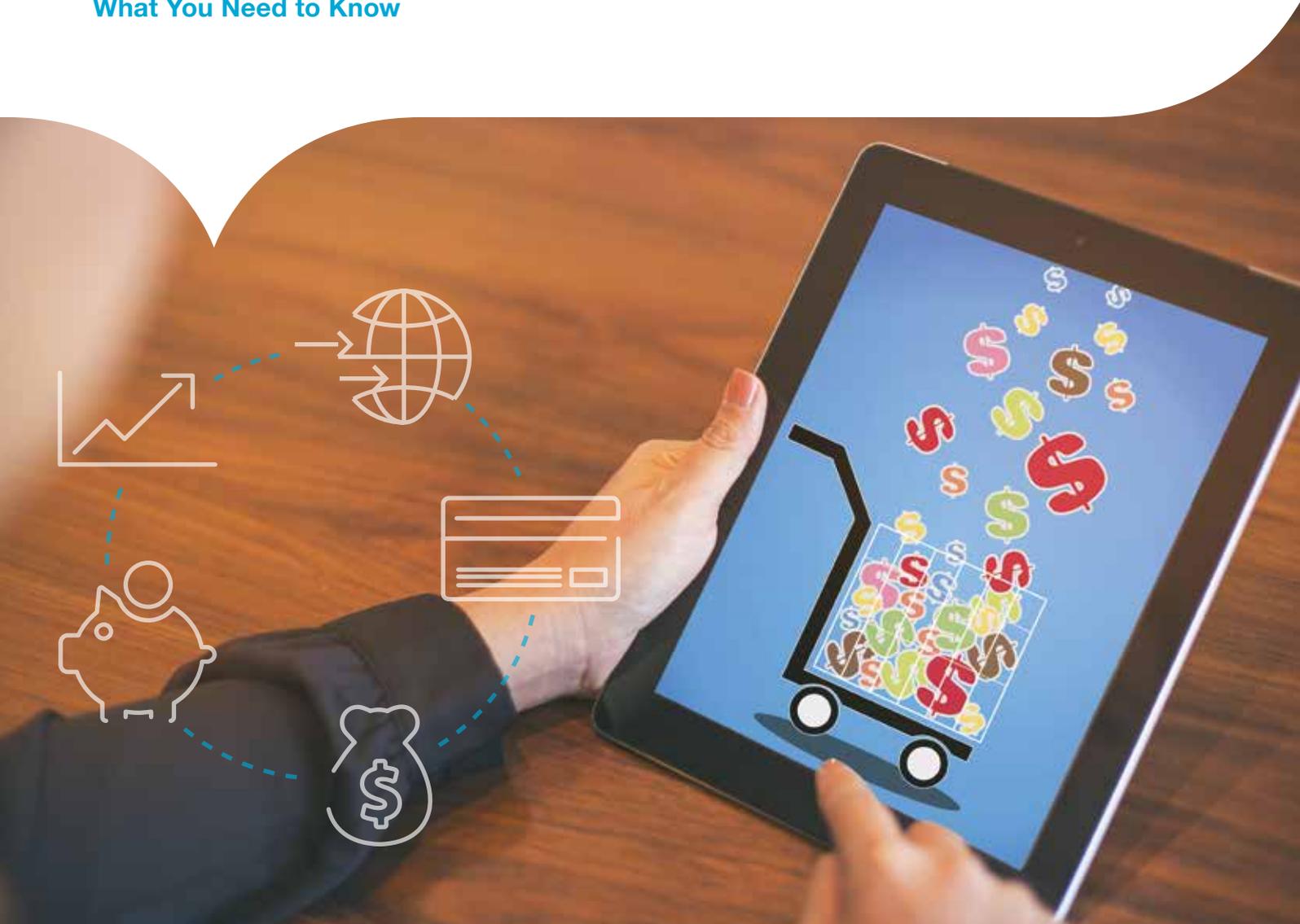


Top 10 Trends in Payments – 2017

What You Need to Know



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Introduction

Objective:

This document aims to understand and analyze the trends in the payments industry that are expected to drive the dynamics of the payments ecosystem in the near future. We have analyzed the current trends in the payments industry and identified the top 10 trends that will be covered in the following sections of the document.

Methodology:

As part of our annual publication of the top 10 payments trends, the table below is comprised of new trends identified this year with the help of our secondary research and the trends that were covered last year, which still continue to cast significant impact on the industry. For the trends that carried over from last year, we have emphasized the current focus area of that particular trend. All the trends have been classified under the three key categories identified below: Markets, Regulatory and Industry Initiatives, and Stakeholder Strategies.



Markets	Regulatory and Industry Initiatives	Stakeholders Strategies
Covers analysis on payment methods and instruments	Covers analysis on regulations and technology initiatives across the globe	Covers analysis on stakeholder strategies, focus and investment areas
		
<ul style="list-style-type: none">  Adoption of digital payments is on the rise with instruments such as wallets, cards, and mobile becoming mainstream  Instant payments are potential alternative to existing instruments while a few challenges still exist 	<ul style="list-style-type: none">  Banks need to adopt a transformational approach to address the dynamics of regulatory landscape  RegTechs and regulatory sandboxes emerge as key themes in the regulatory compliance landscape  Implementation of instant payments and Basel III norms could trigger changes in liquidity management of banks and Corporates  Technology and regulatory initiatives are inducing transformation in cross-border payments domain 	<ul style="list-style-type: none">  FinTech activity in corporate and retail domains can disrupt payments analytics and authentication  Adoption of open APIs is leading to paradigm shift in payments through third party and industry initiatives  Increased threat of risk and fraud has made security and authentication on top priority for payment firms  Transformation of back-end payments systems is still high priority for firms to support front-end innovation

Summary:

Currently, the global payments industry is undergoing a paradigm shift with an influx of technology, demographic, and regulatory dynamics. While the customer-facing part of the value chain continues to witness high levels of innovation, service providers are still grappling with back-end infrastructure enhancements. Trends such as new opportunities in the payments industry in terms of adoption of Open Application Programming Interfaces (APIs), growth in digital payments, innovation in cross-border payments, and challenges from the entry of alternative service providers are impacting the industry in terms of fostering competition, nurturing innovation, and enhancing process and system-related efficiencies.

While the industry is poised towards transformation, non-traditional players are entering the market with solutions that have a quicker time-to-market, thus challenging the incumbents to actively devise differentiated offerings. This fragmentation of the market, coupled with initiatives such as Payment Systems Directive (PSD II) and open banking that aim to open up the market to third-party providers and increasing levels of risk and fraud are driving increased focus toward the implementation of fool-proof identity and authentication measures for customer protection.

Markets across the globe are increasingly witnessing regulatory initiatives that are enforcing standards to maintain stability on the one hand, while implementing frameworks such as sandboxes, with an objective to simplify the process of compliance and reduce costs. Such initiatives are attaining further significance in the wake of increasing complexity in compliance to both older and new regulations. A certain segment of FinTech, named RegTech, has also emerged with solutions leveraging technology for easier compliance.



Markets



Trend 01: Adoption of Digital Payments is on the Rise with Instruments Such as Wallets, Cards, and Mobile Becoming Mainstream

Improved security measures and convenience are likely to be the key drivers of growth of digital payments in mature and emerging markets

Background

- Mass adoption of cheap communication technologies and faster Internet connections have provided a greater degree of convenience to customers, which has translated into a rise in adoption of digital payments, especially in countries such as China
- Banks and regulatory bodies have been encouraging migration of payments to the digital sphere, which can bring down transaction costs for banks and consequently reduce operating costs
- Governments across the globe understand that they can reduce the hidden economy and bring efficiency to commerce by promoting the usage of digital payments, which in turn would accelerate gross domestic product growth

Key Drivers

- Increasing customer demand and adoption of electronic and mobile commerce, contactless payment-enabled devices such as wearables, wallets, mobile devices, and cards are driving the growth of digital payments
- Retailer obligations in terms of infrastructure rollout, increased card payment limits to card companies¹ in key markets is also pushing wider adoption of digital payments
- With the advent of faster and more secure mobile devices, consumers expect far more efficient and faster methods of payments, especially with the greater number of digital payments options
- Downward pressure on interchange fees from card processors by merchants and the cheaper/faster alternative being offered by ubiquitous FinTechs in major markets (e.g., Uber, Lyft) is also driving the adoption of digital payments

Trend Overview

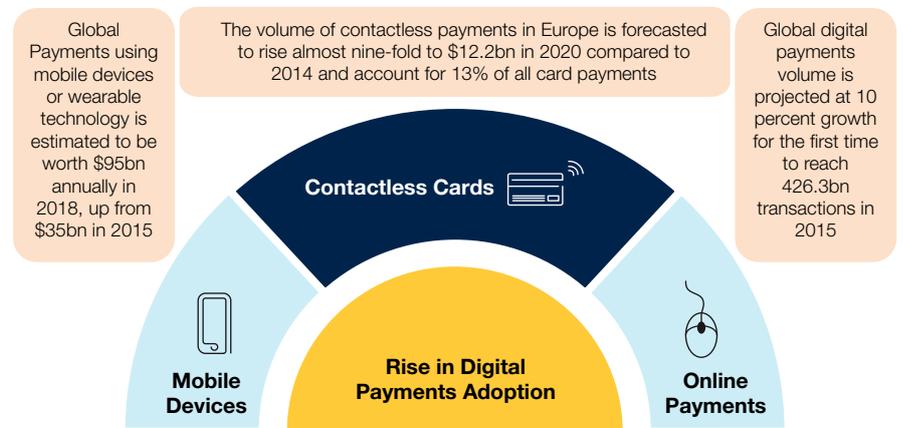
- Digital payments comprised of online, mobile, and contactless cards are expected to hit \$3.6 trillion in transaction globally this year, which is a 20% growth from \$3 trillion in 2015, of which 60% growth is attributed to the contactless cards segment
- The global value of contactless point-of-sale (POS) terminal payments, conducted in store via cards and mobile, is expected to hit \$500 billion annually in 2017 from an expected \$321 billion at the end of 2016²



¹ "MasterCard wants to end the '\$10 minimum'", news.com.au, October 26, 2016, accessed November 2016 at <http://www.news.com.au/finance/money/costs/mastercard-wants-to-end-the-10-minimum/news-story/3481919e5611e57a67ae793b64bfadce>

² "Global Digital Payments to Reach \$36 Trillion This Year", Juniper Research, March 21, 2016

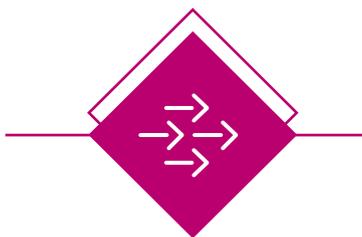
Exhibit 1: Digital Payments Landscape



Source: Capgemini Financial Services Analysis, 2016

“Technology, demographics and shifting consumer behavior have opened the door to a transformative period in digital payments”

–June 2016, Senior Vice President
(Latin American and Caribbean Countries)
at Leading Payments Processor



- Financial services giant Visa has reported 3.2 million contactless-enabled terminals in Europe as of April 2016, up 23% from 2.6 million at the end of 2015
- Technology is driving digital payments adoption, in particular, the increasing ubiquity of smartphones in the Asia-Pacific region led by China is causing shifts in online and offline commerce, with emerging markets moving toward mobile-first payment strategies

Implications

- Banks are expected to issue more contactless cards in mature markets and upgrade their systems to accept contactless payments in emerging markets:
- Payment cards are expected to account for 90% of contactless payments over the next five years
- Deployment of near field communications (NFC) payments and biometrics security would increase consumer awareness and usage of smartphones to fulfill transactions
- The foray into the digital payments by high-profile players such as device manufacturers (Apple, Samsung), tech firms (Google, eBay, Alibaba), telecom operators (Vodafone, airtel), and startups (Square, TransferWise) is expected to attract more digital transactions across the globe
- Growth in digital payments volume is forcing regulators to formulate policies not only for the customer protection aspects such as standards, authentication, and authorization, but also for fostering innovation and growth

Trend 02: Instant Payments Are Potential Alternative to Existing Instruments while a Few Challenges Still Exist

Instant payments along with PSD II and Open APIs might become a potential alternative to the existing payment instruments such as cards

Background

- With a strong value proposition, instant payments have potential to emerge as an alternative to checks and cash for retail and corporate customers
- In the U.K., check usage has declined and noncash payment transactions have increased since the introduction of the Faster Payments Service (FPS)
- The main benefits of instant payments include instant credit availability (leading to better credit risk and treasury management), irrevocability of transactions, the ability to make urgent payments, ease of use, 24x7 availability, and increased transparency of the payments process
- Challenges for instant payments usage such as cross-border interoperability and handling the inter-bank settlement risk still remain as driving successful adoption requires more than just providing related infrastructure

Key Drivers

- Banks are striving to remain competitive, especially due to the entry of FinTechs and regulatory push for modernization of systems
- There is a growing customer demand for instant payments based overlay services due to its convenience and ease of usage
- Increasing adoption of instant payment systems in major economies, (notably the U.S. starting in 2017) coupled with FinTech growth and initiatives such as PSD II, are expected to accelerate the change and help early adopter banks to differentiate themselves

Trend Overview

- The availability of instant payments is triggering new customer needs and requirements, while sparking newer business propositions for service providers:
- With the introduction of PSD II, it is expected that payments landscape will be disrupted with new players and instant payments has the potential to emerge as an alternative to the existing payment instruments
- Simplicity, convenience, and instantaneous availability of funds has propelled the adoption of instant payments
- Several countries including Australia and the U.S. are actively pursuing the development and implementation of instant payments infrastructure
- Although instant payments have the potential to emerge as potential alternative to the current payment methods, certain challenges still exist:
 - **Cross-Border Interoperability:** Several countries have implemented/ implementing/considering implementation of their respective national level instant payment systems. However, such a development may lead to disparate systems and lack of interoperability across geographies/countries may lead to inefficiencies

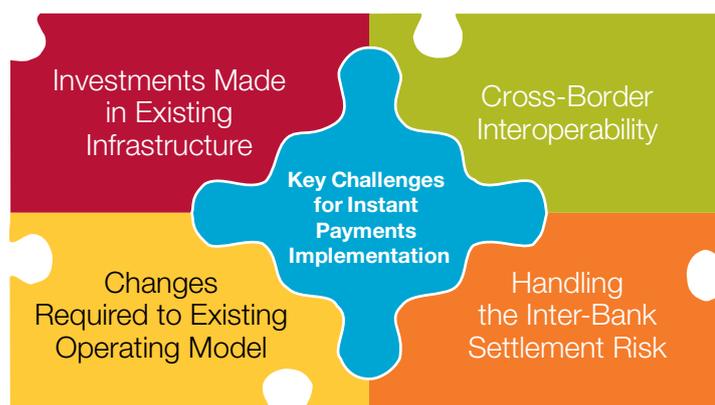


“There are challenges for banks, foremost among them being the overlaying of single real-time payments on an existing batch processing infrastructure. Processing single payments affects the infrastructure, from channel to payment processor, including general ledger, sanctions and anti-money laundering (AML) systems, reporting databases, customer account payables/receivables and reconciliation”

–May2016, Senior Executive at a Leading Global Bank

- **Handling Inter-Bank Settlement Risk:** As instant payments need to be really ‘instant’, clearing and settlement systems will have to be optimized to work on a 24/7/365 basis. However, traditional clearing and settlement are not suitable for meeting the real-time requirements that are currently limited to capabilities around continuous clearing and batch/windowed settlement
- **Changes Required to Existing Operating Model:** Implementation of real-time systems for payments will have a high impact on existing operating models of banks. In order to facilitate real-time initiation and reporting to customers, several existing operational systems need to undergo a transition. Especially, for banks operating across different jurisdictions, complexity increases due to the need to support a multitude of systems and processes
- **Investments Made in Existing Infrastructure:** Capitalizing on the investments that were already made into earlier system modernization projects stand questionable as new investments need to be made into real-time compliant systems

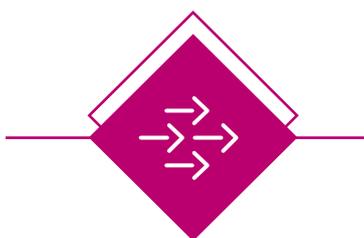
Exhibit 2: Challenges in Implementing Instant Payments



Source: Capgemini Financial Services Analysis, 2016; World Payments Report, 2016; The Global Adoption of Real-Time Retail Payments Systems (RT-RPS), SWIFT, April 2015

Implications

- Overlay services such as Paym and Zapp can increase adoption of instant payments across retail and corporate environments
- By replacing less efficient cash and check instruments, instant payments could drive the growth of non-cash transactions
- Instant payments could also potentially replace debit cards in some scenarios as they could lower banking fees at POS terminals:
 - With the help of immediate payments, new check-out methods could become available for both online and in-store purchases, however, nuances related to dispute settlement, chargebacks, and refunds need to be fool proofed
 - To overcome the challenges and to boost the adoption of immediate payments, efforts are required in a number of areas including value-added services development, education of the main stakeholders, and upgrading of merchant and corporate infrastructures



Regulatory and Industry Initiatives



Trend 03: Banks Need to Adopt a Transformational Approach to Address the Dynamics of Regulatory Landscape

A transformational approach will help banks understand the end goal of regulators and ensure sustainable compliance with that in the long term

Background

- Globally, several banks have implemented holistic compliance programs, however, in reality their initiatives are still tactical in nature and compliance efforts are still deadline-driven and regulation-specific
- Although several banks have their respective holistic compliance initiatives in place, they have made slower progress toward holistic compliance strategy implementation
- avoid lagging behind in complying with the evolving regulatory landscape and to be able to provide value-added services demanded by clients, banks should find ways to accelerate their efforts and adopt a transformative approach to compliance
- For such an approach, banks need to re-define the scope of compliance programs and develop a clear view to ensure efficient system changes

Key Drivers

- The regulatory compliance landscape is witnessing increased complexity driven by the pace and impact of regulations both old and new
- While new regulations are being added, existing regulations are becoming more complex to comply with and expanding in scope, thus adding to the need for a transformational approach by banks to facilitate holistic compliance
- Apart from regulatory needs, dynamics of instant payments and Open API collaboration are expected to drive banks to deploy a transformational approach





“We need to look at the total IT architecture for mapping compliance processes in order to be compliant for the long term”

–June 2016, Senior Vice President at a Leading European Bank

Trend Overview

- By taking a holistic approach toward compliance, banks can leverage their expertise in local regulations across the globe and offer appropriate and relevant services to corporates in areas including legal, taxation, and accounting standards
- Banks can also help corporates to adapt to new regulatory environments in areas such as know your customer (KYC), AML sanctions, and Base Erosion and Profit Sharing
- In KYC for example, banks can help to explain the requirements, enable digital documentation, and share documents across all legal entities of the bank dealing with the client apart from providing enhanced risk management services to corporates and also offer enhanced decision-support systems for assessing counterparty and operational risks
- To avoid lagging behind in complying with the evolving regulatory landscape and to be able to provide value-added services demanded by corporates, banks should find ways to accelerate their efforts and adopt a transformative approach to compliance:
 - In order to do this they need to re-define the scope of compliance programs, develop a clear view to ensure efficient IT changes, streamline investments, recruit skilled compliance staff, improve the efficacy of compliance data and the efficiency of its collection, and move toward integrated compliance risk and governance models
 - By focusing on specific technology areas, banks can accelerate their holistic compliance efforts. These technologies include data warehousing/Big Data, analytics, compliance testing, and lean methodology/change management:
 - › Several banks are leveraging analytics for developing dashboards and real-time feeds into databases in order to enable easier compliance reporting
 - › By leveraging technology for regulatory compliance, banks are realizing cost and operational efficiencies as well
 - › According to a World Payments Report executive interview, banks derive internal advantages including holistic product management and a streamlined multi-country approach through faster and easier compliance
 - Leveraging the agility of RegTech firms will help banks to develop easier and quicker-to-market compliance solutions. For example, RegTechs can help banks leverage data and existing systems in a cost-effective and timely manner, leading to better responsiveness to regulatory developments

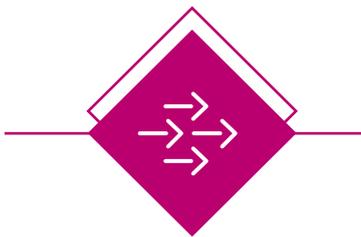
Exhibit 3: Transformational Approach Needed by Banks



Source: Capgemini Financial Services Analysis, 2016

Implications

- With an efficient transformational approach in place, banks can streamline investments, recruit skilled compliance staff, improve the efficacy of compliance data and the efficiency of its collection, and move toward integrated compliance risk and governance models
- With such an approach, banks can focus on technology areas enabling holistic compliance including data warehousing/Big Data, analytics, compliance testing, and lean methodology
 - For adopting the transformational approach, banks need to invest in structural change rather than looking at complying with individual regulations on a case-by-case basis
- Through a transformational approach, banks can accelerate their holistic compliance efforts that can in turn help them in offering better services to corporates



Trend 04: Regtechs and Regulatory Sandboxes Emerge as Key Themes in the Regulatory Compliance Landscape

Although regulatory sandboxes have started to emerge as a regional initiative, it is expected to cascade to a global level, with several countries experimenting with the model

Background

- Globally, as the complexity of regulatory compliance standards has increased, opportunities to leverage technology in order to ease the compliance process and increase transparency have arisen
- Within the FinTech environment, a niche set of firms, RegTechs, have emerged, which are making advanced use of technology to target regulatory compliance
- Regulators in countries such as Singapore, Hong Kong, the Netherlands, and the U.K. are also undertaking initiatives such as sandboxes, aimed at providing a safe environment in which financial institutions, payment service providers (PSPs), and other financial services firms can innovate

Key Drivers

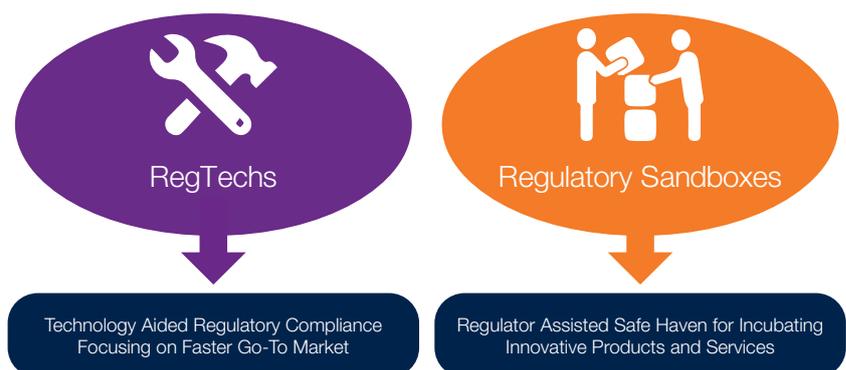
- Increased focus of banks toward compliance initiatives has emerged as the primary driver to leverage technology for easier compliance and increased transparency
- Globally, there is a change in regulatory approach with a focus on fostering innovation and reducing cost of compliance



“RegTech has the potential to address challenges around making sense of regulations, understanding how they apply to the business, assessing regulatory rules over trade/account/ reference data, analyzing compliance, and understanding what-if situations. Soon, this technology will be seen as a must-have instead of a nice-to-have”

– February 2016, Senior Executive at a RegTech Firm

Exhibit 4: Emergence of RegTechs and Regulatory Sandboxes



Source: Capgemini Financial Services Analysis, 2016; World Payments Report, 2016

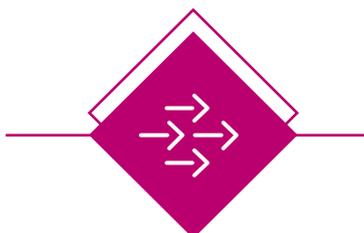
Trend Overview

- The regulatory compliance software industry is headed toward strong growth as the demand for regulatory and compliance software is expected to reach \$118.7 billion by 2020³
- Over time, banks have struggled to devise and implement a robust and efficient approach to compliance, and RegTech firms can help in terms of analyzing and implementing governance rules apart from extracting, analyzing, and storing data
- Examples of banks that have invested in RegTech solutions include:
 - FirstRand Bank, a London-based subsidiary of a South African financial group leveraging RegTech solutions to streamline its reporting systems in order to meet the requirements placed by the Bank of England⁴
 - The Taiwan Business Bank uses the advanced regulatory platform from Wolters Kluwer to support its business with greater scalability⁵
 - Goldman Sachs and Wells Fargo have invested in RegTech solutions from Droit Financial Technologies, whose Adept platform ensures regulatory compliance with every transaction⁶
- In an effort to help startups experiment with new products and services in a safe environment, regulatory sandboxes are being implemented in several countries including Malaysia, Hong Kong, Indonesia, Thailand, Singapore, and the U.K.:
 - Recently, Canada and Australia have also announced plans to establish a regulatory sandbox



Implications

- Initial target areas for compliance solutions by RegTechs include Basel III/CRDIV-related compliance, risk analytics, KYC utilities for storing due diligence information, and cloud-based plug-and-play software that can be integrated with APIs, enabling organizations to benefit from RegTechs by being more flexible and agile
- Potentially, it is highly likely that more tactical compliance tasks will be automated in order to reduce operational risks associated with compliance and reporting obligations



3 "International RegTech Companies Defining the \$100-Billion-Dollar Industry", Lets Talk Payments, July 07, 2016, accessed November 2016 at <https://letstalkpayments.com/international-regtech-companies-defining-the-100-billion-dollar-industry/>

4 "FirstRand Bank live on new reg reporting solution in London", Banking Technology, June 29, 2016, accessed November 2016 at <http://www.bankingtech.com/521632/firststrand-bank-live-on-new-reg-reporting-solution-in-london/>

5 "Taiwan Business Bank selects Wolters Kluwer's OneSumX", Scott Thompson, IBSintelligence, June 13, 2016,

6 "Goldman Sachs and Wells Fargo lead \$16 million investment in RegTech firm", Hayley McDowell, The Trade, November 1, 2016, accessed November 2016 at [http://www.thetradenews.com/FinTechQ/Goldman-Sachs-and-Wells-Fargo-lead-\\$16-million-investment-in-RegTech-firm/](http://www.thetradenews.com/FinTechQ/Goldman-Sachs-and-Wells-Fargo-lead-$16-million-investment-in-RegTech-firm/)

Trend 05: Implementation of Instant Payments and Basel-III Norms Could Trigger Changes in Liquidity Management of Banks and Corporates

Although, the impact of regulatory initiatives might result in increased costs in the short run, liquidity management functions and processes will be optimized in the long run

Background

- Adoption of immediate or instant payments through initiatives such as SWIFT's Global Payments Innovation Initiative (GPII) and real-time payments schemes across the globe is expected to improve liquidity and shorter reconciliation times resulting in faster order fulfillment across the payments lifecycle
- Post the 2008 financial crisis the Basel Committee on Banking Supervision (BCBS) devised new norms and rules for revising the then-current capital-adequacy guidelines for global banks
- The committee has recommended monitoring tools to supplement the Basel III liquidity ratios (such as the Liquidity Coverage Ratio), which are currently in different phases of implementation across different markets
- While several countries such as the Netherlands already have an intra-day liquidity monitoring framework in place, additionally other national-level regulators are also supporting the BCBS tools, where banks need to fully implement intra-day liquidity reporting norms by January 2017

Key Drivers

- There is a growing need for monitoring the level of liquid assets required to cover future liquidity needs and in order to improve banks' ability to withstand the liquidity shocks, the Basel III norms aim at better liquidity through longer-term funding of assets
- Development of risk-mitigating practices, such as payment-versus-payment and delivery-versus-payment and the implementation of settlement systems such as Continuous Linked Settlement and Central Counterparties, has resulted in a dependence between payments, clearing, and settlement systems that is leading to an increased need for intra-day liquidity management
- Globally, the requirement to accelerate payments processes to improve liquidity and have shorter reconciliation times has arisen due to the need for real-time availability of funds

Trend Overview

- According to Basel III norms, banks are required to maintain a minimum Liquidity Coverage Ratio (LCR) of 100% by 2019, which promotes short-term resilience of a bank's liquidity profile
- To maintain the LCR ratio, banks would need to maintain adequate stocks of high-quality liquid assets that are easily convertible into cash in order to meet liquidity needs in liquidity stress scenarios



- The target LCR ratio in 2016 is set at 70%, and to reach the 100% target by 2019 will trigger significant changes in the liquidity management of banks
- Adoption of instant payments can result in faster reconciliation and settlement processes, which will lead to changes in intra-day and inter-day liquidity management

Exhibit 5: Impact of Liquidity Management

“Banks will be affected differently due to their set up, location, and existing business composition; however, all are likely to face increased costs and greater focus on balance sheet usage as a result of Net Stable Funding Ratio and the leverage ratio”

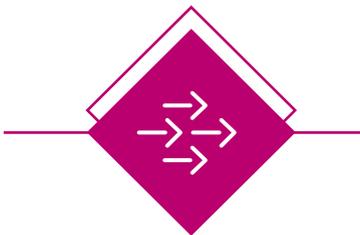
– March 2016, Assistant Vice President at Leading Investment Banking Firm



Source: Capgemini Financial Services Analysis, 2016

Implications

- Banks can monetize investments in the instant payments infrastructure to provide new products and services in both retail and corporate payments, although banks will need to develop real-time liquidity management systems to achieve this, therefore the ROI is not fully established
- Tighter liquidity norms introduced by Basel III are likely to trigger changes in capital structure of global financial institutions, which may result in negative impact across the U.S. and Europe
- It is expected that the biggest impact will be on banks whose processing systems are tightly coupled to batch processes and delayed settlement architectures and capabilities that may force them to undertake back-end transformation initiatives
- Extensive data-driven system and infrastructure changes may be required as monitoring will require the aggregation of retrospective liquidity measurements, which can only be calculated with real-time data
- Strategic changes will be required at the banks' end due to regulatory changes, as cost structures of some product lines could differ and may not look as attractive as before
- Banks should consider setting up a mechanism to monitor differential product pricing and liquidity in order to better manage liquidity and track the actual liquidity consumption of customers



Trend 06: Technology and Regulatory Initiatives Are Inducing Transformation in Cross-Border Payments Domain

Cross-border remittances are likely to witness a high degree of innovation in the coming years due to blockchain, GPII, and alternative solution providers

Background

- Global trade flows are estimated to triple to reach up to \$85 trillion by 2025⁷ and powered by emerging economies and the spread of the Internet and digital technologies, are driving the need for organizations to streamline their processes to keep up with the quickening pace and rising volume of international trade transactions
- Several regulatory and industry initiatives such as GPII by SWIFT and blockchain, respectively, are aimed at changing the traditional international payment methods that currently suffer from high fees due to intermediaries, non-real-time foreign exchange rates, and lengthy timeframes

Key Drivers

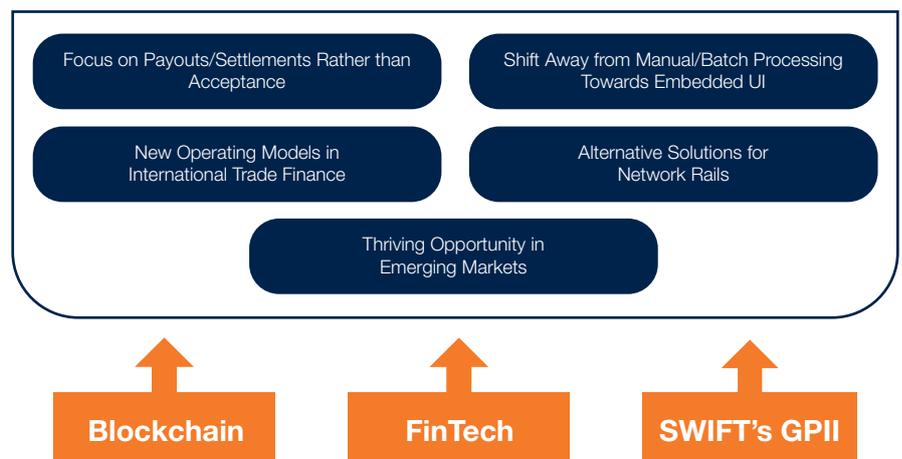
- There is an increasing demand for cross-border payments to become simpler, faster, and more cost effective
- Deficiencies in the existing correspondent banking model such as lack of visibility and complexity in regulatory compliance is leading to the creation of interoperable standards and frameworks
- The cross-border payments segment is undergoing transformation due to adoption of technologies such as blockchain and Ripple



Exhibit 6: Innovation in Cross-Border Payments

“Cross-border payments and correspondent banking model are ripe for rejuvenation”

–October 2016,
Leading Global Bank



Source: Capgemini Financial Services Analysis, 2016

⁷ “Bringing Emerging Markets Into the Flow”, Jens Erik Gould, The Financialist, May 22, 2014, accessed November 2016 at <https://www.credit-suisse.com/us/en/articles/articles/news-and-expertise/2014/05/en/bringing-emerging-markets-into-the-flow.html>

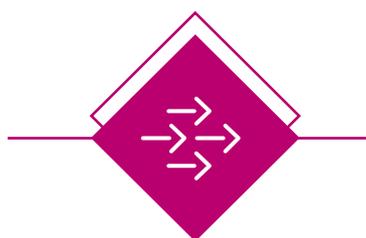
Trend Overview

- Revenue from cross-border transaction banking is tied closely to trade flows, which have experienced moderate growth over the past five years⁸:
 - While it is expected that cross-border trade volume will grow at a significant rate over the next five years, revenue from transaction banking is also likely to grow correspondingly and customers are seeking simpler, more transparent cross-border commerce solutions
 - For banks to capture the growing volume of cross-border trade, there is a need to understand the increasingly complex web of regulations and effective leverage of technology that has resulted in cross-border transaction banking being subjected to digital transformation in areas such as business-to-business payments and correspondent banking
- Correspondent banking continues to remain the primary channel to carry out cross-border banking services and thus remains a lucrative business for banks:
 - Certain imperfections exist in the correspondent banking system such as the slow three-day transaction execution process and non-transparent fee structure
 - Further, this model was designed for high-value, highly secure payments, while today's payments are increasingly low-value, retail-oriented with the proliferation of peer-to-peer cross-border payments /remittances increasing due to growing usage of mobile devices
 - As a result, the unsuitability of the correspondent banking model to modern needs has led to the foray of alternative systems, which either maintain a central agent structure⁹ or disrupt the existing architecture and replace it with distributed networks such as Ripple
- Though there were many initiatives by leading firms to develop new cross-border offerings, prominent among them are proof of concepts run by ANZ Banking Group and Wells Fargo for implementing blockchain technology to reduce the time and cost of transferring funds and increase access to liquidity
- Adoption of GPII continues to increase as additional banks join the initiative, with the base having grown from 45 to 73 major banking participants in the first six months of 2016



Implications

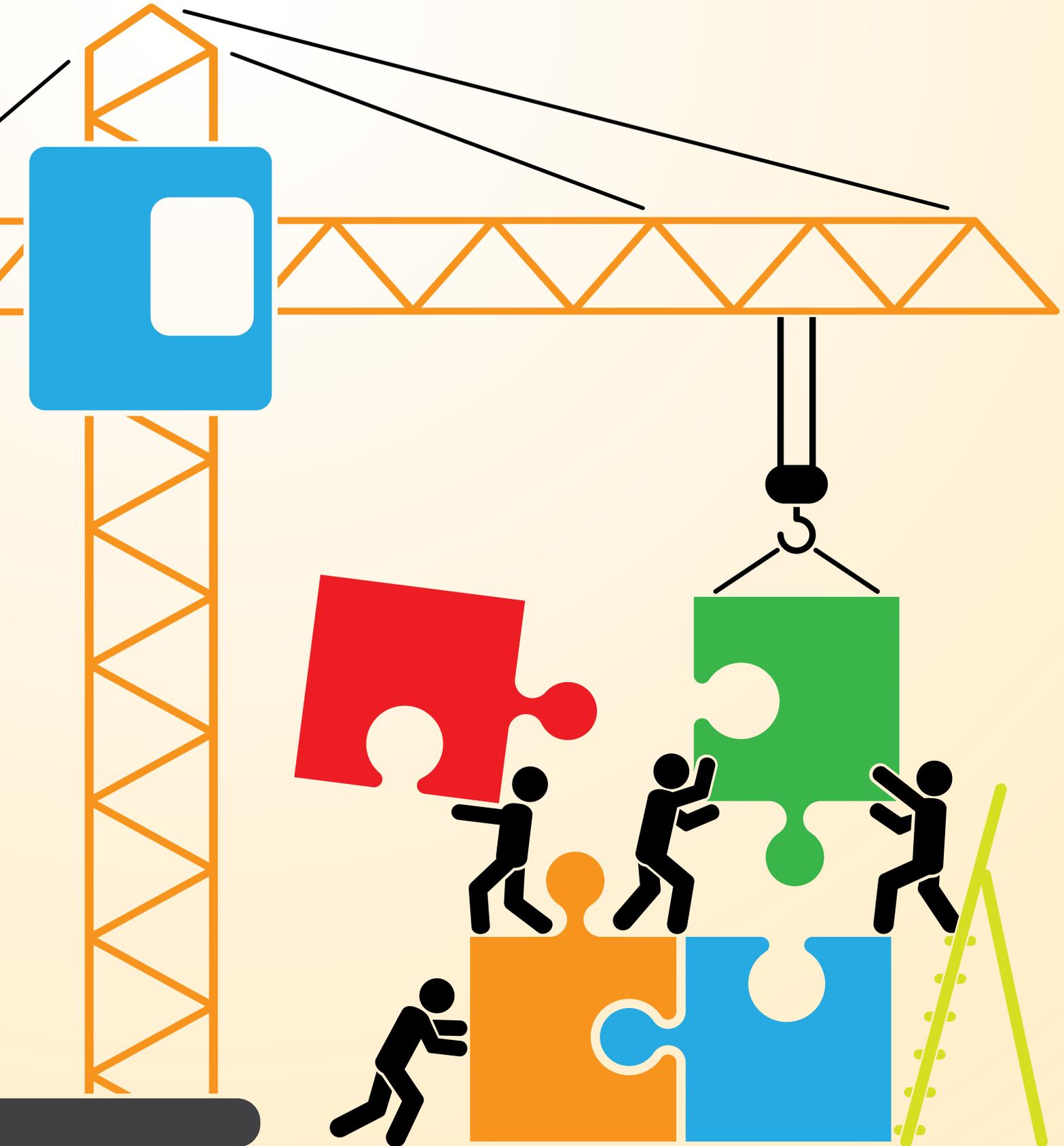
- While cross-border payments is the current focus area for adoption of blockchain, trade finance function also is expected to be disrupted with its features such as distributed ledger and smart contracts:
 - Letter of Credit, risk of documentary fraud, and cost of transaction reconciliation between banks are the likely areas of highest use of the technology



8 "Trade in goods and services has fluctuated significantly over the last 20 years", World Trade Organization Statistics, 2015, accessed November 2016 at https://www.wto.org/english/res_e/statis_e/its2015_e/its15_highlights_e.pdf

9 For example, the global Automated Clearing House (ACH) model proposed by the International Payments Framework Association (IPFA)

Stakeholder Strategies



Trend 07: Fintech Activity in Corporate and Retail Domain Can Disrupt Payments Analytics and Authentication

Banks need to either make investments to increase their digital offerings or foster a more collaborative approach to overcome the challenges posed by FinTechs

Background

- The payments industry is undergoing disruption as many FinTech players are challenging the incumbent banks and PSPs by offering faster, cheaper, and enhanced payment customer experience
- FinTech innovations in the payments space were mostly predominant in retail payments but lately FinTech innovations have gathered pace in corporate payments as well
- In the short term, innovations from FinTechs are expected to improve user experience in the areas of analytics, digital identity, and authentication

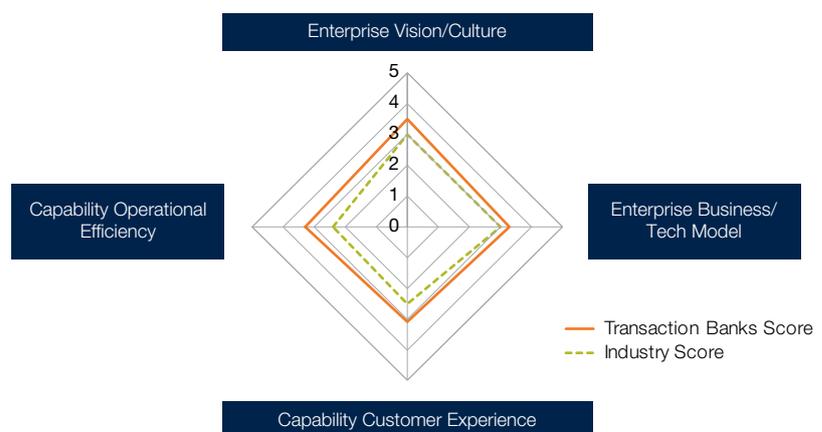
Key Drivers

- Increasing demand from corporate treasurers for digital and analytics-based solutions such as fraud management and compliance tracking in order to improve financial operations
- Corporates have lower perception of banks' digital capabilities than banks do themselves¹⁰
- Massive capital behind FinTechs is pushing the growth in innovation, especially in areas of analytics and authentication, while developments such as instant payments in major markets will pull the demand for such services

Exhibit 7.1: Transaction Banking Digital Maturity Assessment of Banks by Corporates and Industry Executives, Q2 2016

“Many innovative banks are already on board with predictive analytics. Their next step will be to use the new insights and forecasts generated to enhance the digital banking experience of customers. Banks without a data-driven strategy are now taking serious risks with their future; disintermediation is in full flow and data analytics underpins it all”

–May 2016, Senior Executive at a Leading Global Bank



Source: Capgemini Financial Services Analysis, 2016; Executive Interviews for World Payments Report, 2016; Online Survey for World Payments Report, 2016; Total 124 responses received

Note: Questions asked: “Please assess the ENTERPRISE digital maturity of banks offering transaction banking services in the following areas”; “Please assess the CAPABILITY digital maturity of banks offering transaction banking services in the following areas”; Transaction bank score is the digital maturity score provided by banking executives; Corporate score is the digital maturity score provided by corporate executives

10 Digital Maturity Assessment, World Payments Report, 2016

Trend Overview

- User authentication and data security have been identified as one of the important FinTech trends as part of the FinTech influencers survey¹¹:
 - Enhanced fraud and authentication solutions:
 - › Currently, several credit card firms are implementing cryptographically locked, secure operating systems built into android-based smartphones at the point of manufacture
 - › Firms such as MYPINPAD are developing Software as a Service-based solutions for authentication
 - › Implementation of biometric solutions for authentication and fraud prevention are also on the rise with them being deployed for multiple payment use cases
 - › For example, Apple Pay is making mobile POS payments via smartphones much more secure by using fingerprinting in its Apple TouchID biometric system
- Big Data and analytics solutions:
 - Regulations such as PSD II will open up access to customer data, which will be leveraged more by players other than the established incumbents
 - In such a scenario, predictive analytics solutions assume greater significance
 - Several firms such as American Express, Bank of America, BNY Mellon are leveraging predictive modeling to understand customer behavior
 - Recently, MasterCard acquired Applied Predictive Technologies (APT) to use the firm’s technology in combination with its own analytics expertise for providing customers with enhanced decision-making capabilities



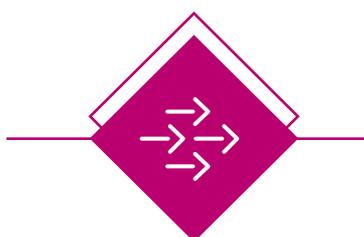
Exhibit 7.2: FinTech Disruption in Payments



Source: Capgemini Financial Services Analysis, 2016; Digital Disruption Brews In Financial Data, Digital Identity, And Payments, 2015, Forrester

Implications

- Banks and industry participants believe that banks are willing to collaborate with FinTechs, and according to the World Payments Report, 2016, nearly 79% of bank executives view FinTechs as partners
- Banks and industry participants are expected to invest in infrastructure initiatives such as open banking platforms and APIs to increase collaboration with FinTechs
- Transaction banking services such as treasury operations are not being heavily disrupted by FinTech offerings at present but banks could lose market share in the future if they are slow to innovate
- In the near future, disruptive solutions are expected in the areas of payments analytics and authentication such as data aggregation, fraud management, compliance tracking, and authentication using selfie or iris scan or voice biometrics



11 “Yodlee’s FinTech Influencer Survey”, Envestnet Yodlee, February 15, 2016, accessed November 2016 at <https://www.yodlee.com/blog/global-fintech-survey-results-51-experts-reveal-2016-trends/>

Trend 08: Adoption of Open APIs is Leading to Paradigm Shift in Payments through Third-Party and Industry Initiatives

Open APIs can separate infrastructure and customer experience by providing easy to use front end applications based on the platform shared by financial institutions

Background

- Open APIs are published on the internet and generally shared freely:
 - A bank, for example might publish a series of APIs to encourage third-party developers and FinTech innovators to be innovative and figure out new ways to use the bank's data platforms
- Open APIs will be able to provide various advantages of allowing development of apps across various platforms, improve customer interface and distribution of financial services across geographies, reduce costs for adoption of new technology, and introduce new services and products at a faster rate
- Banks have been facing pressure due to increasing competition and new regulatory standards, hence are looking at new revenue streams through collaboration with third-party developers for implementation of Open APIs

Key Drivers

- With Revised Payment Services Directive in Europe, or PSD II which will come to effect in 2018, banks will look to attract new customers by offering platform for open banking services
- Changing customer expectations is resulting in banking services to become slightly commoditized which is driving banks to invest in new technologies

Trend Overview

- An Open API is a public interface that is a set of functions and procedures that provides means to access data based on open standards¹²
 - The data thus accessed by Open APIs maybe used to develop micro services for the end customers such as building custom applications (faster cross-border and trade finance transactions) on existing banking platforms and thus create a new revenue model
- Some global banks have realized the benefits of the API platforms and the value of collaboration through such initiatives:
 - Some banks such as Capital One Bank have launched their Beta version of its U.S. API market platform Capital One DevExchange (in March 2016)¹³ to collaborate with developers to build solutions for payments, cards and other financial management services

“Right now there is some talk about [APIs], but in five to 10 years they will become a facet of doing business online that everybody has to do or end up being left in the dust”

–April, 2016, Senior Vice President
at Leading European Bank

¹² “APIs – what do they mean for payments?”, April, 2016, www.paymentsuk.org.uk

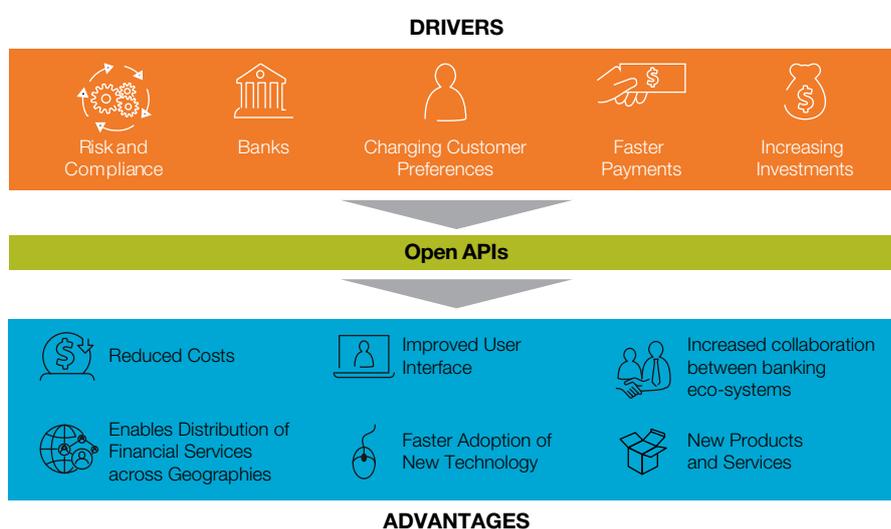
¹³ “Capital One Launches First True Open Banking Platform in US”, March 2016, <http://www.programmableweb.com/news/capital-one-launches-first-true-open-banking-platform-us/2016/03/11>



– While Fidor bank have developed the API platform in house, an emerging bank from U.S., Silicon Valley Bank acquired banking API startup Standard Treasury in August, 2015¹⁴ to collaborate with third party developers and build innovative financial solutions

- Open APIs are slowly gaining traction in Indian banking sector, fueled by the government’s Open API policy for five programs including Aadhaar, e-KYC, e-Sign, proposed privacy-protected data sharing, and the Unified Payments Interface (UPI)¹⁵
- With financial institutions being slow in their adoption of innovation in services having an API based accesses to their core systems will allow them to collaborate with their partners while maintaining the control of their core financial processes
- U.K. Treasury tasked industry-led Open Banking Working Group (OBWG) have proposed a timeframe for further development and implementation of the new standard in stages:

Exhibit 8: Advantages of Open APIs

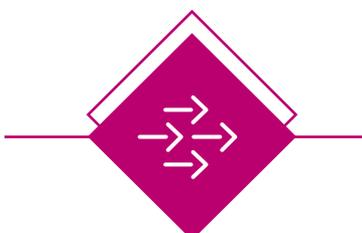


Source: Capgemini Financial Services Analysis, 2016; World Payments Report, 2016

– For the initial phase, ‘Read only’ access to “personal customer data sets via the open banking API could be operational starting at the beginning of 2017, and a fully functioning open data market in the UK banking sector would be a reality by the end of March 2019

Implications

- Banks are expected for forge inter-bank collaborations to develop standards and protocols for third-party partnerships based on open banking platforms
- There is an opportunity for corporates to become more involved with their payment processing partners during the initial phases of processing transformation projects and also in the design phase of new products and offerings through Open APIs.
- On one hand there’s a need to accelerate service innovation through adoption of APIs in the market while on the other hand collaboration between banks and third-party API developers is a win-win deal for both



14 “API Banking startup, Standard Treasury, joins Silicon Valley Bank”, August 2015, www.svb.com

15 “Indian banks testing blockchain, AI, biometrics, open API and payments”, September, 2016, www.biometricupdate.com

Trend 09: Increased Threat of Risk and Fraud have Made Security and Authentication Top Priorities for Payment Firms

As the need for security and authentication measures in payments are at the top of the agenda for payments firms, a close collaboration among stakeholders will help in establishing relevant frameworks

Background

- Relentless growth of data breaches remains a significant threat to the banking and payments firms as the aggressiveness of the cyber attacks have increased from malware to ransomware and banking Trojans
- In February 2016, Central Bank of Bangladesh witnessed one of the biggest cyber heists in which the hackers were able to illegally transfer \$81 million out of the bank in a matter of a few hours:
 - Such incidents are putting pressure on payments infrastructure providers such as SWIFT to strengthen their security measures
- European Banking Authority (EBA) is looking to adopt the proposed new Regulatory Technical Standards on customer authentication and communication to meet the objectives of PSD II of improving the security of payments systems and customer protection across Europe

Key Drivers

- Initiatives promoting blockchain and open banking (such as certain clauses in PSD II and price to sales ratio) also suggest implementation of rigorous technology standards for customer authentication and secure communication that will influence payments firms to upgrade their systems to be compliant with the directives



Exhibit 9: Increasing Focus on Security and Authentication

“The fact that banks should offer all of their core services via mobile is great news for consumers seeking more freedom and flexibility, but could also leave the door open for an unprecedented cyber attack if the banks are not able to meet the increased demand for security”

–August 2016, Senior Executive at an app Security Technology Firm



Source: Capgemini Financial Services Analysis, 2016

- The need for robust authentication and authorization techniques for transaction processing on device hardware such as handheld and mobile devices
- Proliferation of immediate payment systems globally is driving the need for robust security measures due to instantaneous payments

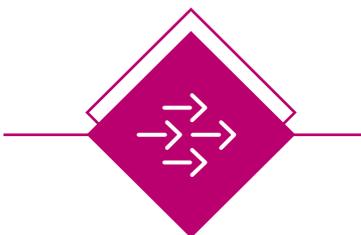
Trend Overview

- Regulations such as PSD II and Open API banking projects are forcing implementation of standards to reduce security breaches:
 - PSD II will allow customers to register at banks to share their data with third parties using alias-based security measures while transaction security will still be as per the bank initiating the payment
 - With growing usage of Fingerprint ID for single sign on across multiple bank accounts, focus on authentication has increased
- With the increasing adoption of mobile payments, digital wallets, NFC, and contactless technology, the number of payment modes to execute transactions has increased significantly, making the systems overall more susceptible to fraud
- More robust security models such as two-factor authentication¹⁶, are being deployed for reducing fraud potential in mobile and online transactions:
 - These measures use multiple data points such as user profile, device used for access, and information from partner banks to establish user authentication
- As the security risk is not only on the network and cannot only be secured with software, in view of the technology developments and increasing volume of online and mobile payment transactions, SWIFT is planning to foster a secure ecosystem comprising security software providers, fraud detection solution firms, interface vendors, auditors, and others¹⁷



Implications

- As customer adoption of the open banking initiatives relies heavily on reliable and consistent user experience, industry leaders and central authorities will have to ensure that the security standards and frameworks are uniform and dependable
- With the open banking initiatives' end dates approaching (such as PSD II in 2018), the EBA has floated a regulatory technical standards for stronger customer authentication and data security measures
- Banks should also invest in initiatives that can help strengthen their existing systems:
 - Banks may review their payments system architecture to reduce the external touch points, making it easier for the bank to manage end-to-end process
- Banks should also review their internal processes in terms of authorized access to its systems and educate its employees, clients, and partners on best practices
 - Banks should also implement solutions that can strengthen its cybersecurity processes against cyber fraud and protect it against risks of system breach such as denial-of-service attack



¹⁶ Two Factor Authentication is an extra layer of security that requires additional information (apart from the username and password) from the transaction initiator such as a physical token or private PIN

¹⁷ "SWIFT launches customer security programme to reinforce the security of the global banking system", SWIFT, May 27, 2016, accessed November 2016 at <https://www.swift.com/insights/press-releases/swift-launches-customer-security-programme-to-reinforce-the-security-of-the-global-banking-system>

Trend 10: Transformation of Back-End Payments Systems is Still High Priority for Firms to Support Front-End Innovation

As new entrants continue to challenge traditional service providers, they will have to invest in back-end transformation strategies to maintain their ability to compete in innovation and time to market

Background

- While the adoption of digital services by both retail and corporate consumers has increased at the front-end, traditional payment processing workflow is currently lagging in innovation
- Such a lag is leading to an operational imbalance for payments firms in terms of transaction processing timeframe, cross-country/cross-instrument transactions, and other real-time requirements
- External factors such as potential convergence of cards and payments in the front end and existing complexities of the internal processing systems are influencing the executives in payments firms to analyze ways to transform their core processing systems

Key Drivers

- There is a need for improving agility by PSPs to support innovations in the front end
- Increasing demand for implementing robust back-end data systems to ensure customer data privacy and security
- Operational requirements for real-time payment processing and convergence of multiple payment methods is resulting in customer demand for data visibility with improved analytics capabilities
- Transformation of the back office has become a trend around ISO 20022 adoption and cost consolidation with banks seeming to be more comfortable adopting an intermediary zone between the digital channels and back-office processing
- Also there is significant operational costs involved in the maintenance of the legacy patchwork systems, which can be reduced by full-scale transformation of back-end systems

Trend Overview

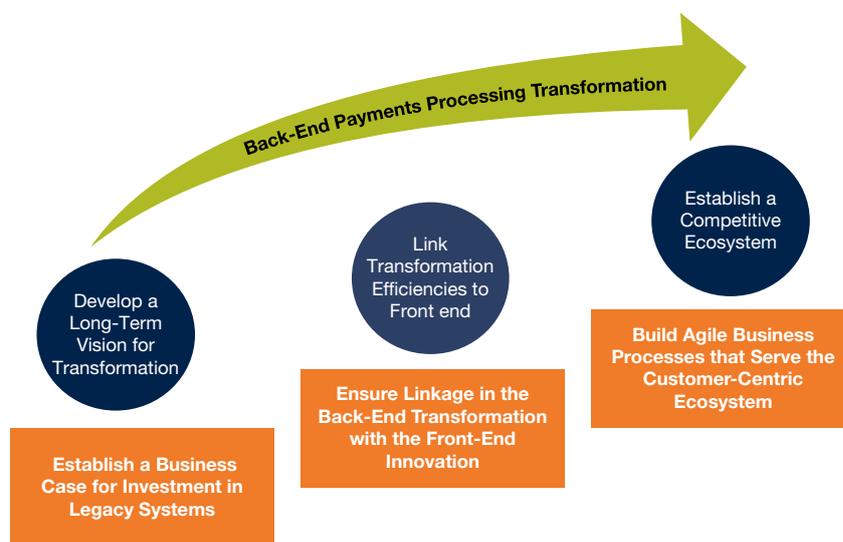
- There is an apparent lag in the processing, clearing, and settlement elements of the value chain, except for some efforts to improve efficiency of these functions
- The firms with legacy systems in their back offices are constrained by several external forces and internal challenges, including multiple key regulatory and industry initiatives related to security and data privacy, which require firms to understand these laws in different jurisdictions and are thus forcing banks to revamp existing process operations
- Overcapacity in the payments processing area is yet another challenge, which is pushing PSPs to find revenue from sources other than volume growth



Exhibit 10: Transformation Road Map for Back-End Processing

“Although the back-end payment processing systems are highly scalable and proven in reliability, they lack the nimbleness and flexibility necessary to adapt to change quickly and economically”

–September 2016, Senior Executive at a Payment Integration Firm

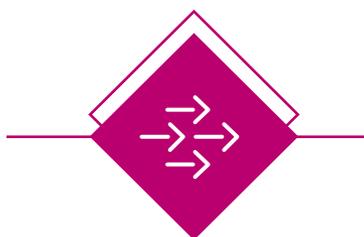


Source: Capgemini Financial Services Analysis, 2016

- Legacy IT landscape, which is a key internal challenge, is characterized by different payments processing systems for different products and this siloed approach has led to increased complexity in managing legacy systems

Implications

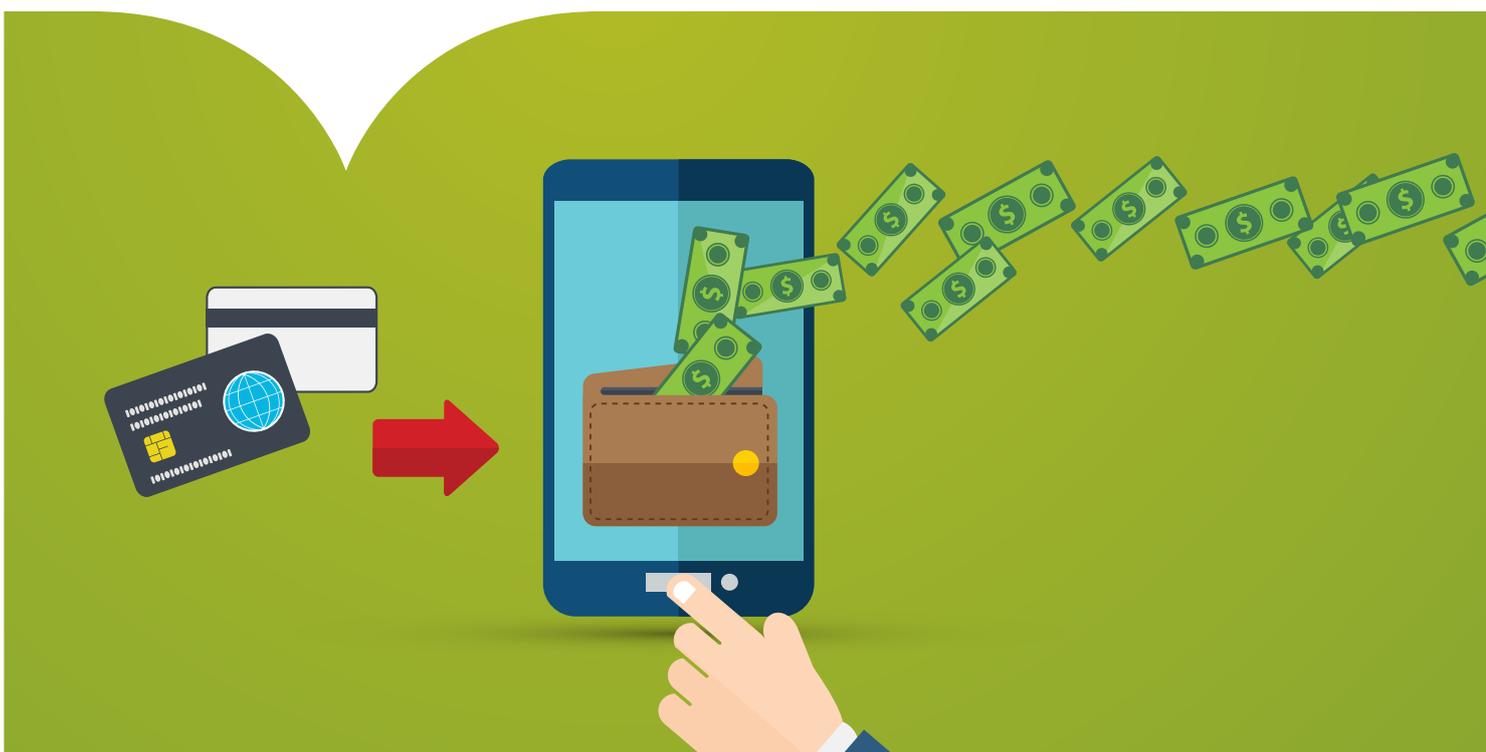
- One of the main implications as part of the back-end transformation projects at banks is to synchronize and integrate the existing disparate systems of processing domestic and cross-border payments, direct debit and credit transfer payments, as well as cards and other payments:
 - One recommendation could be to de-couple front-end initiatives from the back-end transformation to facilitate different pace of evolution for both parts of the value chain by using order manager and APIs as tools
- While some firms might benefit from treating each innovation as an integration around existing infrastructure, it might be more beneficial to the firms by adopting a clear business vision on how their investments can transform their back-end capabilities and thus support them in competing for market share at the front end
- In addition to the multitude of systems, banks have historically undergone high levels of mergers and acquisitions, as a result of which, there are different systems for processing a single product and consequently convergence of such systems will be beneficial
- There is an element of potential risk involved in undertaking a transformation of back-end systems in the existing banking operations due to the complexity of the existing infrastructure
- With the help of transformation initiatives, managing resources and budget across different functions such as regulatory compliance, customer-facing innovation initiatives, and payments processing, becomes easier for banks
 - Banks should create a vision and devise a strategy for planning effort overtime, dedicate constant effort to one-time investments, prevent any tunnel effect, and avoid allocation of a higher budget for infrastructure replacement compared to client-facing innovation



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