customizations with the new version, upgrading the database and training the branch users on the new application.

Innovation highlights

State Bank of India leveraged the Agile Implementation Framework extensively to pull off a big bang upgrade across their operations in 20 countries. The project involved the creation of a base product version with 533 customizations, 147 reports and common interfaces for Internet banking, Treasury, SMS and Office of Foreign Assets Control (OFAC) - Anti-Money Laundering (AML). This was followed by the creation of a country-specific localized version that sits over the base version. A Data Migration Tool was used to upgrade the database to Finacle 10.x and ensure cross-compatibility of Finacle products.

Innovation benefits

Thanks to the upgrade, SBI now has a specially tailored next-generation core banking application with enhanced capabilities in assets, liabilities and trade finance. Several local third-party applications have been integrated. Alternative channels, such as ATM and Internet Banking, have also been seamlessly migrated. The large-scale multi-country migration was successfully completed within a record time of 19 months.

The large-scale multi-country migration was successfully completed within a record time of 19 months.

Innovation In Project Management For Single Country Transformation

Winner: Housing Bank of Trade and Finance

Transforming legacy into leadership

Innovation drivers

Housing Bank of Trade and Finance (HBTF) wanted to transform their architecture from predominantly legacy-based applications to a modern technology platform. The primary objective was to implement a solution that could be standardized and scaled to support HBTF aspirations for global expansion and growth. The bank also wanted an agile architecture that could be adapted and aligned to changing customer expectations and needs. The new platform had to accelerate innovation by bringing time-to-market down from months to weeks. And finally, it had to reduce cost, complexity and time-to-compliance in an increasingly stringent regulatory regime.

Innovation benefits

The modern platform enabled HBTF to quickly and seamlessly shift to High Availability Architecture, an operation that previously took 6 hours. Now the bank has the functionality to implement load-balancing solutions, another critical feature that the old technology did not afford. The new next-generation architecture also enables HBTF to be more responsive to customer expectations and needs. Activities like loan origination for instance, which were previously done manually, have now been automated. The bank is able to accelerate innovation through the launch of personalized offerings, bundled products and enriched segment-specific portfolios. Overall, the new platform has reduced the time taken to provide services to customers by as much as 30 percent. A unified 360-degree customer view also allows HBTF to institutionalize their retail and corporate client relationships, and enhance the service experience exponentially.

The new platform had to accelerate innovation by bringing time-to-market down from months to weeks. And finally, it had to reduce cost, complexity and time-to-compliance in an increasingly stringent regulatory regime.

Innovation highlights

The transformation leveraged an extensive array of productivity aiding tools from the Finacle Solution Delivery Platform (FSDP) initiative to automate different lifecycle stages and ensured complete control over both time and quality of delivery. The delivery was further streamlined by creating a common technical team to assist and supplement the functional teams in handling migration, infrastructure, defect debugging etc. A strategic approach to team structuring also helped to add tangible and substantial benefits. For instance, the entire process of change management was simplified and vitalized by retaining more than a third of the team from the DRG phase for the implementation phase.

Overall, the new platform has reduced the time taken to provide services to customers by as much as 30 percent.

Innovation In Project Management For Single Country Transformation

Winner: Bancolombia

Transforming 30 years of legacy

Bancolombia leveraged the agile project management methodology with Infosys Finacle to bring some key changes to the implementation process.

Innovation drivers

Bancolombia is replacing their 30-year-old legacy systems with Finacle. This meant integrating Finacle with 36 legacy systems in different technologies and migrating 250,000 loans running in Cobol and DB2 Systems. The bank is implementing Finacle Mortgages in Finacle 10.6 as well as migrating the trade products from version 10.4 to 10.6.

Innovation highlights

Bancolombia leveraged the agile project management methodology with Infosys Finacle to bring some key changes to the implementation process. For instance, the bank leveraged the Agile approach to create independent cells comprising developers, testers, users etc. working as an integrated collaborative team. By implementing daily meetings with Kanban boards, the bank was also able to track the project more efficiently, increase team commitment, as well as engender empowerment. Monthly sprints were used to align deliverables between users, Infosys Finacle and IT. For customization, the bank used Finacle Agile techniques to divide customization by packages and Agile Demo techniques to review the solution during the development phase. They also followed the Finacle testing process with the testing factory model and automation framework for end-to-end testing. Bancolombia's out-of-the box approach to project management makes this implementation quite unique.

Innovation benefits

Rather than building distinct interfaces amongst different applications, the project reused nearly 30 percent of generic files during integration. This approach not only reduced implementation effort but also the number of reports built in Finacle reporting tool from 300 to 60. The Bank is on track looking to replace its 30 years old legacy systems with Finacle.

Bancolombia's out-of-the box approach to project management makes this implementation quite unique.

Innovation In Project Management For Single Country Transformation

Runners-Up: Emirates NBD

Core Banking Transformation to power inorganic growth

Innovation drivers

Emirates NBD is the largest bank in the United Arab Emirates and a long-term Finacle partner. When the ENBD Group acquired BNP Paribas Egypt as part of their growth strategy, they decided to upgrade all legacy systems in line with the unified business and technology standards of the group with Finacle universal banking solution.

Innovation highlights

The focus of the ENBD Egypt transformation was not only on the core banking application but also on aligning all surround systems to the ENBD Group business in Dubai, Saudi Arabia, London and Singapore. The massive transformation was conducted out of four different locations – Paris, where the legacy system, Atlas team was located; Dubai, where both the ENBD IT and vendor implementation teams operated; Cairo, where the ENBD business team was located; and India, which hosted the Infosys Finacle development teams. A core Egypt team was formed and trained on various ENBD Group applications across branches in Egypt. After a detailed study of existing systems, a business product and process model was created in line with ENBD Group processes. All products, solutions and processes were standardized across 3 markets including the U.A.E., Saudi Arabia and Egypt. Business solutions were finalized after multiple levels of discussions with the Egypt business team, Egypt core team and ENBD Group domain team.

When the ENBD Group acquired BNP Paribas Egypt as part of their growth strategy, they decided to upgrade all legacy systems in line with the unified business and technology standards of the group with Finacle universal banking solution.

All legacy systems have been completely transformed to a new architecture with Finacle as the central core banking solution.

Innovation benefits

The ambit of transformation covered over 400,000 customers, 700,000 accounts, 77 branches and 1,700 users. All legacy systems have been completely transformed to a new architecture with Finacle as the central core banking solution. The enhanced system capabilities support the quick rollout of new products and reduce processing time for users. The bank has achieved seamless integration with 15 subsystems & highly available system. The processing time for users has been reduced. The bank can now achieve quick rollout of new products and branches due to enhanced system capabilities.

Big Data Beckons Banks

Data should Transition to Information, Knowledge, and Finally, to Wisdom

Nearly 90 percent of the quantum of data generated from the beginning of civilization until 2003 was created in 2015 alone. In 2020, the same amount of data will be generated every second! Even so, the significance of Big Data extends way beyond its size. In a World Economic Forum survey conducted last year, more than 800 senior executives from the ICT sector named Big Data and Artificial Intelligence one of six mega trends that would make a deep impact on society in the coming decade. The other mega trends included People and Internet; Computing, Communication and Storage; Internet of Things; Sharing Economy; and Digitization of Matter.

It's not hard to see why. By providing a way to collect, organize and analyze large sets of data, unimaginable even a few years ago, Big Data is enabling us to see intricate patterns, discover unknown correlations, and acquire insights that help us take better decisions. But to derive this value, individuals and enterprises need to know how to leverage the Big Data at their disposal. Software tools that mine text or make forecasts are only one part of it; what is more important is to have a clear vision of how to optimize their output. For data is of little value until it completes the transition to information to knowledge, and finally, to wisdom.

As possibly the only industry to have access to customers' transaction information (even for non-banking activity) and financial behavior in one location, banks are in a great position to exploit the Big Data opportunity.

A very obvious benefit of Big Data is that it enables banks to right sell, that is, propose the right product, at the right time, at the right price, and through the right channel to every customer. They can target customers

Big Data is enabling us to see intricate patterns, discover unknown correlations and acquire insights that help us take better decisions.

with relevant and contextual marketing offers instead of employing generic cross-selling tactics that are costly but not very effective.

The downside of digitization is increase in cyber crime. Banks, for whom security is a paramount concern, invest billions of dollars in security systems and infrastructure to prevent criminals from accessing their data. With Big Data, they can fortify those defenses by analyzing customer activity to spot atypical patterns and immediately investigate if those transactions are genuine. If something is amiss, they can block the transaction quickly and minimize damage.

Big Data can also help performance assessment, an area that banks need to work on. While it is known that 80 percent of profitability comes from 20 percent of customers, not much is done to rationalize the customer base by increasing business from customers with potential or retiring those who are a drag on profit. Although banks conduct extensive customer satisfaction studies, the scores don't tell the

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entire story. For deeper insight, it is necessary to drill down the data to distinguish the rationally satisfied customers from the emotionally satisfied ones. This is very important because rationally and emotionally

Clearly, there are many ways in which banks can use Big Data to improve their business. However, they should also be looking to monetize it.

satisfied customers – even with the same satisfaction score – are very differently motivated, and will therefore react differently to the same set of events. Where emotionally satisfied customers are loyal and will often champion their bank's services, the rationally satisfied are always on the lookout for a better deal and will switch to whichever bank provides it. Mining Big Data – performance of products, branches and tellers, or social media posts, for instance – can give banks invaluable leads about customers that they can use to convert rationally satisfied users into emotionally satisfied loyalists.

A very interesting use case for Big Data comes from the field of behavior analytics. As people take to wearable devices, they are generating a wealth of biometric data providing insights into their lifestyle choices, habits and behaviors. A number of businesses, such as retail or insurance, are using this type of information to make decisions based on predicted behavior.

Clearly, there are many ways in which banks can use Big Data to improve their business. However, they should also be looking to monetize it. One option is to sell the data to various businesses, within the boundaries of data confidentiality and privacy laws. Another is to strike strategic partnerships with retailing companies or telecom operators to personalize offers for different customers, and share the resulting revenues. Yet another is to take a leaf from the Pokemon Go book, mining data to discover patterns of behavior and other insights, and passing that on to interested enterprises for a fee.

Done right, Big Data could well mean Big Money.

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The Fintech Threat is Real, but not Fatal

Banks have Several Ways by which they can Counter the Fintech Challenge

The 2014 Millennial Disruption Index survey of about 10,000 Millennials found that the banking industry faced the highest risk of disruption. Also, nearly 1 in 2 respondents felt technology startups would cause this upheaval. To top it all, 33 percent of participants felt that in about 5 years, they wouldn't need a bank at all[1].

Two years hence, those predictions are coming true thick and fast. 2015 was dubbed the year of fintech, which attracted USD 19.1 billion in investment[2]. 2016 is off to a promising start, with first quarter fintech investment rising 67 percent year on year to touch USD 5.3 billion[3]. fintech companies, although small, are eating into profitable banking niches and luring customers away. Banks are unbundling, bit by little bit.

What is it about the fintech firm that has captured the public imagination?
If I had to pick just one reason, it would be customer experience.

Banking customer experience is still mired in legacy. It takes longer, costs more, and requires greater effort to complete a transaction through a bank than a fintech provider. The organization structure is partly to blame. In a typical banking institution, customer experience is usually the responsibility of IT and/or marketing. Unfortunately, IT does not have the required customer understanding to produce solutions enabling a winning experience, and marketing is mainly focused on selling. So effectively, customer experience ends up being nobody's responsibility.

Fintech firms have smartly capitalized on this opportunity, albeit in specific niches. They have leveraged the latest technologies to craft innovative business models that put customer experience ahead of everything else. Recognizing that customers want a lot more than an attractive online interface from their banking experience, fintech companies have gone all out to fulfill those expectations, which are briefly described below:

> Flexibility and support for personalization are the hallmarks of good user experience.

Personalization, flexibility, and sound financial values

Accounting software Xero has personalized Personal Financial Management. Personetics offers banks a predictive interaction solution so they can provide personalized experiences to users. Affirm, a digital platform for small loans, reduces the pain of borrowing for small borrowers by allowing them to customize the terms according to their situation.

Flexibility and support for personalization are the hallmarks of good user experience. Aggregators, such as India's Property Bazaar, were among the first to cater to this need by collating the offerings of various banks and financial institutions. Fintech firms took it to the next level by creating innovative user experiences that not only enhanced choice and convenience, but also inculcated good financial practices. China's Qufenqi, for instance, is trying to impart the right values around spending and credit, while prepaid MasterCard goHenry has created a safe environment where its target audience of 8 to 18 year olds can learn about money. Then there are firms, such as Digit and Acorns, which take away small

> 2016 is off to a promising start, with first quarter fintech investment rising 67 percent year on year to touch USD 5.3 billion[3].

But if customer experience is the fintech companies' strength, customer knowledge, trust, scale, and resources are the banks'.

amounts of money from customers' cards or checking accounts to put into long-term savings.

Accessibility at the right time

How customers perceive the experience associated with a product or service depends a lot on whether it is easily available at the right place and time. This is why many startups have set up marketplaces – for loans, property, etc. – that customers can tap into whenever they wish. Property Partner has gone a step further to facilitate "micro" crowdfunding of property for prospective buyers, literally brick by brick (people can put in as little as £ 50 to buy a slice of property). Companies like Groupon are using their vast customer information to anticipate the needs of their consumers and make proactive offers.

Ease, agility and economy

Making payments through the banking network is expensive for merchants and consumers alike. International payments are not only expensive, but also time consuming. A number of fintech firms – Adyen, GoCardless, Fastacash to name a few – have jumped in to enable quick, low cost money transfer. Similarly, in the lending arena, players such as Credit Karma and Earnest, are making it easier for fintech firms to assess the creditworthiness of customers (and therefore easier for borrowers to secure a loan) by using thousands of data points to produce a rating.

But if customer experience is the fintech companies' strength, customer knowledge, trust, scale, and resources are the banks'. Banks therefore have several ways by which they can counter the fintech challenge. The first of these is to process their huge data resources using advanced analytics into deep customer insight, and use that to create personalized, contextual offers, superior experiences, and better decisions, in real-time.

Banks must build upon the trust that customers have reposed in them by offering them timely financial advice that is in their best interest. There is a real opportunity here, because customers would rather consult an established banking institution than an inexperienced fintech startup, however smart, when it comes to major financial decisions.

Fintech firms are at an advantage today because they are lightly regulated, if at all. But that will change soon, as the fintech industry matures, and comes within the ambit of regulatory supervision. That will put the advantage squarely back in the banks' court because they have decades of experience and expertise in regulatory compliance.

But arguably, banks' biggest advantage is staying power, arising from their size and huge resources. They have the money to invest in the same technologies as fintech startups. Already, a number of banks, such as Citibank and Wells Fargo, have set up accelerator programs. Others like BBVA have bought out fintech companies. There are now also several partnerships between big banks and small fintech companies. Some banks, such as DBS and Unicredit, are making their intentions to target

So although fintech poses a threat, banks are more than capable of meeting it head on.

next-generation customers clear by setting up separate digital-only banks that are free of their parents' legacy processes and systems.

So, although fintech poses a threat, banks are more than capable of meeting it head on. However, they must act quickly to align their offerings with what customers expect from them. Banks should view this as a wake up call and take the opportunity to enhance their propositions to customers, while fintech companies are still small. Any delay could cost them dearly.

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The Future of Payments

What Progressive Banks can do to Successfully Ride the Fintech Wave

Over the past seven years or so, fintech (financial technology) startups have burst on to the world stage, rapidly capturing market share by offering services that are faster, better and fairer. Almost every financial service that is offered by a bank is now also offered – or soon will be – by a fintech company. For the consumer, this means that for the first time ever, there is a real alternative to the conventional bank. Payments are seeing the hottest action among all financial services, and the highest number of innovations – mobile payments, digital currencies, regulatory disintermediation separating payments from banking, are but a few.

Innovation in payments is happening mainly along three axes – technology, business and consumer payment needs, and regulatory intervention. In this article, we examine each of these areas and talk about critical innovations influencing our "payment lives" today and in the near future.

We end by looking at how progressive banks are adapting to this new reality and what banks could do to successfully ride this wave.

Introduction

Worldwide, payments have undergone tremendous growth and evolution in recent years. A leading consulting and advisory firm predicts global payment revenues to grow at about 6 percent annually in the next few years to touch USD 2 trillion by 2020. Technology and its offshoot, the fintech industry, are largely responsible for the change and disruption in the way payments are being made today. While banks are not too far behind, they have some way to go before they can catch up with their new-age competitors. Having to operate in highly regulated markets and shoulder the burden of legacy processes and systems, isn't helping their case. Some banks are also holding back fearing that going down the fintech path might result in the cannibalization of their existing business.

On the other hand, fintech firms, which have none of these challenges, are forging ahead with innovative payment models and practices, to steadily threaten banks' monopoly of this business. This article explores the monumental changes in the payments arena, the role and influence of fintech, and what smart banks are doing to benefit from these trends.

The Growth of fintech

A recent report on fintech trends says that global investment in this area grew at a scorching 75 percent to eclipse USD 22 billion in the year 2015. Typically, payments and lending ventures attract the most funding. However the seeds of financial technology innovation-disruption were sown much earlier, and nurtured by the combination of five major developments, namely:

A recent report on fintech trends says that global investment in this area grew at a scorching 75 percent to eclipse USD 22 billion in the year 2015.

a. The loss of trust in banks in the wake of the global financial crisis of 2008
b. Expectations of superior customer experience, on par with that provided by retailers, consumer technology companies, etc.
c. The rise of highly demanding and discerning consumers from the millennial generation
d. The growth of the mobile Internet
e. Intensification of consumer protection regulations

The past seven years or so have witnessed explosive growth of fintech startups and non-bank payment providers, who have shaken up the business by taking advantage of favorable new technologies and market conditions, and in the process disintermediated banks from their traditional roles.

Technology has touched the entire spectrum of services to yield innovations such as:

a. POS / mPOS terminals
b. Digital and Bitcoin-based currencies
c. FAST or immediate payments from bank accounts
d. Mobile wallets
e. Cross-border payments using digital currencies

In 2015, Transferwise, a leading fintech player in cross-border payments, surveyed consumers to gauge their current and expected usage of fintech providers. At the time of the survey, 68 percent of respondents had never used a technology provider for financial services such as in-store payments, international money transfer, lending, wealth management, and property investment.

However, nearly half of all respondents (48 percent) expected to use a technology provider for at least one financial service, and a third (32 percent) for at least half of their financial needs, within five years. 20 percent of the consumers surveyed said that in ten years' time they would probably entrust technology providers with all their financial requirements, from credit cards to mortgages.

Factors that would encourage this shift from traditional banks to technology players included more secure services (34 percent), lower cost (29 percent), greater convenience (26 percent), faster services (18 percent) and better customer service (18 percent).

Key Drivers of Change

As mentioned earlier, technology has been at the forefront of payments transformation, with new and improved developments producing solutions, which influenced consumer behavior, which in turn, completed the loop by driving further technology change and innovative solutions. And so a virtuous cycle of sustained innovation and increasing consumer benefits was born.

A few examples would be apt at this stage. While check clearing is a slow process, in some markets, consumers routinely take a picture of their checks and email it to the bank for faster processing. Of course, this needs the backing of regulators. Kenya's MPESA has acquired iconic status for empowering people with a safe, instantaneous and low cost mechanism for sending and receiving money amongst family and friends. And now digital currencies, such as Bitcoin and XRP, and their underlying technologies, namely Blockchain and Ripple, are doing more of the same, enabling instantaneous, low cost cross-border transfers and interbank payments. Also, innovation in mPOS (mobile Point of Sale) terminals is allowing new entrants like POYNT to offer completely new value propositions to small and medium businesses.

Besides technology, which is the most important driver of transformation in payments, other influential factors are business and consumer requirements and regulation. The following sections discuss each of these drivers.

Interestingly, the technologies underlying digital currencies, an example being Blockchain, have gained immense traction and their decentralized ledgers could transform the very fundamentals of how payments are processed and governed.

Technology Drivers

- **Mobile**

  Of the various technology drivers impacting payments, mobility, and especially the smartphone, have been largely responsible for the mobile becoming a principal channel of payment. Today, the mobile phone plays a key role in the delivery of services to consumers. In many global markets smartphone penetration is already well above 50 percent, with the majority of owners using mobile Internet and apps on a daily basis. Today's

Progressive banks have taken a variety of approaches to capitalize on the fintech opportunity. One of these is Venture Capital investing.

smartphone is an extremely sophisticated device. Since the arrival of the iPhone and Android smartphones in the late 2000s, the smartphone has gained many features that are extremely useful for payments innovation. Some examples are transaction geo-logging (fixing a payment to a place, such as a store), NFC (Near Field Communication), which enables contactless payments using debit or credit cards, and biometrics (fingerprint and iris recognition) as a second factor of authentication. The natural evolution of both biometrics and mobile payments is in the sphere of wearables, which is now on the ascendant thanks to products such as the smart watch (essentially a smartphone minus the phone). Examples include the Samsung Gear range and the Apple Watch.

- **Digital Currency**
  Digital currency is another significant technology trend that is changing the face of payments globally. However, despite digital currencies like Bitcoin claiming to offer several significant benefits – instantaneity, payment freedom, very low fees, security and control, transparency and neutrality – to the end consumer, their acceptance continues to be low for various reasons. Interestingly, the technologies underlying digital currencies, an example being Blockchain, have gained immense traction and their decentralized ledgers could transform the very fundamentals of how payments are processed and governed.

Business and Consumer Drivers

- **Customer acquisition**
  Customer acquisition and retention is the strongest driver of change in retail payments. Entry of new payments providers, such as Paypal, Apple and Samsung, has intensified the trend.

- **Retailers' needs**
  The underlying business needs of retailers have also influenced developments in this space in recent years. Traditionally, small and medium-sized retailers have relied upon a simple payment terminal, whose only function is to take payments. But this is only a small part of what many retailers need; retailers want inventory management (so they know what they have in stock, and how much they have sold) and transaction reporting facilities for the purposes of accounting and stock control. The principal innovation in this space is the mPOS, available in two variants – a small card reader attachment with an associated app running on a smartphone (iZettle and PayPal are a couple of examples), and a tablet-based solution such as Square.

- **Cost**
  Cost is of course a fundamental driver of fintech adoption for consumers and businesses alike. Consumer-to-consumer payment revenues account for 8 percent of all global payment industry transaction revenues, according to a leading consulting and advisory firm – about USD 45 billion annually. However, consumer-to-consumer volumes represent just 0.0017 percent of total global payment transaction volumes. That's a huge disconnect. On average, the revenue margins in the consumer-to-consumer space are 30 times larger than in the business-to-business space, and in June 2015, the average cost of sending a remittance was 7.68 percent, says the World Bank.

Regulatory Drivers

Regulation is playing a crucial and powerful role in determining the future evolution and development of payments, with a potential for revolutionary change over the next few years. There is increasing emphasis on customer identification and multi-factor authentication using the mobile phone, wearable devices and biometrics. Regulators are also facilitating change in the payments arena. Two examples of this include permitting external payment providers to offer access to bank accounts and stipulating that banks should allow customers access to data so that they can aggregate all their transactions across all their bank accounts.

Regulatory changes also have another impact, namely, determining what technology providers need to offer. A good example is the many types of authentication that must be completed for processing a payment. Regulatory guidelines can even alter a business operating model at times. PSD II in Europe and the Unified Payments Interface (UPI) in India are basically doing this by segregating payments from their banks' deposits businesses. Although payments is a peripheral business for banks, and one they don't charge customers for typically, the shift to non-banking payment providers could easily catalyze a similar migration in the case of other banking products as well.

What Can Banks Do?

Progressive banks have taken a variety of approaches to capitalize on the fintech opportunity. One of these is Venture Capital investing. That being said, investments are quite low, amounting to only USD 5 billion of the total USD 22.3 billion fintech investment in 2015. One possible reason for this is that while the model allows banks to stay abreast of happenings and maybe earn high returns, it does not integrate fintech innovation within their operations.

Investment in collaborative fintech ventures has risen from 38 percent of total investment in 2010 to 44 percent in 2015.

In recent years, many banks have set up accelerator or incubator programs. The equation between bank and investee firm can vary significantly from one entity to another. Some banks are "hands-off", only offering support when required, while others are much more involved and might even harbor merger plans.

Then there's the competitive investing model, where a bank takes a stake in a disruptive fintech company, which is actually a rival. BBVA's investment in Atom is an example of such an arrangement. Yet another model is the collaborative venture. Investment in collaborative fintech ventures has risen from 38 percent of total investment in 2010 to 44 percent in 2015. The collaborative venture is more informal in nature and therefore makes a good starting point for banks looking to make their first fintech investment.

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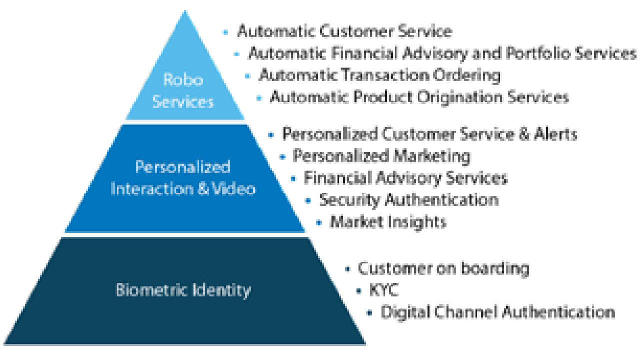
Biometric Identity, Personalized Video and Robo-Services Reinvent Banks' Digital Experience

Some of the Most Popular Fintech Innovations

IDENTITY PROTECTION

Deepface from Facebook announced it is 97 percent accurate for face recognition, almost as accurate as the human brain.

Fintech innovation has been on the rise for years, reaching fever pitch. Many fintechs are constantly disrupting with established banks. However, other fintechs – for instance, in areas such as biometric identity, personalized video, and robo-services – are not competing, but rather enabling banks' digitalization journey. In this article, we will introduce some of these popular fintech innovations, and how they are taking banks' digital experience to the next level.



Biometric Identity for Optimized Process

Digital firms and banks have been exploring the concept of digital identity - in particular biometric identity - for years. For instance, Deepface from Facebook announced it is 97 percent accurate for face recognition, almost as accurate as the human brain. In early 2016, a mobile-only startup Atom Bank has gone live in the UK, and it uses face and voice biometrics plus machine learning technology to authenticate and service clients. Since recently, startups are actively innovating in biometric identity and that beyond just fingerprint or facial recognition – new algorithms that compare between an ID photo and facial scan for fraud detection, how to turn an ordinary selfie into an eye-print verification process, and even behavioral biometrics.

Despite the concerns from uncertain regulation and technology readiness, consumers and banks have been longing to get rid of forms, passwords and even SMS

Biometric Domain	Description	Sample Startups and fintechs
General Identity Management	Manage multiple identities across mobile devices, computer networks and cloud environments.	• Onegini (an EdgeVerve and Finacle partner) • Onelogin • Centrify • Okta
Voice Identification	Compare spoken word samples or free speech for the purpose of voice identification.	• SayPay • KnuEdge • Arkami
Face & Eye Identification	Compare and recognize selected facial features from image, video and facial database.	• EyeVerify • KeyLemon
Behaviour Identification & Others	Observe how the user behaves: the rhythm of typing, the key pressure, even user's palm vein pattern and the heartbeat pattern.	• Biyo • Bionym • Behaviosec

one-time-password for a while. Startups focusing on biometric identity could add value by helping banks re-engineer the digital process of channel authentication, customer on-boarding and KYC compliance.

Visualization and Streaming for Consultative Experience

A recent study shows consumer video and streaming data will account for 80 percent of all internet traffic by 2019. Interactive visualization and streaming allows banks to connect human-to-human, and allows customers to participate in storytelling in ways that enrich user experience. Besides those established firms like Tableau and Qlik, startups and fintechs are actively innovating in visualization and streaming in the below three key areas.

Innovation Area	Description	Sample Startups and fintechs
Visualized Interactive Tool	Create visualizations of markets, trends, and demographics by search, data and algorithms. Provide structured answers to unstructured data like emails, instant messages and social media content.	• Quid • Idibon
Integrated Streaming Experience	Integrate video and collaborative browsing capabilities into the digital experience.	• Salemove • Vee24 • Percolate • Vidyo • Videodesk
Personalized Streaming Content	Broadcast personalized communications, including statements, investment status, and alerts in video format, to private banking and mass market consumers.	• SundaySky • Vidyard • Eyeview • Idomoo • Silver6

Concerns over user experience is still a question mark – whether customers will be comfortable playing a video in a crowded bus or a silent meeting environment. But eventually, in certain business scenarios that require explaining a complicated product or service, digital customers are expecting for the same kind of high-touch interactions that are possible face to face, and streaming

A recent study shows consumer video and streaming data will account for 80 percent of all internet traffic by 2019.

is a better engaging option in these scenarios.

Robo-Advisor for Automated Services

Robo-advisors started from U.S. but has been expanded globally – Nutmeg in the U.K., Stockspot in Australia, MoneyFarm in Italy, and OwlHub in Germany. The number of robo-advisor fintechs in the U.K. is expected to triple if not quadruple by this year-end. As the robo-advisor industry grows, it continues to attract the attention of established financial services firms. In the past few years, Blackrock, Goldman Sachs, Fidelity Investments, Charles Schwab Corp, DBS, and Deutsche Bank have either created their own digital services

With automation, these services become scalable and accessible: a robo-advisor can deal with giga-bytes of financial data in a minute and serving hundreds of customers the same time.

unit or partnered with an existing robo-advisory firm. Today robo-services offered by fintechs and banks are mainly grouped into the below four categories:

Robo-Service Types	Description	Sample Startups and fintechs
Passive Investing Robo-Advisors	The first generation of robo-advisors are those that deal only with ETFs, and mostly use MPT (Modern Portfolio Theory) for asset allocation.	• Personal Capital • Betterment • Wealthfront • FutureAdvisor
Active Investing Robo-Advisors	Second generation robo-advisors are those that allocate investments not only to ETFs, but also to stocks or mutual funds. They are focused on risk management for re-balancing.	• Alpha Architect • Trade Ideas • E*Trade
Chatbots	A type of conversational agent, a computer program designed to simulate an intelligent conversation with customers via auditory or textual methods in a banking domain.	• AssistEdge from EdgeVerve • Kasisto • Chatfuel • Api.ai • Converse.ai • Textit
Robo-Advisor for Generic Financial Services	The concept of "robo-advisor" services has extended widely to other banking business lines besides investment automation, with the support of natural language processing and machine learning.	• IBM Watsonc

Each advance in robo-advisor software – for instance machine learning and natural language processing – is just one more step toward automating most (if not all) financial advisory services. With automation, these services become scalable and accessible: a robo-advisor can deal with giga-bytes of financial data in a minute and serving hundreds of customers the same time. The market's natural evolution could also result in traditional human advisors enhancing their practice by pairing up with a white labeled robo-advisor to offer investment and other advisory services.

Conclusion

McKinsey estimates that fintechs could disrupt 40 percent of revenue in Retail Banking and 30 percent of revenue in Payments in the next few years. To deal with these severe business risks, banks have to optimize onboarding process, offer consultative experience and provide automated services for digital customers. Startups, fintechs and digital technology firms – including

Edgeverve and Finacle – in the areas of biometric identification, personalized streaming, and robo-services can help to enable these digital transformation, and these tools and services could be designed to be white labeled, or offered through open APIs to integrate into banks' legacy IT environment.

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About Infosys Finacle

Finacle is the industry-leading universal banking solution from EdgeVerve Systems, a wholly owned product subsidiary of Infosys. The solution helps financial institutions develop deeper connections with stakeholders, power continuous innovation, and accelerate growth in the digital world. Today, Finacle is the choice of banks across 94 countries, and serves over 848 million consumers – estimated to be nearly 16.5 percent of the world's adult banked population. Over a billion bank accounts are powered by Finacle globally.

Finacle solutions address core banking, online banking, mobile banking, payments, treasury, origination, liquidity management, Islamic banking, wealth management, and analytics needs of financial institutions worldwide. Assessment of the top 1000 banks in the world reveals that institutions powered by Finacle enjoy 50% higher returns on assets, 30% higher returns on capital, and 8.1% points lesser costs to income than others.

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