Innovation in Retail Banking

Efma

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Reimagine Banking

DIGITAL BANKING REPORT

Infosys Finacle

> *Innovation is simply not in the DNA of most bankers. They've been trained throughout their whole career to identify and avoid risks, and innovation is about taking small risks and failing fast and cheaply and learning from those mistakes to get to the right answer quickly.*

— JP Nicols

Managing Director
FinTech Forge

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Letter from the Author

A great deal has occurred since the first Innovation in Retail Banking study was conducted in 2009. The financial services industry has mostly recovered from the global banking crisis of 2008, to a point where the biggest threat today may be trying to keep up with an increasingly demanding consumer, integrating new technologies and updating legacy systems and cultures.

I am fortunate enough to have the opportunity to partner with Efma and Infosys Finacle in the development and publication of their 9th annual report in conjunction with the Digital Banking Report – looking at the innovation, transformation and disruption of the banking industry.

As has been found in previous years' reports, the innovation agenda has become intertwined with the digitalization agenda, where transforming back-office core processes and customer-facing experiences are brought together by application of data and advanced analytics. The level of investment in both digitalization and innovation has increased in lockstep with each other as a result.

While a casual reading of this year's report would seem to suggest that the focus on innovation and digitalization has decreased, this change is caused by a broader sample of organizations of all sizes being included in this year's report. As opposed to including only larger banks and credit unions, our respondent base has a much more representative sampling of organizations globally. What became apparent is that smaller organizations have a much lower digital maturity with a lower priority on investment in innovation.

I would like to thank **Efma** and **Infosys Finacle** for their partnership and their sponsoring of the 9th annual Innovation in Retail Banking research report. Their partnership has enabled us to create the most robust benchmarking of digitalization and innovation in banking, and to better understand the impact across all components of the financial services ecosystem.

As more organizations of all sizes are trying to keep pace with the capabilities and experiences provided by the large tech firms like **Google**, **Amazon**, **Facebook** and **Apple (GAFA)**, this research provides a roadmap for planning, strategy development, deployment and for setting key performance indicators (KPIs). Most importantly, we hope that banks and credit unions will use the insight in this report to take action on developing stronger innovation capabilities and improved application of data and advanced analytics in the deployment of solutions in the future.

Jim Marous, Publisher, Digital Banking Report, Author, Innovation in Retail Banking 2017

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Innovation in Banking

KEY RESEARCH QUESTIONS

- Do financial institutions have a clearly defined innovation strategy?
- Are organizations increasing investment in innovation strategies?
- What are the digital transformation business priorities for financial organizations?
- What is the biggest challenge for organizations trying to embrace innovation?
- What is the time period for evaluating success of innovation initiatives?
- What challengers pose the greatest threat of disruption to traditional financial organizations?
- What areas of banking will feel the greatest threat from outside competition?
- What areas of technology are the most important based on investment level in 2017?
- What are the plans for deploying robotic process automation (RPA) and conversational AI solutions?
- How mature are organizations in being able to deliver data-driven insights to consumers?

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Innovation in Banking

KEY TAKEAWAYS

- The percentage of institutions with a clearly defined innovation strategy dropped significantly from previous years. This is attributed to the inclusion of a greater diversity in the size of the organization this year.
- Organizations continue to increase investment in innovation strategies in all functional areas.
- Digitizing products and services, the customer journey and security were the top three areas of focus for digital transformation efforts.
- The top innovation challenge is systems integration and legacy technology.
- Organizations expect to see a measurable return from their investment in innovation in 1-3 years.
- Large tech companies, challenger banks and smaller fintech start-ups were considered to be the biggest threat to disruption.
- The greatest threat to banking products was expected to be in the areas of payments and mobile wallets.
- Technology investment is being made in 'traditional' technology as opposed to 'disruptive' technologies.
- Fewer than 50% of organizations had plans to deploy RPA solutions, while 70% of organizations planned to support a conversational AI solution.
- In terms of maturity of the financial institutions for using data driven insights, most of them are still at an early stage of using analytics for descriptive or diagnostic purpose.
- The quest for expertise in advanced technology and analytics is increasing industry-wide.

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Executive Summary

In order to re-imagine banking in today's increasingly competitive environment, there needs to be a focus on disruptive technologies and innovations, as opposed to simply an iterative focus. The winners in the future will be defined by those organizations that can leverage digital technologies to deliver a customer experience that goes beyond the ordinary.

More and more financial organizations are embracing the potential of a greatly expanded definition of banking. Leveraging new technology and advanced analytics, the potential for a bank or financial technology firm to be at the epicenter of a consumer's everyday life is not just possible, it is probable.

With this as a backdrop, the threat of disruption is perceived to be high by banks and credit unions globally. The biggest threat is expected to come from fintech start-ups (non-bank fintech firms) and large technology companies. These are the competitors that have best been able to apply data, analytics and advanced technologies for the benefit of the consumer.

With regards to business lines, payments and mobile wallets are expected to be the most impacted, with lending also expected to be challenged by non-traditional sources – especially in the U.S., where competition is fierce.

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The benefits of collaboration between banking and fintech providers have never been greater. Fintech firms do not have the burden of a dated infrastructure, but have the benefits of innovation agility and focus. Alternatively, fintechs usually lack an understanding of regulations and have difficulty achieving scale. Legacy banking organizations have the benefits of customer trust, an established base and massive reservoirs of data, but usually lack digital expertise.

Innovation as a Competitive Weapon

While on the surface, the proportion of banks with a defined innovation strategy decreased significantly from 2016, this was caused by the inclusion of a much more representative sample of smaller institutions being included in the global research compared to prior years. Alternatively, when we look at the level of innovation maturity from the perspective of size of organization, we clearly see that larger financial organizations are more likely to have a clear innovation strategy, to invest in innovation and to have a chief innovation officer.

Across all sized organizations, we continue to see an increase in investment in channels and the customer experience, with sales and marketing innovation continuing to lag. We also see that legacy systems and old technology are challenging institutions wanting to innovate similar to prior years.

Taking a 'wait and see' approach to innovation is not a viable option. Instead, banking management teams need to commit to investments that limit risk and allow an organization to take advantage of market opportunities. More than ever, the banking industry needs to manage for the long-term, through cycles, even as they adapt in the short term through continuous test-and-learn experimentation.

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Digital Transformation and the Customer Journey

As consumers have moved most of their shopping and buying activities to digital channels, the banking industry has responded accordingly. This is important, since recent research shows that the definition of 'convenience' in banking is no longer associated with physical proximity, but with ease and functionality of digital capabilities.

There was a shift in many of the digital transformation priorities this year, with digitizing processes for products and services being ranked the highest. Reflecting the current cybersecurity environment, enhancing digital security was the second highest rated digital strategy, compared to being a mid-ranked strategy in 2016. Finally, improving the customer journey was ranked third in this year's study, moving from the number one mentioned strategy in 2016.

When we asked executives of banking organizations worldwide about their aspirations regarding broader banking ecosystems, the majority of firms are either limiting their scope to local ecosystems or are still evaluating to ecosystem opportunities. Interestingly, close to 20% of firms surveyed are considering a global ecosystem.

The technology required to build the invisible bank of the future already exists today. Components such as APIs, cloud-based services, artificial intelligence and mass personalization are already becoming the foundation for the future at many financial institutions. But, in most cases, these technologies are being used in the peripheral systems rather than the core.

Deployment of Advanced Technologies

The pace of digital change is about to accelerate exponentially, with the integration of AI, robotics, blockchain, open banking APIs and the Internet of Things (IoT). The smarter use of data, combination of non-financial and financial solutions, and new, real-time delivery alternatives could significantly change the entire structure of banking.

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As opposed to deploying disruptive technologies, such as augmented or virtual reality, IoT, robotics, blockchain or voice interfaces, most financial organizations are limiting their focus to more traditional technologies, such as information security, advanced analytics and open banking APIs (primarily in Europe). This is in alignment with priorities around risk and the customer experience.

There does seem to be an increasing focus on cloud processing and wearable technology as well according to our research. In many organizations, there has also been an expansion of the view of distribution, from specific devices (smartphone, wearables, etc.) to the broader concept of 'digital'.

The impact of new digital technologies will be felt across the entire banking value chain, impacting the competitive structure and the ways people bank. More than ever, the transaction-based component of banking will be commoditized, with differentiation achieved through the personalized experiences provided to the consumer.

Preparing for the Future

Especially for the financial services industry, it is imperative to think beyond individual emerging technologies. With the advent of open banking APIs as a way to bring external technologies and innovations directly to banking customers, and the emergence of non-traditional banking ecosystems that may include non-banking services — a combination of technologies will become the norm.

For instance, the use of customer data insights and advanced analytics may be combined with IoT technologies to allow payments directly from smart home devices. Likewise, the expanded use of conversational AI and VR devices may come together, providing methods of banking interactions only imagined in sci-fi movies.

Financial institutions need to develop a rigorous approach to emerging technology and innovation — one that includes a formal framework of listening to those on the leading edge, learning the true impact of these technologies, sharing results from pilot projects, and quickly scaling by implementing them throughout the enterprise.

In other words, being a leader in innovation and emerging technology is no longer a luxury only for the big players. It is important for all financial organizations to make innovation and emerging technology a 'core competency,' with engagement throughout the organization (not just the very top). In addition, the focus of every implementation must include internal and external human experiences, as opposed to revenue, profit and cost savings.

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Why Retail Banking Struggles with Innovation

Article by Paolo Barbesino
SVP | Head of Digital | CEE Retail | UniCredit Group

Paolo Barbesino

I was recently in Hong Kong, just the day after typhoon Hato forced the closure of the entire city. Walking in a suburban area in the new territories, I saw several brightly colored bikes left unattended on the grass. I felt this may have been the result of the fierce gales that also brought down trees and blew out the windows on several buildings.

I was wrong. With their QR codes and GPS systems, those bikes are what **Jeffrey Towson** recently defined as "wild assets". Mostly independent of any staff, support or traditional retail or distribution system, and released in large numbers, they are changing the bike sharing experience and its business model forever, in and beyond China.

By re-engineering bike sharing around wild assets, and developing their big-data and AI based "herd intelligence", Chinese companies like **Mobike**, and **Ofo** went from start-ups to global operators in less than two years. Today, their bikes are getting everywhere in a growing number of countries.

China bike sharing is a clear example of how nimble players leverage existing technology but assemble it in a completely new way in order to entirely disrupt an industry, rather than just incrementally improving the status quo.

A Banker's Dilemma

Why established bike sharing players didn't get there? For more than 10 years, European companies like **Clear Channel** have developed sustainable public transport solutions with cities such as Stockholm, Milan, Barcelona, Dijon and Antwerp that every year resulted in around 20 million bike trips.

In his manifesto, '*The Innovator's Dilemma*' (1997), **Clayton Christensen** argued that in order to protect their market position, dominant organizations are prone to underestimating or dismissing competition, and often fail to take the necessary actions to react to disruption. Some argue that something similar is happening to banking today, as the level of uncertainty in the industry is growing at an unprecedented pace given the steady surge of a global fintech movement and the larger number of regulators around the world that focus on significantly empowering the consumer.

Banking is no longer a safe industry as it used to be. And whether its disruption will increase, will depend on the global success of big Chinese disruptors such as **Baidu**, **Alibaba**, and **Tencent** that are spurring innovation in the global financial ecosystem, as **Zhi Ying**

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Ng and Eryan Zhou pointed out in a recent **Forrester's** study.

All elements of the industry value chain are at risk as different domains are being touched. For any of them, a host of fintech firms are developing a clear value proposition at a pace that is incomparably faster than that of the incumbents: risk, intelligence & security; payments & transfers; core banking; blockchain & cryptocurrencies; lending & financing; trading & investing; money management & robo advisory; financial inclusion; insurtech; regtech.

Different Types of Innovation

The innovation gap between banking incumbents and nimble players is unlikely to shrink, as the former continue to struggle when discerning disruption from distraction, while the latter are free to experiment, fail, and pivot. This gap is even more dramatic when we look at smaller organizations, who may not have the talent or financial wherewithal to embrace digitalization or innovation.

Many incumbent teams fail to understand what is the real business impact of the ideas they are working on. In his seminal '*Change by Design*' (2010), Tim Brown put forward a straightforward way to classify innovation and understand its business impact. An organization can 1) manage the status-quo by incrementally improving the existing offering to the existing customer base; 2) evolve the current offering by adding new products and services but sticking to its captive market; 3) adapt the existing offering to target prospective customers in new market segments or territories; and 4) revolutionize its business by creating a brand new value proposition with a complete new offering for new customers.

> *"But the question is whether in banking today an organization can thrive just by optimizing the as-is when the entire industry is facing a growing level of uncertainty."*

What type of innovation is a chatbot, a voice interface, biometrics, AI, or the blockchain? What are the use cases that can be built around these technologies? How can they contribute to any of the four types of innovation?

Nokia got distracted by the continuous optimization of its feature phone range, while playing with the same technology that Apple was putting together to disrupt the entire mobile phone value chain. On the contrary, you can miss what a potentially disruptive innovation can bring in terms of optimizing and augmenting what you already have.

For instance, Samsung DEX may not be the next big thing for consumers, but by replacing PCs in bank branches, it may help streamline in-store processes and enable compelling use cases in digitizing KYC and payments.

Innovation Impact on the Bottom Line

Without making sense of the potential impact of different types of innovation, it is hard to realize that incremental and evolutionary ideas have a significantly lower potential of creating value than revolutionary bets, but with a much lower risk.

No doubt, disruptive innovation can be funded only if incremental and evolutionary innovations succeed in generating new value. But the question is whether in banking today an organization can thrive just by optimizing the as-is when the entire industry is facing a growing level of uncertainty.

Bansi Nagji and Geoff Tuff have shown that companies that allocated about 70% of their innovation activity to incremental initiatives, 20% to evolutionary ones, and 10% to revolutionary ones outperformed their peers, typically achieving a P/E premium of 10% to 20%. But when more-direct returns on innovation are considered, the return ratio is roughly the inverse of the ideal allocation above: incremental innovation efforts typically contribute 10% of the long-term, cumulative return on innovation investment; evolutionary initiatives 20%; and transformational efforts 70%.

Managing Innovation as a Portfolio

In an industry with a traditionally low amount of patents, it is no surprise that the number of ideas upon which individual players are working is usually too small to ensure the necessary 'requisite

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variety' that allows an organization to cope with changes in its environment. If in innovation ideas are similar to bets, incumbents are making too few bets to have a chance to thrive.

Designing a digital banking value proposition exclusively around the assumption that the majority of customers will use a tablet, while mobile is just a scrapped down version with few functionalities, may be a risky bet if tablet sales stagnate and people move from PCs straight to smartphones.

Also the ratio between ideas that are conceived and those that are shipped to the end-customer is an indicator that the way innovation is managed is too rigid.

When such ratio is too close to 1, this means that all bets go through the full innovation funnel, from opportunity mapping to ideation, from validation to prototyping, from MVP to customer roll-out. Far from being a sign of success, this hints at the entire innovation management being failure averse, nor allowing to turn failure into learning, making a pivot possible for the organization.

That is why instead of managing innovation as a series of unrelated projects, a portfolio approach based on multiple bets allows both to mitigate the risk that any idea may not survive through the entire funnel, and the upside that a disruptive bet can transform the bottom line. But, such an approach can succeed only if the corporate culture accepts failure and promotes learning.

Paolo Barbesino

Paolo Barbesino is SVP, Head of Digital, at CEE Retail UniCredit Group. Based in Vienna, he crafts the digital strategy and customer experience for one of the Systemically Important Financial Institutions in Central & Eastern Europe.

Decoding and anticipating what consumers will do, he works at the crossroad where strategy, technology, and service design get together in order to bring to life digital products, services, and experiences for retail customers in the region.

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Competitive Trends

The challenger banking battlefield is crowded, with new players coming into the marketplace every week. With the geographic and the product scope of most new fintech challengers being limited, and venture capital being more selective, is consolidation inevitable?

For the past decade, new fintech providers have focused on providing an enhanced consumer experience around a rather narrow set of financial products and services. This has impacted traditional banking organizational planning, innovation and even investments in technology.

As the banking and fintech industries begin to merge through consolidation and collaboration, the focus will move beyond simply providing better payment, lending, money transfer and digital engagement experiences, extending to the entire financial services ecosystem according to a *report* from **McKinsey**. These changes will be supported by new regulations, demands from increasingly digital consumers, and a new "platformification" perspective as introduced by Ron Shevlin.

According to McKinsey, there are seven critical aspects of the new financial services environment that must be understood by both traditional and new financial services providers.

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Expanded Scope

Moving well beyond payments, lending, and P2P transfers, fintech offerings now reach more than 30 areas throughout the entire banking value chain according to the report. Offerings now include all areas of financial services including the following:

- Retail (money management, P2P lending, digital lending)
- Wealth Management (robo-advising, crowdfunding, social investing)
- Insurance (IoT and connected devices, telematics, digital prevention)
- Capital Markets (collateral management, trade analytics)
- Small and Midsize Enterprises (digital cash management, P2P corporate lending and investment)
- Payments (mobile payments, mobile POS devices, payment processing)

The expansion does not even include the extensive expansion being realized in both operations and infrastructure where some of the most dramatic innovation is occurring. In addition to advancements in blockchain and open APIs, much is being done with advanced analytics, artificial intelligence and cybersecurity.

Fintech firms are even providing advanced advisory and support services. An example is **Social Finance (SoFi)**, which has gone beyond offering just lending products to students and young professionals, expanding to provide career coaching, high touch customer service and networking events.

Increased Diversification

"The fintech industry is also becoming more diversified, with a wide variety of business models seen across geographies, segments, and technologies," states McKinsey. This includes venture capital funded start-ups that address a specific consumer need (**Stripe**), large tech firms expanding into financial services (**Alibaba/ Alipay**), and established fintech firms expanding offerings (**PayPal**).

There are also dozens of examples of existing financial services firms creating their own fintech units. This includes divisions to provide new services as well as completely newly branded banking entities. With no signs of the fintech industry's growth abating, its reach is likely to broaden quickly to embrace even newer technologies and offerings, blurring the boundaries now delineating financial services.

Improved Collaboration

The benefits of collaboration between banking and fintech providers has been thoroughly explored by **The Financial Brand**. While fintech firms do not have the burden of dated infrastructure and have the benefits of innovation agility and focus, they usually lack an understanding of regulations and have difficulty achieving scale. Alternatively, legacy banking organizations have the benefits

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of trust, an established customer base, massive reservoirs of data, but usually lack digital expertise.

"While fintech firms do not have the burden of dated infrastructure and have the benefits of innovation agility and focus, they usually lack an understanding of regulations and have difficulty achieving scale. Alternatively, legacy banking organizations have the benefits of trust, an established customer base, massive reservoirs of data, but usually lack digital expertise."

Examples of such partnerships are widespread. For example, New York–based **Moven** and Canada's **TD Bank** have partnered to integrate Moven's mobile financial-management tools with TD's Internet-banking platform in Canada. Similarly, **BBVA** has funded and partnered with a number of fintech providers to expand service offerings.

Increased Consolidation

There is a significant amount of overlap within the fintech space, with multiple players vying for a foothold and/or expansion in the payments, lending, funds transfer and consumer experience market. The crowded marketplace and need to garner VC investment will most likely lead to a period of consolidation, with larger players turning to mergers and acquisitions to satisfy their expansion goals.

Legacy banking organizations may also identify acquisition targets to fill in digital delivery gaps within their organizations. This trend may become more important to fintech start-ups as well given that fintech VC funding activity has slowed.

Normalized Valuations

"Valuations of fintech firms are normalizing as investors become more cautious and start favoring companies with proven track records," states McKinsey. McKinsey examined 44 fintech firms with valuations of more than $1 billion, and found that valuation growth has slowed considerably.

"Between 2014 and 2015, valuations for these companies grew on average by 77%, and then slowed to 9% from 2015 to 2016," the report states. In the United States, where more than half the companies in the study were based, the report found the drop in valuations to be even more dramatic. While valuations for large U.S. fintech firms grew on average by 54% from 2014 to 2015, they actually dropped by 7% from 2015 to 2016.

There has also been a lower number of newly launched firms compared to very active years of 2012-14. P2P and marketplace lending activity has also suffered somewhat from a crisis of confidence owing to well publicized issues at the US market leader **Lending Club**.

Shifting Regulations

With growth of the fintech industry, and the relationship with legacy banking organizations changing, regulations have needed to evolve quickly to keep pace. In many markets, regulators are playing a more proactive role in overseeing the industry, often encouraging its development, for instance by following a sandbox – or test and learn – approach that allows fintech firms to experiment without impacting the entire financial system.

It is still unclear how regulators will balance the need for limiting risks with the desire to encourage innovation. It is clear, however, that the role of government regulations will increase in the foreseeable future, impacting partnerships, investments and innovation in the banking industry regionally and worldwide.

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With all of the transformation in the industry, the very concept of what comprises a fintech will shift. This new fintech era is being shaped by changes in market conditions, new regulations, and shifts in consumer demands and behaviors. As a result, the industry, generally, is becoming more cautious, even as it becomes more diverse across technologies and products.

Emerging Ecosystems

"Leaders in these ecosystems will need strong data-analytic capabilities to develop useful insights from the torrent of customer information available, and they will likely use fintech firms and others to develop the system and extract maximum value."

As fintech and traditional bank offerings have become more interconnected, new ecosystems will develop that span multiple industries, predicts McKinsey. As outlined in the article regarding platformification, fintech firms could become part of a much broader digital network in the future.

These ecosystems may extend far beyond traditional financial services as we know them today. Ecosystems will likely develop to follow customer needs, rather than conform to traditional industry lines. Leaders in these ecosystems will need strong data-analytic capabilities to develop useful insights from the torrent of customer information available, and they will likely use fintech firms and others to develop the system and extract maximum value.

The underlying capability in all of these ecosystems will be the ability to capture and analyze consumer data. Advanced analytics and machine learning will enable greater personalization as well as predictive capabilities around needs. In addition to data analytics, these leaders will also need expertise in cybersecurity to credibly safeguard the huge amounts of potentially sensitive client data available in the system.

The Future of Disruptive Competition and Collaboration

The future can be bright for both fintech firms and traditional financial firms that embrace the potential of a greatly expanded definition of banking. Leveraging new technologies, the potential for a bank or financial technology firm to be at the epicenter of a consumer's digital ecosystem is not just possible, it is probable.

Understanding and taking advantage of the trends described above is the first step to surviving in a digital marketplace that combines financial services with a consumer's everyday life, making banking as we know it today a supporting function to digital commerce.

The threat of disruption is perceived to be high by banks and credit unions globally, according to our research. The biggest threat is expected to come from fintech start-ups (non-bank fintech firms) and large technology companies, with respondents giving an average score of 5.25 and 5.24 respectively on a scale of 7. These scores are similar to what was found in 2016.

Challenger banks and traditional banking organizations were found to be the next most likely source of industry disruption. The impact of traditional banking firms increased in 2017 compared to 2016, which is understandable given the collaboration seen between larger banks and fintech firms and the greater emphasis on new technology.

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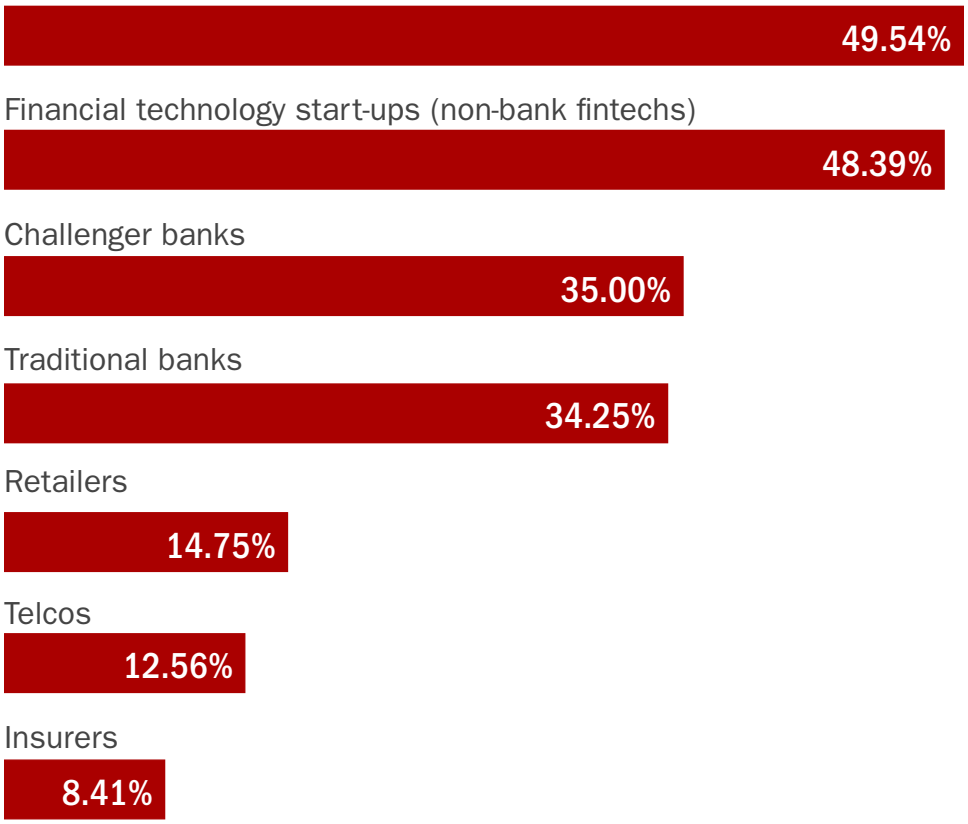
When we asked about which business lines would be most impacted by new competition, payments and mobile wallets (which are linked to payments), were the areas most mentioned – similar to the findings in the 2016 research. The third most disrupted product line that organizations worldwide mentioned was lending (4.91 on a 7 point scale). This was a significant jump for lending disruption compared to 2016, possibly caused by the impact of more U.S. and smaller institution responders to the 2017 survey.

CHART 1:

SIGNIFICANT THREATS OF DISRUPTIVE INNOVATION FROM ACTUAL OR POTENTIAL COMPETITORS

Percentage of respondents who considered the below types of competitor to be a significant threat (either 6 or 7 on a scale of 1-7, where 1 is very low and 7 is very high).



[1]Google, Apple, Facebook, Amazon, etc.

Source: Efma-Infosys Finacle-Digital Banking Report Survey 2017

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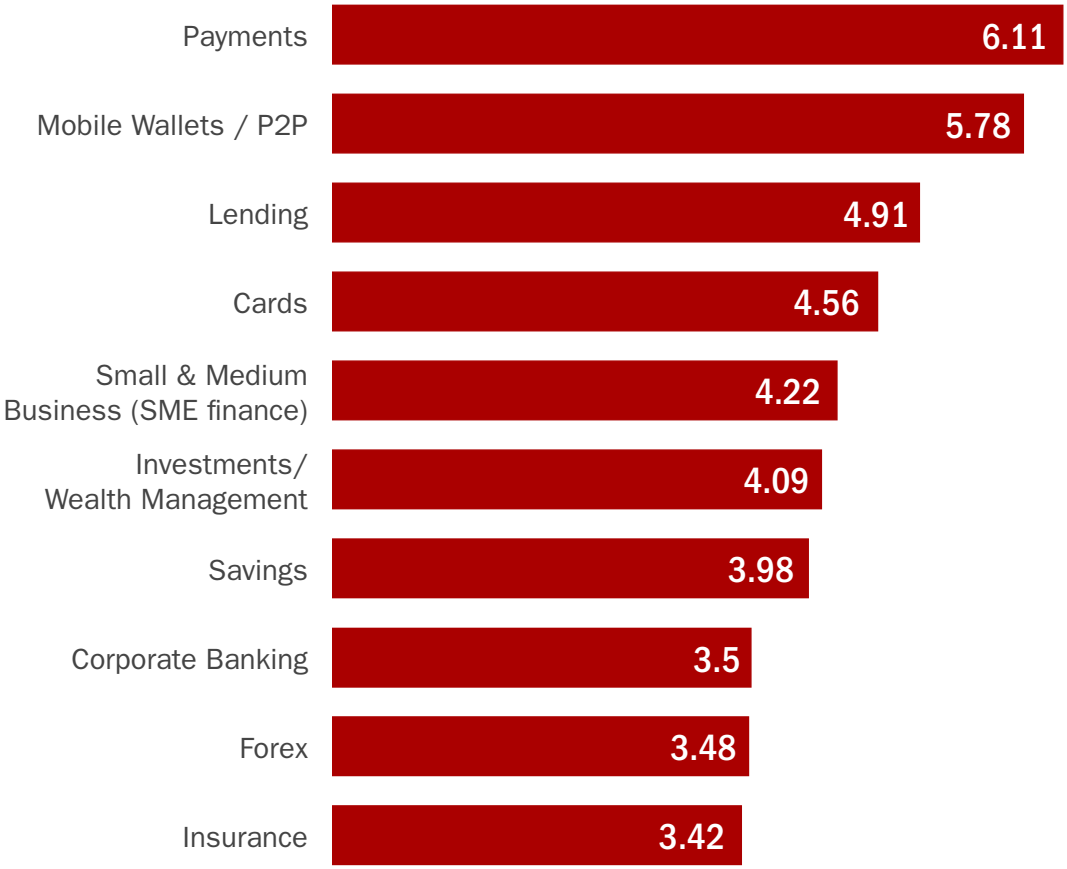
CHART 2:

BUSINESS LINES WHERE EMERGING COMPETITION IS EXPECTED TO HAVE SIGNIFICANT IMPACT

On a scale of 1-7 (where 1 is very low and 7 is very high)
Value at the end of bar is Average Score.



Source: Efma-Infosys Finacle-Digital Banking Report Survey 2017

The Threat from Technology Giants

Fintech start-ups have been the focus of a great deal of attention in the banking industry, as these firms have combined digital technology to provide easy-to-use applications that have impacted virtually every aspect of traditional banking. As mentioned, while being a source of advanced innovation, the vast majority of these start-ups have had difficulty achieving scale, however, with the prospect of partnering with traditional banks becoming more commonplace.

In the **World Economic Forum** report titled *Beyond Fintech: A Pragmatic Assessment of Disruptive Potential in Financial Services*, it is noted that fintech start-ups, while achieving success in terms of changing the basis for competition, have had less impact than expected in disrupting the overall competitive

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landscape. More importantly, the report found that there is increasing competition from global tech giants such as Google, Amazon, Facebook and Apple (GAFA).

"The challenge to banks and insurers is down to large technology firms hollowing out the value proposition of these institutions by carrying out more core functions, even as banks and insurers lean ever more heavily on them to compete," states the report. The report highlights that cloud computing, customer-facing artificial intelligence (AI) and advanced analytics are three capabilities that are becoming critical to the competitive differentiation of financial institutions. These capabilities are also where technology giants like Google, Amazon, Facebook and Apple have far deeper experience than legacy banking organizations. As a result, many banks and insurers are turning to technology firms to provide these core functions.

For instance, **Amazon Web Services** (AWS) provides services to dozens of finance companies, including **Aon**, **Bankinter**, **Capital One**, **Nasdaq**, **Pacific Life** and **Stripe**. Another Amazon connection is that Capital One, **American Express** and **USAA** have built Alexa voice-activated personal assistant solutions. "Tech giants are able to pick and choose their points of entry into financial services; maximizing their strengths like rich data sets and strong brands, while taking advantage of incumbent institutions' dependence on them," states Jesse McWaters, lead author of the study.

The **WEF** report uncovered eight forces that have the potential to shift the competitive landscape of the financial ecosystem.

- Cost commoditization: Financial institutions are embracing new technologies to accelerate commoditization of cost drivers.
- Profit redistribution: The location of profit pools within and between value chains are shifting with new technologies.
- Experience ownership: Distributors will enjoy a position of strategic strength as owners of the customer experience; manufacturers are expected to become hyper-scaled and hyper-focused.
- Platforms: Financial institutions are shifting to multiple-provider platforms as a channel to distribute and trade across geographies.
- Data monetization: Financial institutions are starting to use a combination of data strategies to follow the lead of tech firms in data monetization.
- Bionic workforce: New technologies such as artificial intelligence will mean major shifts for financial institutions' workforces.
- Systemically important techs: Financial institutions of all sizes rely on large tech firms' capabilities.
- Financial regionalization: Diverging regulatory priorities and customer needs is making way for tailored regional models of financial services.

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The Potential of Application Program Interfaces

A strategic option that the banking industry has available is "application programming interfaces" (APIs), where banks could partner with smaller fintech firms to build new banking products, become product distributors or even platform managers. This could allow both financial and non-financial services to be offered by banking organizations.

The banking industry could benefit from open platforms because brand image becomes even more important than before, and banks have an advantage in the race to become distributors due to their existing customer base. Customers still trust their primary provider which could be leveraged to the banking industry's benefit.

While a potential benefit for the banking industry, little is understood about the economic and competitive potential of APIs due to the newness of the concept. The uncertainty has discouraged some incumbents and financial services software providers from investing in platform banking solutions, particularly as the incremental scale required to offset potential cannibalization is unclear.

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Case Study: Bud

Bud is a plug-and-play financial services platform based in the U.K. Bud integrates over 60 fintech and other financial services into a single platform via APIs, deploying the product into large tier one banks around the world.

The Bud platform brings together fintech and traditional banking solutions to address the fintech need for scale and distribution and the banking need for agility and better digital customer experiences. The result is banking apps and websites that give users full control over the products and services they use with the ease of one screen and one log in. Bud is the first and company regulated as an API open banking platform, so a bank takes on none of the regulatory burden of using the marketplace of products. The current distribution exceeds 30 million customers through the strategic banking partners.

The unique features of the product stem from using data capture and processing tools as well as a network of marketplace partners. Bud uses transactional data to help customers optimize their financial services. The company is now branching out of the UK and is about to release a SME version of the product, already picked up by a bank.

Bud has been awarded Innovation of the year from the British Bank Awards, It was shortlisted by Capgemini to celebrate their 50th anniversary as one of the top ten small businesses globally (the only UK finance company), we have been chosen by BBVA as a finalist for their Global Trends competition, highlighting financial companies who will change the industry and we are listed as an agent of change in the 'Fintech50 Hot 10'.

Case Study: Tic Toc Loans

Tic:Toc offers Australian customers a complete online home loan solution, using a digital decisioning system to assess and approve online applications in real-time. This solution provides consumers a cheaper, faster and more convenient home loan application process.

Tic:Toc launched the world's first instant home loan using a 100% online lending platform, offering eligible customers full home loan approval in just 22 minutes (instead of 22 days), including mortgage document production and delivery upon approval. To make this possible, Tic:Toc uses a digital decisioning system to assess applications online in real-time. This also provides cost savings of digitization which is passed to customers via competitive interest rates and no application, settlement or valuation fees.

Australia has one of the highest uptakes of online banking in the world. The on-demand economy has shifted customer expectations when it comes to personal finance, but home loans have been left behind. Tic:Toc believes customers deserve a faster, easier and more transparent way to get a home loan.

Early results demonstrate Australians are ready to embrace the digital application, approval and documentation process. With 77% of consumers beginning their home loan research online, but with no genuine digital home loan solution available, over 25,613 people visited the Tic:Toc website and 11,730 began applications on the platform during the first month after introduction.

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Case Study: Raisin

Raisin is a one-stop-shop open marketplace giving customers access to the best interest rates across Europe. Before Raisin launched its platform, savers had to deal with varying, complex account opening procedures in foreign languages, a lack of transparency about available offers from other countries, administrative requirements etc. Often, even the physical presence of the saver was required to open a deposit account with a European bank abroad.

With Raisin, banks that want further funding or wish to diversify their deposit portfolio can reach customers from across Europe in a simple and low-cost way. Alternatively, banks that have a strong funding base and wish to reduce excess liquidity can offer Raisin's savings products to their customers, reducing excess liquidity without losing their customers. The integration is a win-win-win-solution.

Raisin provides a marketplace for investments into the online banking offering of third-party providers via a self-developed API. Distribution partners can provide their customers with savings products via a simple, standardized and scalable technical solution.

N26, Europe's first mobile bank with a full European banking license was the first distribution partner using the Raisin solution to integrate offers in their online banking platform. "Thanks to our partnership with Raisin, our clients can benefit from the highest interest rates available, with only a few clicks and directly on their smartphones," says Valentin Stalf, founder and CEO at N26.

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Innovation Trends

Of the 20 largest global banks as of early 2017, one-third were new to the list since a decade ago. Even more startling is their shift in relative market share compared with the major technology firms. Banks and credit unions must prepare for an uncertain future.

The most dramatic change to the financial services industry in more than a century may be the integration of digital technology as part of the back-office and customer-facing banking ecosystem. Whether you consider these changes disruptive or merely just transformational, they are changing the way banking services are delivered to the consumer.

These shifts have impacted both the day-to-day operations of banking organizations, as well as the long term strategic vision in boardrooms, conference rooms and innovation labs. Standing still is not an option – and the viability of being a 'fast follower' could be challenged, as changes are coming at the industry fast and furiously. These changes are coming in response to the dual threat/opportunity of consumer expectations and new financial technology players.

The underlying role of banking has changed much less than the way banking is delivered. The result has called into question not only the value of banks overall, but also the possibility that large tech companies could take on the role of distributors of banking services in the near future.

Firms like Google, Amazon, Facebook and Apple (GAFA) are often mentioned as being in the best position to be at the center of banking ecosystem in the

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future. Their market capitalization and use of data to deliver increasingly improved consumer experiences is a threat that can't be ignored.

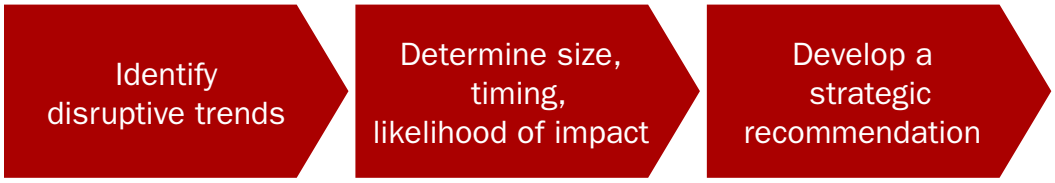
"More than ever, the banking industry needs to manage for the long-term, through cycles, even as they adapt in the short term through continuous test-and-learn experimentation," according to the authors of the **Bain and Company** study, Banking Strategy for the Long Game. According to the study, the following questions must be understood:

- What are all of the possible disruptions that are relevant to our organization?
- How will these changes impact revenue, competitive positioning and the operating model?
- What can our institution do to protect the core business, take advantage of new opportunities, create options and hedges and place some long-term bets?

Taking a 'wait and see' approach to innovation is not a viable option. Instead, banking management teams need to commit to investments that limit risk and allow an organization to take advantage of market opportunities. Bain suggests that the best strategies blend 1) No-regret moves that add value with minimal risk, 2) Options and hedges that protect against major negative shifts and allow for participation in significant positive movements, and 3) Big bets that will define the long-term viability of an organization.

CHART 3:

THE LONG GAME APPROACH TO BANKING TRANSFORMATION



Source: Bain and Company

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Presence of Defined Innovation Strategy

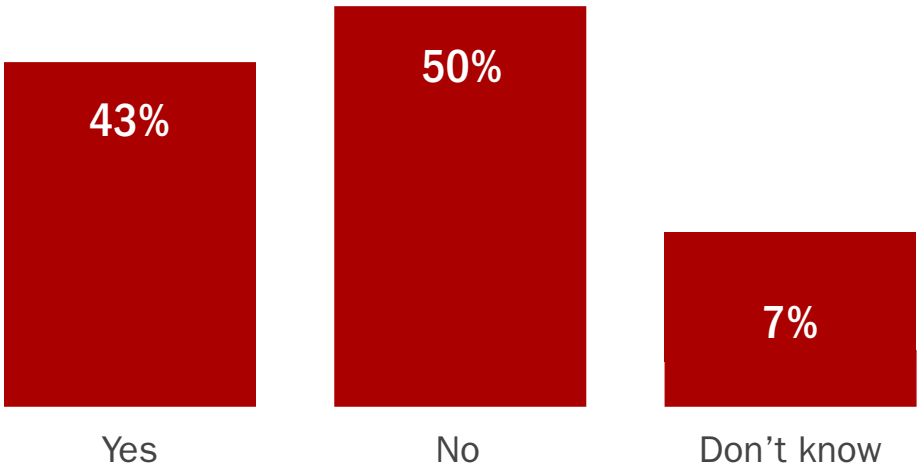
According to our research, the proportion of banks with a defined innovation strategy decreased significantly from 2016. In 2016, the percentage of firms with an innovation strategy was 74%, compared to 73% in 2015 and only 37% in 2009. The reason for the dramatic drop this year is caused by the expansion of our respondent base in 2017.

In the past, the vast majority of organizations surveyed were larger financial institutions. In 2017, we significantly expanded our scope of targeted respondents, including smaller firms that are less likely to have a mature innovation process.

For a more comparable metric, we have done a delineation of respondents by asset size. When we look at the same question from the perspective of size of organization, we clearly see that larger financial organizations are more likely to have a clear innovation strategy.

CHART 4:
CLEARLY DEFINED INNOVATION STRATEGY

Does your financial institution have a clearly defined innovation strategy?*



* A clearly defined innovation strategy would include, for example, having objectives, resources, processes and measures of success.)

Source: Efma-Infosys Finacle-Digital Banking Report Survey 2017

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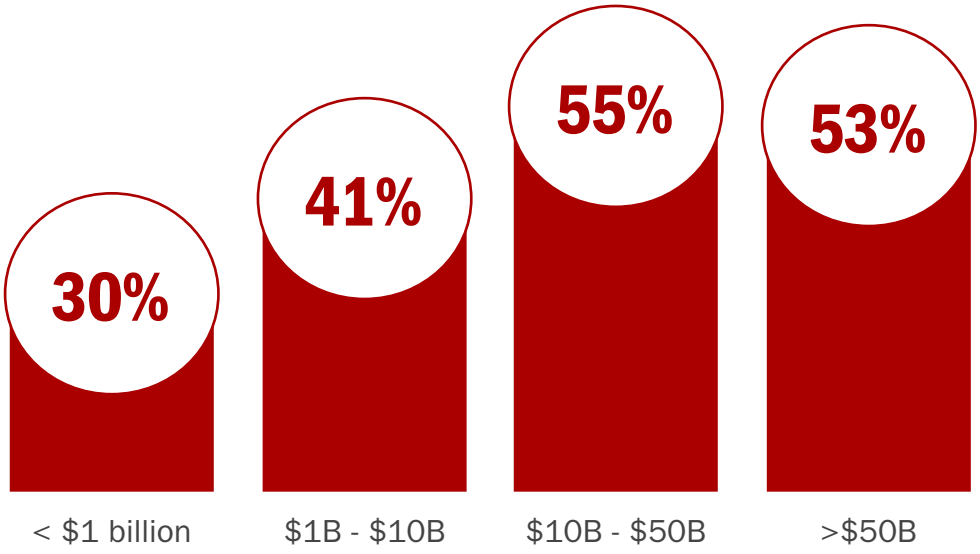
CHART 5:

PRESENCE OF CLEARLY DEFINED INNOVATION STRATEGY BY SIZE OF ORGANIZATION



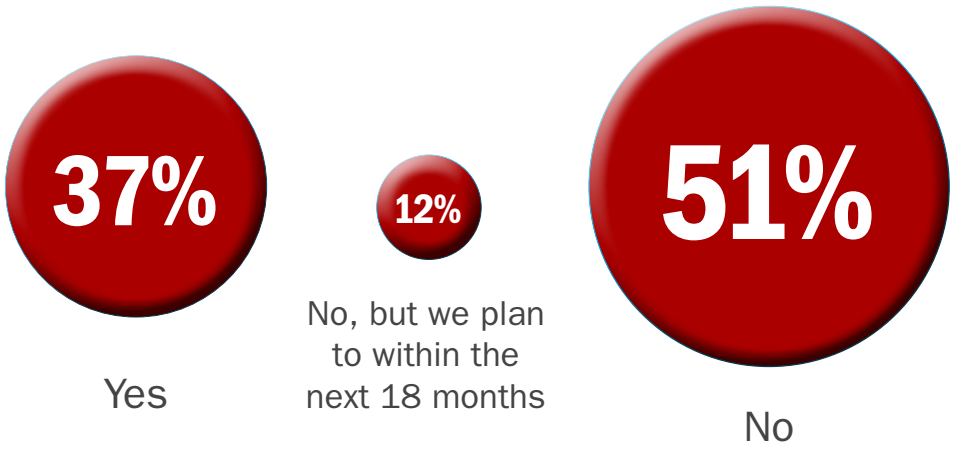
Source: Efma-Infosys Finacle-Digital Banking Report Survey 2017

To have a defined strategy usually includes the presence of a chief innovation officer or a similar executive who can spearhead the innovation process. When we asked financial executives if their firm had a key individual assigned the role of managing the innovation process, we found that more than half of the organizations surveyed did not have a single point of innovation ownership.

CHART 6:

PRESENCE OF A CHIEF INNOVATION OFFICER

(Or someone with a similar title with a full-time job of working on discovering / creating / implementing new innovations)



Source: Efma-Infosys Finacle-Digital Banking Report Survey 2017

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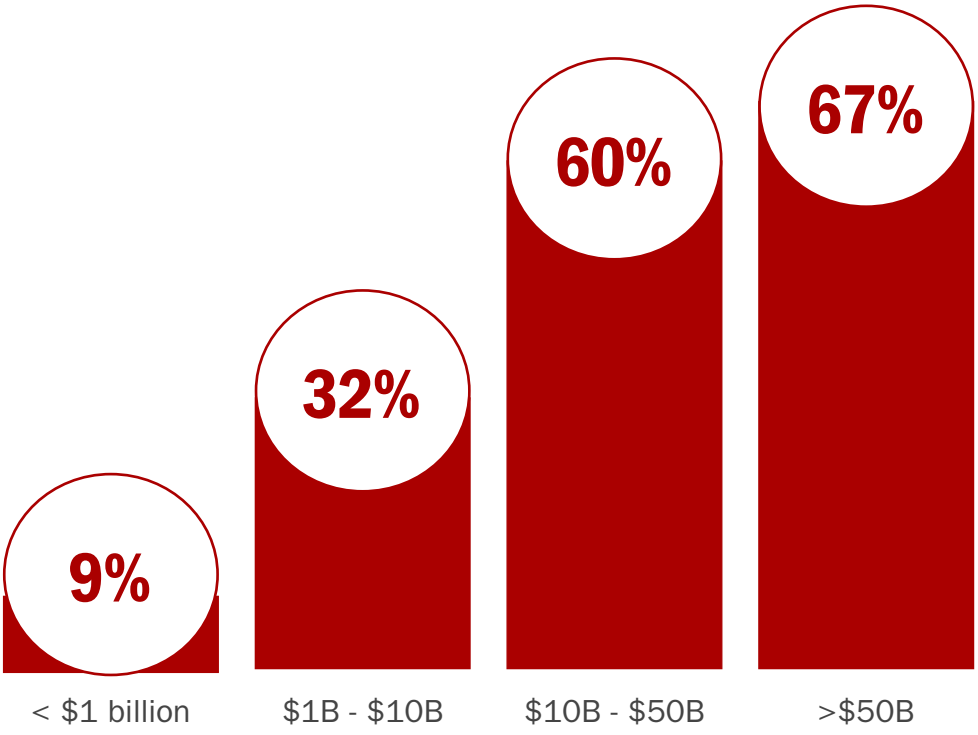
When we dug deeper into the responses, we saw a definite delineation based on the size of organization. As expected, the presence of an executive assigned the innovation process is correlated with the size of the bank or credit union. It is assumed that as the size of the organization gets smaller, innovation becomes part of a broader role within the organization.

CHART 7:

PRESENCE OF CHIEF INNOVATION OFFICER BY SIZE OF ORGANIZATION



Source: Efma-Infosys Finacle-Digital Banking Report Survey 2017

Level of Innovation Investment

The proportion of banks increasing innovation investment each year increased from 2009 to 2016, with the first decline in this measure being evidenced last year (from 84% in 2015 to 78% in 2016). The percentage of firms increasing investment in innovation increased slightly to 79% in this year's study.

While the percentage of firms increasing investment in innovation remained relatively flat this year, it is interesting to note that the number is relatively the same across all geographic and sizes of organizations. As mentioned, there was a substantial increase in the number of smaller organizations included in this year's study, yet the numbers remained consistent. We do see that more large organization are increasing investment than smaller firms.

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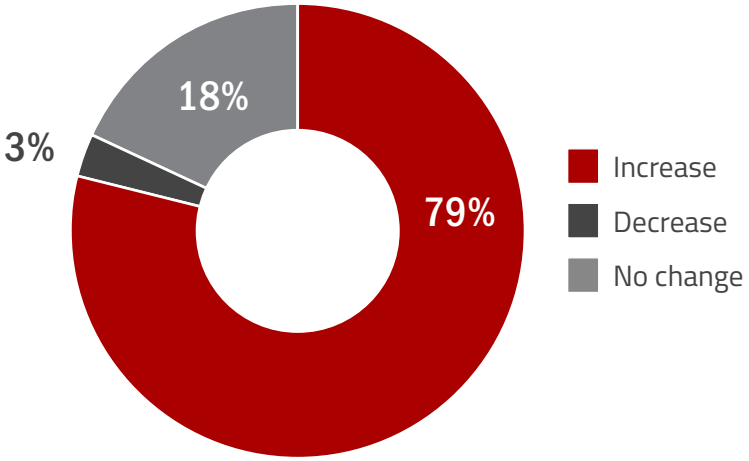
As was the case in 2016, the areas where investment in innovation increased the most was with channels and customer experience. This is consistent with other research done by the Digital Banking Report such as the annual *Retail Banking Trends and Predictions* report. Compared to 2016, there was little change in the other categories.

CHART 8:
OVERALL CHANGE IN INNOVATION INVESTMENT



Source: Efma-Infosys Finacle-Digital Banking Report Survey 2017

CHART 9:
INCREASE IN INNOVATION INVESTMENT IN 2017 VS. 2016 BY SIZE OF ORGANIZATION

	<$1B	$1B-$10B	$1B-$10B	>$50B
Channels	74%	80%	86%	76%
Customer Experience	72%	74%	89%	82%
Products	64%	65%	73%	68%
Processes	58%	69%	68%	70%
Sales & Marketing	58%	61%	58%	55%

Source: DBR Research © October 2017 Digital Banking Report

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CHART 10:
OVERALL CHANGE IN INNOVATION INVESTMENT BY CATEGORY

	Increase	Decrease	No Change
Channels	79%	5%	17%
Customer Experience	78%	1%	21%
Products	67%	4%	29%
Processes	66%	4%	31%
Sales & Marketing	59%	3%	38%

Source: Efma-Infosys Finacle-Digital Banking Report Survey 2017

Struggles with Innovation Process

In most of the research conducted by the Digital Banking Report and Efma, organizations continue to struggle with legacy systems, technology and funding. The same was the case with this year's survey around innovation. On a 7-point scale, systems integration (5.17), legacy technology (4.93) and the resources of time and cost were the areas of biggest struggles.

Somewhat surprisingly, the ability to get executive level sponsorship and support and the lack of expertise and talent were not greater challenges. We believe that talent will become an increasing issue in the future.

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CHART 11:

PARTS OF THE INNOVATION PROCESS WHERE THERE ARE THE MOST STRUGGLES

On a scale of 1-7 (where 1 is very low and 7 is very high)

	Average Priority
System integration challenges	5.17
Legacy technology landscape	4.93
Time/cost required from concept to reality	4.91
Budget constraints	4.8
Culture/structure of your organization	4.61
Evaluating/prioritizing new ideas	4.34
Lack of skills and expertise	4.31
Market intelligence/keep up with ideas in the market	4.03
Market adoption of the new innovation	3.95
Gaining executive sponsorship and buy-in to prioritize innovation	3.76

Source: Efma-Infosys Finacle-Digital Banking Report Survey 2017

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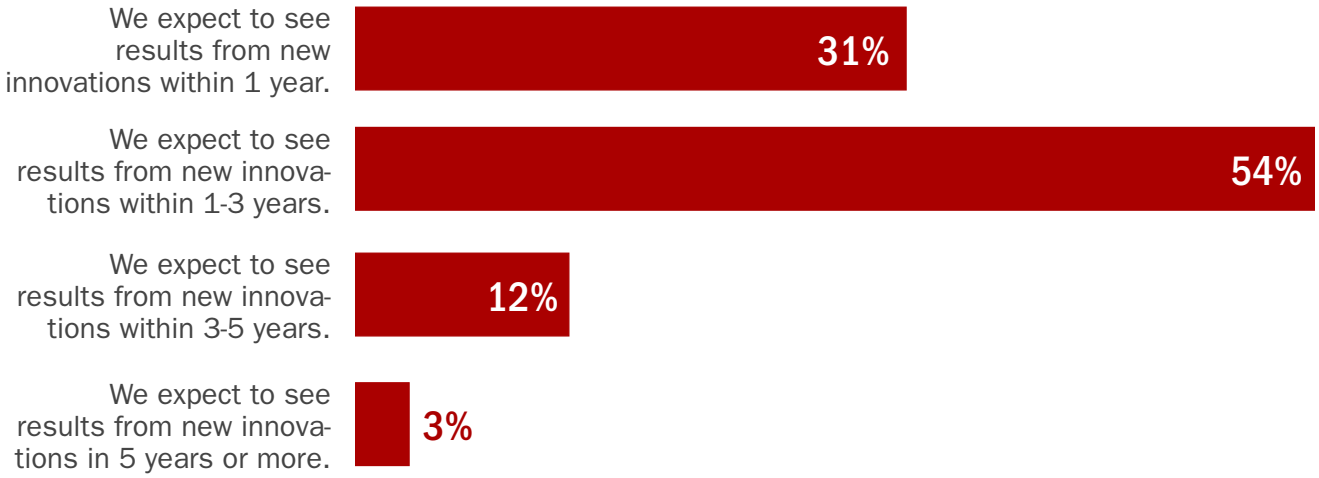
Timing for Innovation Success

When we asked financial institution executives globally what time frame they measured innovation investment effectiveness, more than half used a 1-3 year time frame. An additional three of ten executives used a shorter time frame for measuring success.

CHART 12:
TIME PERIOD USED TO MEASURE INNOVATION SUCCESS



Source: Efma-Infosys Finacle-Digital Banking Report Survey 2017

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The Power of One Sigma

Article by JP Nicols
Managing Director of the **Fintech Forge**

Six Sigma is a quality improvement program that gets its name from the concept of 99.9997% quality. In statistics, each sigma represents the statistical measure of 1 standard deviation from the mean in a range of outcomes in a normal distribution. Six sigma translates into no more than 3.4 defects per million opportunities.

It is often related to (and sometimes conflated with) the concept of "Lean", which was coined to describe Toyota's manufacturing practices during the late 1980s, when their level of consistent quality was noticeably superior to much of what was coming out of Detroit at the time. Lean focuses on improving efficiencies by reducing waste through standardization and elimination of non-value-added efforts.

Six Sigma, developed by **Motorola** and widely popularized by **GE** and others, focuses on improving quality by reducing process variation and using detailed measurement and statistical analysis. The two are often used in tandem in Lean Six Sigma programs.

Striving for this kind of consistent quality can save lives in healthcare procedures and plant safety. It is what we have come to expect today from our personal electronic devices and even from lower priced automobiles, and this is the kind of uptime we expect from computer and communications networks.

In financial services, it's what we strive for in our transaction processing, statement production, compliance programs, and reliability of our ATMs and core systems.

What's Not to Like?

Quality, consistency, efficiency, defect reduction, what's not to like?

Lean and Six Sigma programs work well when there are identical operations and repeatable processes in large volumes, particularly when those operations can generate a lot of accurately measured data. When administered properly, they also focus on creating real value by improving quality, cost and customer satisfaction.

But what happens when you perfectly execute the wrong priorities?

Kodak was arguably the best manufacturer of celluloid film in the world (although **Fuji Film** might argue that one). **Nokia** was the world's leading maker of mobile phones, with 48.7% market share in 2007. Sony's Walkman was the leader in portable music for a decade. The quality of their operations was admirable, and not what turned out to be the Achilles heel for those companies.

New technologies and new business models regularly disrupt the status quo. **Blockbuster** beat all comers in the business of operating video rental stores. They executed the standard business model of

JP Nicols

their industry better than anyone else. **Netflix** didn't beat them at their own game, they changed the game.

> *"There is nothing so useless as doing efficiently that which should not be done at all"* — Peter Drucker

Blockbuster is an especially good example for financial services. For most of the industry's history, success has been about executing the same business model better than largely similar competitors. The winners of the consolidation wars over the past three decades have been those who executed with the efficiency that created operating leverage.

Efficiency and positive operating leverage are important ways to win the standard game in financial

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services, but they aren't necessarily enough to counteract the new technologies and new business models that are changing the game now and in coming years. Nor will simply blindly going all-in on the latest in fintech hype. How can we balance operational excellence and efficiency with flexibility and innovation?

The Power of One Sigma

One of the drivers of the dot com boom and bust of late 1990s was the notion of 'build it and they will come'. Billions of dollars of equity were invested in new technologies that were promising, yet unproven in the marketplace. Valuations got unreasonably optimistic, money flowed too freely, and millions of dollars of advertising was spent hawking products that not enough people wanted.

Eventually reality set in, valuations came back to earth, and the weakest value propositions died off. New wisdom prevailed from Geoffrey Moore, Steve Blank, and others, including Eric Ries who offered a better formula for testing ideas before making big bets. This process of Build, Measure, and Learn is a twist on "lean" methodologies that Ries detailed in his best selling book *The Lean Startup*. But this 'nail it then scale it' approach is not just for startups.

In financial services we tend to think that if we can just get all of our smartest people in a conference room, perhaps supplemented with the best consulting minds we can rent from the outside, we can perfectly plan out all of our strategies and "roadmaps" down to the last detail. Then, all we need to do is execute them perfectly. Plan your work and work your plan. Simple, right?

But the marketplace has a way of making us look stupid when we think we can plan for every contingency up front. Market conditions change, customer preferences evolve, and the competitive landscape shifts, so our plans have to be flexible and responsive to these changing conditions.

One Sigma in a normal distribution covers more than two-thirds (68.27% to be exact) of the outcomes. That's not nearly good enough for heart surgery or network reliability, but it's a pretty good indication that you're on to something worth testing further.

The answers are outside the building, not inside the boardroom. The sooner we can test our ideas, the sooner we'll know whether we should increase our bets or iterate to something better. That's stacking the odds in your favor in the strategic planning process.

By all means keep those Lean and Six Sigma programs going where they're working, but navigating these uncharted waters in our rapidly changing industry takes a new approach. It's time to embrace the power of One Sigma.

JP Nicols

After spending 20 years as a part of the leadership team growing a $6B regional bank into an industry leader with over $400B in assets, JP has been working at the intersection of fintech, innovation and financial services to help others turn potential into performance.

He is a Managing Director of the **FinTech Forge,** which extends the innovation capacity of financial institutions while dramatically lowering the cost and risk of innovation. He was also a founder of the **Bank Innovators Council**, which is now as a part of **Next Money**, a global community committed to reinventing finance through design, innovation and entrepreneurship.

FINTECH FORGE

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Case Study: DenizBank

"SiteniYonet" is a free of charge residential property management cloud platform from DenizBank out of Turkey. Developed with a Sales-Force infrastructure, SiteniYonet is a holistic web application that helps both apartment managers and residents with communication and payment management.

This free holistic solution replaces multiple antiquated fee-based systems currently being used for apartment and site management, such as e-mail and SMS resident communication, income & expense management for site managers, online monthly payments supported by fastPay, and residential debt follow-up.

Beyond site management capabilities, SiteniYonet has a resident interface for tracking their debit – credit situation, getting site management's announcements and paying dues. Residents can pay their dues with DenizBank's mobile payment application fastPay.

It is expected that 160 apartments will be paying their dues via fastpay within 6 months. The platform will be offered as well to other SMEs such as groceries, hairdressers, etc., providing the convenience of mobile payment and customer communication.

Case Study: Zagrebacka Banka

Croatia-based Zagrebacka Banka has introduced a single, cloud-based interface, offering small & micro clients an omnichannel solution that coordinates stock inventory and loyalty programs across all payment channels, including brick & mortar stores, web shops and market places like Amazon and eBay. This solution allows small retailers the functionalities currently reserved for only the largest organizations.

The primary goal of this service was to open card acceptance for small & micro clients who have not accepted card payments previously, leveraging mPOS technology. The software is downloadable to a smartphone or tablet or implemented into standard registers, while in-store card payment is made possible with use of a small, easy to use, card reader connected to an app on smartphone.

The biggest challenge was the mPOS certification due to some features that had not been supported on the bank's POS acquiring (e.g. offline PIN). Solution comprises DCC service which was not enabled on other mPOS solutions.

Close to 200 clients were acquired in first six months, with a positive impact on bank and small business revenue and a reduction in costs. Compared to competitive offerings, the mPOS solution also had excellent SME customer satisfaction measures.

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Digital Transformation Trends

The majority of shopping and buying is moving from physical to digital channels across industries. The impact on the banking industry can be found in the new definition of banking convenience, and in the increased preference for digital account opening capabilities. The question is ... How will banks respond?

Banks have historically expanded branch networks to drive market exposure, increase customer acquisition and support deposit growth. With a bank on every corner, storefront signage drove consideration and influenced purchase decisions, with consumers going from branch to branch collecting product brochures and asking questions.

Today, the vast majority of shopping for financial services (or virtually any consumer product) is done using the keyboard on a computer or mobile device. As consumers in all age categories become more comfortable with digital technology, the shopping experience may even include voice commands. The question is – are financial institutions prepared for this shift in shopping and buying behavior?.

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The 2017 Omni-Channel Shopper Study, published by **Novantas**, found three major shifts in consumer behavior that will impact bank distribution and sales strategies in the future.

1. A significant shift from branch dependence to digital preference
2. A redefinition of the drivers of bank consideration and purchase
3. An increase in demand for digital account opening

A Shift in Dependence on Branches

According to the Novantas study, "The majority of U.S. shoppers are now in segments that either don't use bank branches, don't care much for branches … or both." This seismic shift in preference will have profound implications for the way banks and credit unions acquire and service customers in the future.

The implication for financial institutions is that winning deposit and customer share will no longer be determined as much by the number and location of branches, but by the ability to resonate with a prospect on a personalized level. Those organizations that can target micro-segments more effectively and create positive digital experiences will be more likely to win new business.

A New Definition of Convenience

The traditional definition of convenience in banking has revolved around the proximity of the branch. With the growth in digital technology and the increased acceptance of online and mobile banking, access to banking products and transactions is no longer tethered to a physical location, resulting in a redefinition of convenience. Today, while convenience is still the primary driver of initial consideration, the importance of branches in that definition has gone down.

The biggest news is that the drivers of 'perceived convenience' start with an organization's digital capabilities. In fact, the importance of branch-centric factors has dropped in each of the past three years. This is especially true for consumers aged 18-54.

This ongoing shift in the definition of 'perceived convenience' benefits the larger financial institutions that have invested the most in digital capabilities. Banks lagging in digital innovation and product development not only risk losing out to those banks on the leading edge, but also to fintech providers positioning themselves as technology-first bank alternatives.

The importance of increasing investment in digital capabilities is profound. There also needs to be significant marketing funds allocated to promote awareness of digital capabilities (with an emphasis on mobile).

Research has found that the average consumer only considers two banks when shopping for a new checking account. Without an awareness of digital leadership, a bank or credit union could be removed from the consumer's decision set much earlier than in the past.

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A New Customer Journey

The impact of an Amazon shopping experience has impacted the way consumers want to purchase financial products as well. The digital consumer has less patience for being 'forced' into a physical branch to open a new account and is comfortable with managing more of their life on a digital device. As illustrated in the *2017 Account Opening and Onboarding Benchmarking Study*, published by the Digital Banking Report, industry leaders are providing customers the ability to open accounts starting and ending on online or mobile devices.

The Novantas shopping survey found that 79% of consumers are doing at least some of their shopping for new checking accounts digitally, with 54% using only digital channels. These digital-only shoppers are both older and wealthier, with the size of the digital-only shopper category increasing in size.

Aligned with the preference to shop digitally, there has been a corresponding increase in the preference to open accounts digitally, according to the Digital Banking Report. Over a third of consumers prefer to open their account digitally, with the number being significantly higher (46%) if the consumer shopped using digital channels exclusively.

Unfortunately, many consumers continue to be forced to use channels they do not prefer. According to the Digital Banking Report, a small percentage of consumers are actually successful in applying for, and opening, their accounts entirely online. This indicates a significant pent up demand; if banks fail to address this gap, it's almost certain an enterprising fintech firm will.

The importance of investing in digital capabilities has never been greater. With consumers only considering two banking organizations in their shopping process, and doing their shopping on digital channels, coming in third is not a viable long-term strategy. To be considered, a bank or credit union must not only have a strong digital banking offering, but promote this offering as well.

The same applies for digital account opening capabilities. Digital account opening is the norm in other complex categories such as P&C insurance, investments, and even health insurance — there is no reason why banks cannot also crack the code. As digital acquisition rates increase industry-wide, banks who fail to enable a digital opening process risk losing their fair share of acquisitions and ultimately will face a shrinking portfolio.

It All Starts with a Digital Banking Culture

Despite continuously talking about putting the customer first, the digital age is forcing financial institutions to actually take appropriate action. With best-in-class user experiences being provided by the large technology companies (Google, Amazon, Facebook and Apple), the consumer has a benchmark to measure their bank or credit union against.

A customer-centric digital banking culture has become a matter of survival. The

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"According to last year's study, "Part of the reason for launching digital only banks is to provide this exceptional customer experience without having to link in physical channels to create a seamless omnichannel experience, something which is proving to be a particular challenge with legacy systems."

good news is that becoming customer-centric reduces the risk of experimentation, with the results of tests being available in close to real-time. It is also fortunate that there is such advancement in data analytics, allowing financial organizations to know each customer on a 1:1 basis.

When you look at the most innovative financial services organizations that are doing the best at improving their 'digital maturity,' you will always find a strong digital culture that starts at the top and has travelled across the organization. The outcome of getting the culture component right has been found to result in a 30% variance in performance, as noted in a survey done by McKinsey & Company.

More importantly, it may be the deciding factor in the survival of an organization. This is most important for those organizations that want to pursue a strategy of being a 'fast follower' – leaving others to lead the digital disruption.

While cultural change will almost always lag technological change, the gap in time must be narrowed significantly, even for fast followers. This makes it even more critical for executives to be proactive as they move forward.

Digital Transformation Strategies

The priorities for banks in their digital transformation in 2016 included creating a customer-centric organization, enhancing channels to give an omnichannel digital experience, maximizing usage of mobile and social technologies, and enhancing or re-designing products and services

For the Digital Age

It was noted in last year's report that there is a link between digital channels and customer-centricity because customer experience is usually better in digital channels.

According to last year's study, "Part of the reason for launching digital only banks is to provide this exceptional customer experience without having to link in physical channels to create a seamless omnichannel experience, something which is proving to be a particular challenge with legacy systems."

The biggest barrier to digital transformation in 2016 was the legacy technology environment. The lack of a unified vision for digital and the lack of skills and experience were also important barriers for many banks.

In 2017, there was a shift in many of the digital transformation priorities, with digitizing processes for products and services being ranked as 5.35 on a 7 point scale. Reflecting the current cybersecurity environment, enhancing digital security was the second highest rated digital strategy, compared to being a mid-ranked strategy in 2016.

Finally, improving the customer journey was ranked 5.24 on a 7 point scale in 2017, moving from the number one mentioned strategy in 2016.

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CHART 13: BUSINESS PRIORITIES FOR DIGITAL TRANSFORMATION

On a scale of 1-7 (where 1 is very low and 7 is very high)

Business Priorities	Average Priority
Digitizing processes for new and existing products and services	5.35
Enhancing digital security	5.27
Reimagining the customer journeys	5.24
Building a culture of innovation among employees	4.49
Ubiquitous operations/automation	4.47
Opening up to create new and join existing products ecosystems	4.45

Source: Efma-Infosys Finacle-Digital Banking Report Survey 2017

"The combination of advanced data analytics, open banking APIs and conversational AI can create a differentiated experience that can improve customer satisfaction, increase loyalty and generate revenue for the provider."

The Potential of Expanded Digital Banking Ecosystems

In a digital banking environment, there is no reason why financial services organizations should be limited to offering only traditional core banking services. In fact, the future of banking will most definitely include the integration of products and services from a variety of providers, all focused on helping the consumer simplify their daily life – without leaving a primary financial institution's portal … all on a mobile device.

The combination of advanced data analytics, open banking APIs and conversational AI can create a differentiated experience that can improve customer satisfaction, increase loyalty and generate revenue for the provider. The challenge is that the provider of this advanced banking ecosystem doesn't necessarily have to be a traditional bank or credit union.

Customers in countries like Poland, China and Sweden already receive these types of advanced ecosystem experiences. The U.S., and to a lesser degree, the U.K., lack these types of banking ecosystems because of regulatory environments that are wary of non-traditional providers of financial services.

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Non-financial examples of consumer ecosystems already exist in industries such as hospitality, healthcare, travel, etc. For instance, travel ecosystems can help a traveler secure a flight, lodging accommodations, a rental car, tour guides and even restaurant and entertainment options.

According to a McKinsey study, an ecosystem usually provides three key value components:

1. Reduction of friction between related services: "Facebook Messenger enables users to shop, check into a hotel, message a friend, read the news or chat with a doctor— all from a single interface. Users do not have to toggle between portals, manage separate logins or spend mental energy maintaining multiple services."

2. Leverage of network effects: Smart home device producer, **Nest**, provides users a comparison report to measure the energy use of the device owner against other comparable users.

3. Integration of customer data across a series of services: The system of combining consumer information with highly targeted business offers by a firm like **Cardlytics** provides value to both the retail and small business customer.

As mentioned, digital ecosystems have advanced much more quickly in other countries. **Tencent's** WeChat enables users to send messages, make payments, invest, order taxis, buy bus tickets and more, from a single integrated system. WeChat has more than 700 million users, with nearly one-third using its payments functionality. (It is important to note that Tencent has already entered Europe with WeChat Pay, targeted to Chinese tourists in the region)

Another expansive ecosystem has been built by **Alibaba**, with 500 million customers who enjoy an ecommerce platform similar to Amazon, payments services, other financial products, travel, etc. Similar to 'Amazon on steroids,' it is clear to see the power of Alibaba's integration of financial services with ecommerce.

While the progress of U.K. financial services ecosystems has been similar to that of the U.S. in the past, the emergence of ecosystems will be accelerated by the implementation of PSD2, which allows a more positive open banking environment. Many fintech firms in the U.K. have already taken advantage of regulatory trends and are building their solutions accordingly.

It is likely that the move to a broader banking ecosystem will evolve in three 'waves. Wave 1 will be the seamless integration of existing and related services into existing customer journeys. Easier to implement, this wave will have only modest revenue potential.

Wave 2 will be similar to today's private banking relationship, but available digitally to the mass market retail banking customer. "With a focus on simplifying the financial life of a retail banking or small business consumer, this wave will leverage ecosystems to integrate disparate aspects of a customer's financial life to better understand behaviors and deliver highly personalized

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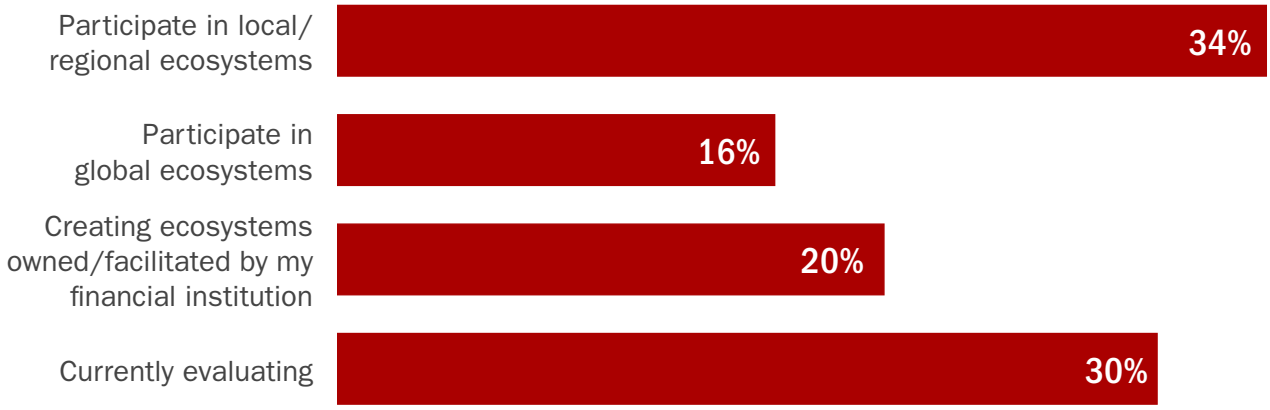
solutions," according to McKinsey. Advanced data analytics is at the core of this wave.

Finally, Wave 3 extends beyond financial services, with partnerships in areas such as travel, hospitality, ecommerce, etc. (similar to what is occurring in China). Many traditional financial organizations may decide to forgo this level of integration. Alternatively, this is where many of the large technology companies may be looking to expand.

When we asked executives of banking organizations worldwide about their aspirations regarding broader banking ecosystems, the majority of firms were either limiting their scope to local ecosystems (34%) or are still evaluating to ecosystem opportunities (30%). Interestingly, 16% of firms surveyed are considering a global ecosystem.

CHART 14:
ELEMENTS OF DIGITAL ECOSYSTEM STRATEGY

(Select all options that are relevant.)



Source: Efma-Infosys Finacle-Digital Banking Report Survey 2017

Preparing to Become the Invisible Bank of the Future

The future banking ecosystem, where banking is in the background of a consumer's daily life, is just one possible future of how banking's transformational journey will play out, with voice assisted AI being one of the many opportunities that may result. According to Brian Roemmele, founder of **Payfinders.com**, "The first transition to this world for a bank is to present uniformly the exact taxonomy of services rendered and the exact benefits available. Once established, voice-assisted AI via personal digital assistants, will cull from ontologies to find perfect recommendations and financial solutions in real time."

The technology required to build the invisible bank of the future already exists today. Components such as APIs, cloud-based services, artificial intelligence and mass personalization are already becoming the foundation for the future

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at many financial institutions. But, in most cases, these technologies are being used in the peripheral systems rather than the core.

According to Brett King, founder and CEO of Moven and author of the book *Augmented: Life in the Smart Lane*, "Banking is becoming embedded in our life through a set of distinct experiences, whether that be access to credit in a store, a voice agent that can act as a money coach and tell us if we can afford to go out for dinner and then can reserve and pay for a restaurant booking, or an algorithm that will manage our portfolio. As banking becomes a set of embedded technology-based experiences, the artifacts associated with the bank disappear."

"A real shift in banking would require building out core platforms from scratch – and few banking CEOs have the risk appetite for that," states KPMG. "The winners will be those that are able to utilize their data, drive down costs, build effective partnerships with a broad range of third parties, and of course, those with robust cyber security."

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Interview: Dominic Venturo

Chief Innovation Officer and Executive Vice President | U.S. Bank

Dominic Venturo

As the Chief Innovation Officer of U.S. Bank, Dominic Venturo leads the innovation process at one of the most progressive financial institutions in the U.S. The Innovation group at U.S. Bank started more than a decade ago as part of the Retail Payments group and is now a 30-person team.

Over time, the innovation group evolved to support the bank beyond the original payments charter. The group takes a "hands-on" partnership-based approach with internal business partners to collaborate, test and learn – similar to an applied R&D approach. This allows the group to be aligned with U.S. Bank's operating groups rather than operating a standalone support function.

In this interview, Venturo discusses the impact of innovation at U.S. Bank and the opportunities, challenges and future prospects for being a first mover with new technologies.

How does your organization support an innovation culture?

Dominic Venturo: U.S. Bank prioritizes education as a vehicle for cultural change both inside and outside the organization and creating a culture of innovation is the most important thing we do from an innovation team perspective. It involves the entire enterprise and means that every employee, be they in a branch, or call center, or wherever, has the capacity – and the authority – to be an innovator.

- Employees can present ideas in response to internal challenges we pose or as a recommendation for how we can improve in our various lines of business. This has led to the development of several products currently being offered, or in our product pipeline.
- Another is the bank's Innovator in Residence program through which small teams of employees leave their day job to work with the innovation team for six weeks to solve a problem. Once armed with new "design-thinking" practices and/or tools, they return to their lines of business to further evangelize the culture of innovation across the enterprise.
- While we believe strongly in looking inward for inspiration, we're not afraid to look outward as well and have a robust history of Fintech partnerships, including Plug and Play and INV Fintech Accelerator.
- We've sponsored, or participated in, large scale and local hackathons where we encourage teams to use our APIs to solve real problems through the development of new product ideas.
- We recognize the importance that diversity represents for the future of innovation in financial services and engaged with Technovation (MN) to teach young women how to code by challenging them to develop an app that helps young people build positive savings habits.
- We also have three innovation hubs in Minneapolis, Atlanta and San Francisco, and if you walk into any one of those locations, you'll feel like you're in an emerging Fintech company.

What role does the leadership play in support of your innovation efforts?

Dominic Venturo: The leadership at U.S. Bank – up to and including the board – is fully behind what we are doing in innovation across the enterprise. We endeavor to stay a step ahead for our customers and continually improve the services that we provide to them.

Middle managers are crucial to helping us deliver on this expectation. With leadership support and engagement across all levels of management, we find that teams are really effective at leading innovation efforts.

What are the 3 biggest challenges you face in your innovation process?

Dominic Venturo: Three that we recognize today are investment, pace of change and the balance of security and convenience.

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Investment is all about making sure that you have the proper processes in place to remain ahead of the curve for customers. We believe in an iterative approach based on testing and learning. We're not afraid to fail, but when we do, we hope it's fast and in a way that we can learn from it. At a fundamental level, we focus on what problem or need the concept is attempting to address coupled with the size and uniqueness of the opportunity. We tend to think three to five years out as we evaluate most opportunities.

Our CEO likes to say that he's seen more change in the last five years than he'd seen in the previous 30; it's likely that fintech is a big driver of that. There is so much to stay on top of these days. It's very difficult for a business to run its core business, do its annual planning and product development while also keeping an eye on three to five years into the future. By partnering with our various business units we can have some teams focused on the long term view and others delivering against current objectives.

There is no challenge financial institutions take more seriously today than ensuring the security of our customers' information and at the same time providing the ability for customers to do business with us how, when and where they want. And while we're at it, we need to make it easy and hassle free to do business with us. This balance requires a lot of careful planning, design, and engineering. The stakes are high and we take it very seriously.

How do you encourage disruptive innovation?

Dominic Venturo: Disruptive innovation is not necessarily good by definition. It is a term that can sometimes be misunderstood. It is true that many changes we see in banking are iterative. We are deliberate in our approach to innovation, but never shy from making a case for big ideas or dramatic shifts in how we need to do business. Building trust, understanding the trends on the horizon and how we can adjust to those trends while maintaining that trust is more important than being disruptive.

Our overriding preference is for solutions that improve customer experience, solve a problem, or address a new opportunity in a different way, rather than innovation for its own sake. If it doesn't do at least that much, it's likely just a shiny new thing in financial services. There doesn't need to be a bias towards disruptive, unless your mission is to disrupt a particular part of a value chain.

What is the biggest threat and opportunity banking over the next 5?

We recognize there are threats, particularly around security. But we also believe that there is a tremendous opportunity through the exploration/expansion of Fintech partnerships. The Fintech landscape has evolved from its original mindset/mantra of disrupting banks via disintermediation, to a more cooperative approach.

Over time, it became clear that Fintechs and banks have many complementary assets and reasons to work together. Banks have strong distribution, established brands, and large customer bases. Fintechs have technology platforms that can help integrate to the banks to APIs and development portals so there is a fair amount of middle ground to in which to collaborate. Put another way, many banks and Fintechs are now customers/partners of one another, rather than competitors.

Will your future innovations will be built internally, bought or be the result of partnerships?

Dominic Venturo: Put simply, we don't believe that any one of these three approaches will dominate our innovation efforts going forward. For as long as our innovation team has been in existence, we've been receptive to each approach where it makes the most sense for a given project/initiative.

Dominic Venturo

Dominic Venturo is the Chief Innovation Officer and Executive Vice President at U.S. Bank since March 23, 2015 and has led the innovation team for U.S. Bank's payments division since 2007. A veteran of financial services for close to 30 years, Mr. Venturo's experience spans product development and management, commercial risk management, commercial lending, marketing and sales management.

Mr. Venturo earned a Bachelor's Degree in finance from Oregon State University and is a Graduate of the Pacific Coast Banking School at the University of Washington Graduate School of Banking.

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Interview: Jose M. Villa

Head of Open Innovation | BBVA Spain

Jose M. Villa

Jose M. 'Seppe' Villa is the head of open innovation at BBVA in Spain. BBVA is implementing open innovation models, in order to overcome existing limitations in organizations and attract the best talent. Consequently, it is creating a knowledge network around the Innovation Centers, such as those in Madrid (Spain) and Bogota (Colombia), which are the areas where the BBVA Group's most disruptive projects are being carried out.

Innovation Centers play an essential role in the digital transformation that is underway in BBVA today. The Group is relying on ecosystems for innovation and talent worldwide, with the aim of fostering a culture of collaboration with entrepreneurs, startups and developers. A community of innovation in which new ideas are one of the mainstay of its growth.

In this interview, Villa discusses the innovation process at BBVA and the way BBVA positions innovation within the organization.

How does your organization support an innovation culture?

Jose M. Villa: Innovation and Digital Transformation is promoted from the top-most senior executives in BBVA: Francisco Gonzalez (Executive Chairman) and Carlos Torres (CEO). Thanks to that, the culture of being innovative gets way more easily adopted by the employee base.

Being a great foundation, that isn't enough. BBVA's Talent & Culture (Human Resources and staffing unit) is creating special programs to help the company transform better and faster … starting with themselves. They have just announced they will operate as a 100% agile organization.

What role does the leadership play in support of your innovation efforts?

Jose M. Villa: BBVA's CEO assumes Innovation and Digital Transformation is his 100% responsibility and plays an extremely active role in delivering the message and educating the whole staff in this vision and journey.

BBVA's Executive Chairman has been claiming banking will be profoundly transformed by technology for 10 years now. As you can imagine, having the top-most executive fully convinced there is no other way, BBVA's employee base mindset is rapidly converging to become accustomed to our fast-paced environment.

Middle managers are key in all this journey, as they are the ones with direct access to the people capable of doing the magic. Those who don't get the message and don't get aligned in whatever manner, will be left 'out of the game' soon. Like it or not, a digital revolution is happening all around us, and quoting Charles Darwin, "It is not the strongest of the species that survives, nor the most intelligent that survives. It is the one that is most adaptable to change."

What are the biggest challenges you face in your innovation process?

Jose M. Villa: The top challenges (for us and the industry) is our legacy which includes:

- **Mindset:** People looking backward as opposed to look forward
- **Processes:** Defined in the past for a different environment which are now obsolete.
- **Technology**
- **Regulation & Related Functions/Activities:** We live in a hyper-regulated industry and regulations don't move as fast as the surrounding environment.

Our response to these challenges include:

- **Mindset:** BBVA is creating the right programs for people to understand and participate in the digital transformation program starting with a multidisciplinary 500 people team in Digital Transformation Spain (Business, IT/Engineering, Product, Segment, …) back in 2014 and preparing plans for multi-disci-

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plinary teams and projects for the whole organization.

- **Processes:** Adopting agile as the way to do everything and training BBVA employee base to contribute in this new way of creating our products and services.
- **Technology:** BBVA is introducing, for long now, state of the art technologies in their software creation process and have ambitious plans for migrating existing and ancient technologies to the ones in this new era.
- **Regulation & Related Functions/Activities:** Colleagues get onboard as soon as any new creation process begins so they can raise their voice very early in the process and avoid any wasting of time later on. They also contribute with alternate approaches for being able to keep the innovation pace in our products and services proposition while keeping everything under the umbrella of regulation, risk control, security, etc. BBVA is also playing an active role with different regulators to share with them our long-term strategy and let them know the implications around the usage of new technologies in banking.

What is the biggest threat and opportunity you see in the next 5 years?

Jose M. Villa: I would say the biggest threat and biggest opportunity are the two sides of the same coin, with the biggest threat being getting disintermediated and becoming 'the pipe' in another organization's ecosystem.

I would see the biggest opportunity as being the one keeping the most intimate and close relationship with our customer based on reciprocal trust.

How do you encourage disruptive innovation?

Jose M. Villa: I would describe this as normal as, like it or not, that the banking value proposition has not evolved as fast as the world has moved around mobile & cloud.

Having said that, beyond the Digital Transformation journey, BBVA is also keeping an eye into the long term. Because of that, BBVA created some years ago the New Digital Business unit with the mandate of scouting, discovering and/or creating the new banking products and services that will be there in the future.

Will your future innovations will be built internally, bought or be the result of partnerships?

Jose M. Villa: To me the virtue would be right in the middle, with 50% being internal innovations and 50% being external innovations through partnerships, collaborations and/or acquisitions.

Internal innovations are centered around 'based-on-trust relationships' I mentioned above. Our customer contact teams will know what the customer needs/wants, and, in my humble opinion, this close relationship and trustful conversation will provide a huge number of clues on how to better serve our customer.

For external innovations based on buying or partnering, technology and knowledge is available to everyone, everywhere at any time so you just can't pretend to have all the talent within the boundaries of your organization. Creating a model/platform where a traditional and well-renowned financial institution can smoothly work and collaborate with other brilliant people/companies is key to get connected to what's happening out there (your well-known world) and will be most helpful to devise your future roadmap.

Jose M. Villa

José Manuel Villa is director and head of Open Innovation at BBVA Spain. His responsibility is to identify partners within the startup and fintech ecosystem which will help BBVA Spain to expedite its digital transformation journey. Before that, José led BBVA's mobile journey, attracting more than 2.5 million customers in less than two years.

José earnt a degree in Computer Science from Universidad Autónoma de Madrid.

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Case Study: Bradesco

Bradesco out of Brazil is developing a solution (Nuveo) that offers automatic analysis of legal contracts and documents through cognitive artificial intelligence, interpreting through a set of words defined by the legal business area, resulting in a legal dossier to meet legal requirements. The mission is to automate the legal analyzing process, categorizing and prioritizing legal documents to improve operational efficiency.

Using incremental innovation, Bradesco created a method of virtual receipt of documents and immediate analysis, automatic point of divergences and automatic dossier. The main challenge was analyzing several documents at the same time to extract the information with the high assertiveness index of the solution.

At the end of the experimentation phase, the metrics which will be impacted include:

- Reduction of the time to analyze legal documents
- Reduction of operational costs, increasing the operational efficiency
- Accuracy of information analyzed by 85%.

Case Study: Bank of Ireland

Bank of Ireland wants to be positioned at the heart of Irelands startup ecosystem, having early access to key fintech solutions. As a result, the bank built a national and international pipeline that supports business growth, research and development and innovation initiatives.

Bank of Ireland created an R+D function, with fintech and startup organizations at the core and an Open Innovation ecosystem. The bank would learn, partner and invest in these teams, and in return, the bank would provide a whole new way of working for the Irish startup and fintech ecosystem.

The bank built 6 co-working spaces, 3 incubation labs in Galway, Dublin and New York and introduced the role of startup community manager to the organization. They also created new partnerships with third parties such as Waterford, Cork and Sligo, where there was not a suitable incubation space.

The bank conducted over 1,000 events in the community spaces with over 20,000 attendees. Over 600 startups were supported, with partnerships with 4 startups for BOI integration and investment in 2 startups. This includes Plynk – a fintech who built from the BOI workbench and received seed capital from BOI to become the largest in Irish tech.

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Case Study: Rabobank

Rabobank and Signicat are entering the Dutch identity market together by providing digital services to businesses, supporting them in finding prospects, onboarding new clients and services existing customers. This joint Digital Identity Service Provider (DISP) offers a range of online login, identity, signature and archiving solutions under the banner of Rabo eBusiness. The solution is targeted to businesses, including insurance, energy and leasing companies as well as other financial services providers.

The identity world is an opportunity to banks in general because of their experience with security, client data and handling large number of transactions and the growing need to know your customer in the online world. Rabobank eBusiness combines the fintech skills and identity platform of Signicat with the large client base of Rabobank in the Dutch market.

With Rabo eBusiness, consumers can log onto the merchant's website using one of the identity services provided by Rabo eBusiness (e.g. iDIN) and can then, for example, sign a contract online. The platform is easy to integrate into the existing business processes using API technology. In the future, the platform will integrate more data and payment oriented services to serve the total customer journey of the merchant websites and apps.

Rabo eBusiness services will make it easy for businesses to enable functions such as onboarding new customers, signing contracts digitally and offering a dashboard for invoices or expense claims. The solution will also offer integration with several payment solutions and other smart data services such as chamber of commerce information and financial validation services.

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Deployment of Advanced Technologies

New technologies like artificial intelligence, blockchain, the Internet of Things, open banking APIs and robotic process automation will rock the banking ecosystem down to its very core, disrupting the way people bank and the manner in which institutions deliver financial services.

Over the past several years, digital technologies have changed the once staid banking industry. The collection and advanced analysis of data has changed the way customers are viewed, and the introduction of mobile devices has altered the way consumers access their bank. In short, digital transformation is on the front burner of all banks and credit unions.

At a time when most organizations are still playing catch-up, a new wave of digital technology has the potential to change the way organizations deliver banking services even further. These new technologies include artificial intelligence (AI), the Internet of things (IoT), blockchain, open banking platforms with application program interfaces (APIs) and robotic process automation (RPA).

With the potential to increase efficiency, decrease costs and enhance the customer experience, these digital-enabled technologies will result in disruption of the way people do their banking and potentially what organizations deliver these services. We are already seeing organizations testing many of these digital technologies, hoping to win the battle to become the 'bank of the future.'

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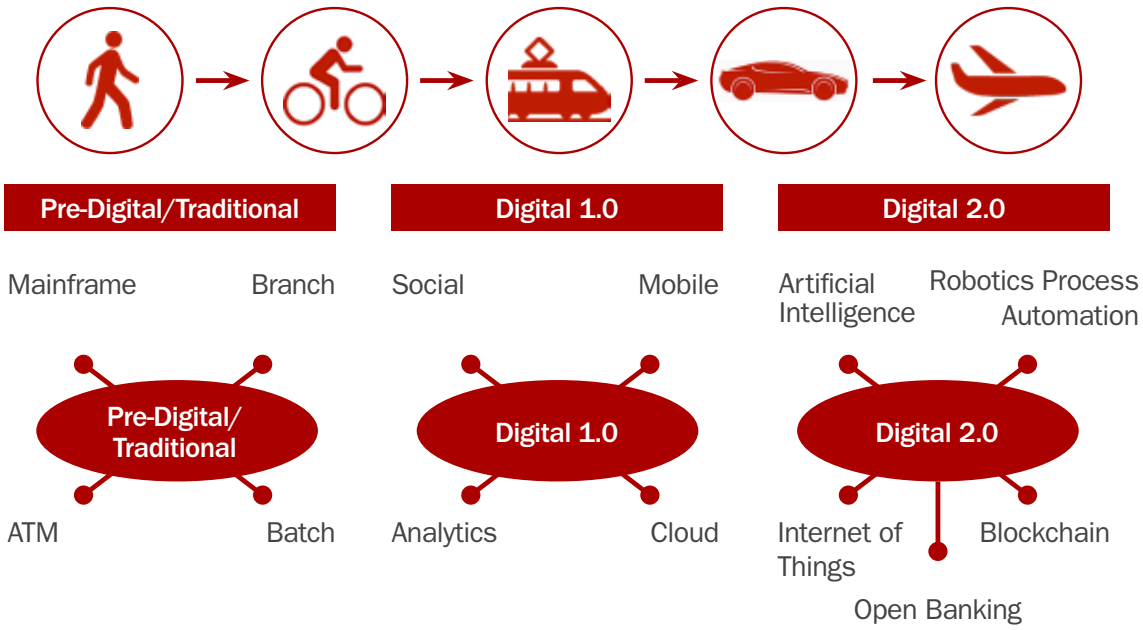
The Evolution of Banking

For decades, the banking industry was based on branch-based and mainframe-supported operations that focused on the efficiency of processing transactions in person, at ATMs, on the phone and with plastic cards. Relatively recently, the impact of digital technology has moved banking transactions out of the branch and on to mobile devices, with advanced data analytics allowing for personalized delivery of services.

The pace of digital change is about to accelerate exponentially, however, with the integration of AI, robotics, blockchain, open banking APIs and the Internet of things. The smarter use of data, combination of non-financial and financial solutions, and new, real-time delivery alternatives could significantly change the entire structure of banking, according to a white paper from **Cognizant**.

CHART 15:
THE EVOLUTION OF BANKING

The pace of financial services innovation has accelerated from leisurely to turbo-charged.



Source: Cognizan

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We are already seeing multiple tests of all of these technologies to different degrees across the industry. While just scratching the surface of potential, these tests are important to keep pace with consumer expectations.

"While the cost structure of delivery will need to be minimized, winners will be those firms that can bring together the new digital technologies in a way similar to what consumers experience from non-financial firms.."

- AI and Machine Learning: Organizations are testing the use of chatbots to improve customer service, while machine learning is being used to decrease fraud and improve personalization.
- Robotic Process Automation (RPA): Alerts and notifications are being automated with RPA.
- Internet of Things (IoT): Mobile device geolocation is increasingly being used for enhanced credit/debit card security, with firms also testing the use of voice-first digital assistants to conduct transactions.
- Blockchain: Blockchain technology is being used by many firms for secure document transfer and to reduce settlement costs.
- Open Banking APIs: Several traditional banking organizations are partnering with non-traditional providers to offer expanded banking services.

Building the 'Bank of the Future'

The impact of new digital technologies will be felt across the entire banking value chain, impacting the competitive structure and the ways people bank. More than ever, the transaction-based component of banking will be commoditized, with differentiation achieved through the personalized experiences provided to the consumer.

While the cost structure of delivery will need to be minimized, winners will be those firms that can bring together the new digital technologies in a way similar to what consumers experience from non-financial firms. This will become increasingly important as the financial needs of digital generation expand with age.

According to Cognizant, the winners in this battle will be characterized by the following:

- Orchestrator of Personalized Customer Journeys: Using expanded data and traditional and non-traditional solution sets to manage experiences contextually and across channel touchpoints.
- Aggregator of Capabilities across Banking Ecosystem: Delivering highly custom solutions from across banking ecosystem including fintech firms, tech organizations, and other banks and non-banking institutions through open APIs.
- Provider of Platform-Based Offerings: The bank of the future will be platform-based, with high levels of front and back-office digitalization to allow for agility, rapid innovation and real-time insight.

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- Intelligent Processor of Expansive Data: Using AI and machine learning from transactions, behavioral data, etc. to ascertain future customer needs and intent and deliver customized solutions.

- Provider of On-Demand Offerings: Eliminating on-premise systems dependency, using the cloud to improve agility, flexibility, etc.

One of the keys to delivering in the new digital banking ecosystem will be the elimination of internal silos. Not only is this required for improved data analytics, but it is important when trying to deliver customer- as opposed to product-centric solutions. It is important to combine the best of internal capabilities with the best of what is offered outside the bank or credit union – which is only possible with an integrated perspective.

Importance of the Human Touch

Despite the shift to digital technologies, a human touch will still be highly desirable for consumers. According to Cognizant, "A well-thought-out framework will be necessary to determine the right balance between human and machine intelligence."

As opposed to an overnight change in the way people do their banking, the channels they use, and the organizations that serve them, change will be incremental. A focus on the customer experience and corporate support of an innovation culture will determine the leaders. In the end, the consumer will be the ultimate winner.

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In the end, the banking ecosystem will most likely expand significantly to include both traditional and non-traditional financial services. This expansion will lead to greater competition (and cooperation) between existing and new players.

Investment in Advanced Technology

As quickly as past technologies have become the norm, a new wave of emerging technologies will combine digital technologies and the power of data to set new standards. The prioritization and investment in each of these technologies will vary based on the business model and strategic goals of each organization. For instance, while larger organizations foresee investing in blockchain technology, smaller organizations do not see this as a major priority, impacting the overall industry numbers.

Most of the investment in advanced technology is dedicated to security (importance of 5.51 on a 7 point scale), data analytics (5.19) and open banking APIs (4.78), according to our research. These could be considered 'iterative' technologies compared to the more 'disruptive' technologies of augmented and virtual reality, robotics, the Internet of Things (IoT) and conversational interfaces.

In our research, cloud technologies and wearables scored rather well from an importance perspective. In related research done by the Digital Banking Report, we have found that organizations are beginning to reduce their focus on specific devices (smartphone, wearables), instead taking a device agnostic perspective on digital development.

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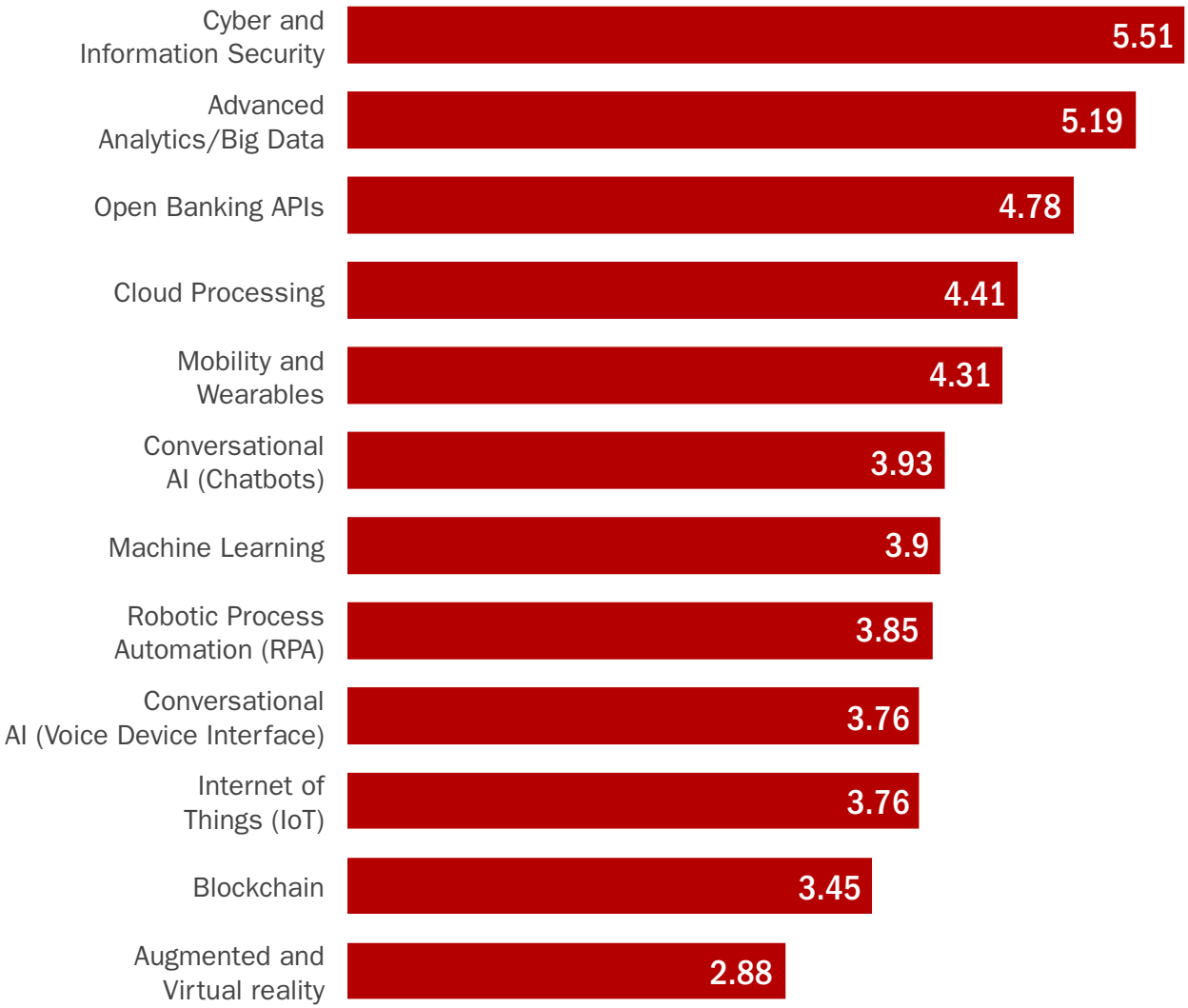
CHART 16:

IMPORTANCE OF ADVANCED TECHNOLOGY BASED ON INVESTMENT LEVEL

On a scale of 1-7 (where 1 is very low and 7 is very high)
Value at the end of bar is Average Score.



Source: Efma-Infosys Finacle-Digital Banking Report Survey 2017

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Impact of Disruptive Technologies

When financial services executives were asked about the timing of impact of various technologies, it was not surprising that the time correlated with the prioritization of investment. The technologies that are currently having an impact were related to cybersecurity (61% believed the impact was immediate), cloud processing (34%), advanced analytics (33%) and mobility/wearables (29%).

Interestingly, each of these scores was lower than the comparable scores in 2016, which is attributed to the inclusion of more institutions in lower asset categories in 2017. We have seen that the urgency and investment around advanced technologies (and innovation) is significantly lower with smaller organizations.

CHART 17: TIME PERIOD TECHNOLOGIES WILL HAVE THE MOST POTENTIAL TO CHANGE THE ORGANIZATION

Technology	Currently	1-2 years	3-4 years	5+ years	Never
Advance Analytics/Big Data	33%	46%	18%	2%	1%
Open Banking APIs	25%	44%	23%	8%	1%
Robotic Process Automation (RPA)	14%	26%	38%	21%	1%
Conversational AI (Chatbots)	11%	42%	35%	11%	1%
Conversational AI (Voice Device Interface)	12%	30%	44%	14%	1%
Machine Learning	15%	25%	33%	25%	1%
Mobility & Wearables	29%	31%	24%	12%	4%
Cloud Processing	34%	35%	23%	7%	2%
Internet of Things (IoT)	16%	32%	31%	19%	2%
Blockchain	9%	23%	39%	25%	5%
Augmented and Virtual Reality	5%	17%	29%	39%	10%
Cyber & Information Security	61%	26%	8%	4%	1%

Source: Efma-Infosys Finacle-Digital Banking Report Survey 2017

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Maturity of Advanced Analytics

As the volume of data has increased exponentially, the consequences of not leveraging insight has never been more pronounced. Ineffective marketing, dissatisfied customers, missed opportunities and reduced wallet share and loyalty are the costs of not communicating to each customer in a personalized manner. While traditional analytics provide a great "rear-view mirror" perspective of what has happened, advanced analytics provides a "GPS" perspective of opportunities ahead.

The benefits of advanced analytics include:

- Targeting customers with highly relevant offers across online and offline channels
- Understanding customers in the context of their relationship with your brand
- Engaging/using the right channel, at the right time with the right message
- Predicting which customers may be at risk as well as the best way to retain them
- Gaining a better awareness of customer needs, intentions and behaviors through social media
- Maximizing customer lifetime value through personalized offers

The potential of advanced analytics grows exponentially over time. Each iteration, additional data source and performance measurement results in learning that enhances the accuracy of the predictive models. It also allows organizations to refine data sources as opposed to simply adding more and more data.

Finally, with each iteration, predictability goes up while costs can go down, improving marketing efficiency. From the customer's perspective, the messaging is more "on target," improving the customer experience, satisfaction and lifetime value.

The use of new technologies such as the Internet of Things (IoT) and mobile beacons is attractive but they are not currently used in high volumes because companies recognize that they need to perfect the (data) basics first. There is too little integration between systems and data sets to begin introducing even more touchpoints and variables into the mix. There is still a great deal of scope to find growth in existing resources, if only companies are able to focus on improving their integration.

Financial institutions that effectively leverage data and advanced analytics will be in a position to capitalize on newer technologies such as machine learning and automation. Those firms who fall behind will need to quickly overcome barriers that are preventing them from enjoying the benefits of advanced analytics or they will find themselves too far behind to catch up.

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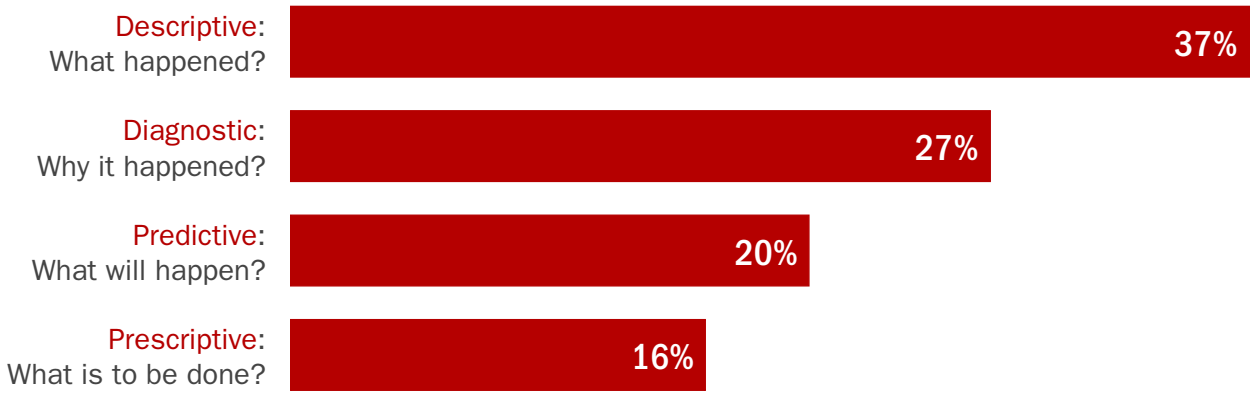
When we asked financial organizations about how advanced they were in applying data towards an improved customer journey and experience, there was a vast distribution of analytic maturity. Not surprisingly, the largest percentage of organizations (37%) believed they were only able to tell customers what had already happened.

More advanced organizations (usually larger firms) could help consumers understand why something happened (27%), with one in five being able to assist customers in understanding what will happen in the future. Finally, 16% of financial institutions who responded were able to provide advisory capabilities around what the customer could do given the insight known.

CHART 18:

LEVEL OF MATURITY WITHIN ORGANIZATION FOR USING DATA-DRIVEN INSIGHTS

(Select all options that are relevant.)



Source: Efma-Infosys Finacle-Digital Banking Report Survey 2017

One of the added benefits of advanced analytics is the ability to embed the results of the analysis within both physical and digital delivery channels, as part of business processes and within operational systems. This enables a bank or credit union to deliver a consistent and optimized experience to each individual customer across an entire organization.

Customer-facing representatives can be equipped to provide the best response to a customer's inquiry from both the organization's and customer's perspective. Analytics can also deliver messages using the channel most preferred by the customer as opposed to the channel most preferred by the financial institution.

Finally, detailed insights into individual and organizational behavior can enable an organization to proactively resolve issues that may impact a specific segment of the customer base. From interest rate changes to ATM outages, personalized communications can be delivered to micro-segments of customers to improve the overall customer experience.

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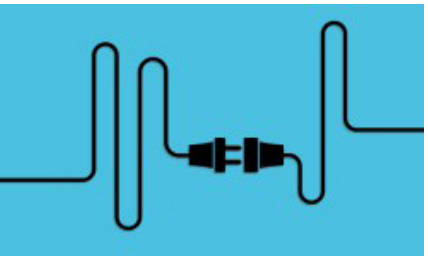
Importance of Open Banking APIs

Organizations in all industries are battling for customers based on providing a superior customer experience. The banking industry is no exception. In fact, as digital banking applications have grabbed a greater share of customer transactions, the need to provide an easy-to-use, frictionless experience, with new digital services offered across a greater number of touch-points has never been greater.

To satisfy these increased expectations, fintech firms have entered the financial services marketplace. While most of this competition has not achieved significant scale, that shouldn't signal that these solutions are not important to the industry. In fact, nearly one-third of banking customers have a relationship with at least one non-traditional firm.



According to the *World Retail Banking Report 2017*, published by **Capgemini** in conjunction with Efma, fintech firms are more likely than traditional banks to provide consumers with positive banking experiences. That said, more collaboration than ever is taking place between banks and fintech firms, leveraging the benefits that each can bring to the table to create customer-centric solutions. This collaboration has led to the emergence of Open Banking and APIs, using customer data and innovations to create new revenue streams and more contextual services.

While APIs are not new to banking and are nothing more than a structure for how software applications should interact, they provide the gateway for innovative, contextual solutions that would be difficult to offer without Open Banking. As outlined by the WRBR, there are three types of APIs:

- Private APIs: These are APIs that are used within the traditional banking organization, reducing friction and enhancing operational efficiency. A vast majority (88%) of banks view private APIs as essential.
- Partner APIs: These are usually between a bank and specific third-party partners, enabling the expansion of product lines, channels, etc.
- Open APIs: In this scenario, business data is made available to third parties that may not have a formal relationship with the bank. Because of the structure of open APIs, many banks have a greater concern around security.

Most banks ease into the use of APIs, moving from private, to partner … and sometimes to open APIs. It is believed that, over time, APIs will evolve to the more extensive options in response to the consumer desire for greater digital solutions not currently provided by legacy organizations. This will also occur as both fintech firms and traditional banking organizations understand that they need each others strengths. This collaboration will enable both banking organizations and fintech firms to offer more to customers than previously possible.

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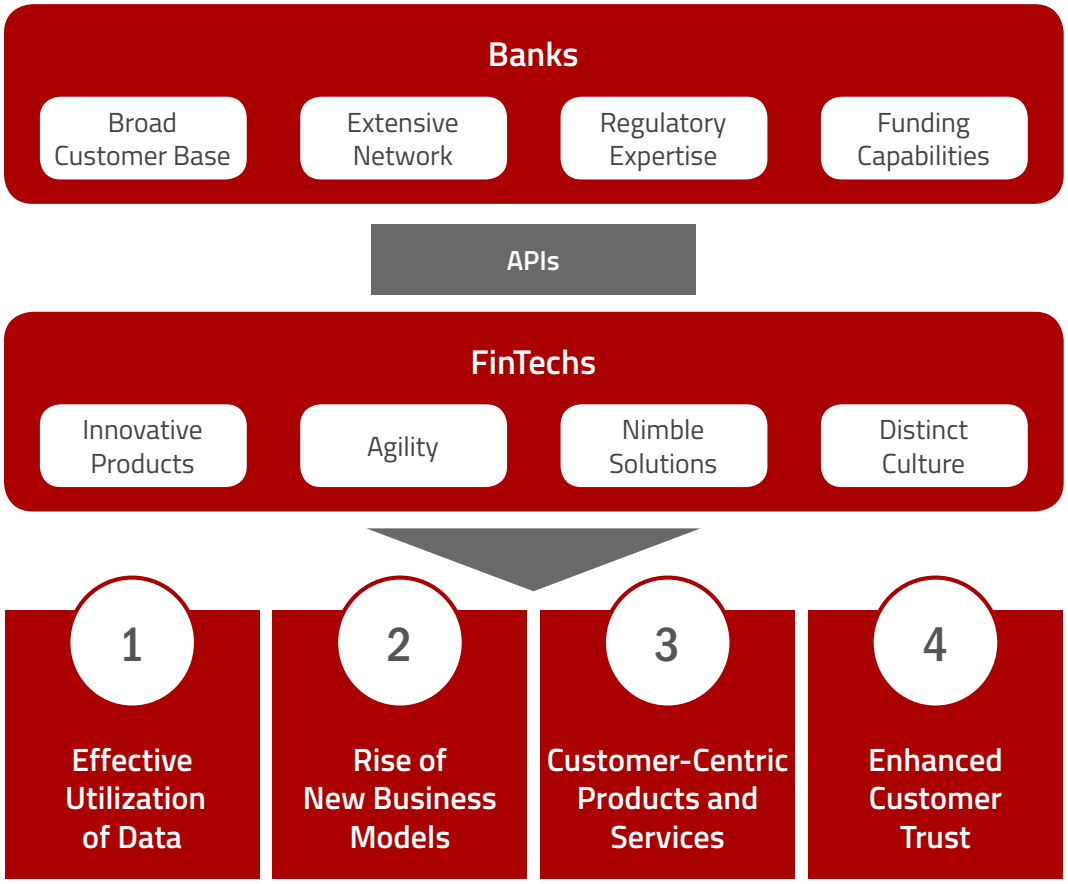
CHART: 19

BENEFITS OF BANK AND FINTECH API COLLABORATION



Source: Efma-Infosys Finacle-Digital Banking Report Survey 2017

APIs can help banks pursue new distribution channels, while also finding new ways to improve the customer digital banking experience. In addition, the product development process can occur more quickly, responding to rapid changes in digital technology and capabilities (voice banking, P2P, loan processing, risk management, etc.). According to the WRBR, 78.3% of banks are counting on APIs to help them improve the customer experience, with fintech firms agreeing. They also agree that new revenue streams are possible.

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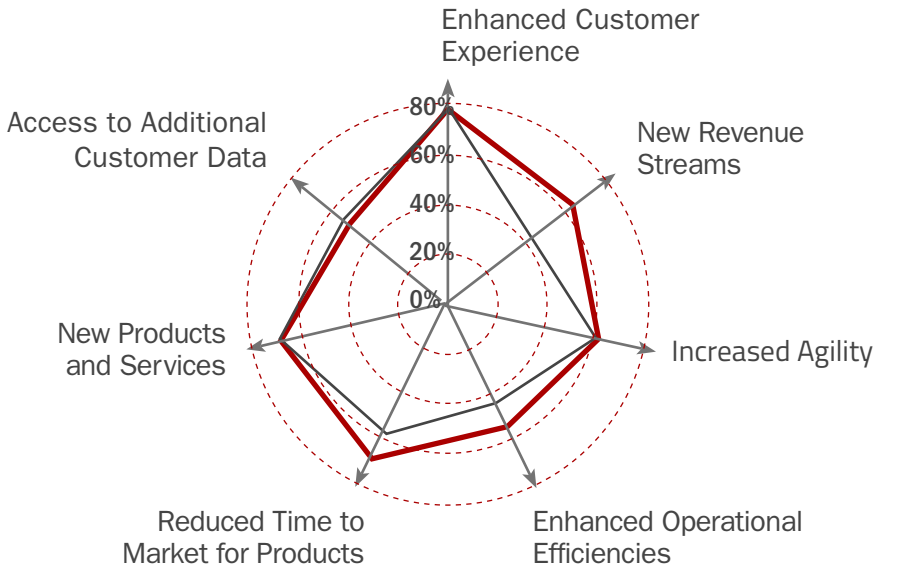
CHART: 20
BENEFITS OF IMPLEMENTING BANK APIs



Note: The percentage represents the fintech and banking executives who have given a rating of 6 or 7 on a scale of 1-7 for each of the benefits.

Source: Efma-Infosys Finacle-Digital Banking Report Survey 2017

Alternative API strategies could include:

- Create new businesses: Increase the reach and depth of product lines or segments.
- Encourage innovation: Facilitate innovation not possible with internal resources.
- Increase speed of change: By breaking down silos, APIs can improve speed to market.
- Decoupling platforms: Rejoining platforms through APIs reduces cost of development.
- Embrace IoT future: APIs can allow for a future where the consumer is identified by their device.

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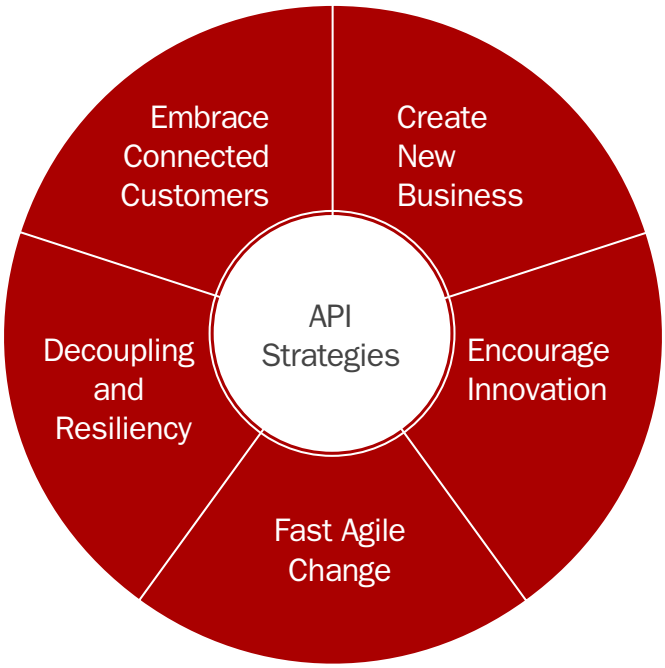
CHART: 21
STRATEGIES FOR BANK API IMPLEMENTATION



Source: Efma-Infosys Finacle-Digital Banking Report Survey 2017

"The most successful banks will use open APIs to generate new customer insights and revenue streams, while also improving customer experience," said Vincent Bastid, CEO, Efma. "Many banks currently use APIs internally to improve information flow between legacy systems. In fact, we are already seeing early adopter banks asserting their role in Open Banking by proactively making their systems and data available to third parties and creating new revenue streams."

The future of open banking and APIs does not need to be limited to simply a vertical enhancement of what already exists. In fact, the potential of open banking APIs extends far beyond traditional banking, to include all of the services a consumer may want in a digital world. As mentioned in the WRBR, "Banks that open up their APIs to a global community of web developers can tap into a stunning amount of innovation."

Open banking presents opportunities for creating and distributing a wide variety of both financial and non-financial products and services – with the banking retaining the customer relationship – but greatly expanding the number and variety of services to improve the customer's quality of life. In an open banking model, an unlimited number of partners could insert themselves into the relationship development process.

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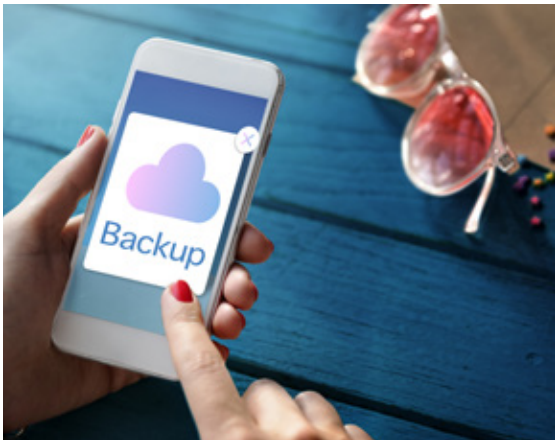
Advanced Data Analytics Requires Cloud Technology

The largest and most basic need in the data science hierarchy is the need for data collection. While every bank and credit union collects data daily on transactions, product use, customer demographics, and even external insights from social media and other sources, an organization needs to determine what specific insight may be needed to get a complete picture.

Is an organization collecting insight on channel use, geolocational data and consumer beliefs and behaviors? While a financial institution can build a plan for future collection, the success of any machine learning or AI initiative hinges on the scope and quality of data collected.



Collection of the right data is important. It is equally important to have an ongoing flow of real-time data that is easy to access, store and analyze. This can be a major challenge for financial services organizations that are notorious for having data silos. Beyond internal data flows, it is important that any external or unstructured data can also be collected, stored and analyzed. While once a major problem, cloud technology has simplified some of the storage challenges.

Transforming data into insights is the highest stage that many financial services organizations ever reach in the data pyramid. Data is collected from many sources, cleansed, and turned into valuable reports that are used internally to measure performance.

Unfortunately, these insights are never used to create valuable customer experiences. Why go through all of the effort to collect and analyze customer insights and not use this insight for segmentation, product development, offer selection, etc.?

For those organizations that want to proceed to the level of AI and machine learning, the stage of aggregation and labeling is simply a 'rest stop' in the journey. This is the stage where you determine what you ultimately want to predict or learn and what components of the insight will help you reach your goal.

There is no guarantee that machine learning and AI will improve a firm's final results. Similar to a turbocharged car with bad wheel alignment or bad brakes, the most advanced data analytics tools may simply get you to the wrong outcome faster. But if a firm is collecting the needed real-time data, that is organized, clean, tested and optimized, it is time to test machine learning and artificial intelligence solutions using the vast potential (and capacity) of cloud technology.

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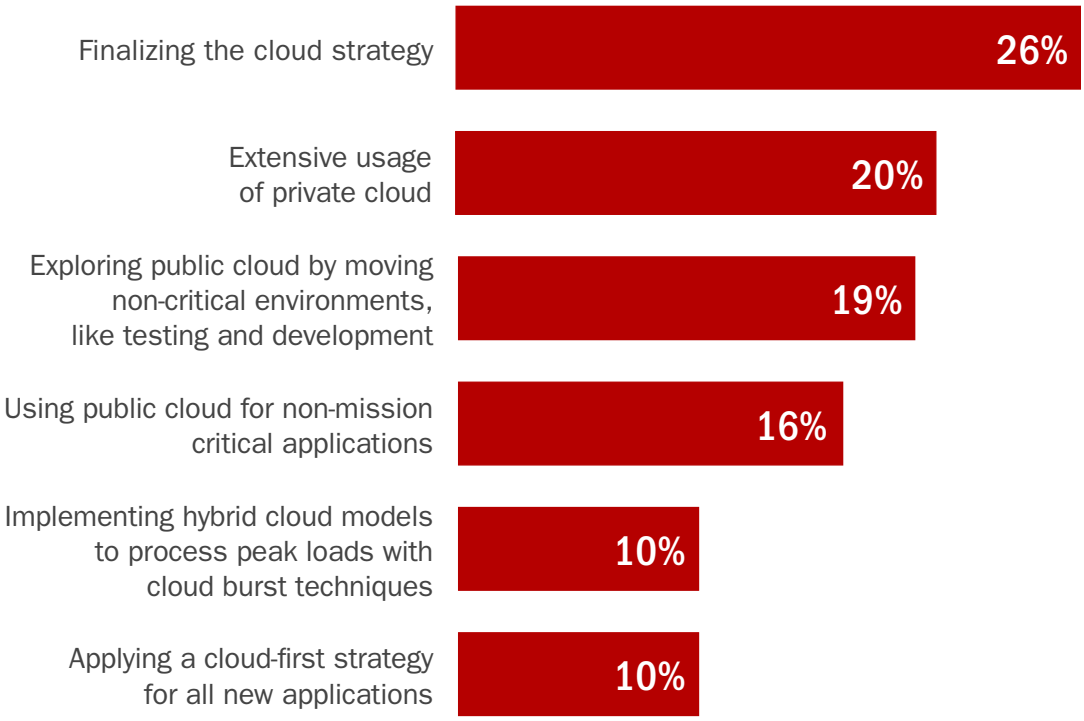
Our research found that the application of cloud technology, while deemed important by many of the organizations surveyed, is still in the embryonic stages of development. Just slightly over a quarter of the organizations surveyed (26%) are finalizing a cloud technology strategy, with 20% of the firms using the cloud extensively. The rest of the organizations surveyed were in different stages of early cloud utilization.

CHART: 22

MATURITY OF MIGRATING APPLICATIONS ONTO CLOUD



Source: Efma-Infosys Finacle-Digital Banking Report Survey 2017

Maturity of Blockchain

In 2016, venture capital funding in blockchain rose to $450 million. In 2017, the technology is progressing from hype to reality with additional business use cases becoming more and more common.

While blockchain was initially explored by the financial services industry, the realized potential of this emerging technology has expanded to include energy, telecoms, healthcare, automotive, and even voting systems. Moreover, these simplified transactions facilitated by blockchain will become the basis for smart contracts, with the promise to automate complex processes while making them legally binding and self-enforcing at the same time.

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By the mid-2020s, it is expected that blockchain-based systems will be leveraged by leading enterprises with the aim of reducing or eliminating categories of validations and verification friction to streamline all kinds of transactions.

In the 2017 PwC Fintech survey, more financial institution respondents become familiar with the technology – with 24% very or extremely familiar versus only 17% the year prior. North American participants were the most familiar with the technology, and globally 55% are planning to adopt it as part of a production system or process by 2018. That number increases to 77% by 2020.

Some organizations are already making use of the technology. One example was a large European bank that completed instantaneous payments between two of its clients on a cross-border basis using blockchain technology. This highlighted the benefits of using the technology that can eliminate unforeseen charges, delays, and processing mistakes.

Blockchain technology is poised to improve customer experience, streamline product features, and enable our global economic system to reshape market structures that will impact us from Wall Street to Main Street.

According to Mike Quindazzi, Managing Director at **PwC**, "Financial services marketers, retail bankers, product managers and customer service executives will all be impacted by the progress of blockchain technology. One of the first overarching impacts could be in the development of a system of universal identity verification that will impact everything from new account opening to cybersecurity."

In our survey of financial institution executives, the highest priority for the use of the blockchain is for digital identity management (23%), with smart contracts and international remittances each being mentioned by 15% of the organizations surveyed.

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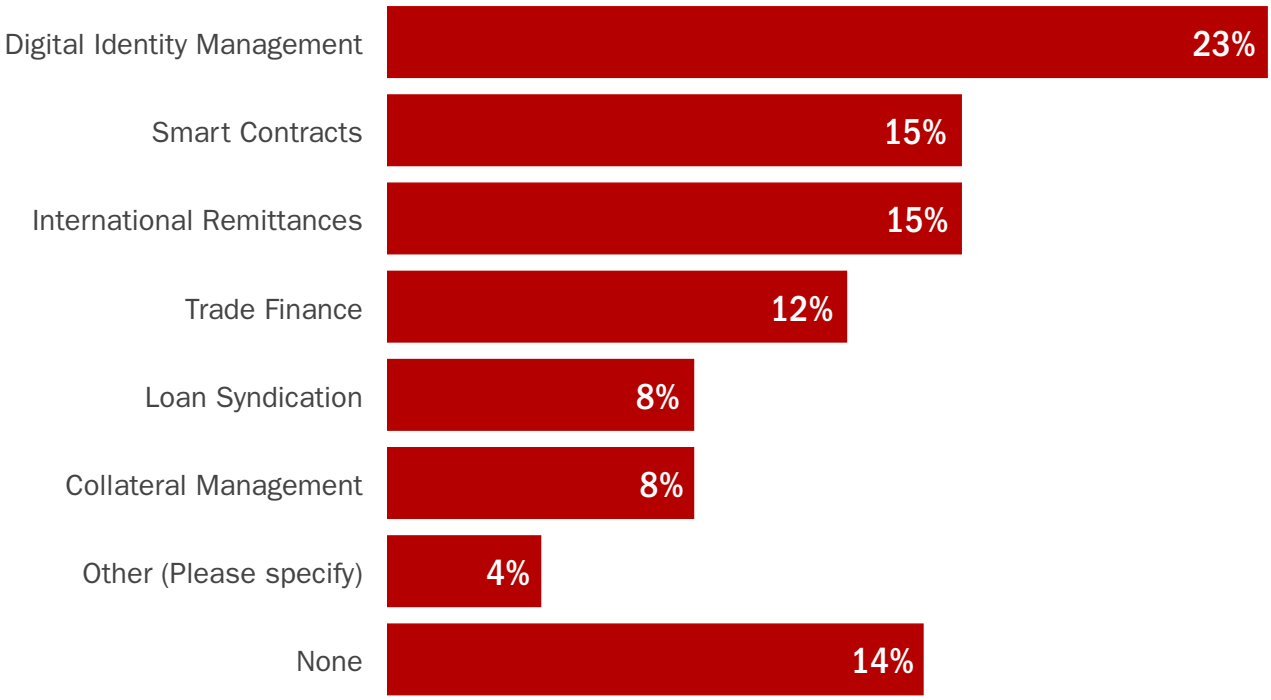
Similar to many of the advanced technologies available to financial organizations, the blockchain is still in a formative stage of development. Despite this, leaders must be prudent and act now in evaluating blockchain as the types of deployments evolve. At the same time, regulators need to re-evaluate policies and processes given the enhanced transparency the technology promises.

CHART: 23
PRIORITIES FOR PRODUCTION ON BLOCKCHAIN

(Select all options that are relevant.)



Source: Efma-Infosys Finacle-Digital Banking Report Survey 2017

The Vast Potential of 'Voice Banking'

It is becoming clear that the next battle in the tech world will be around voice-driven digital assistants, such as the Apple Siri, Amazon Alexa, Microsoft Cortana, Google Assistant/Now and Samsung Bixby/Viv. While the attention has moved from smartphone assistants to home hubs, the real excitement will begin as the underlying AI (artificial intelligence) and machine learning begins to deliver detailed, contextual, and highly personalized responses that will make a consumer's life easier.

Digital assistants will be at the heart of a user's daily activities, whether in an increasingly smart home (using home hub devices like the Amazon Echo and Amazon Dot, Google Home, Apple HomePod), a connected car, at work or walking down the street. Advancements will increase consumer usage, improving the accuracy of responses and increasing revenue opportunities for businesses. Eventually, digital assistants will process enough insights to transform from be-

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ing a reactive listening tool to being a 'digital concierge', providing proactive recommendations for all parts of a consumer's life.

While today's digital assistants are far from being able to provide proactive recommendations or integrate all of the elements of a consumer's day (news, calendar, financial relationships, personal preferences, groceries, e-commerce, etc.) there are many firms that are working to provide this 'digital concierge' experience, either as part of a home hub device or as part of individual devices. As a result, brands need to take a proactive approach and create voice-first skills in order to connect with customers at home.

There are plenty of reasons consumers are using voice more, with saving time and the simplicity of the process being mentioned most. Not surprisingly, as with most digital technologies, security of data and personal information is a primary concern holding people back from voice-first commerce. In addition, there is a need to get the best hardware and software in the hands of users.

There will definitely be a first-mover advantage for both voice-initiated payments and voice banking, with many organizations playing catch-up in voice, AI and Internet of Things (IoT) innovations. In the battle for the voice banking and voice payments customer, AI companies **Nuance** and **Personetics** are the leaders for banks looking to launch voice assistants.

Nuance powers voice-first assistants that reside in the mobile banking apps at **USAA**, **Santander Bank**, and others, while Personetics powers the virtual assistant, Ally Assist, in **Ally**'s mobile banking app. Because digital assistants are contained within organization's mobile banking apps (as opposed to being separate apps), they alleviate many of the trust issues with external providers.

Early entrants into Siri P2P payments include **PayPal**, **Venmo**, and **Square Cash**. Some banks are beginning to follow the lead of these firms, including UK challenger bank Monzo, German direct bank **N26**, and the **Royal Bank of Canada** (RBC) all offer P2P payments with Siri.

For banks and financial institutions looking for new business from Millennials and Gen Z, leveraging chatbots will be a necessity. This technology is set to sky-rocket in the next 12-24 months. AI is getting smarter, it's evolving quickly, and going mainstream — not just in banking, but also in our day-to-day lives.

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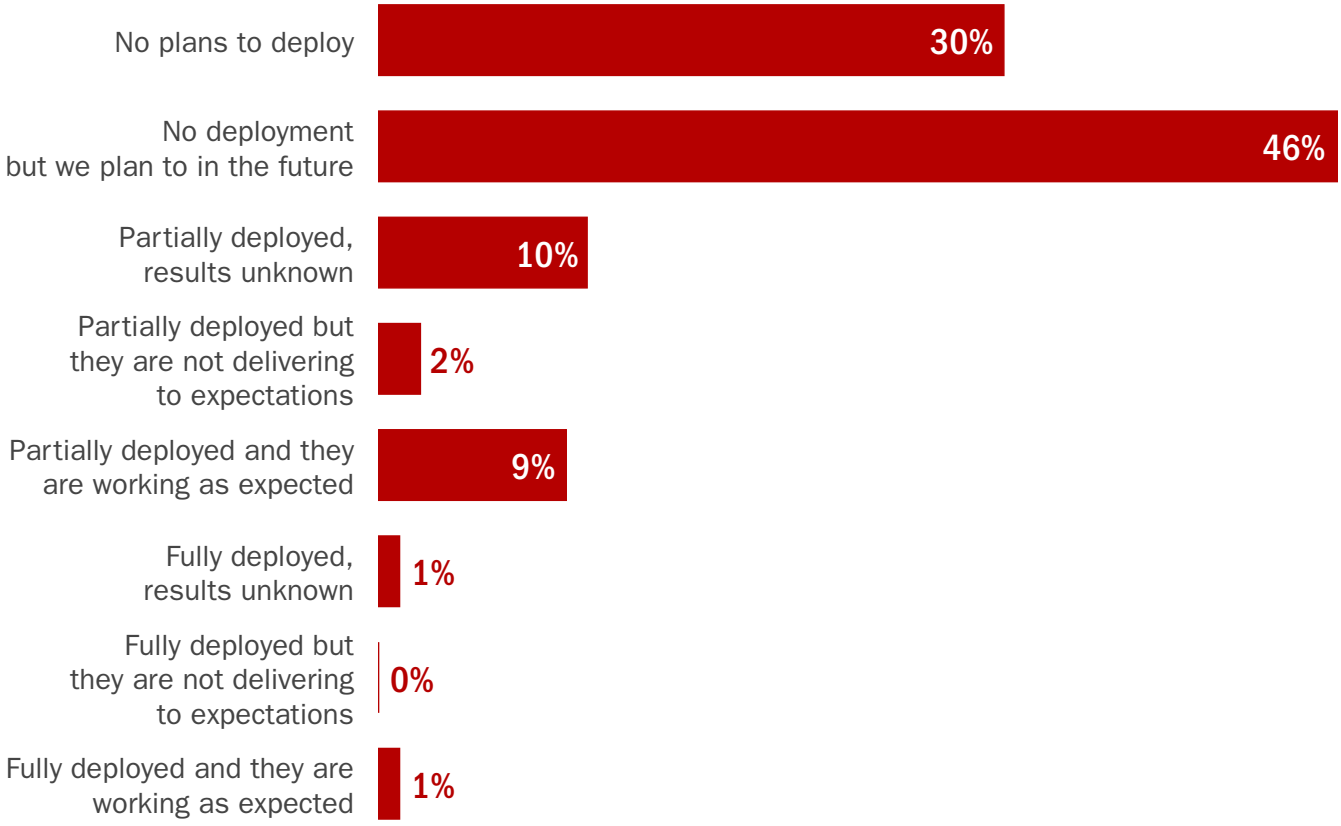
Our research found that advancements in AI technology for the deployment of chatbots and voice banking solutions to be at one of the lowest stages of development. That said, there are many that believe that conversational banking may be one of the most transformational and disruptive innovations in the near future. This belief is based on the increasing consumer acceptance of voice devices and the improved application of voice recognition and solution analytics.

CHART: 24

CURRENT STATUS OF CONVERSATIONAL AI DEPLOYMENT (CHATBOTS/VOICE BASED INTERFACE)



Source: Efma-Infosys Finacle-Digital Banking Report Survey 2017

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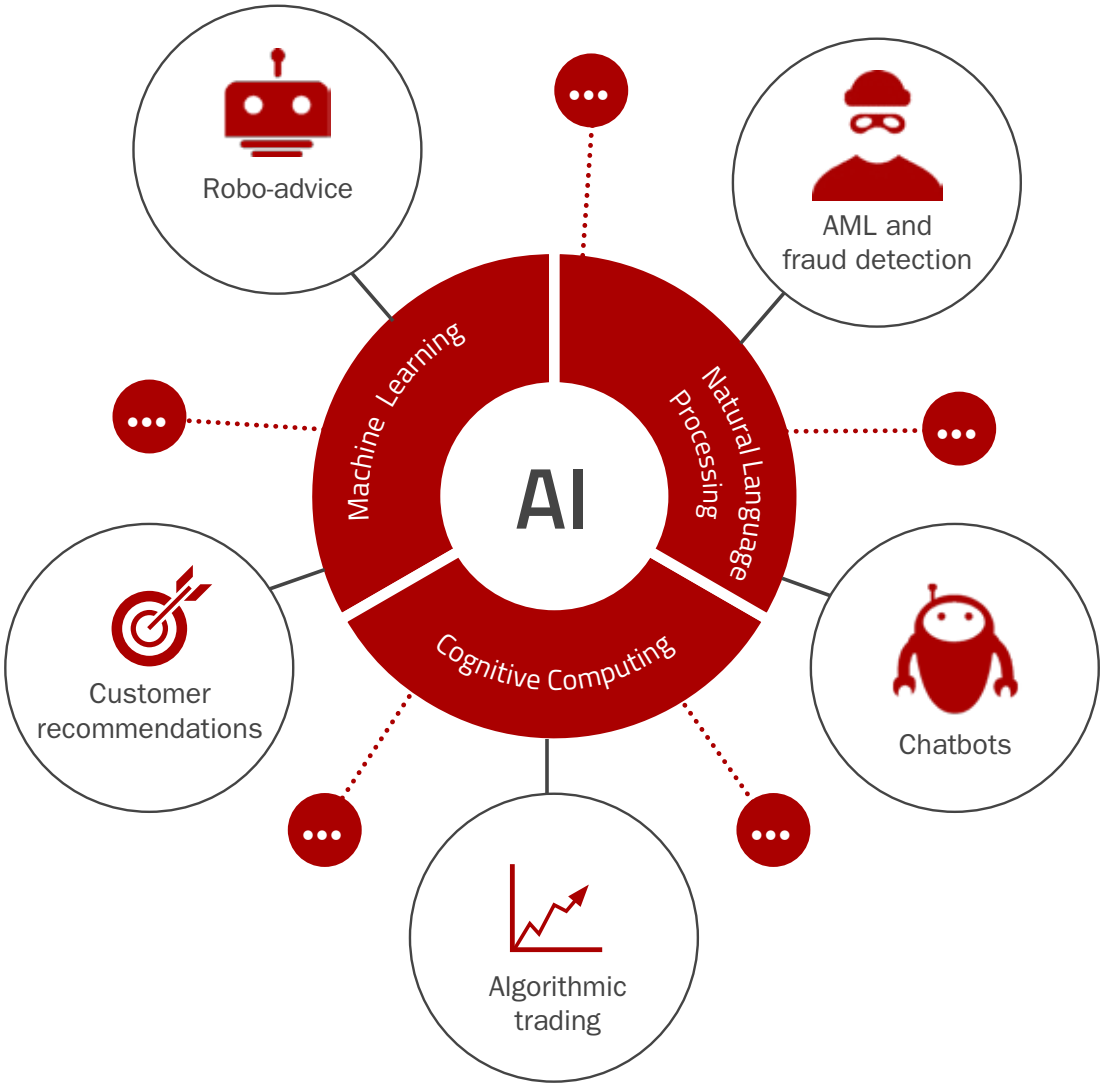
Strategic Challenges in Deployment of Robotics in Banking

In the report, *Getting Ahead with AI: Transforming the Future of Financial Services*, Efma provides AI opportunities, challenges, recommendations, and a number of case studies illustrating how AI could transform the financial services industry. According to Efma, "AI presents a huge number of opportunities for retail financial services firms, who, when able to exploit their growing data repositories, can better meet regulations, increase their bottom line, improve the customer experience and more."

CHART: 25
AI APPLICATIONS IN FINANCIAL SERVICES



Source: Efma-Infosys Finacle-Digital Banking Report Survey 2017

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One of the most dynamic (and advanced) uses of AI in banking is with robotic process automation (RPA). Still in the early stages of development at most organizations, concerns revolve around data security, organizational impacts, the integration of new technologies and the understanding of use cases and ROI benefits.

According to Efma, one of the biggest challenges is finding the right talent. With only slightly more than half of survey respondents (55%) stating they have identified an AI leader within their company, more than half of those have appointed the head of innovation as the leader. While this assignment may be fine initially, external hires will usually be required, as applications get more complex.

Another 'people' issue (especially with RPA) is the impact on current employees of financial institutions. In some cases, current employees will not be well positioned for the 'new age of banking.' In other cases, the transformation of labor caused by the advances of robotics will eliminate some positions entirely.

In a study fielded by **Accenture** encompassing nearly 33,000 financial services consumers across 18 markets, a very high number of respondents said they are open to a purely automated service and support experience, even when making more complex decisions around product choices. Consumers are now open to robo-advice to help determine which bank account to open (71%), which insurance coverage to purchase (74%), and how to plan for retirement (68%).

One quarter of all respondents said they found robo-services appealing because they view computers/artificial intelligence as more impartial and analytical than humans. The study revealed that the prospect of faster (39%) and less expensive services (31%) also increased consumers' receptivity to robo-services. Not surprisingly, Millennials and mass affluent consumers expressed the strongest interest in robo-services.

"Robo-advice has already gained significant traction in the wealth management industry," says David Edmondson, senior managing director of Accenture's North America Banking practice. "However, our research shows this trend is also picking up in retail banking. Consumers will continue to dictate how, when and where they want to interact, and banking providers have an opportunity to use intelligent automation and robotics to simplify and improve the customer experience."

Despite increased consumer acceptance of robotics, the banking industry is slow to respond according to our research. In fact, less than 50% of organizations surveyed have any plans to deploy robotics at this time. An additional 18% have yet to deploy robotics, but have future plans to do so. The remaining 32% of those surveyed have deployed some level of RPA within their organizations.

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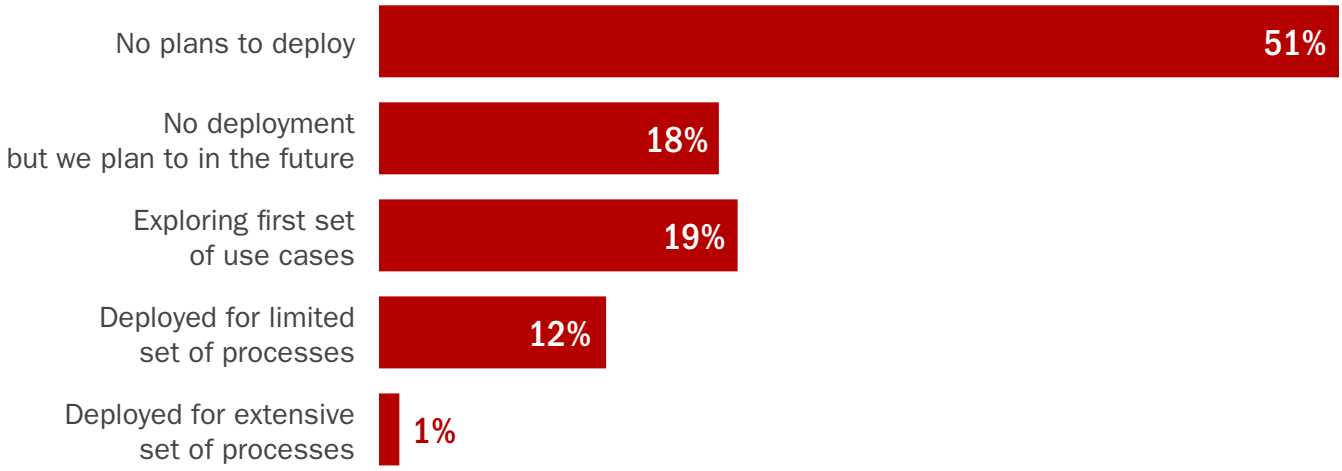
CHART: 26

CURRENT STATUS OF ROBOTIC PROCESS AUTOMATION (RPA) DEPLOYMENT



Source: Efma-Infosys Finacle-Digital Banking Report Survey 2017

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Case Study: Emirates NBD

Checkchain is an innovation project from Emirates NBD that enables an increased cheque security using Blockchain technology. This project has evolved in different phases starting from the creation of unique identification on cheque leafs and the corresponding Blockchain implementation.

The rationale for this solution is because the Central Bank mandates all presenting banks to verify the basic security features of all cheques before presenting it in the clearing system. These security features need to be verified on the physical paper based cheques – a process which is both time consuming and expertise-dependent.

Creating a unique identification on each cheque leaf while leveraging Blockchain technology establishes the genuineness of the cheque and validates it without any manual intervention, saving time and reducing risk.

Specifically, the benefits include:

- Detection in real time, before losses occur
- Cost savings and workflow simplification by elimination of manual processes
- Leverages the unique benefits of the Blockchain technology
- Provides opportunity for further innovation using blockchain technology smart features

Case Study: Jibun Bank

Jibun Bank offers an innovative tool on the smartphone banking application that indicates the forecast of foreign currency trade rates. As a mobile-first bank with no branches and no advisors, Jibun Bank wanted to make a support tool for foreign currency deposits because of the extended period of lower interest rates in Japan. The algorithm of this tool is an excellent use of machine learning and image feature extraction AI technologies.

Early indications of performance of this AI tool is that it could indicate the signal of EUR/JPY forecast with a probability of 80% or more. The impact has been 10,000 transactions per day with 1500 unique customers making foreign currency deposits.

One of the advantages of Jibun Bank is the small size of the bank and the flexible organization. As a result, for a project like this, team leaders can have discussions with the CEO and other board members every day, allowing for project development and release of this solution in only one year.

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Innovation Case Studies

Over the past year, many innovations we have seen in banking have been more iterative than disruptive. The good news is that there are great global examples of organizations reimagining banking for the benefit of the customer. In this section, we provide a few examples.

The research conducted by the Digital Banking Report team on behalf of Efma and Infosys Finacle, lends credibility to the argument that less is more, meaning that simplifying banking and making financial services part of a broader life stage ecosystem is the foundation for future banking innovation.

The case studies in this section and throughout the Innovation in Retail Banking report illustrate that reinventing banking requires a top-down culture that supports the innovation process. Our research also shows that, while much of the investment in the innovation process is being done by larger financial services organization, smaller firms have created some very exciting solutions.

From non-traditional fintech firms to the largest global banks, innovation needs to be nurtured and invested in, with an assigned leader helping to bring disparate parties together to improve the customer experience. It is clear the consumer is expecting more from their financial services provider. Great innovation will help us meet these expectations.

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Case Study: Intesa Sanpaolo

The "Customer Journey" project is the beginning of a new approach to customer relations at Italy-based Intesa Sanpaolo. Based on the study of customers' profile, behavior, owned products, the Customer Journey Team identified 14 areas of intervention, involving all product families, several important life events (e.g. wedding, new baby…), and the cycle of customer relationship with the bank.

This project was initiated since technology has rapidly changed the market dynamics and brought into question the traditional banking model. With data and customer insight being increasingly available, and competition coming from digital native players, the offering of personalized solutions has gone from a 'nice to have' to competitive imperative.

By 2018, more than 300 customer journeys and more than 9,000 multi-channel one-to-one communications will be developed, with commercial offers, educational tips and enhanced customer care.

To support the new approach, the bank created:

- New opportunities for guided dialogue in the context of the renewed digital experience
- An environment with innovative big data analysis techniques
- CRM customer-centric infrastructure (RTDM infrastructure), which acts by interacting in real-time across all channels, including external to the bank (third party sites)

This new approach has allowed Intesa Sanpaolo to achieve better results in terms of success of marketing campaigns (+12.3 mln euros exp. sales increase in 2017 and 5 mln yearly savings), as well as higher satisfaction and engagement of clients (88% of customers are satisfied with the offers received, more aligned with their needs).

Rationale for Solution

The increasing ease of access to and utilization of insight by many different industries has made customers ever more demanding. Consumers who use services offered by digital native players (such as Facebook, Amazon, Google and Apple) have realized how they are effective in offering personalized services and engaging communication.

The interaction of Intesa Sanpaolo customers on digital channels has also changed dramatically in the last year, thanks to the bank's new digital experience. 78% of ISP customers are using digital channels to carry out financial transactions while they also want to be supported in person, in-branch or remotely.

In response, the bank developed a process of customer relationships with more frequent and personalized communications, through all channels. To each customer, they want to send the right message at the right time.

Differentiation of Solution

Combining people, technology, insight, advanced analytics and organization allowed for the creation of a unique competitive advantage:

- Customer-driven campaigns, activated by behaviors, propensity purchase expressed or unexpressed, key moments of life and network events (e.g. family)
- Advanced contact strategy: Interactive real-time and multi-channel
- Creation of a "library" of messages to be delivered proactively at each stage of the customer journey, to obtain benefits in terms of acquisition, sales and loyalty
- Test-and-learn approach with continuous monitoring and refinement of communication initiatives

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Implementation of Solution

To support the new approach, the bank created a new digital experience, offering renewed multichannel communication opportunities. These communications are supported by a big data environment with innovative analysis techniques. Deployment of communications is achieved by a customer-centric CRM infrastructure, which operates in real time by interacting with customers through all the channels.

Finally, detailed architecture (based on the "status" model), allows the highest customization and proactivity in the commercial communications, activated by the analysis of behaviors and features of customers in their daily interactions with the bank. For each customer is created a "status" related to the interest, possession or use of the bank's products and moments of life: the steps of the "status" model act as the trigger points of a customer journey.

Results

The new CRM infrastructure, the use of the most advanced analytics models, and a customer-centric approach lead to the improvement of the customer satisfaction level and the commercial effectiveness in terms of:

- Increased NPS index
- Increased sales: estimated +12.3 million euros in 2017, of which
  - 36% reduction of the churn, increased loyalty and word-of-mouth
  - 64% by greater redemption rate of commercial initiatives.
- Improvement of the ability to interact real time with customers
- Cost reduction related to minor operating effort required to the branches for the outbound contact activities: an estimate of an average savings of about 5 million euro per year, in terms of:
  - Less time dedicated to sell: "warm leads" are selected and informed before the meeting with the RM
  - Less time dedicated to customer care: through profiled communications and customer support through direct channels.

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Case Study: Deutsche Bank

Deutsche Bank

Deutsche Bank's robo advisor "ROBIN" is a digital investment solution, which offers automatized portfolio management services based on ETFs. Algorithms manage the individually created portfolios based on each customer's personal and financial situation and preferred risk level. As an end-to-end digital product, from the creation of an individual investment strategy to the administration cockpit, ROBIN allows full transparency on the portfolio at any time and on any device.

With ROBIN customers are now able to invest their capital in a professional portfolio management solution that was so far only available to wealth management clients. ROBIN is driven by state-of-the-art algorithms and the CIO market view of Deutsche Bank PW&CC. The CIO view adds further value for ROBIN clients as the current market view of the investment strategy team is an additional input parameter for the portfolio allocation.

Interdisciplinary teams at Deutsche Bank's Digital Factory wanted to develop a financial product which helps customers to create their personal investment strategies tailored to individual risk appetite, investment objectives and personal situation. ROBIN invests in Exchange Traded Funds (ETFs) as cost-efficient financial instruments that enable to compose broad diversified portfolios.

Rationale for Solution

Deutsche Bank was aware that a significant number of private clients only trusts in conservative investment forms (i.e. savings book, fixed-term deposits) with low interest. Private investors lose money as interest rates are mostly below inflation. Therefore, the bank decided to develop a service for clients which provides the same opportunities on the capital markets as for large-scale investors. The "democratization of capital investment" has been made possible through technically advanced algorithms and unlimited scalability of processes which reduces costs for customers substantially.

Differentiation of Solution

The differentiation from the majority of solutions offered – which mostly rely on sample portfolios – is creating individual portfolios, managing risk by applying the Value at Risk and integrating the CIO market view into the portfolio allocation. The Deutsche Bank team of portfolio managers are responsible for monitoring and confirming the proposals of ROBIN. Therefore, ROBIN can be described as the "symbiosis of man and machine": A full-service robo-advisor.

Implementation of Solution

The vision was to provide a user-centric investment solution for Deutsche Bank customers. The strategy was derived from that approach and had a significant impact on the product vision and its robo engine powered by algorithms as well as the customer journey.

During the development of ROBIN, the bank passed several major milestones. After determining the necessary steps from the customer's point of view, the team created detailed concepts of each step including business processes, the robo engine, IT architecture, front-end visuals as well as design and content.

In an iterative and agile approach, the project team and other stakeholders from all bank departments put all steps in relation to each other and created an entirely digital and innovative customer journey. Alongside design and functional testing, the main focus included the simulation of various scenarios and stress testing programs in order to guarantee an accurate function and the reliability of our algorithms.

Results

Deutsche Bank created an end-to-end digital product (including various digital features) with state-of-the-art user experience that will become a future cornerstone for the bank's investment business. Individual portfolios based on the client's risk appetite provide professional wealth management for a huge target group at comparatively low costs. The bank put customers in the comfortable position to manage and build up their assets by delegating investment decisions to Deutsche Bank.

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Case Study: Sberbank

Smart Learning System is a unique technology developed by Sberbank out of Russia that provides an individual approach to mastering managers' skills. By combining big data analysis of numerous metrics, business performance results, lacking managing skills and personalized e-learning courses, team skills are increased, sales are improved and customer experience is enhanced.

For Sberbank, the Smart Learning System changed the traditional approach to training employees:

- Allows focus to be on training specific managers, who had obvious problems with execution and insufficient business results.
- Saves time, as well as human and financial resources on training staff. It gives only the knowledge which is relevant at the moment.
- Rises the quality of e-learning courses and improves the educational system in total, as it tracks the effect of learning programs on business straight after managers study them.
- The short e-learning courses takes less time for studying than traditional training seminars, and brings better results.
- Sends results of training to boss and the mentor of the manager, in case additional support & coaching sessions are needed.

Rationale for Solution

Most managers get training sessions regardless of their individual needs and actual level of knowledge and skills. The Smart Learning System provides an individual approach to training on sales technology, loss management, customer service, training & coaching and workflow organization skills.

Differentiation of Solution

Smart Learning System is a unique technology and efficient tool for upgrading managing business skills on an individualized basis for each manager. Smart Learning System defines managers' missing skills and ways for upgrading.

Results

6075 heads of retail branches were involved in the project when it started in April 2017. More than 12,000 training courses were offered to the head of branches during the 1st month of implementation. The first defined results include a 13.3% increase in conversion of customer flow into sales.

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Appendix: About the Research

The analysis in this report is based on a July 2017 Digital Banking Report survey of global banks and credit unions. The survey used the subscriber lists of The Financial Brand and Digital Banking Report, which includes organizations of all sizes worldwide. We also included organizations that are members of Efma.

No responses from non-financial organizations were included in the results, and only completed surveys were included. The responders were self-selected after receiving a nominal incentive of raw survey results.

Among overall survey respondents, 36% are from large national or regional banks, 21% are from community banks, and 20% are from credit unions. This distribution is very similar to previous research, allowing for valid comparisons based on the type of organization.

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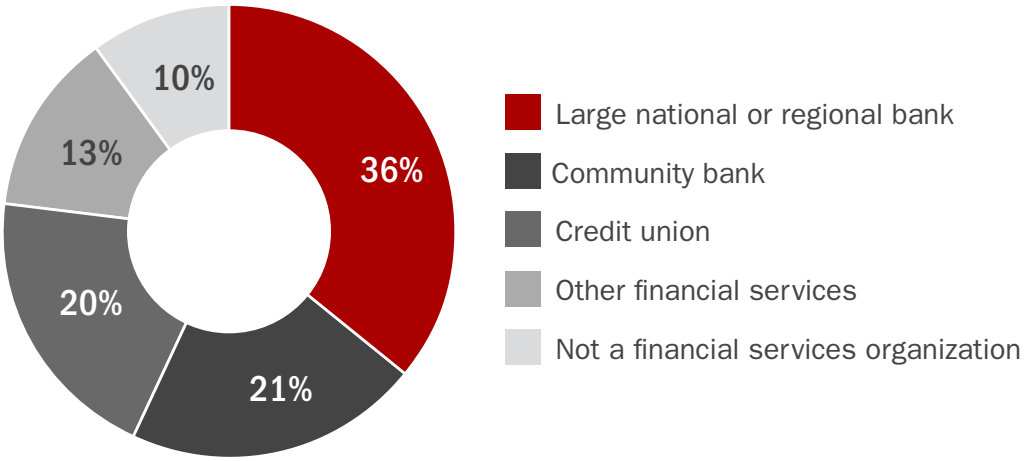
CHART 27: RESPONDENTS BY TYPE OF FI

What type of financial institution do you work for? (n=408)

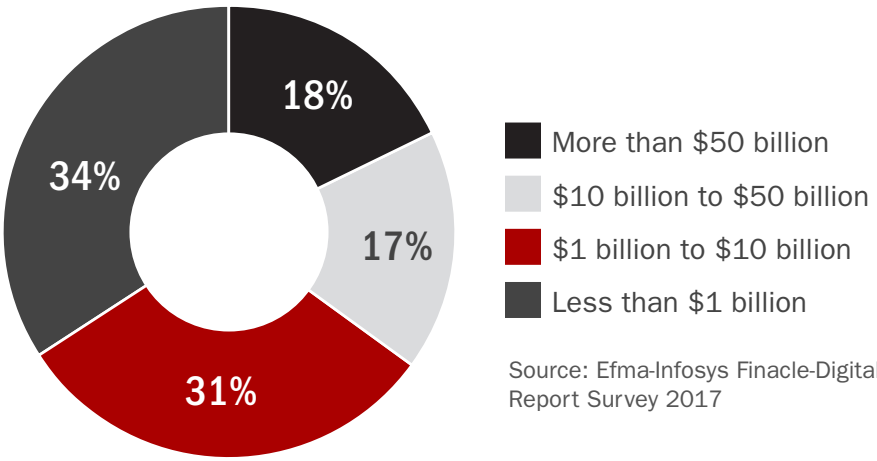


Source: Efma-Infosys Finacle-Digital Banking Report Survey 2017

Roughly 35% of respondents are from FIs with more than US$10 billion in assets, with 31% having US$1 billion – US$10 billion in assets, and 34% representing firms with less than US$1 billion in assets. The distribution by size of organization is comparable to the majority of the previous research done by the Digital Banking Report.

CHART 28: RESPONDENTS BY ASSET SIZE (IN US$)

What is the asset size of your institution?



Source: Efma-Infosys Finacle-Digital Banking Report Survey 2017

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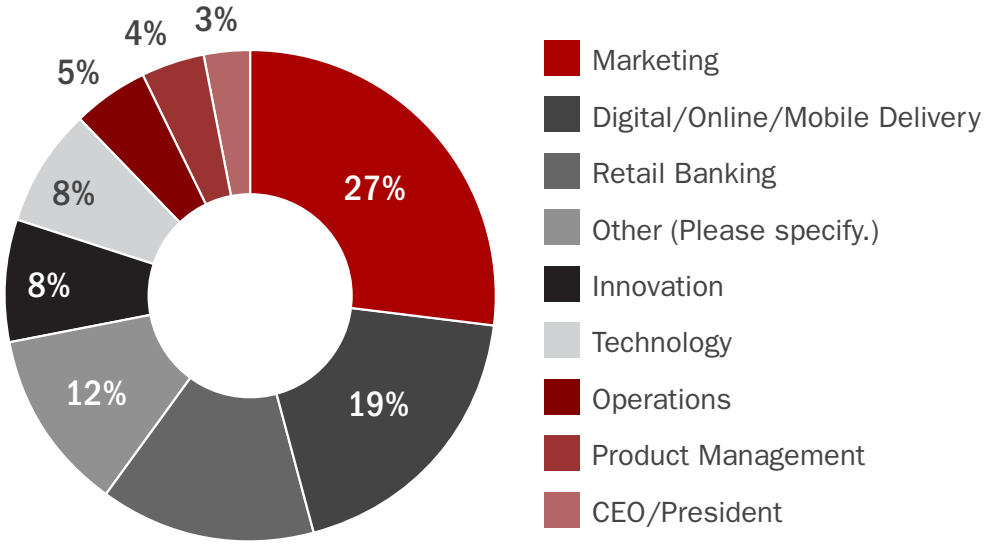
When we looked at the role/department of the respondents, we found 27% of the respondents were marketing executives, with 19% owning the digital/online/mobile channels. Another 14% were in charge of the retail banking area, with the remaining respondents being from multiple areas of the organization.

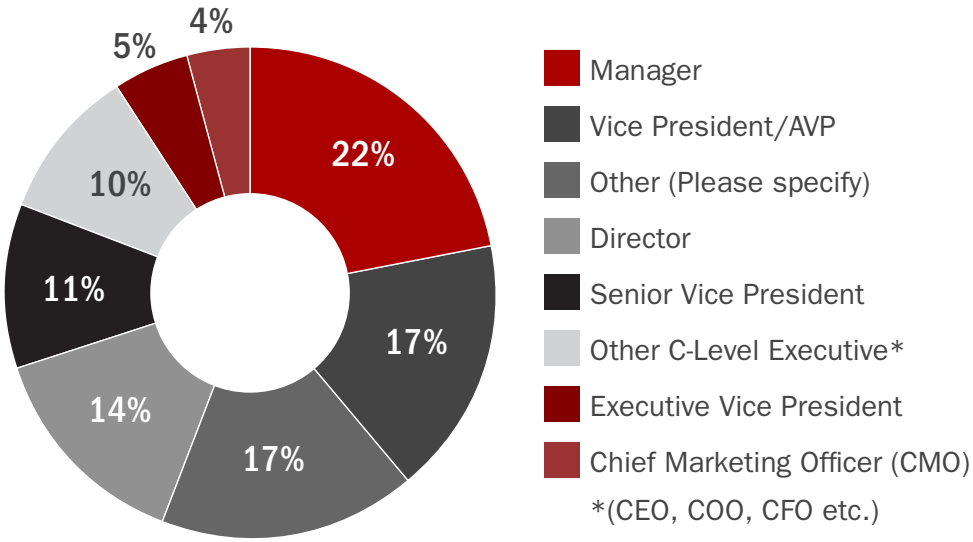
CHART 29: RESPONDENTS BY ROLE/DEPARTMENT



Source: Efma-Infosys Finacle-Digital Banking Report Survey 2017

When we looked at the position/title of the respondents, we found roughly 22% of the respondents were managers, with 17% being vice president/AVP level. Approximately 30% were directors, executive vice presidents or senior vice presidents, with another 14% being c-level executives (marketing or otherwise).

CHART 30: RESPONDENTS BY POSITION/TITLE



Source: Efma-Infosys Finacle-Digital Banking Report Survey 2017

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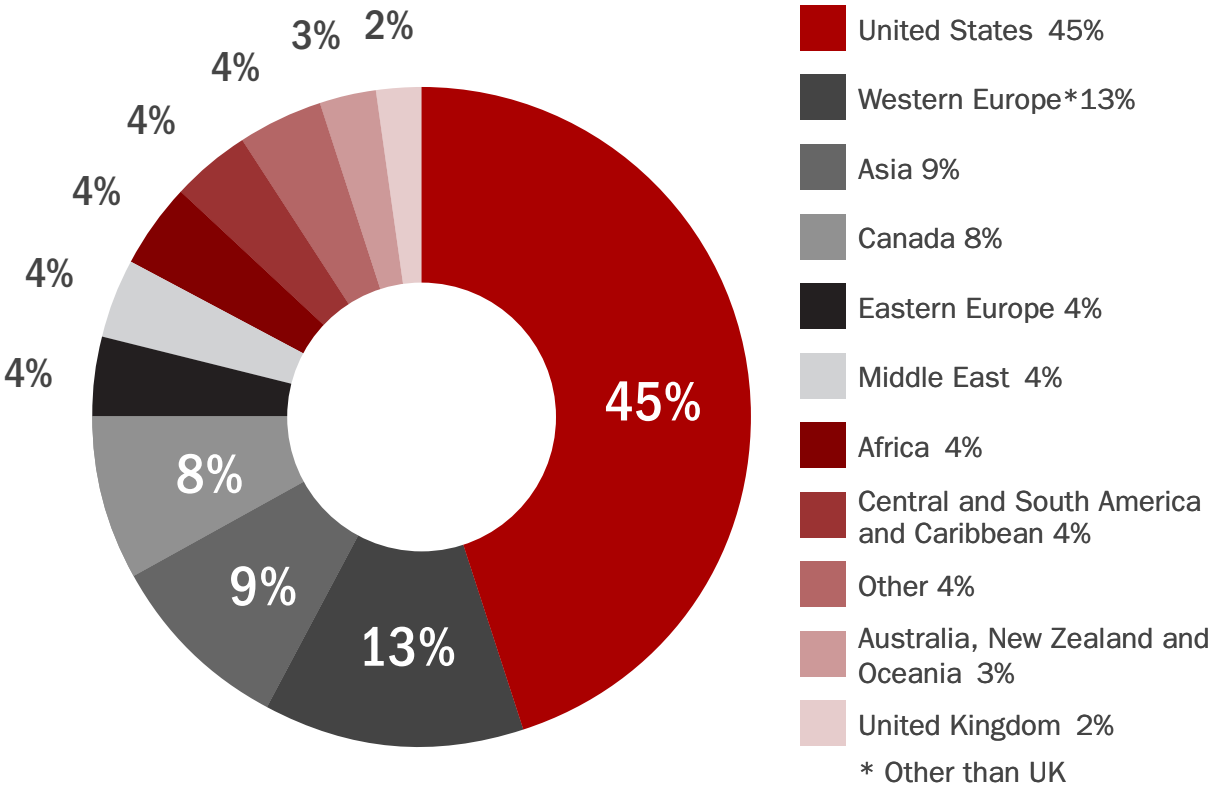
Finally, the respondents who participated in our research were globally head-quartered. While there was an over sampling from the United States (45%), 19% were from Europe, 9% were from Asia, 8% from Canada, with 4% from the Middle East as well as from South America.

CHART 31:
RESPONDENTS BY LOCATION

Where is your organization head-quartered?



Source: Efma-Infosys Finacle-Digital Banking Report Survey 2017

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Online Survey Questions

1. Where is your organization head-quartered?
2. What is the asset size of your institution (in US$)?
3. Which of the following best describes your role at your financial institution?
4. What is your position / title?
5. Does your institution have a Chief Innovation Officer (or someone with a similar title with a full-time job of working on discovering / creating / implementing new innovations)?
6. Does your financial institution have a clearly defined innovation strategy? (Note: A clearly defined innovation strategy would include, for example, having objectives, resources, processes and measures of success)
7. Did your financial institution increase or decrease the level of investment in innovation in 2017 compared to 2016?
8. What are your institution's business priorities for digital transformation?
9. In which parts of the innovation process does your financial institution struggle the most?
10. Over what time period do you measure success in innovation?
11. How significant is the threat of disruptive innovation from different actual or potential competitors?
12. In what business lines do you expect emerging competition to have a significant impact?
13. In which of the following ways does your company currently support innovation?

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Online Survey Questions (continued)

14. Please indicate the level of importance over the next 12 months of the following technology areas based on investment level.

15. In your opinion, over what time period will the following technologies have the most potential to change your organization?

16. What is the current status of robotic process automation deployment at your institution?

17. What is the current status of conversational AI deployment (chatbots / voice based interface) at your institution?

18. Indicate which of the below elements constitute your digital ecosystem strategy.

19. Indicate the average level of maturity within your organization for using data-driven insights.

20. Which of the below areas would your financial institution prioritize for production on blockchain?

21. Indicate the maturity of your organization's journey for migrating your applications onto cloud.

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About Us

Efma

As a global not-for-profit organization, Efma brings together more than 3,300 retail financial services companies from over 130 countries. With a membership base consisting of almost a third of all large retail banks worldwide, Efma has proven to be a valuable resource for the global industry, offering members exclusive access to a multitude of resources, databases, studies, articles, news feeds and publications. Efma also provides numerous networking opportunities through working groups, webinars and international meetings. True to its vocation, Efma has recently developed an Innovation Portal that aims to identify and award the most innovative projects in the retail financial services arena.

For more information: http://www.efma.com

Infosys® Finacle

EdgeVerve Systems, a wholly owned subsidiary of Infosys, develops innovative software products and offers them on-premise or as cloud-hosted business platforms. Our products help businesses develop deeper connections with stakeholders, power continuous innovation and accelerate growth in the digital world. We power our clients' growth in rapidly evolving areas like banking, digital marketing, interactive commerce, distributive trade, credit servicing, customer service and enterprise buying.

Finacle is the industry-leading universal banking solution from EdgeVerve Systems. 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 customers – nearly 16.5 percent of the world's adult banked population. Finacle solutions address the core banking, e-banking, mobile banking, CRM, payments, treasury, origination, liquidity management, Islamic banking, wealth management, and analytics needs of financial institutions worldwide. Assessment of the top 1000 world banks reveals that banks powered by Finacle enjoy 50 percent higher returns on assets, 30 percent higher returns on capital, and 8.1 percent points lesser costs to income than others.

For more information: http://www.finacle.com

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About the Author

Named as one of the most influential people in banking and a Top 5 Fintech Influencer to Follow, Jim Marous is an internationally recognized financial industry strategist, co-publisher of **The Financial Brand** and the owner and publisher of the **Digital Banking Report.** The Digital Banking Report is a subscription-based publication that provides deep insights into the digitization of banking, with over 150 reports in the digital archive available to subscribers.

DIGITAL BANKING REPORT

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As a sought after keynote speaker, author and recognized authority on disruption in the financial services industry, Marous has been featured by CNBC and CNN, Cheddar, The Wall Street Journal, New York Times, The Financial Times, The Economist, The American Banker, Accenture and the Irish Tech News and has spoken to audiences worldwide. Jim has also advised the White House on banking policy and is a regular contributor and guest host for the Breaking Banks podcast.

You can follow Jim on **Twitter** and **LinkedIn**, or visit his professional website.

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For more information, please contact
Efma: info@efma.com
Infosys Finacle: finacle@edgeverve.com

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