



BNP PARIBAS

The bank for a changing world

WORLD PAYMENTS REPORT 2018



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Preface

In this 14th edition, the *World Payments Report (WPR)* provides insightful analysis of the development of new payments ecosystems, which are opening new horizons in payments and transaction banking. In-depth analysis of global non-cash transaction volumes is combined with an examination of the ever-changing regulatory landscape to track the evolution of payments ecosystems and payment service providers' (PSPs') changing roles.

WPR 2018 marks the third year of partnership between Capgemini and global banking institution BNP Paribas, a recognized leader in transaction banking and cash management. This partnership brings strategic insight and client-based industry research into the critical issues and trends shaping the payments industry that are relevant for corporate treasurers and financial institutions.

Globally, non-cash transaction volumes continued to grow at double digit growth rates during 2015–2016. Volumes grew by 10.1% to reach a total of 482.6 billion. The main growth regions during the period were Emerging Asia and Central Europe, Middle East, and Africa (CEMEA). Based on our model and hypotheses, we have also estimated the global non-cash transactions from 2017 through to 2021. WPR 2018 finds that the global e-wallet market is growing even faster, with transaction volume estimated to total 41.8 billion, which is about 8.6% of global non-cash transactions. Alibaba, Tencent, Google, Apple, Facebook, and Amazon have captured a significant share of this market. There is increasing evidence that high levels of non-cash transactions can benefit society in a number of ways and can even help to solve challenging problems, such as corruption and payments fraud.

Section 2 of the report analyzes the regulatory dynamics in the payments market. The section describes the cyclical effect that is being observed in the objectives of key regulatory and industry initiatives (KRIs) between risk reduction, innovation, and standardization. It also examines how KRIs with conflicting objectives impede the development of payment ecosystems and how regulatory clarification could help alleviate the challenges.

The core theme of the report explores how the banking industry is adopting new payments models to offer new value-added services to customers, including corporate treasurers. The report also analyzes the ways in which banks can come closer to their customers by orchestrating various services, leveraging emerging technologies, and suggests a roadmap for the future. In this edition of *World Payments Report*, we have introduced the Payments Open Banking Assessment. This highlights the state of open banking from a payments perspective across 16 countries. We highlight how an open banking environment successfully creates the conditions for non-cash payments, provided PSPs meet a few critical requirements, including adoption of emerging technologies, an innovative spirit, and collaboration with FinTechs.



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Section

01

Non-Cash Transaction Analysis



Key Findings

- **Global non-cash transaction volumes grew at 10.1% in 2016 to reach 482.6 billion.** Emerging Asia (25.2%) and CEMEA (17.1%) were the chief drivers of this growth. Growth rates accelerated in developing markets to reach 16.5%, fueled by governments' efforts to increase financial inclusion, and the increasing adoption of mobile payments, particularly in India (33.2%), China (25.8%) and South Africa (15.1%). Mature markets including mature APAC, North America, and Europe witnessed a stable growth rate of 7.1%.
- **Non-cash transactions are estimated to accelerate at a compound annual growth rate (CAGR) of 12.7% globally with emerging markets growing at 21.6% from 2016–21.** Emerging markets that now account for about one-third of global non-cash transaction volume are expected to contribute nearly half of the global volume in 2021 by growing at a rate of close to three times that of mature markets. Emerging Asia is expected to witness a stellar CAGR of 28.8% from 2016–21, driven mainly by sustained digital innovation, adoption of mobile payments, and financial inclusion initiatives.
- **Global electronic wallet (e-wallet) transaction volumes are estimated to be about 41.8 billion in 2016, comprising almost 8.6% of all non-cash transactions.** There is enough market potential for the large global technology firms (the so-called BigTechs, such as Google, Amazon, Facebook, Apple, Alibaba, and Tencent) and incumbents to expand their respective markets. BigTechs accounted for about 71.0% of the global e-wallet market in 2016. These companies are leveraging their large-platform user base to make an impact in the payments space, focusing on providing seamless user experience, value-added features, and making use of network effects. Incumbents should learn from the BigTechs and invest in technology platforms in order to compete with them.
- **There is no one-size-fits-all strategy that can help with payments evolution of a market. Context analysis of a particular market is critical to enable high digital transactions growth.** Regulators can help by creating the required demand-side pull and supply-side push to enable rapid adoption of non-cash instruments. Government initiatives and industry collaboration are creating the necessary supply-side push for Australia's payments industry, for example. High levels non-cash transactions can benefit the society in a number of ways, solving even challenging problems, such as corruption.

Global Non-Cash Transaction Volumes Analysis

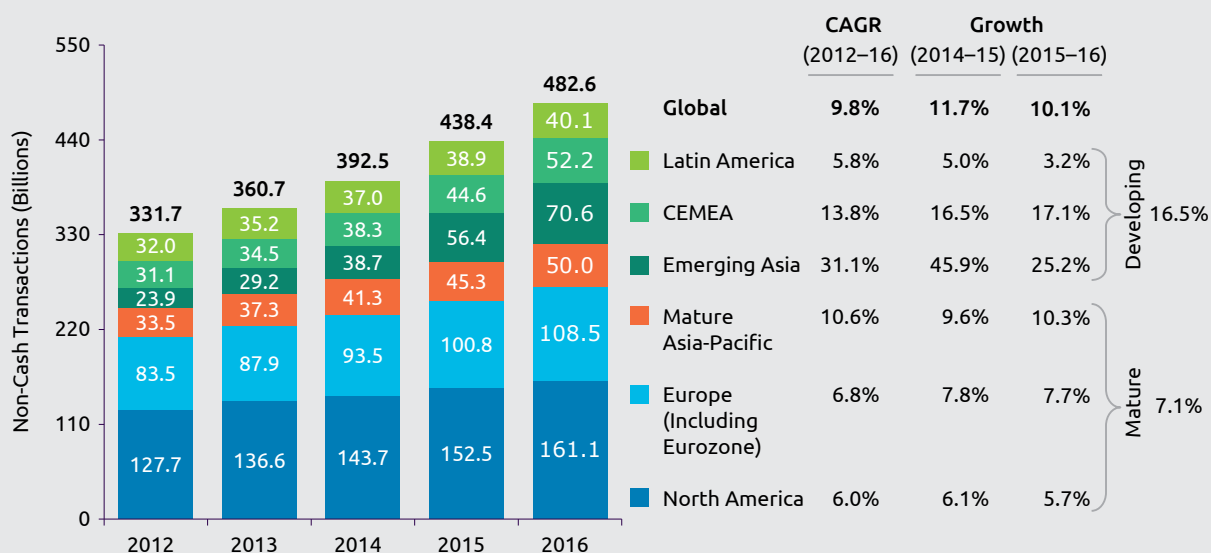
GLOBAL NON-CASH TRANSACTION VOLUMES GREW AT 10.1% IN 2016 TO REACH 482.6 BILLION

During 2015–2016, global non-cash transaction volumes grew at 10.1% to reach 482.6 billion (see Figure 1.1). Two regions (which fall into the developing markets category) fueled this growth: Emerging Asia (with 25.2% growth) and CEMEA (17.1%). Overall, the developing markets of Emerging Asia, CEMEA and Latin America recorded an accelerated growth rate of 16.5% in 2016, driven by financial inclusion efforts and the adoption of mobile payments. Notable growth rates were recorded in Russia (36.5%), India (33.2%), China (25.8%), and South Africa (15.1%).

The 10.1% growth rate was above the 9.1% rate predicted in World Payments Report (WPR) 2017. The prediction anticipated that the growth rate in China

would stabilize in 2016 and come down. However, we could not anticipate the Indian Government's demonetization program, announced in November 2016, which resulted in higher-than-expected growth in non-cash transactions of 33.2%, with debit cards contributing the highest growth of 76.2%. Additionally, the government's financial inclusion measures have led to higher adoption of debit and prepaid cards. Credit card volumes grew by 38.1%, compared with 27.8% in 2015. The number of payments made via mobile wallets in India increased by 75.5% in 2016, highlighting the growing importance of new instruments and entrants in the market. CEMEA grew 17.1% with cards transactions volumes increasing the most. Russia led the growth in the region (36.5%), primarily due to the Russian Government's push for the adoption of cards. This is being led by the Mir payment system, which was developed by the Bank of Russia subsidiary, The Russian National Card Payment

Figure 1.1 Number of Worldwide Non-Cash Transactions (Billions), by Region, 2012–2016



Notes: CEMEA (Central Europe, Middle East, Africa) includes Algeria, Bulgaria, Croatia, Kenya, Nigeria, Egypt, Israel, Morocco, and UAE in other CE and MEA countries; Latin America includes Argentina, Colombia, Venezuela, Chile, Peru, Uruguay, Costa Rica, Bolivia, and Paraguay in other Latin American countries; Emerging Asia includes Malaysia, Thailand, Indonesia, Philippines, Taiwan, Pakistan, Sri Lanka, and Bangladesh in other Asian countries; Mature APAC (Asia-Pacific) includes Japan, Australia, South Korea and Singapore; NA (North America) includes the US and Canada; Chart numbers and quoted percentages may not add up due to rounding; Some numbers may differ from data published in WPR 2017 due to previous year data updated at the source.

Sources: Capgemini Financial Services Analysis, 2018; ECB Statistical Data Warehouse, 2016 figures released October 2017; Bank for International Settlements (BIS) Red Book, 2016 figures released December 2017; Countries' central bank annual reports, 2017.

System (NPCS). Volume growth slowed in the US during 2016, from 6.1% in 2015 to 5.7% in 2016, possibly due to limited innovation and the persistence of a legacy payments infrastructure (compared to other parts of the world). Canada grew at 5.1%, as mobile payments adoption increased. Non-cash transactions in Europe increased at healthy rate of 7.7% in 2016, led by faster growth in Germany, Spain, Finland, Greece, Sweden, and Denmark. While growth rates in mature markets are stabilizing, the higher adoption of digital initiatives in developing countries is resulting in higher volume growth.

LEADERSHIP OF MATURE MARKETS IN DECLINE BUT THEY STILL HAVE LION'S SHARE OF GLOBAL NON-CASH TRANSACTION VOLUMES

In terms of market share, the mature markets account for 66.3% of global non-cash transaction volumes in 2016. In the past 10 years, however, they have lost about 20% of their share to developing markets that are leapfrogging the legacy payments systems prevalent in mature markets and adopting advanced payments technologies. Only mature APAC countries such as Australia, Japan, and Singapore increased market share by growing at double-digit rates.

In 2016, emerging markets collectively surpassed the North American region for the first time in non-cash transaction volumes. These markets are on track to overtake mature markets as a whole by 2021, which is consistent with the prediction we made in WPR 2014.

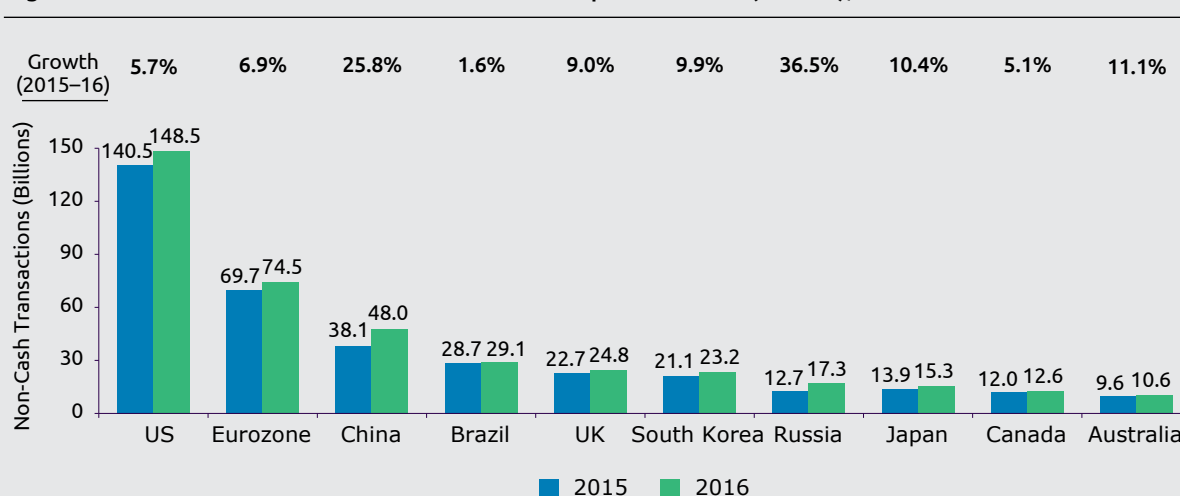
Specifically, the US is predicted to lose leadership in non-cash transaction volumes to China by 2021. North America experienced the steepest decline in the share of non-cash transactions, perhaps a result of that market's slowness to adopt new payments technologies.

The market share of emerging markets has more than doubled from 14.1% of total non-cash transactions in 2006 to 33.7% in 2016, while during the same period the share of Europe and North America decreased by 9.2% and 12.4%, respectively. These figures emphasize the high-growth potential of emerging markets.

PERFORMANCE OF THE TOP 10 GLOBAL MARKETS

While there was no change during 2016 in the countries that make up the top-ten markets by number of cash transactions, Russia surpassed Japan to become the seventh-largest market. The US continues to dominate in terms of numbers of non-cash transactions, reaching 148.5 billion transactions in 2016, an increase of 5.7% over 2015 (see Figure 1.2). However, the most rapid growth came in Russia, which recorded an increase in transaction numbers of 36.5%, to reach 17.3 billion transactions due to initiatives including financial inclusion programs, regulations to cap cash payments, and the introduction of the National Payment Card System (NPCS). China, with 25.8% growth and 48 billion transactions, recorded the second-highest growth rate. Four APAC countries: China, South Korea, and Australia.

Figure 1.2 Number of Non-Cash Transactions in the Top Ten Markets (Billions), 2015–2016



Note: Some numbers may differ from data published in WPR 2017 due to previous year data updated at the source.

Sources: Capgemini Financial Services Analysis, 2018; ECB Statistical Data Warehouse, 2016 figures released October 2017; BIS Red Book, 2016 figures released December 2017; Countries' central bank annual reports, 2017.

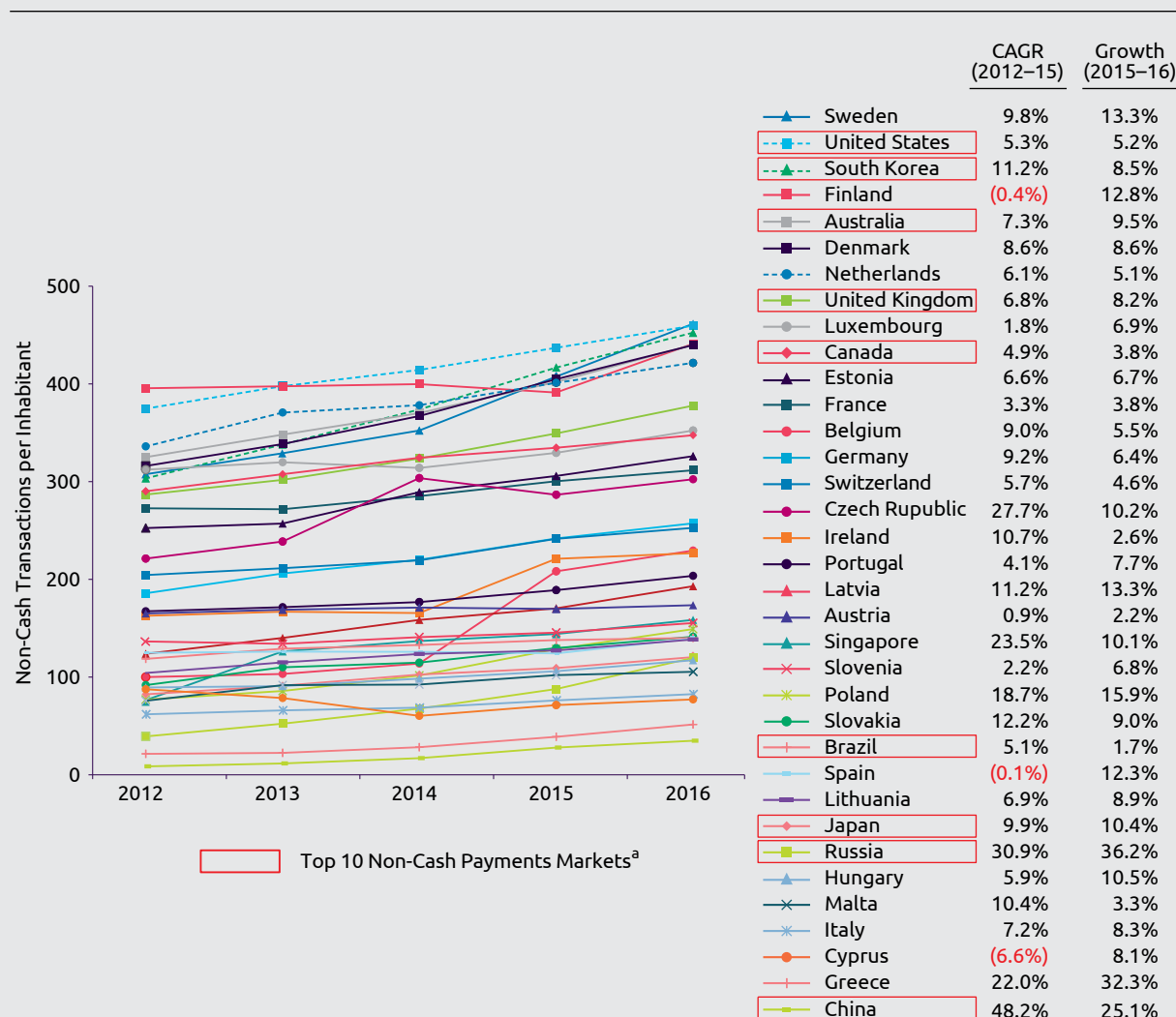
Australia, and Japan, accounted for four of the five fastest growing markets in the top ten. Our research indicates that growth in the top-ten countries is shifting from West to East. India is expected to overtake Australia by 2018 and Canada by 2019.

NON-CASH TRANSACTIONS PER INHABITANT

The fight for global leadership in terms of transactions per inhabitant between the US and the Nordic countries continues. Sweden moved ahead of the US for the first time to become a global leader in per inhabitant

non-cash transactions, recording 461.5 transactions compared to 459.6 recorded in the US. Initiatives to create a completely cashless society in Sweden have contributed to this, with 6.33 million of the country's 10 million total population using Swish, a mobile payments service backed by all of the main Swedish banks.¹ Meanwhile, a lack of modern infrastructure in the US, and the absence of government moves to encourage cashless transactions, have relegated that country to second place. Sweden is expected to maintain its current growth path and retain its leading position, while South Korea and Australia could surpass the US during the next one to three years (see Figure 1.3).

Figure 1.3 Number of Non-Cash Transactions per Inhabitant, 2012–2016



a: Eurozone has not been highlighted as a leading market as most of its individual members have been displayed on the chart.

Notes: Chart numbers and quoted percentages may not add up due to rounding; Some numbers may differ from data published in WPR 2017 due to previous year data updated at the source level.

Sources: Capgemini Financial Services Analysis, 2018; ECB Statistical Data Warehouse, 2016 figures released October 2017; BIS Red Book, 2016 figures released December 2017; Countries' central bank annual reports, 2017.

¹ "Swish Website", <https://www.getswish.se/sv-press/statistik/>, accessed Aug 30, 2018

Average growth for the top four markets in 2016 was 9.9%, which was greater than the next four markets, at 7.8%. The average growth of the next four markets was only 5.3%. Markets with higher numbers of non-cash transaction per inhabitant experienced higher growth on average than those with slightly lower non-cash transactions per inhabitant, demonstrating that growth creates a virtuous circle of investment and innovation, leading to additional growth. High volumes of non-cash transactions create an ecosystem in which those consumers and merchants who may have been reluctant to use digital payments gain more confidence to do so. The non-cash payments market has not reached a plateau and mature markets demonstrate that high growth drives further investment in innovation, which in turn leads to more growth.

CARDS CONTINUE ON GROWTH PATH, WITH EMERGING MARKETS A KEY DRIVER

Cards are gaining market share globally, with debit cards transactions growing by 14.7% – the fastest rate of all non-cash payment instruments during 2016. The next-highest growth rates were recorded by credit cards, which grew at 10.9% and credit transfers, at 7.2%. Globally, cards continued to increase their share of the payments instruments mix in 2016, growing by 2.1% over 2015. The market share of all other instruments declined during the same period

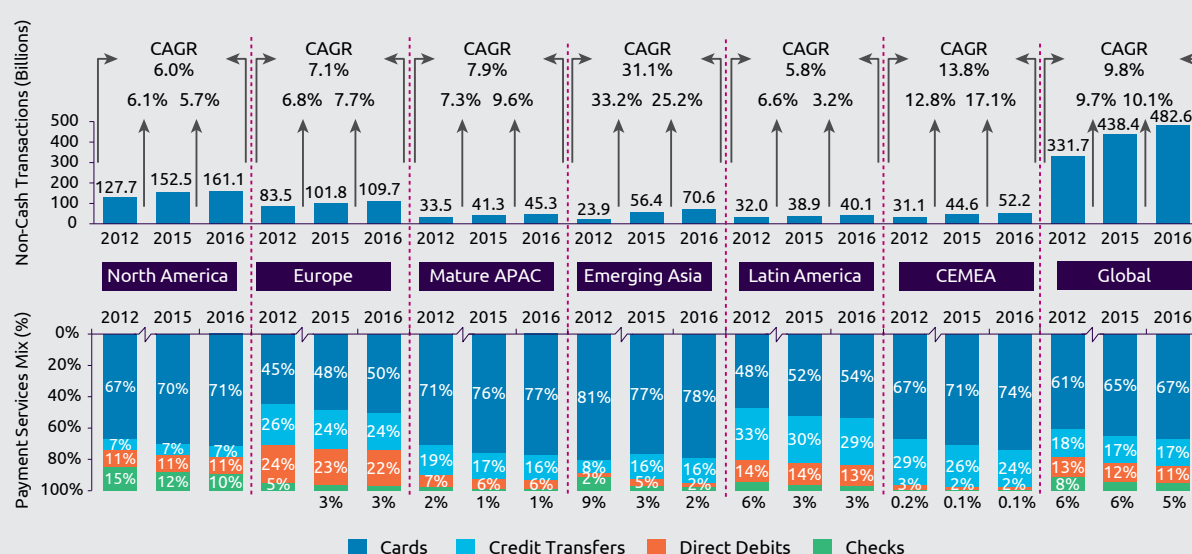
(see Figure 1.4). As the market share of checks and direct debits declines in the wake of increased adoption of contactless and real-time payments, a duopoly may develop in the non-cash market, with cards and credit transfers dominating across most geographies.

Contactless, biometrics, and EMV are expected to drive credit card volume growth in mature markets, while robust credit scoring models that leverage data are expected to increase credit card volume in developing markets.

The volume of direct debits is expected to slow globally in the coming years as the market moves towards adoption of in-app wallets, coupled with rising adoption of real-time payments. For example, direct debits have been popular as a means of paying recurring bills, however the rise of alternative payment instruments in some countries is leading to a decline in volumes. At the same time, credit transfers volumes are expected to witness a steady increase in the near future thanks to the adoption of real-time payments, particularly in Europe and North America.

Credit card transaction volumes grew in North America, Mature APAC, and Latin America, while dipping in Europe, Emerging Asia, and CEMEA. The US, South Korea, and Japan combined account for 64.9% of total global credit card volume — the US alone accounts for 39.1% of global volumes.

Figure 1.4 Comparison of Non-Cash Transactions (Billions) and Change in Payments' Mix (%), by Region, 2012, 2015–2016



Notes: Chart numbers and quoted percentages may not add up due to rounding; Some numbers may differ from data published in WPR 2017 due to previous year data updated at the source.

Sources: Capgemini Financial Services Analysis, 2018; ECB Statistical Data Warehouse, 2016 figures released October 2017; BIS Red Book, 2016 figures released December 2017; Countries' central bank annual reports, 2017.

The use of checks continues to decline. In APAC, China, South Korea, and Australia recorded a drop of more than 20.0% in check usage. However, India witnessed a rise of 10.1%, as people shifted back to using checks in the wake of the government's demonetization efforts. Overall, checks are becoming a US-only phenomenon, with that country alone contributing to about 73.5% of global check volume. Although the volume of checks is decreasing due to the penetration of cards, they are still being used for larger value bill payments, B2B payments, and payroll transactions.

NON-CASH TRANSACTIONS ARE FORECASTED TO GROW AT A CAGR 12.7% GLOBALLY WITH EMERGING MARKETS GROWING AT 21.6% FROM 2016–21

Our estimates suggest that during the five-year period between 2016 and 2021, the CAGR of worldwide non-cash transactions will be 12.7%, with growth in the more immediate future of 11.0% during 2016–2017. The highest growth rate, of 21.6% over the five-year period, is expected to be in the developing regions of Latin America, CEMEA, and Emerging Asia. Fueled by a change in mindset of payment users from cash-to-mobile payments, China is expected to continue on a high growth path through to 2021. China alone is estimated to account for 40% of global retail e-commerce, according to the country's Ministry of Commerce.²

However, regulatory measures could have a huge impact on growth in the emerging markets. For example, China's move to regulate e-wallet operators such as WeChat and Alipay could significantly reduce the growth of non-cash transactions in the country.³

India is one of the most promising markets, with high potential for growth in non-cash transactions. We believe there is good scope for increasing this number with a digital push. For example, the National Payments Corporation of India's (NPCI's) efforts to bring digital payments into the mainstream, and financial inclusion measures by the government are driving India towards increased digital transactions.

The mature markets, meanwhile, are likely to grow at 6.7% to 2021 (see Figure 1.5). However, these markets are adopting new technologies slowly and may need to take more prompt action to accelerate the use of innovative solutions such as QR codes if they are to keep pace with the emerging market growth.

Emerging Asia is expected to continue on a high-growth trajectory, with an estimated CAGR of 28.8% from 2016–2021. Factors contributing to this include a shift towards smartphone use, increasing use of e-wallets, financial inclusion efforts by governments, and the growth of e-commerce in rural areas.

CEMEA is forecast to witness healthy non-cash transaction volume growth through to 2021, as the percentage of young people in the population grows and digital payment schemes proliferate. Notable in the region is the establishment of the Mir system by Russia's NPC's. The Russian Government is encouraging the adoption of Mir cards and undertaking financial inclusion initiatives.⁴ This will help Russia to continue on its high growth path (despite various trade sanctions and low oil prices) as consumer awareness of the benefits of debit cards increases and the banking infrastructure improves. In the Middle East, the Saudi Arabian Monetary Authority (SAMA) has taken many initiatives to encourage digital payments. For example, a new electronic payments system, mada pay, has been created.⁵

Africa has been a pioneer in mobile banking and mobile network operators (MNOs) such as M-Pesa, Orange Money, and MTN Money are major players for mobile money services. Recently, FinTechs have entered the market, while a number of banks are beginning to compete aggressively for the mobile banking customer. The global mobile industry association, GSMA, predicts that there will be 498 million smartphones by 2020 in sub-Saharan Africa, up from 300 million at the end of 2016.⁶ The implementation of new schemes in mobile money and digital payments could benefit significantly from this growth as well as increased economic activity and regional trade. However, fragmentation and a lack of standardization in Africa may hinder growth.

² "China accounts for 40 percent of global ecommerce transactions", Cyrus Lee, May 30, 2017, accessed August, 2018 at <https://www.zdnet.com/article/china-accounts-for-40-percent-of-global-ecommerce-transactions/>

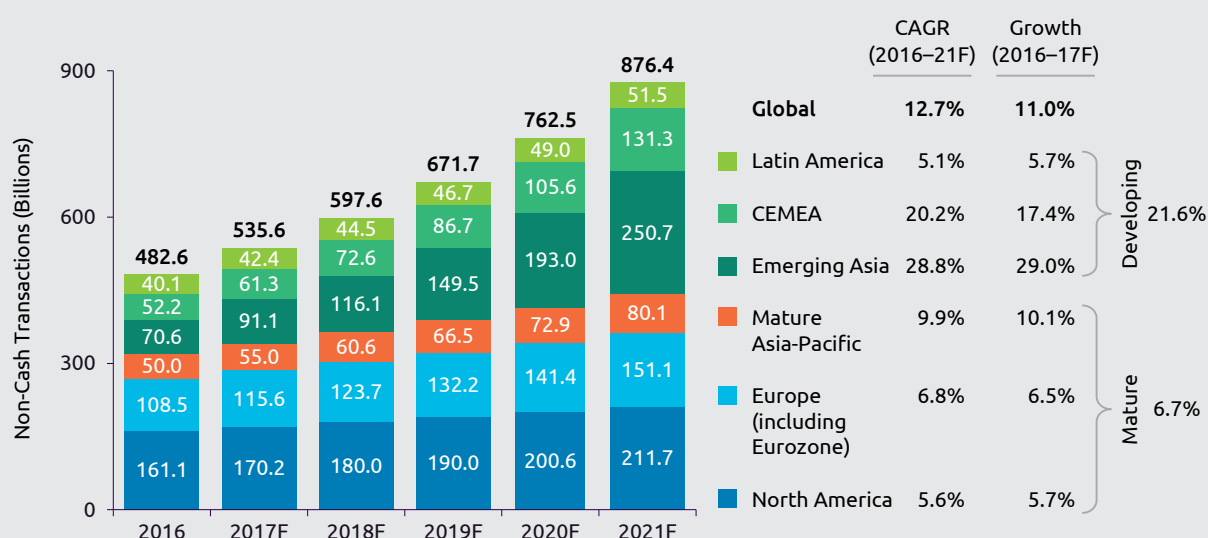
³ "China Tightens Regulation Over Mobile Payment Apps—What's Next For Tencent and Ant Financial?", Yue Wang, Jan 3, 2018, accessed August, 2018 at <https://www.forbes.com/sites/ywang/2018/01/03/china-tightens-regulation-over-mobile-payment-apps-whats-next-for-tencent-and-ant-financial/>

⁴ "Financial sector assessment program", World Bank, July, 2016, accessed August, 2018 at <http://documents.worldbank.org/curated/en/777811472539077075/pdf/108086-FSA-P157494-PUBLIC.pdf>

⁵ "At a glance - Saudi Payment Network SPAN", www.mada.com, accessed August, 2018 at <https://www.mada.com.sa/en/content/glance-saudi-payment-network-span/38>

⁶ "The Mobile Economy Sub-Saharan Africa 2017", www.gsmainelligence.com, July 2017, accessed August, 2018 at <https://www.gsmainelligence.com/research/?file=7bf3592e6d750144e58d9dcfac6adfab>

Figure 1.5 Number of Worldwide Non-Cash Transactions (Billions), by Region, 2016–2021F



Notes: CEMEA (Central Europe, Middle East, Africa) includes Algeria, Bulgaria, Croatia, Kenya, Nigeria, Egypt, Israel, Morocco, and UAE in other CE and MEA countries; Latin America includes Argentina, Colombia, Venezuela, Chile, Peru, Uruguay, Costa Rica, Bolivia, and Paraguay in other Latin American countries; Emerging Asia includes Malaysia, Thailand, Indonesia, Philippines, Taiwan, Pakistan, Sri Lanka, and Bangladesh in Other Asian countries; Mature APAC (Asia-Pacific) includes Japan, Australia, South Korea and Singapore; NA (North America) includes the US and Canada; Chart numbers and quoted percentages may not add up due to rounding; Some numbers may differ from data published in WPR 2017 due to previous year data updated at the source.

Sources: Capgemini Financial Services Analysis, 2018; ECB Statistical Data Warehouse, 2016 figures released October 2017; BIS Red Book, 2016 figures released December 2017; Countries' central bank annual reports, 2017.

As economic conditions in Latin America improve, revised positive GDP forecasts may drive growth in non-cash transactions. Despite the prevailing economic crisis, certain retail segments and geographical clusters, such as tier one and two cities in Brazil, are experiencing increased spending. With increasing awareness and penetration of smartphones, digital payments in Latin America might directly leapfrog into e-wallets instead of following the traditional route of increased card transactions.

Europe is expected to grow faster than the US as regulatory authorities introduce initiatives such as the revised Payment Services Directive (PSD2), which encourage and foster innovation. Contactless cards are also experiencing growth in this region — particularly in the UK following the London Olympics of 2012 — as consumers are drawn to their ease of use. An important factor in Europe are moves towards cashless economies, which are being reflected in the numbers of non-cash transactions per inhabitant in Sweden, Finland, and Denmark. We expect many of the more mature countries will follow their lead.

North America is once again forecast to have slow growth and, at current forecast growth levels, is expected to cede the position as the region with the largest number of non-cash transactions to Emerging Asia by 2021. A persistence of check payments, fragmentation of solutions from individual banks, and a delay in the introduction of real-time payments is causing growth rates in the US to slow.

In mature APAC, government initiatives are driving the non-cash transactions. Australia's payments system modernization program, the New Payments Platform (NPP), was launched in 2018 and is expected to drive non-cash transaction growth by enabling real-time payments with value-added features. Singapore's efforts to enable e-payments include the establishment of a payments council, PayNow, a common QR code, unified PoS terminals and cashless public transport. These should drive growth in the country. In Japan, modernization efforts by the central Bank of Japan have included the extension of operating hours of the BOJ-NET funds transfer system to enable a longer overlap with overseas markets. This is aimed at facilitating smoother cross-border settlement as Japan progressively introduces more global standards.

E-wallet Market Analysis

E-WALLET TRANSACTIONS⁷ ARE ESTIMATED TO TOTAL 41.8 BILLION GLOBALLY, OR AROUND 8.6% OF GLOBAL NON-CASH TRANSACTIONS

Non-cash transactions conducted via e-wallets were estimated to total 41.8 billion globally during 2016. Of the estimated total, about 71.0%, or 29.7 billion, were conducted via the payment apps and e-wallets offered by BigTechs to their customers. China alone accounts for 16.3 billion transactions while the rest of the world accounts for remaining 25.5 billion transactions. These offerings present a distinct value proposition to these customers. While they dominate e-wallet volume share, the BigTechs' market share of total global non-cash transactions is still below 10.0%.

The e-wallet market is growing fast, which presents opportunities for BigTechs. e-wallets have emerged to meet specific customer needs; Paypal, for example, offers real-time and cross-border e-payments across many countries. China adopted digital platforms for all types of transactions and services in the absence of credible solutions in a very cash-based society with a limited card- acceptance network. BigTechs use e-wallets to leverage their client bases, advance customer journeys, and ensure ease of use and big data capabilities.

Growth is being driven by advances in mobile technology and a variety of regional factors. The mobile penetration rate, number of smartphones, and the cost of data in a country play a very important role in determining the success of digitalization efforts. All of these factors combined can affect the rate of proliferation of e-wallets in a country. In Asia, a proliferation of QR code-based applications has driven the adoption of e-wallets. Scanning a QR code is considered to be very convenient and easy for customers. QR codes also eliminate the need for PoS terminals, which can be a cost burden for merchants. In regions where the electricity supply is unreliable, QR codes are more appropriate as they do not require a continuous electricity supply.

The future growth of e-wallets will depend on operators' ability to attract more customers in different

geographies by expanding reach via compatibility with different devices. Also, operators can increase use by existing customers via value-added services, improved security, and greater merchant penetration. For example, Facebook's WhatsApp messaging application is testing a payments service in India, while Google launched the Tez payments app in 2017. Significant adoption of such services could increase the market share of e-wallets. The growth of e-wallets can be slowed, however, if regulations requiring licensing or mandatory KYC are introduced and serve to slow adoption. Instant payments schemes enable banks to offer direct account to account instant transfers, which can significantly boost e-wallet transaction rates. Further, the expansion of Chinese companies such as Alipay and Tencent to other countries could drive rapid increase in e-wallet transactions.

THE BIGTECH E-WALLET VALUE PROPOSITION

The e-wallets and payment apps of the BigTechs offer a distinct value proposition to customers in five distinct areas:

- **Peer-to-peer payments:** Taking advantage of an increased mobile penetration and high user-base, Alipay and WeChat Pay have become leaders in P2P payments in China, a country in which P2P payments are more prevalent due to the absence of established, large retail chains. Other BigTech players such as Google, Apple, Facebook, and Amazon are entering the P2P payments market in other countries. In these markets, however, P2P is not as prevalent as in China because of the presence of retail giants.
- **Personalization through data:** BigTechs are utilizing their rich stores of customer data to offer personalized products and services, such as automatic bill payments, goods ordering, and bill splitting, which are underpinned by secure payments frameworks. Personalization also helps merchants to generate more revenue that enable some payments to be subsidized.
- **New revenue streams:** BigTechs can combine users' data with payments data (with customers' consent) to enable monetization of payments data, which helps them to offer payments services at a reduced cost.

⁷ E-wallets are payment apps housed on smartphones and wearables that enable users to initiate a payment via cards or a credit transfer within the app. Mobile payment methods such as SMS/USSD based transactions, mobile web payments (WAP) and carrier billing (by network operators) are not considered as e-wallets and are not included in our market size estimate

- **Seamless customer experience:** Using their expertise in technology, BigTechs are creating more secure and smoother checkout and funds transfer experiences, adding convenience and value to payments, taking them beyond pure utility.
- **Rewards and customer loyalty:** BigTechs are incorporating loyalty rewards into their e-wallet offerings, helping customers to track their spending and providing the ability to earn and spend points.
- **Digital ecosystem:** BigTechs are making a foray into various financial services offerings such as bill payments, lending to merchants, and insurance products, such as health or travel, to create a digital ecosystem.

Via their e-wallets and payments apps, BigTechs' value proposition lies in a superior customer interfacing experience compared to banks. This focus on the customer interface and experience is at the core of BigTechs' developments from inception. Banks, however, retain the advantage of access to multiple payments networks, including both traditional and alternative. As the API-driven online economy gains momentum, it will become easier for BigTechs to create an ecosystem beyond payments and financial services, providing a one-stop solution to customers.

To date, the BigTechs have operated in a less-regulated environment. They are reluctant to join the complex and fragmented banking industry and prefer to develop partnerships whereby banks offer their services. Banks are highly regulated and must maintain payment infrastructure and resources, diverting investment away from discretionary spend on e-wallets and other client interfacing applications and services. By comparison, BigTechs can operate in niche segments that may have lower regulatory oversight and/or less complex compliance requirements.

BigTechs are also better positioned than banks in terms of the global reach of their solutions; most banks have localized reach that is limited to a few countries or a region. BigTechs operate their own global platform and have a high-profile presence throughout the world. They can make use of this to push standardization and economies of scale at a global level.

While banks are starting to recognize the importance of ease of use and personalization, the business models of BigTechs are based on the utilization of data. They leverage their data to provide superior customer experiences and to enable very low-cost payments. These companies are continuously engaged with their customers through communication, personalization, and offers or deals to improve customer experience. An example is Amazon Go, a Seattle, US-based grocery store, which has no checkouts.

Unlike banks, BigTechs are unencumbered by costly legacy infrastructures and operate cloud-based systems. To match the speed and agility that BigTechs boast, banks must undergo significant transformation to modern, digital infrastructures.

BigTechs and banks each have unique advantages; BigTechs are not looking to "kill" the banks in payments, but for ways to make payments easier for customers while operating within their area of expertise. When they invest and partner with BigTechs, banks should leverage their strengths such as client trust, network reach, regulatory expertise, transparent business model, and the ability to provide instruments and services to cover all use cases.

Payments System Evolution Economic Analysis

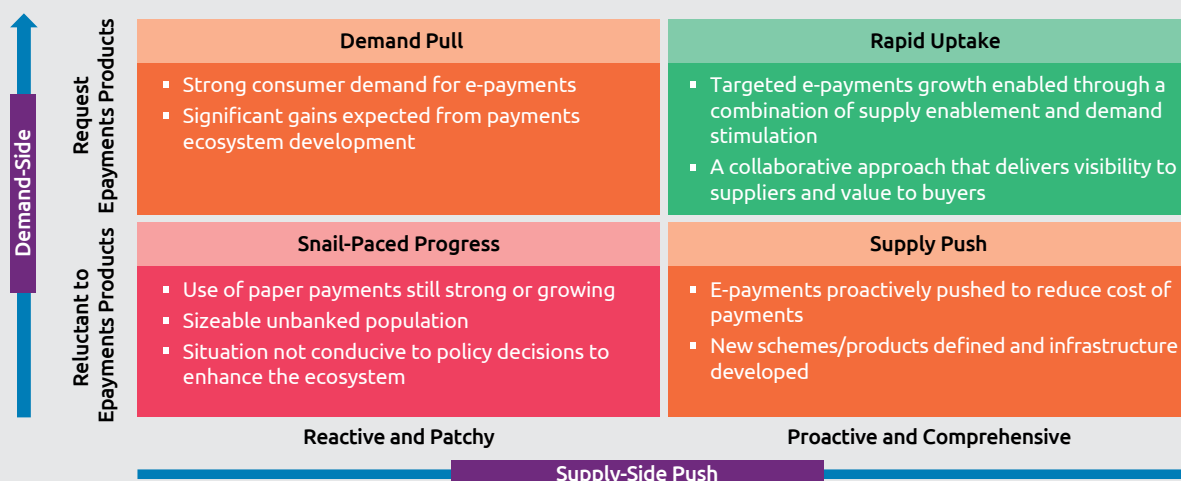
SUPPLY-SIDE PUSH AND DEMAND-SIDE PULL DETERMINE PAYMENTS SYSTEMS EVOLUTION

To promote the growth of non-cash, digital transactions, payments industry participants must undertake contextual analyses of a market, rather than trying to pursue a one-size-fits all strategy. There are, however, two main factors that determine the

evolution of payments systems: supply-side push and demand-side pull. These factors occur in the four scenarios of payment systems evolution: demand pull, rapid uptake, snail-paced progress, and supply push (see Figure 1.6).

Supply-side push is typically generated by government and industry initiatives to modernize payments infrastructures, promote digital literacy, and further open access to banking facilities. Such initiatives may

Figure 1.6 Four Scenarios of Payments System Evolution



Source: Capgemini Financial Services Analysis 2018.

be designed to increase bank account penetration or create acquisition infrastructure for non-cash transactions, for example. Demand-side pull, on the other hand, is mainly generated from the customer side. This is because the more familiar customers become with technology, user-friendly applications, and digital payments methods, the higher their expectations that such digital payments and alternate payments methods will be available. Banks have a role to play here in developing user-friendly services.

If both demand-side pull and supply-side push are strong, a rapid uptake of digital payments methods will take place. However, if either factor is progressing at a different pace from the other, the market is unlikely to reach its full growth potential. Regulators can help by creating the required demand-side pull and supply-side push to enable rapid adoption of non-cash instruments. If both factors are weak due to

any challenges, progress in adopting digital payments will be slow (at a snail's pace).

An initial step that stakeholders such as banks and governments must take to increase the number of non-cash transactions is to focus on increasing financial literacy and therefore account penetration and build out the payments acquiring infrastructure. When the infrastructure and financial literacy are in place, a cultural shift towards non-cash instruments can be observed. In India, the financial literacy program Jan Dhan Yojna led to a 27% increase in financial inclusion between 2014–2016. However, non-cash transactions per inhabitant increased by only 2.8 during the same period, so there is more to do to encourage non-cash transactions. Among the mature markets, Sweden's non-cash transaction per inhabitant reached 461, an increase of 109 since 2014. This was driven by 100% account penetration in the country achieved in 2016.

AUSTRALIA'S NEW PAYMENTS PLATFORM

Payments is an intensely networked industry and network effects mean it is different from other industries. For developing economies, progress in digital transactions also depends upon the rate at which these economies can develop mobile and telecommunications networks. Australia provides an example of what happens when governments and regulators drive innovation and build a payments infrastructure to encourage demand pull factors that can facilitate the rapid uptake of non-cash instruments. With the New Payments Platform (NPP), the Australian Government and financial industry collaborated to create the necessary supply-side push for Australia's payments industry.

Stakeholders	Supply-side Push
Regulator: Reserve Bank of Australia (RBA)	<p>Played a key role in effectively managing and regulating various payment systems:</p> <p>Established Payments System Board with responsibility for determining the Reserve Bank's payments system policy</p> <p>Developed RITS Fast Settlement Service, to enable the settlement of NPP transactions between financial institutions in real time on a 24/7 basis⁸</p>
Australian Payments Network (AusPayNet)	<p>The Australian Payments Clearing Association is the self-regulating body for Australia's payments industry</p> <p>Administered the NPP program jointly with the RBA</p>
Industry stakeholders	<p>Twelve Authorized Deposit-Taking Institutions (ADTI), along with regulatory bodies, committed to funding the build and operation of the NPP and became founding members of NPP Australia Limited</p> <p>SWIFT helped to design, build, test, and deliver the NPP and will play a key role in operating its infrastructure</p>
Government	<p>In September 2017, the Australian Government released a consultation paper on Australia's digital future, including payments, titled The Digital Economy: Opening up the Conversation</p> <p>Introduction of e-conveyancing through legislation enables electronic dealings to be processed through an Electronic Lodgment Network (ELN), also providing the facility for funds transfers is reducing the use of checks</p>

NPP will provide a versatile platform with benefits for all industry players and has many superior features to existing real-time systems elsewhere in the world.

Advantages of NPP for Industry Players

Businesses: A 24/7 payments system through the NPP ensures that transactions are no longer restricted to business hours. Improved tracking and receipt of payments, due to richer data, will help businesses lower costs. For example, better remittance information will streamline reconciliation processes.

Banks: Non-cash transactions are expected to increase under the NPP, resulting in higher revenues for banks as they deliver new value-added services and develop an ecosystem of offerings around their core banking solutions. This will help the banks to more effectively compete against non-traditional players such as BigTechs.

Card operators and payment processors: Overlay services through the NPP can enable network operators to offer new card products, for example, contactless payments. Payment processors could provide an interface between authorized deposit-taking institutions (ADIs) and the NPP as well as between banks' core banking systems

Initially, NPP payment volumes may be low, but they are expected to grow gradually with some push from the Australian Government. A similar growth trajectory was witnessed in UK on the introduction of Faster Payments.

⁸ "Launch of the New Payments Platform", [www.rba.gov.au](https://www.rba.gov.au/media-releases/2018/mr-18-02.html), February 13, 2018, accessed August, 2018 at <https://www.rba.gov.au/media-releases/2018/mr-18-02.html>

The Benefits of Non-Cash Transactions

High numbers of non-cash transactions can provide benefits to the society, addressing even challenging issues such as corruption. Non-cash transactions share a positive linear correlation with corruption perception index (see Figure 1.7).

Countries with higher numbers of non-cash transactions tend to have lower perceptions of corruption and vice versa. Migrating to digital payments does not guarantee that corruption will be curbed, however, research has found that a digital economy helps in reducing the likelihood of corruption.⁹ Digital transactions from banks and e-wallets can be traced more readily than cash payments, enabling financial crime and law enforcement officers to identify beneficiaries and flag and investigate suspicious transactions.¹⁰

The more payments that are shifted to cashless instruments, the more likely it is that even large cash transactions can be flagged and investigated, reducing the possible means of accepting illicit or fraudulent payments.

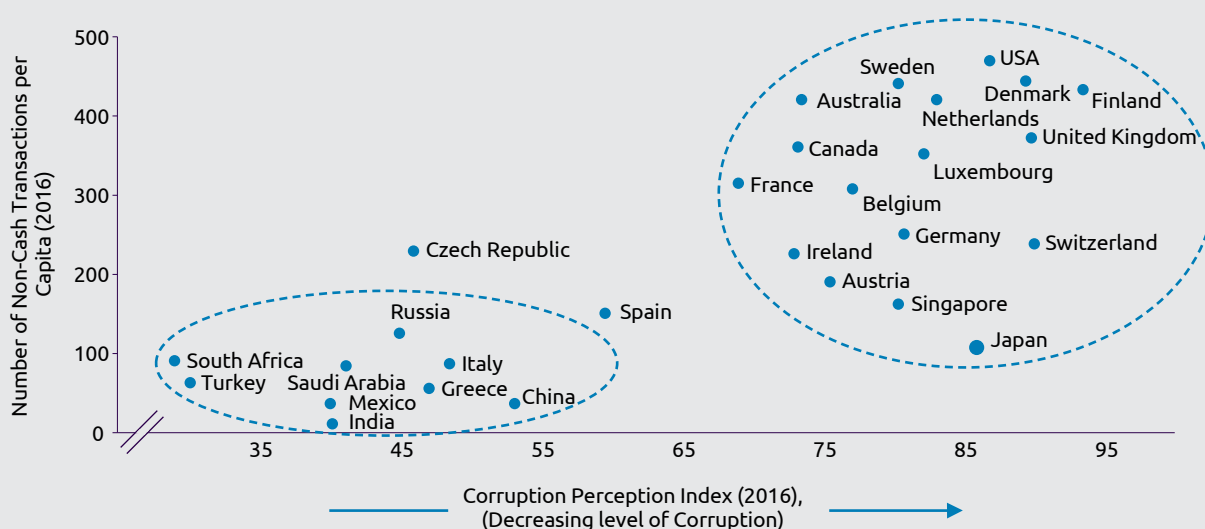
Non-cash transactions can provide a plethora of benefits to economies, both developing and mature, including social, financial, and micro- and macro-economic. Governments should create the necessary supply-side push for such transactions by creating the supporting infrastructure, bringing positive change with regulations, and promoting non-cash transactions to create a conducive environment for digital transactions to grow. Figure 1.7 proves that there is a link between a cashless society and the benefits it delivers in lowering corruption levels.



You cannot have a developed economy without a developed payments system. Wealth and prosperity depend upon digitalized payments systems in the modern world."

—Chris Hamilton
Group CEO, BankservAfrica

Figure 1.7 Global Non-Cash Transactions per Capita vs. Corruption Perception Index, 2016



Notes: Higher value of corruption perception index score denotes lower corruption.

Sources: Capgemini Financial Services Analysis, 2018; ECB Statistical Data Warehouse, 2016 figures released October 2017; BIS Red Book, 2016 figures released December 2017; Countries' central bank annual reports, 2017; <https://www.transparency.org/research/cpi/overview>.

⁹ "Governments can fight corruption by joining the digital payment revolution", Tidhar Wald, April 11, 2018, accessed August, 2018 at <https://www.weforum.org/agenda/2018/04/governments-join-digital-payment-revolution-fight-corruption/>

¹⁰ "Demonetisation: Digital Payments Could Help Us Deal With Corruption", Naina Khedekar, November 15, 2016, accessed August, 2018 at <https://www.firstpost.com/tech/news-analysis/demonetisation-digital-payments-could-help-us-deal-with-corruption-3692273.html>



Section

02

Key Regulatory and Industry Initiatives (KRIIs)



Key Findings

- **As KRIIs gradually spread from regional up to global levels, standards and interoperability measures must be developed to harmonize the fragmented global marketplace.** Europe's PSD2 has emerged as a benchmark for regulators globally to introduce open API banking initiatives. Also in Europe, diverse instant payments (IP) schemes were introduced before the launch of the pan-European SCT Inst scheme, which has led to a fragmented IP landscape. The regulatory focus in developed markets has spread to emerging markets such as Asia Pacific, where regulators are introducing initiatives related to standards, industry governance, and oversight of new players. However, several of these initiatives vary in scope and objectives, thus creating disparate systems and markets. Additionally, different messaging rules from Fedwire, CHIPS, and banks with their own formats is still impeding the shared goal of a common ISO 20022-based payments messaging standard.
- **The regulatory landscape is following a cyclical path with the focus of KRIIs transcending from standardization to innovation and back again.** During 2017–2018 the primary objective of an increasing number of KRIIs is standardization, contrary to the 2015–17 period, when KRIIs were more focused on innovation and modernization. More generally, past regulatory standardization initiatives aimed to ensure a level playing field on the supply side; now they aim to facilitate a balance between regulatory supply and market demand. KRIIs are tending towards collaborative regulator and industry initiatives as the payments industry is increasingly embracing innovation and openness. Consideration should be given to reducing the number of country-specific KRIIs to simplify the regulatory landscape for large corporates. Aligning standards across regions will help to foster greater investments in innovation.
- **As several KRIIs have overlapping objectives, complementary or conflicting effects are bound to arise. When KRIIs are in conflict, implementation challenges may arise, which could hinder the enablement of new payments ecosystems and delay the expected benefits for society.** Regulatory intervention is required to address the gray areas between KRIIs such as the Fifth Anti-Money Laundering Directive (5AMLD) and the Payment Services Directive 2 (PSD2); and PSD2 and the General Data Protection Regulation (GDPR). There is also conflict around the regulatory treatment of certain KRIIs, such as cryptocurrencies, across different regions. This creates an uncertain environment that could hamper progress and innovation.

As KRIs Spread Regionally, Standards and Interoperability Measures are Required to Harmonize the Fragmented Marketplace

Across the globe, a multiplicity of KRIs are being implemented at the national, regional, and global levels. However, varied regulatory objectives and interpretations of objectives have led to a fragmented regulatory marketplace for PSPs. This is a particular challenge for global entities, which often have to take customized approaches to the regulatory compliance requirements of different markets. Standards and interoperability measures must be developed and implemented to harmonize the fragmented marketplace.

Fragmentation occurs even in markets, such as Europe, where harmonization is a focus. Here, although regulations such as PSD2 and NIS (network and information systems) Directive are framed as pan-regional and have been overseen by a single entity, the European Council (EC), implementation has been subject to inherent industry and cultural factors within each Member State. Such factors include the makeup of the local banking industry, payment behaviors of consumers and businesses, and the levels of digital adoption and awareness.

One of the main elements regulators are seeking via PSD2 is open banking — driving increased competition and innovation by opening customer banking data to third parties. This open banking focus has emerged as a benchmark for other regulators within the EU and the more than 18 countries worldwide that are implementing their own open API banking initiatives. Such countries include the US, Australia, Singapore, Hong Kong, Canada, Japan, Nigeria, and India. As open APIs transform into a global trend from a regional one, regulators are examining harmonization and interoperability of APIs. (For more information on open API initiatives, please refer to “Open API Banking Platforms” in the detailed KRI table on www.worldpaymentsreport.com).

Several KRIs across the various themes are regional and vary in scope and objectives. Regulators are focused on facilitating interoperability, as in Europe with instant payments. Before the launch of the European Payment Council’s (EPC’s) SCT Inst scheme in November 2017, diverse IP systems had been

developed in some European countries outside of the Eurozone. Introduced by banks, these schemes leveraged the infrastructure of national clearing and settlement mechanisms (CSMs). SCT Inst gives freedom for implementation of IP schemes at a pan-European level, facilitating the integration of interoperable solutions that have been developed at a country level. Italy and Spain are updating their mobile payments systems (Jiffy and Bizum, respectively) to comply with the EPC’s scheme, while Portugal, France, Belgium, and the Netherlands, have developed new schemes and CSMs that are aligned with SCT Inst. However, to date, only 1,000 banks adhere to the SCT Inst rulebook, representing just 20% of the region’s banks. To facilitate full interoperability of the SCT Inst scheme, the European Central Bank (ECB) is extending its TARGET2 settlement system with TARGET Instant Payment Settlement system (TIPS), which will provide central bank settlement on a 24/7 basis. It is due to go live in November 2018.

Fragmentation is also impeding progress on the standards front. The roll-out of ISO 20022 XML as the global standard for payments is progressing very slowly. While European regulators have made it mandatory for domestic payments since the introduction of the Single Euro Payments Area (SEPA), large-value and cross-border payments continue to use legacy formats. The plan for migrating SWIFT transactions to ISO 20022 XML is under discussion. In the US and other countries, banks’ own formats are hampering the deployment of ISO 20022 and thus the desired goal of a common messaging standard. It is possible that ISO 20022 may coexist with other standards in many countries. However, further payments modernization initiatives, IP systems, and the adoption of ISO 20022 by corporates, may move the industry towards its global payment messaging standard goal.

REGULATORS IN EMERGING MARKETS FOCUS ON STANDARDS, GOVERNANCE, AND OVERSIGHT OF NEW ENTRANTS

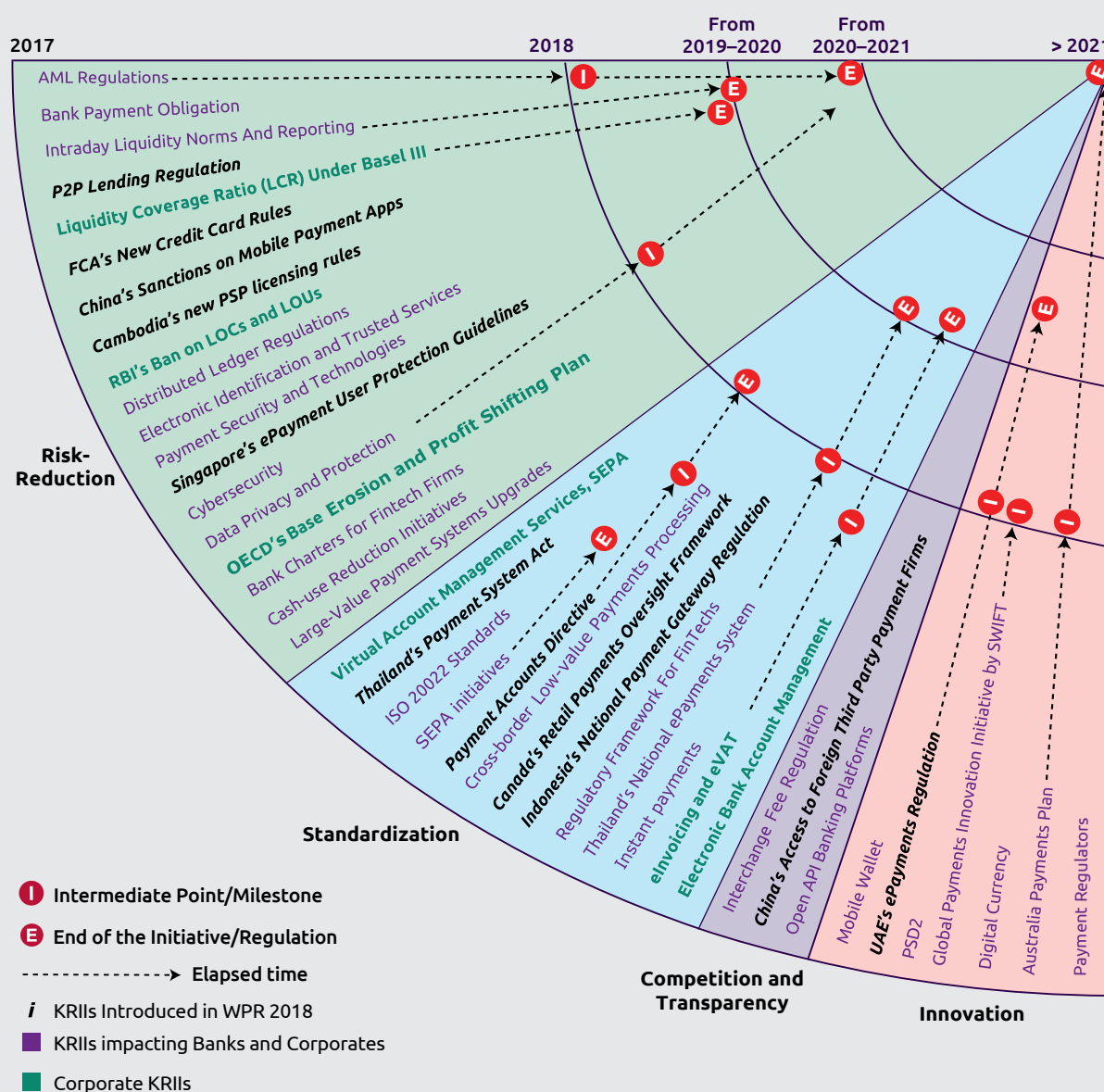
In Asia Pacific, KRIs such as Thailand’s Payment System Act, Singapore’s proposed e-payments user protection guidelines, and China’s sanctions on new payment

apps are focused on standards, industry governance, and oversight of new players. Several countries in the region including Singapore, Thailand, Indonesia, China, and Cambodia, are introducing standards and rules to improve systemic efficiency and safeguard customers (see Figure 2.1).

A raft of new regulatory measures are emerging in China from the government and the PBoC. These

include the opening up of the payments market to foreign firms to encourage competition, and the imposition of sanctions on mobile apps. For example, the reserve funds ratio of mobile payment platforms has been raised from 20% to 50%, bringing more e-wallet deposits and funds held in escrow by payment providers under the PBoC's centralized management. This risk control measure comes in the wake of exponential growth in the use of e-wallets in the

Figure 2.1 Key Regulatory and Industry Initiatives (KRIs) Clustered by Regulators' Primary Objectives, 2018



Notes: Timelines have been provided for regulations where they are specified, no timelines are specified for industry-trend KRIs; SEPA – Single Euro Payments Area; Payments Security and Technology includes Contactless, Near Field Communication (NFC), Tokenization, Biometric authentication, and Mobile Point of Sale (mPOS); In this year's report, KRIs on Cybersecurity, Internet Payments Security, and Mobile Payments Security have been merged into a single KRI "Cybersecurity."

Source: Capgemini Financial Services Analysis, 2018; World Payments Report, 2017, 2016, 2015, 2014, 2013, 2012, and 2011.

Chinese market. The Chinese Government is also encouraging Western countries to open up their markets to innovative Chinese firms such as Alipay and WeChat. However, Western countries want access to the Chinese market before they make such a move. In April 2018, the authorities introduced a “record-filing” system for the previously unregulated P2P payments market (which was valued at \$445 billion in 2017). A lack of clarity concerning the system has raised concerns. From May 2018, a new national standard on personal information came into force in the country. It includes regulations for user consent, and how personal data is collected, stored, and shared.

KRIs focused on data privacy and protection and cybersecurity have witnessed significant traction recently, particularly in Europe with the General Data Protection Regulation (GDPR) and the Electronic Privacy Regulation (EPR). Recently, the US state of California announced new data privacy rules in line with the GDPR, and Singapore and Indonesia announced amendments to their Personal Data Protection (PDP) rules. Other countries such as Canada, Japan, and Israel are working towards data privacy and protection laws that are on par with GDPR standards. These moves emphasize the importance given to data privacy and protection standards globally by the regulators.

KRIs Traverse a Cyclical Path from Standardization to Innovation and Back Again



Globally, we are seeing a cyclical effect where regulators are bringing in an element of standardization and level playing field and pushing for innovation proactively, more like a pendulum swinging from one extreme to another.”

—Arif Ismail

Head FinTech Program,
South Africa Reserve Bank

When plotted against the regulatory supply push and industry pull, it is observed that the primary objectives of KRIs have traversed from standardization, through innovation and modernization and back to standardization (see Figure 2.2). Most of the KRIs announced 2017–18 that focused on standards initiated in Asia Pacific. This trend is a result of a spread of regulatory activity in the developed markets in the West and is expected to be witnessed in other regions in due course, and at a global level in the near short term.

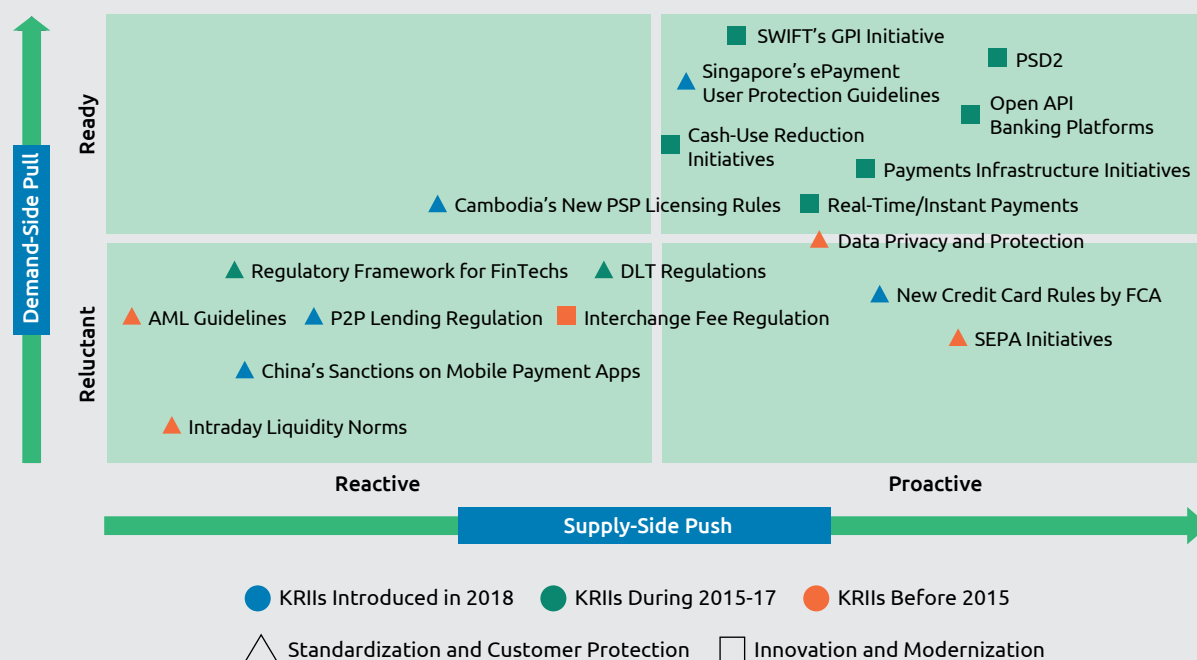
In the wake of the 2008 financial crisis, regulators focused on systemic risk reduction and financial stability, and their influence was continuous through the formulation, implementation, and compliance stages of these KRIs. KRIs covered AML and intraday liquidity norms (see Figure 2.2). At the same time, SEPA was introduced in the EU to standardize the way payments were made across the region to create a level playing field and encourage innovation. Although

initially pushed by regulators, KRIs focused on data privacy and protection are garnering significant traction on the demand side as risk-reduction measures. Regulators in Asia Pacific countries also recognize the need for data privacy and protection to mitigate payments risk and boost digital payments volumes. As digital payments volumes and innovation continue to flourish in the region, they are introducing data protection KRIs that are based on initiatives in Western countries.

Regulators have traditionally pushed innovation from the supply side through multiple initiatives (such as payments infrastructure modernization and the implementation of real-time payments systems). Such initiatives are now being embraced by the industry and are being implemented collaboratively by the industry and regulators. These include PSD2, SWIFT’s gpi initiative, and initiatives to encourage the use of non-cash instruments.

Currently, an increasing number of standardization-focused KRIs are being introduced. While the earlier KRIs were aimed at ensuring a level playing field, recently introduced KRIs facilitate a balance between regulatory supply and market demand. This is being seen in Asia Pacific where KRIs, such as Cambodia’s new PSP licensing rules, and China’s sanctions on mobile payments apps, have been developed for the mutual benefit of customers and FIs. Further, as new solutions introduced during ramp-up and consolidation phases need to be rationalized, regulators have to jump in to regulate the earlier initiatives where new demand appears.

Figure 2.2 Evolution of Regulatory Landscape in Payments



Source: Capgemini Financial Services Analysis, 2018.

Within the dynamic regulatory scenario, and due to the breadth of their business, banks feel that they are subjected to more complex regulations and tighter regulatory oversight than new entrants. This means that significant amounts of resources, including capital, are directed towards regulatory compliance, leaving them with less scope than the FinTechs and BigTechs to address customer-facing activities. Further, due to developments such as open banking, incumbents are being forced to open up their systems to enable data access, while there is no such obligation for FinTechs or BigTechs to share their data.



There is an increasing diversity in players, as there are new market entrants from different sectors, so ensuring a level playing field is necessary by subjecting them to the same relevant regulatory requirements."

—Etienne Gousse

Director General, European Payments Council

Figure 2.3 (on page 24) illustrates the performance of countries in terms of regulatory supply side and industry demand pull side, in the context of the four scenarios of payment system evolution and how regulators can increase demand-side pull through supply-side push, as presented on page 14. The UK has been a pioneer in banking and payments, since the launch of FPS in 2008. Regulators there are very active through multiple initiatives, including the Competition and Markets Authority's Open Banking, the Financial Conduct Authority's (FCA's) new credit card rules, and its regulatory sandbox initiative. Further, initiatives such as the New Payments System Operator, are driving the industry uptake on initiatives such as open banking. On the other hand, the US is focusing on standardization and risk-reduction initiatives. The country has advanced standards and rules in areas such as AML and financial stability. With new initiatives to grant banking licenses to FinTechs, the roll-out of The Clearing House's (TCH's) real-time payments, and further uptake of open banking, the US may soon move ahead with the help of a more balanced and collaborative approach by regulators and other industry stakeholders.

Some of the reactive countries, such as Brazil and Thailand, have conservative regulators that have initiated few or no forward-looking initiatives and have reluctant demand-side institutions. Proactive

countries such as Singapore, Australia, the UK, and Sweden have proactive regulators and enthusiastic demand-side institutions that are ready to embrace regulatory initiatives. China is an interesting case; if the industry does not embrace the supply-side push from the government, the country will remain in a dormant space, like India. It is only when regulators are proactive and market participants are ready to embrace KRIs, that countries will exist in ideal state.

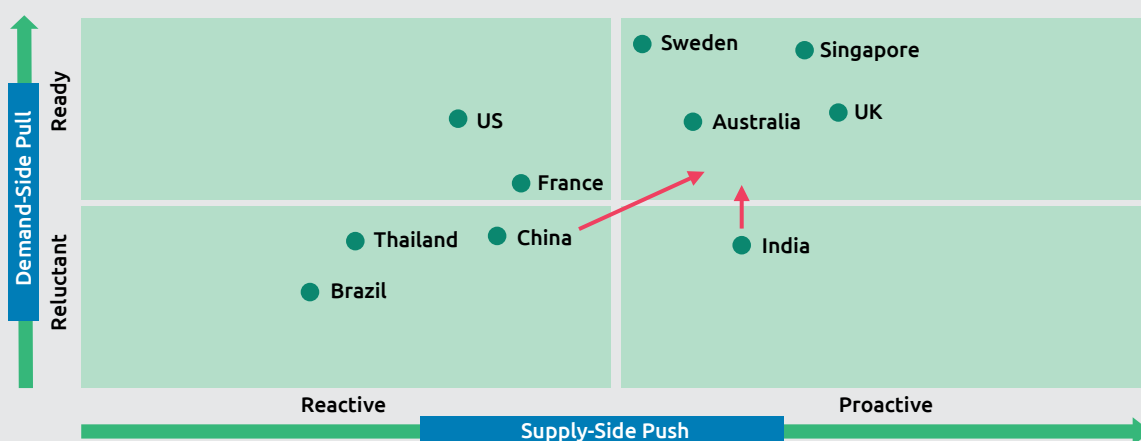
Swedish banks have been very open to innovation and the country has been a champion in per- capita, non-cash transactions (see page 8), as it implements its cashless society vision. The mobile payment service Swish, card-based mobile payments iZettle, and the real-time payments system BiR, have played key roles the Swedish payments landscape. Also, there is a long tradition of cooperation between Swedish banks to create shared infrastructure and services. This has helped Sweden to strike the right balance between supply-side push and demand-side pull. In France, on the other hand, although banks and the industry as a whole are ready for KRIs, the conservative regulators have been driving initiatives in a consolidated manner.

Asia Pacific is witnessing much traction in regulatory activity and regulators are adapting ideas from elsewhere. Australia's modernization projects and approach to open banking could see it swiftly catching up with the UK. Through myriad initiatives in the areas of digital payments (including cash use reduction and contactless cards), virtual bank licenses, FinTech development programs, and open banking activities, the country has emerged as a benchmark for its peers. China demonstrates that if industry associations or the government do not push on initiatives, other non-

government and non-financial companies, such as Alipay and Wechat, will move in and capture the market. Banks have realized that leaving the market demand unattended has created a risk, especially when the community requests better service levels. The industry has recently responded with multiple initiatives. However, if the government continues to become more involved in KRIs, the country may accelerate and be on a par with Australia and Singapore. India is forging ahead of its peers, as open banking, P2P lending, and demonetization KRIs take hold. Initiatives to note include the development of an open API stack, which is a set of APIs that enable governments, businesses, startups, and developers to utilize a single digital infrastructure for providing remote, paperless, cashless, and consent-based service delivery. Other aspects to note include a push for digital payments through demonetization efforts including the Bharat QR code and Aadhar Pay, and growing demand for e-wallets. Regulators in Thailand have responded to market needs through initiatives in the areas of a national payments infrastructure, retail real-time payments, and cryptocurrencies.

Within the Latin American market, Brazil relies heavily on the regulator to drive market-wide innovation in technology and business processes. The Brazilian Central Bank, together with its partner regulators, has faced a dilemma in driving efficiency and effectiveness while maintaining and promoting comprehensive monetary policy and national standardization efforts. Although Brazil is one of the highly competitive mobile payments markets, regulators have been striving to accommodate new technologies on older infrastructure, which is a primary reason for low demand from the industry side.

Figure 2.3 Evolution of Regulatory Landscape Across Select Countries



Source: Capgemini Financial Services Analysis, 2018.

Conflicting KRIs Pose Implementation and Operational Challenges that Hinder the Transition to New Payments Ecosystems

As several KRIs have overlapping objectives, they are bound to create either complementing or conflicting effects amongst themselves, with the latter potentially hindering the enablement of a new payments ecosystems. This impact of KRIs on each other – either cascading, complementing, or conflicting – increases the complexity of the regulatory landscape.

A few KRIs reinforce and complement each other in either their scope or objectives and as a result can achieve an accelerated pace of implementation (particularly if done in parallel). Examples include PSD2, open banking, and eIDAS, which strike a perfect balance in enabling the objective of a single European digital marketplace.

On the other hand, a conflicting effect may include either an overlap in terms of scope or objectives, which pose challenges for all industry stakeholders as they transition to the new payments ecosystem. KRIs such as the Fifth Anti-Money Laundering Directive (5AMLD) and PSD2, and PSD2 and the GDPR, are in conflict, which poses implementation challenges for PSPs. Such an effect has created calls for regulatory intervention. Also, KRIs, such as those regulating cryptocurrencies, are witnessing conflicting treatment across the globe, which may lead to a complex and unclear environment. This could be exploited for unscrupulous purposes, which could deter multinational corporates from investing in DLT-based initiatives.



CONFLICTING KRIs

PSD2 VS. GDPR

PSD2	GDPR
Banks are required to open customer account and transaction data to third party providers (TPPs)	GDPR requires banks to protect customer data and imposes significant penalties for that fail (up to four percent of global annual turnover)
The Directive encourages an open-banking environment	With the stringent requirements, the regulation might make open banking implementation a little unattractive

Although the GDPR and PSD2 converge around five pillars: enhanced customer and data protection, enhanced data compliance (use must comply with the law), data quality (including accuracy, consistency, and lineage), enhanced user experience, and enhanced competitiveness, there may be inconsistencies during implementation. The main difference between the GDPR and PSD2 is that while the former is a regulation, the latter is a directive and is open to interpretation by individual Member States. While the GDPR is directly applicable across the EU, PSD2 is subject to translation into Member States' local laws such as the "Code Monétaire et Financier" in France.



Although the GDPR is necessary to safeguard open access under PSD2, there is considerable conflict on the kind of data to be shared, stored, and retrieved, and issues such as dispute management."

—Francis De Roeck
Head of SEPA Offering, BNP Paribas

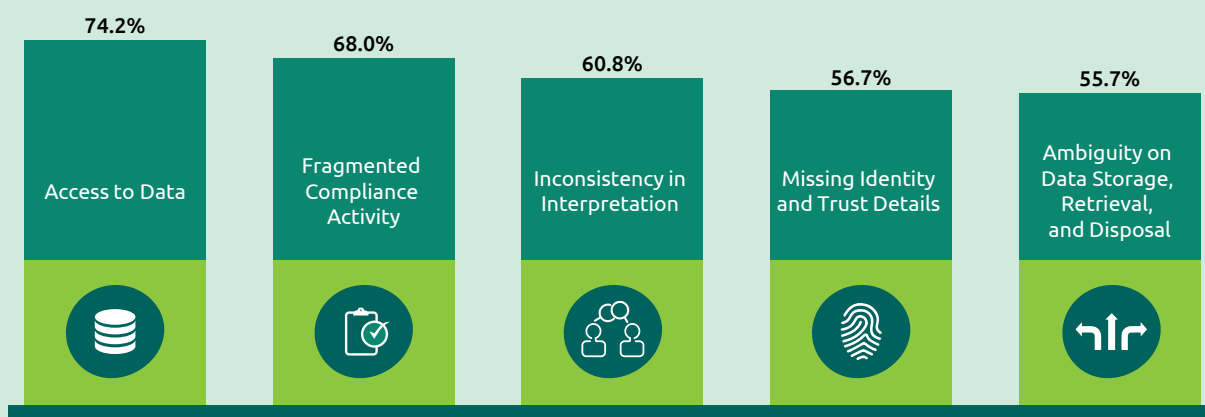
In an executive survey for WPR 2018 (in the month of June), only 21.4% of respondents said they were fully compliant with PSD2, indicating that the industry faces a conundrum as it seeks to comply with the RTS specifications that come into effect in September 2019. With no rigid guidelines on any penalty for non-compliance, 100% implementation might take some more time, as 18% of respondents are still in the implementation stage. On the other hand, 44.1% of the respondents have stated that they are fully compliant with GDPR requirements. The number is low,

especially given that it was due on May 25, 2018 and how punitive the penalty for non-compliance or breach is.

Given the uncertainty connected with certain KRIs and the impediment to progress that conflicting regulations cause, regulatory intervention to solve anomalies and inconsistencies is required. Action in areas including data access, data storage and disposal, identity and trust, and interpretation of the term data controller, will help to increase the levels of compliance with both the PSD2 and the GDPR within the industry. For example, both KRIs diverge on data access; while the PSD2 emphasizes data sharing with PSPs, the GDPR proposes to protect personally identifiable information (PII) from TPPs. Further, on data control, the GDPR requires customer consent for processing data while the PSD2 requires it for sharing with other institutions, where the AISP is not the controller. In our survey, access to data, fragmented compliance activity, inconsistency in interpretation, and missing identity and trust details were rated highly as areas of concern (see Figure 2.4).

Further, there are inconsistencies with the GDPR over the timeframes mentioned in the SEPA Direct Debit (SDD) rulebook and a few FATF recommendations. The SDD rulebook states that customer mandates for a transaction should be deactivated after 36 months of inactivity. The mandate ID is usually retained even after deactivation, which may violate the GDPR norms. FATF recommends that information on the payer and payee can be retained for a maximum of five years; the GDPR mandates that data is disposed of immediately after use unless customer consent for retention exists. The PSD2 allows for rectification of unauthorized transactions for 13 months, which may again violate GDPR requirements on data disposal.

Figure 2.4 Executive Responses on the Importance Attributed to Conflicting Parameters Under PSD2 and GDPR (% of Respondents), 2018



Source: Capgemini Financial Services Analysis, 2018; Capgemini and BNP Paribas WPR executive Survey, 2018; Total 101 responses received.

5AMLD VS. PSD2

PSD2	5AMLD
Guidelines may impose stringent KYC due diligence requirements including digital identity norms and continuous transaction monitoring	Requires merchants to work with their PSPs to implement strong customer authentication (SCA) for transactions processed within the EU

The 5AMLD extends the scope of the existing Fourth Anti-Money Laundering Directive (4AMLD). Its extended due diligence (EDD) requirements aim to harmonize customer screening measures for “risky third countries.” The PSD2, on the other hand, facilitates remote customer onboarding, KYC, and extended identity norms that may conflict with parameters outlined under the 5AMLD. The amended 5AMLD also proposes extending the obligations regarding electronic money and would no longer allow issuance of anonymous e-money products. This is expected to have repercussions as restricting e-money issuance and imposing a threshold value on transactions overrides the EU’s eMoney Directive and may hinder innovation in the payments industry.

While the above are examples of KRILs in conflict with one other, conflict — between different regulators across the globe — exists in the cryptocurrency space (see Figure 2.5). Australia has been one of the few countries to bring cryptocurrencies into national AML and CTF guidelines. Recently, the EU also has included them in the 5AMLD. Countries, such as India, that were initially friendly towards cryptos, have changed their

stance, and in early 2018 the Indian Government restricted their use. A number of countries, including the UK, France, Saudi Arabia, and Germany have no concrete regulations, but are tending towards crypto-friendliness.

“We see more viability in a ‘central bank digital currency’ than in a pure cryptocurrency.”

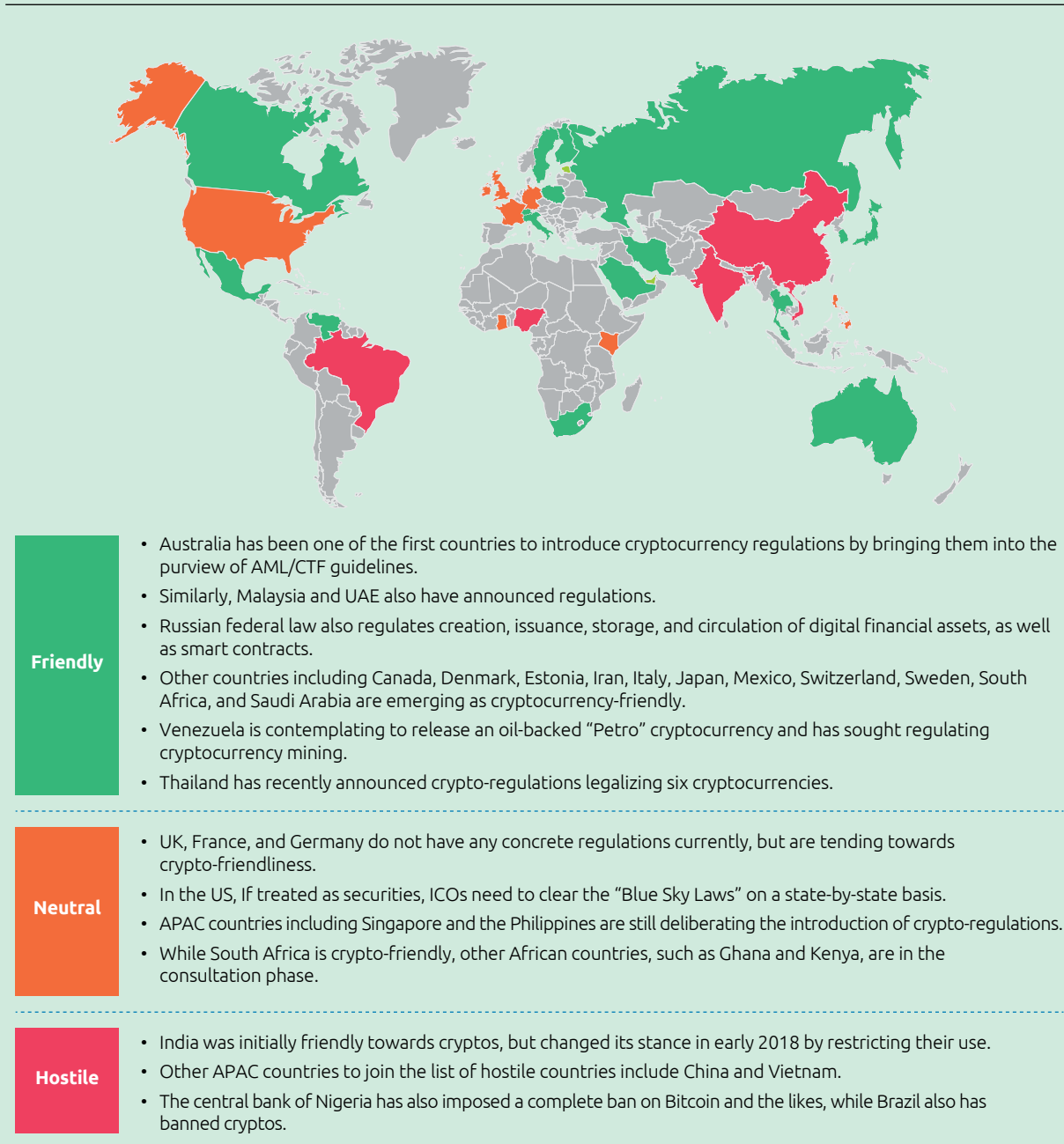
—Ziad Al-Yousef
General Manager (Payment Systems),
Saudi Arabian Monetary Authority

The existence of conflict between certain KRILs creates confusion, which could be alleviated if regulators stepped in and clarified existing gray areas. Bank of Korea recently announced that while it is difficult to use cryptocurrency as money, it is likely it will be used as a means of payment in limited scenarios such as overseas remittances. Further the central bank plans

to ease rules on crypto-based assets in line with policies initiated by G20 nations to establish unified global transnational crypto regulations, which were agreed in March 2018. The Financial Stability Board, which is in charge of this regulation among the G20

economies, is proposing a framework that will also cover how risks from crypto assets could spread to other areas of the financial system. Without such intervention, progress towards new payments ecosystems will be slow.

Figure 2.5 Regulatory Standpoint on Cryptocurrencies in Various Countries



Sources: Capgemini Financial Services Analysis, 2018; <https://bitcoinmagazine.com/articles/cryptocurrency-regulation-2018-where-world-stands-right-now/>; <http://www.zdnet.com/article/the-state-of-cryptocurrency-regulation-worldwide-and-what-the-future-will-bring/>; [https://www.thepaypers.com/interviews/bitcoin-essentials-payments-accounts-and-regulation/772571-38?utm_campaign=20180330-automatic-newsletter&utm_medium=email&utm_source=newsletter&utm_content=](https://www.thepaypers.com/interviews/bitcoin-essentials-payments-accounts-and-regulation/772571-38?utm_campaign=20180330-automatic-newsletter&utm_medium=email&utm_source=newsletter&utm_content=;); <https://australianfintech.com.au/australia-among-first-to-introduce-bitcoin-regulations/>; <https://news.bitcoin.com/russia-finalizes-federal-law-cryptocurrency-regulation/>; <https://news.bitcoin.com/new-malaysian-cryptocurrency-regulation-come-into-effect/>; <https://news.bitcoin.com/thailand-crypto-regulations-legalizing-cryptocurrencies>.



Section

03

New Horizons in Payments and Transaction Banking



Key Findings

- **The disruption to the payments landscape has accelerated during the past year, with multiple factors creating a more complex payments landscape.** These factors include open banking, the entry of new market participants, new technologies, and changing customer expectations. Additionally, BigTechs, backed by agile technology platforms and the ability to provide seamless user experience, have started capturing payments market share from incumbents.
- **The response to this accelerated pace of disruption in the form of adapting to and redefining their roles in new payments ecosystems – from incumbents such as banks and the wider financial services community including the public sector and regulators – has been slower than what is required.** While banks have invested in instant payments (IP)-based solutions and in APIs to connect to FinTechs with which they have fostered relationships, there has been little visible change for end clients. Public sector, regulators, and other third parties also must consider the roles they wish to play and work together to ensure development continues at a strong pace. A question remains as to whether regulators can catalyze banking industry consolidation by facilitating the entry of new players, thus paving the way for new payments ecosystems. Banks with large payments market share must play an anchor role, orchestrating various services, leveraging the latest technology and other capabilities, and collaborating with other stakeholders to enhance the customer experience across all touchpoints while ensuring consumer safety and regulatory compliance.
- **We are introducing the Payments Open Banking Assessment and it was observed that globally, an interesting correlation exists between per-capita non-cash transactions and open banking; countries that record higher levels of per-capita non-cash transactions are emerging as open banking pioneers.** Further, the more mature open banking countries seem to have a higher level of participation from not just banks, but also all the other payments industry stakeholders. Consequently, users are offered a greater choice of payments instruments. Based on the current market context, the payments industry has not yet reached the tipping point where the market moves to a platform model. Orchestration will help banks define their competitive edge and enable them to be ready for an open banking world that has the potential to alter the way banks interact with customers and the way payments are made. The banks that move fast to orchestrate stand to gain immensely from the first mover advantage and it is probable that those that are not fast enough may lose market share in a short period.
- **Emerging technologies and innovation are the key transformation pillars for banks to orchestrate ecosystems, improve operational efficiency, and enable new business propositions, thereby leading to improved customer centricity.** Good progress on integration, the development of new products and services, and enhanced customer experience has been made by banks as they implement APIs and RTP. Banks are also exploring the potential of DLT to improve transaction transparency in the short term, and greater efficiency in certain payments functions in the long term. However, limitations such as a lack of integration with legacy systems, insufficient clarity on regulations, and scalability mean that DLT initiatives in the payments space are nascent and yet to witness widespread adoption. Emerging technologies include internet of things (IoT) and smart devices, backed by AI-based digital assistants. Such technologies could not only improve customer experience at the front end, but also operational efficiency at the back end. Again, a lack of interoperability as well as standardization are limiting adoption.
- **While banks are looking to play an anchor role by designing new propositions through interacting with partners, corporate clients, and merchants, they need to identify the best FinTechs with which to partner.** Such a choice of FinTech partner should be based on complementary services and the value these can provide to clients. Compared with banks, FinTechs are agile, digital by design, and can better leverage technology to create value-added products and services. These firms can play a key role in overcoming any technology-related challenges banks face. The dynamics of risk and revenue sharing between banks and FinTechs is evolving; the current ratio favors the FinTechs and for long-term sustainability, this issue must be addressed.

The Complexity of the Payments Landscape is Increasing at an Accelerated Pace

During the past year, a number of factors have been disrupting the traditional role of banks and creating a complex payments landscape. These factors include higher corporate and consumer expectations of value-added services, the emergence of FinTechs, and the increase in payments-enabling technologies. The pace of change caused by open banking, new technologies, the rise of new market entrants, and changing customer expectations has accelerated (see Figure 3.1).

REGULATORY PUSH AND OPEN BANKING

Regulations and initiatives such as PSD2 and open banking are promoting collaboration between stakeholders, which gives customers additional, more integrated services. For example, the UK Competition and Markets Authority's (CMA's) Open Banking initiative includes a set of standard APIs, which can be used by banks and third parties in collaboration to deliver innovative offerings. Inspired by these KRIs, central authorities across several markets such as South Korea, Singapore, Japan, Hong Kong, Australia, and Nigeria are also pursuing open banking initiatives.

NEW TECHNOLOGIES AND REAL-TIME PAYMENTS INFRASTRUCTURE

Emerging technologies such as APIs, DLT, IoT, and AI, complemented by real-time payments infrastructures, are facilitating efficient and secure collaboration between stakeholders (for more information on RTP initiatives, please refer to the detailed KRI table on www.worldpaymentsreport.com). This is creating a more connected ecosystem of stakeholders, devices, and systems. Additionally, alternate payments methods such as wallets, wearables, social media, and biometrics are evolving to become mainstream.

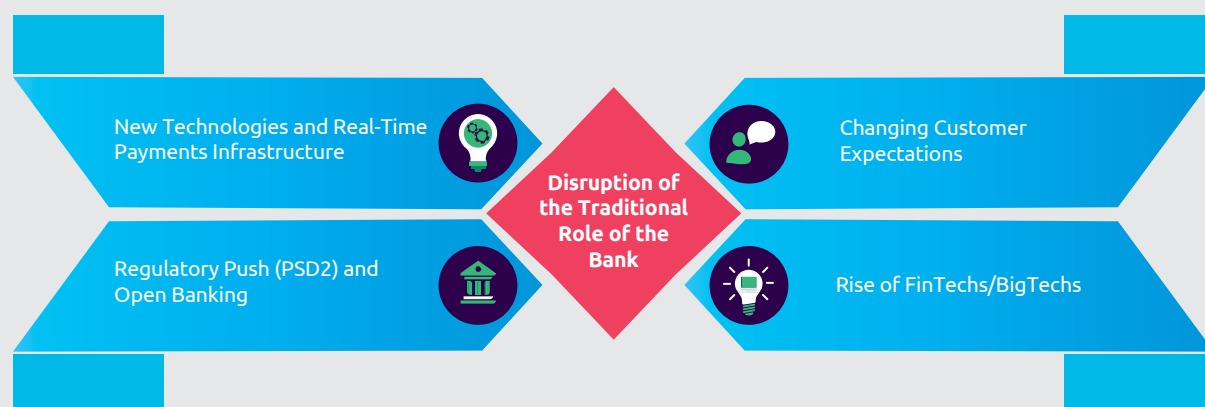


The whole market infrastructure worldwide is moving to real-time payments and taking away the paradigm of end-of-days and validations as things would be working 24/7."

—Bruno Mellado

Head of International Payments and Receivables, BNP Paribas

Figure 3.1 Disruption of the Traditional Banking Model



Sources: Capgemini Financial Services Analysis, 2018.

CHANGING CUSTOMER EXPECTATIONS

Clients increasingly expect banks to help them improve their efficiency while also making sense of the options available to them to reduce costs, improve cash flow, and help with business outcomes and new revenue models.



Corporate demand is changing from 'payments only' to end-to-end services across the entire value chain. Banks are traditionally not well organized to address these demands

—Mark Buitenhek

Global Head of Transaction Banking, ING

RISE OF NEW ENTRANTS

Collaboration between the Financial Services industry and FinTech companies continues to gain traction as both types of organizations leverage complementary benefits. Incumbents gain access to the latest innovations and customers of the FinTechs, while the FinTechs benefit from the financial scale and strength of the incumbents. Moreover, FinTechs can fill the gaps between customers' expectations and current bank offerings with value-added services.

On their own, FinTechs lack the scale to launch their own products into the banking market and therefore do not present the threat to incumbents that they once were thought to pose. BigTechs, however, with their large user base, agile technology platforms and the ability to provide seamless customer experience, can be considered a threat to payments market incumbents. Companies such as Alipay and WeChat Pay from China and Alibaba-backed Paytm in India have started capturing payments market share from incumbents by offering competitive payments products.

While these BigTechs are making rapid inroads in the payments space, most banks are yet to accelerate their responses. It is crucial that banks that want to be leaders respond quickly, leveraging the latest technology (in collaboration with FinTechs if necessary) to create the best possible experience for their customers. If they don't, they could cede control over the customer relationship to the new BigTechs.

IN THE INCREASINGLY COMPLEX PAYMENTS LANDSCAPE, BANKS MUST REDEFINE THEIR ROLES

According to the WPR 2018 executive survey,¹¹ only 38% of banks are planning to play an anchor role in developing new payments ecosystems. This is low, given the threat that banks face from new market entrants. However, banks have two key strengths – capabilities and access to infrastructure, and customer trust, on which they can call to counter the competition from non-traditional players including the BigTechs.

Over time, banks have already made significant investments in areas including core banking, access to cards and payments infrastructure, cash and liquidity management solutions, and risk management solutions. Banks can now build on the capabilities these investments have delivered by collaborating with FinTechs to offer superior and differentiated customer experience.

Another advantage banks have over new payment market entrants is the high level of trust they have from their retail customers. Banks have the potential to create stronger customer intimacy with corporate clients by offering advisory services. As treasurers also operate in an increasingly complex and dynamic world, they are increasingly relying on their banks to provide value-added services that are safe, efficient, reliable, and global.

The development of the new payments landscape will not depend solely on bank-led initiatives; the financial services community, including public sector organizations, regulators, and third parties must also work with their corporate clients. The involvement of corporate treasurers will help banks to understand their requirements from a corporate perspective. Like the banks, corporate treasuries must also consider their roles. In the absence of such collaboration, at least one key stakeholder in a particular market, which can draw on significant network effects, may be a key influencer in bringing about the change required to accelerate development.

In countries with more mature open banking markets, the payments market comprises a wider range of stakeholders, which offers customers more choices for making payments. Spain, Sweden, the UK, and the Netherlands, have larger participation and facilitation from the wider community, and faster progress can be achieved. However, conservative countries are not

¹¹ Capgemini and BNP Paribas WPR Executive Interviews and Executive Survey, 2018

evolved on the open banking scale, partly due to underestimating the scale of changes required, and also due to a lack of specific use cases. Emerging countries constitute a large proportion of the conservative markets, where the low-cost closed loop solutions from providers including the BigTechs have a competitive edge over banks. Hence, although banks are in the spotlight for rendering the performance of open banking, participation from the larger community has a bigger role to play in the success of any open banking regime. (For further details, see deep dive on open banking assessment on page 37)



Banks are successfully adapting to serve their existing customers in the new mobile, virtual economy by using upgraded interbank platforms and new, flexible, data-rich services. But I am concerned they are being outflanked in the underbanked community by low-cost closed loop solutions, and that is where future disruption will come from."

—Chris Hamilton
Group CEO, BankservAfrica

Banks that have a large share of the payments market are best placed to improve customer experience by leveraging technology and their core strengths to orchestrate value-added capabilities (see Figure 3.2).

By orchestrating, banks can achieve their objectives of greater operational efficiency, which leads to new business propositions, and ultimately to improved customer centricity.

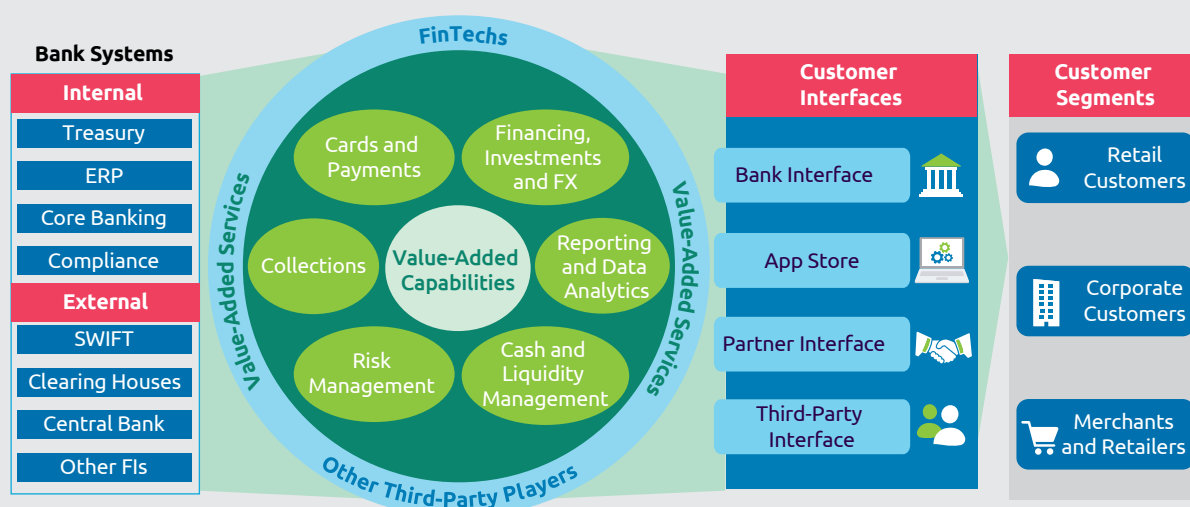
OPERATIONAL EFFICIENCY

Operational efficiency can be achieved via a modernized payments infrastructure and new technologies that will create new payment rails. By improving their own payments and cash management operations, banks will be better placed to help improve the operational efficiency of their corporate clients. The ability to change the underlying economics of payment acceptance and processing through efficiency is very much front and center of the agenda, as overall banking margin challenges continue in the near term.

NEW BUSINESS PROPOSITIONS

Value-added, results-based services will help to create new business propositions through which banks can retain existing and acquire new customers. For example, new methods of paying and receiving funds through RTP and APIs will ultimately replace costlier card payments. New business propositions also can be developed by leveraging customer data, while API technology promises the ability to seamlessly integrate offerings. Within the fast-changing payments landscape, banks might have to change their business models, as doing everything on their own will not be possible. However, they can create a bank-orchestrated ecosystem that is based on collaboration. The B2B payments space is one of the areas where we are seeing new models emerge. Such models

Figure 3.2 Bank-Orchestrated Ecosystem



Source: Capgemini Financial Services Analysis, 2018.

essentially help organizations to manage their liquidity and working capital through dynamic discounting for accounts payable and receivable.

CUSTOMER EXPERIENCE

The ultimate goal of a bank-orchestrated system is improved customer centricity, whereby customers have access to a broad choice of payment solutions. By offering services through the relevant interfaces, such as bank channels, app stores, or third parties (based on the target customer segment), banks can focus on delivering the desired outcome to customers. This will give customers a wide range of options without having to deal with the financial and operational complexities

behind the bank interface. Strategic partnerships will enable corporate customers to find what they need in a fast and seamless fashion while enjoying a consistent, channel-agnostic experience. Through the right partnerships, banks can bundle the required capabilities for particular customer segments and reach target clients through the appropriate interface. Such partnerships should be considered with multiple companies to ensure the best experience is provided to customers, even if it means banks may at times need to share revenue with third parties. Against the backdrop of emerging cybersecurity challenges across financial services, winners in this space will be those that balance simplicity and ease with security.

Creation of Value-Added Services will Help Banks Derive Greater Benefits from Orchestration

To gain even further value from orchestration, banks could consider moving away from a standard service offering by market segment and create a business model based on customized and contextual value-driven offerings. The types of value-added services banks could offer in this business model are outlined in Figure 3.3 below.

Many of these value-added services will enable banks to take a more strategic role and add new income streams for both themselves and their clients. For example, banks can improve their corporate advisory services in cash forecasting and liquidity management by leveraging data analytics and other technology tools. Banks can also leverage data to generate new revenue streams for their clients, helping marketing

Figure 3.3 Potential Value-Added Offerings by Banks



Source: Capgemini Financial Services Analysis, 2018.

departments to more accurately target relevant customer segments, leveraging the knowledge gained from the digital marketing undertaken by retailers across the globe.

Many corporate clients also rely on banks to help them upgrade their payments and transaction banking technology; in such a fast-moving technology environment, this will be an important role, particularly with regard to the historic challenge of integration. Additional revenue streams for banks could also be achieved as a percentage of revenue generated from third parties that leverage bank APIs to develop value added services for their customers. The API service-based models that are yielding better results are those that opaquely embed a payment into a typical retail journey, such as booking travel and subsequently ordering foreign currency.



Payments will continue moving towards the ideal state of being fully instant, automated, efficient and thus become more than ever, a game of scale. Differentiate will come from new value creation in the greater process of companies that ultimately lead to payments and receivables."

—Wim Grosemans

Global Head of Product Management,
Payments & Receivables,
BNP Paribas

In addition to the opportunities for banks in providing value-added services, they can also look to provide some value-added services for customers in transaction banking, such as cash aggregation, cash forecasting, cash position advisory, and automated treasury. Such offerings should enable banks to equip corporate treasurers with the means to move beyond a tactical or operational role and towards a more strategic one for their companies. To gain the most from such value-added services, industry leaders of the future will need to strategize how they can differentiate such services from their competitors, based on their own strengths.

By aggregating balance and other details from across bank accounts, banks can simplify treasury operations for corporate clients. Through cash position advisory services, banks can provide investment advice based on the real-time, aggregated cash positions of the

corporate treasurer. By leveraging data analytics, banks can provide cash forecasting services based on empirical data. Another opportunity for banks to differentiate themselves comes with the growing trend towards real-time, cross-border payments, where they can provide seamless cross-border payments services to large corporates operating across multiple countries. Leveraging AI for automated decision making will enable banks to offer automated treasury as a service for large and mid-sized corporates. Advanced technology also can be utilized for smart analytics and reporting, where banks can provide analytics, reporting, and dashboarding services to help corporate treasurers make informed and optimized decisions. For merchants, banks can offer to integrate payments made from bank accounts with online checkouts by using APIs. This will enable the merchant to collect from a customer account whenever required after receiving the necessary approvals. Automating accounts payable and receivable will provide an end-to-end service that will optimize these processes. Some of the leading banks have begun to offer value-added services in this area. For example, BNP Paribas is implementing SWIFT gpi at IATA for real-time tracking of payment flows across different regions. The service provides an end-to-end view of each payment's lifecycle. Large numbers of IATA's transactions are cross-border, while only a small number are made at a local level; SWIFT gpi is particularly apt. IATA's member airlines will be able to precisely track their funds in real time and manage their liquidity positions.



Payments has become a commodity today. We are working with partners and merchants to provide differentiated mobile payment solutions that bring value to all parties. For example, merchants can provide accelerated check out and offer personalized digital services by leveraging data management techniques in a responsible way. At the same time, users can benefit from integrated payment methods, extended P2P payments, and loyalty programs."

—Carlo Bovero

Global Head of Cards and Retail
Payments, BNP Paribas

THE PAYMENTS OPEN BANKING ASSESSMENT OF SELECT COUNTRIES

The success of open banking will depend on a variety of factors, with four attributes likely to play a significant role in defining how conducive the industry environment will be for open banking: market dynamics, enabling infrastructure, governance, and customer demographics (see Figure 3.4). The market, for example, can encourage open banking adoption via data sharing, collaborative initiatives such as NPP in Australia, and consortia, such as that promoting QR-based payments in Singapore. An enabling infrastructure can be built on standards created by CSMs, card schemes, IP schemes, and third parties (as in the case of the UK, through the FCA). Governance will come from regulatory initiatives such as sandboxes as well as initiatives undertaken by industry associations, such as in Spain where banks created Bizum, a P2P mobile payment service, which set the interoperability standards for SCT Inst. Finally, digital literacy, smartphone penetration levels, and high levels of per capita non-cash transactions will help to drive consumer acceptance of open banking (as in Sweden and the Netherlands).

Banks must be ready for open banking as early as possible in order to derive prime mover advantage,

essentially ensuring that they are well-architected for the API economy not only for compliance, but also for the ability to expose further value-added services from partners to end customers. This will position them well in a market that is becoming increasingly competitive. To gain this advantage, banks looking to lead in this space should consider implementing componentized software architecture and deploy a platform approach to banking (platformification).

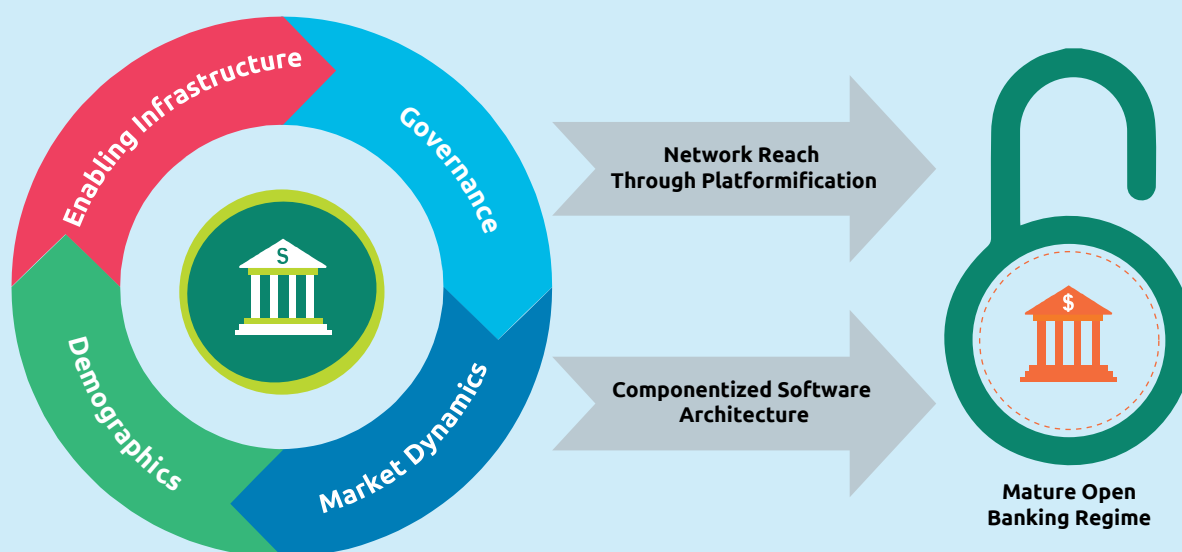


Open banking is much more than APIs and PSD2. Banks are to consider their service offering as being entirely modular, with more conscious and more frequent decision making on what to build themselves versus what to partner on with third parties."

—Wim Grosemans

Global Head of Product Management – Payments & Receivables, BNP Paribas

Figure 3.4 Attributes Driving the Success of Open Banking



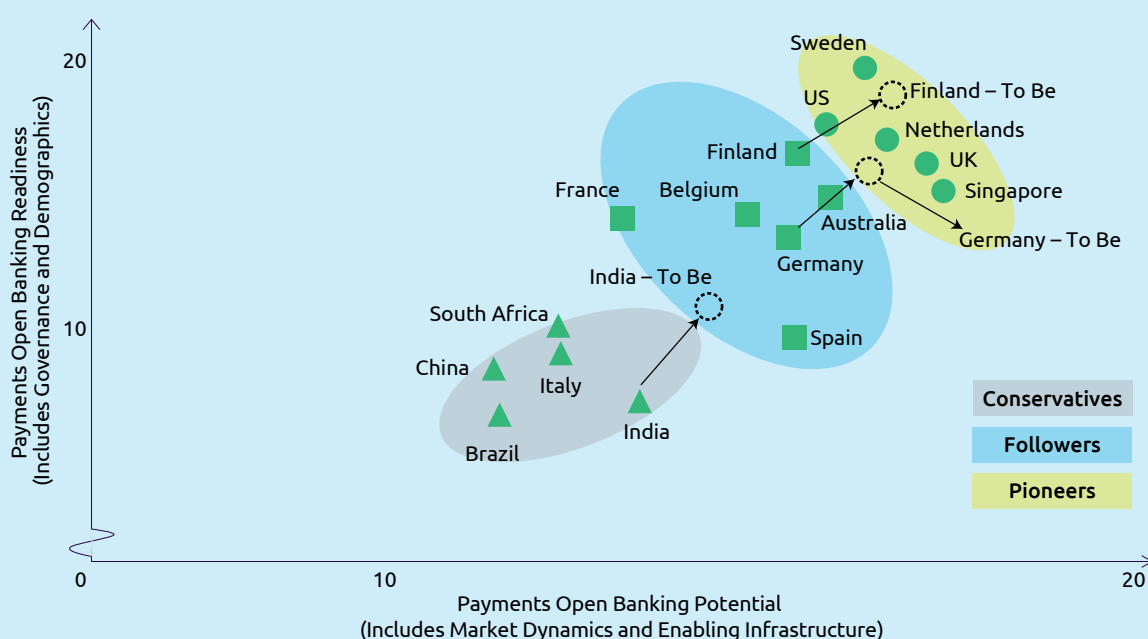
Source: Capgemini Financial Services Analysis, 2018.

In WPR 2018, we are introducing the Payments Open Banking Assessment. The readiness has been assessed in terms of openness in the market with respect to new competition, adoption of standards, degree of data-sharing deals between banks and third parties as per open-banking norms, enhanced CSM procedures, and the maturity of instant payment schemes. The potential on the other hand, is measured in terms of demographics-related criteria, such as penetration of mobile payments, government and regulatory initiatives, such as sandboxes, to promote innovation, and FinTech-related activities. The assessment will help to track the select markets in terms of their performance on the open banking front from a payments perspective. When mapping the open-banking readiness versus open-banking potential of these markets, we observed three categories: pioneers, followers, and conservatives (see Figure 3.5). Among the pioneers, it is interesting to observe that countries with higher per-capita non-cash transactions (see Figure 1.3, page 8), such as Sweden, the Netherlands, the US, and the UK, are more mature open-banking markets. Additionally, Finland, which ranks highly in per-capita, non-cash transactions, is slowly positioning itself as an open-banking pioneer. The PSD2 has complemented innovation in the European Union countries and helped push open banking ahead. Singapore is in the pioneer category thanks to the Open API Playbook, cash usage

reduction initiatives, and its conducive infrastructure. The US is a pioneer for a different reason; banks here have embraced open banking and created API portals for developers. Its potential is low, however, in the absence of holistic regulation and governance.

Among the followers, Belgium and France have not made significant progress in open banking, because they wish to protect existing systems and participants in their markets that are fairly consolidated and dominated by a few large banks. Although post-PSD2 API-based services have been adopted in Belgium by banks such as KBC and Isabel Group, uptake has been very limited. Further, Belgium tends to have fewer FinTechs, due to the low attractiveness for foreign players of such a small market and low levels of interest in FinTech entrepreneurship among Belgians. Funds invested in FinTech in Belgium are falling behind versus the country's major European competitors. Likewise, the French open-banking industry might eventually become a consolidated market as the PSD2 and GDPR drive banks to collaboratively develop an ecosystem. Also, French banks are adopting a single, open API standard to create a strong, secure, resilient, and standardized solution for connecting TPPs and banks. This API is developed by STET and will be available in 2018. On the other hand, Finland and Germany are quite open to innovation and competition. Both countries are expected to soon move into the pioneer category

Figure 3.5 Payments Open Banking Assessment of Select Countries



Source: Capgemini Financial Services Analysis, 2018.

thanks to innovative industry initiatives, including the rise of digital banks such as Fidor and NUMBER 26 and increasing FinTech collaboration (such as Commerzbank's nurturing of open banking platform providers including NDGIT). Australia, however, seems to have chosen to closely monitor the UK market to incorporate the lessons learned and not impose stringent regulatory scrutiny as done by the CMA.

Conservative countries are taking a wait-and-see approach and rank low in per-capita, non-cash transactions (see Figure 1.3, page 8). South Africa is an interesting case, where although there is no holistic regulation to promote open banking, banks are quite proactive and may not wait for a regulatory mandate to move to open banking. Further, as the country has a mature mobile and real-time payments environment, it may rapidly progress to open banking. Italy demonstrates how a pan-regional regulation such as the PSD2 can vary in its implementation and delay the realization of benefits compared to other EU countries. Further, Italy is a market where cash is still intensively

used, therefore there are fewer digital payments and less openness in the market. Although China and India are both classified as conservatives, initiatives such as India's Open API stack, federated digital identity database (USSID), unified QR code, and instant payments rails (UPI), may move the country into the followers category in the short term. China is also starting to open up the market through various regulatory initiatives.

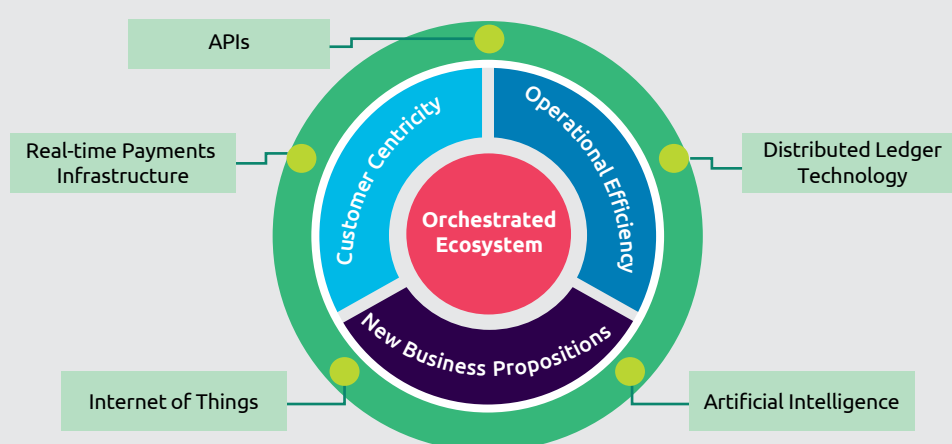


Banks and thereby countries with comprehensive payments network reach coupled with the power of open banking will have the capability to provide integrated, differentiated services at much lower marginal costs."

—Chris Hamilton
Group CEO, BankservAfrica

Emerging Technologies and Innovation are the Key Transformation Pillars to Orchestrate Ecosystems

Figure 3.6 Emerging Technologies and Innovation for the Orchestrated Ecosystem



Source: Capgemini Financial Services Analysis, 2018.

Within the orchestrated ecosystem, emerging technologies and innovation will play a vital role (see Figure 3.6). APIs will act as the glue, connecting multiple players, systems, and technologies to enable

one integrated ecosystem. At the same time, digital identity will help to address the growing cybersecurity concerns connected with real-time payments.

APIs AND RTP

Many banks have made good progress on API and RTP initiatives, and have started achieving easier integration with multiple systems, developing new products and services, and improving customer experiences via seamless, “customer-in-control” services. Additional benefits are also expected to be realized in the near future. APIs enable third parties to develop new products and services for banks and PSPs, and help to improve the operational efficiency of banks’ internal systems. Combined, API and RTP systems can act as catalysts in orchestrated ecosystems as they enable integration with banking legacy systems supporting overlay services. This delivers benefits such as customer centricity with additional overlay and value-added services to improve customer experiences. RTP and API in combination with mobile technologies could also provide an alternative to card payments, particularly in the C2B e-commerce area, with corporates gaining immediate availability of funds at lower cost. This combination also helps PSPs to improving operational efficiency as the transfer of data along with real-time payments allows for easy reconciliation of transactions. The instant availability of funds also improves risk management for banks as the risk is shared with customers. Finally, API and RTP can generate new business propositions, as richer payment data in RTP systems can be leveraged along with APIs to create value-added services.

For example, the International Air Transport Association (IATA), has piloted a new payments model to enable near-real time payments. The model will enable airlines to accelerate their funds while generating significant working capital and liquidity benefits. This in turn will enable a smoother, more convenient, and less complex payments experience for travelers.¹²



Open APIs are shaping a dual market – One in big corporates that have the budget for heavy investments in IT, where large banks can drive customization and two involving mid-market clients that have limited investments and look at FinTechs to offer plug and play services at lower costs.”

—Thara Trivedi

Leader, (Cash Management and Payments Product Management), Bank of the West

DLT

Three key features of DLT, decentralization, data integrity, and process automation, can bring a range of potential benefits. A decentralized, distributed DLT-based system with a central authority will be lower cost, more scalable, and will accelerate settlement, particularly for international payments. Such a system also will offer superior business continuity and disaster recovery, ensuring 24/7 service. With regard to data integrity, DLT can provide an immutable and verifiable audit trail of transactions and real-time traceability for users. Data encryption and digital signature features build customer trust, and DLT-based KYC systems can provide a secure digital identity at lower cost for banks and PSPs. DLT helps in processing automation by reducing or eliminating manual reconciliations, which in turn reduces the timely and costly dispute process. Additionally, smart contracts enable the programming of agreed conditions that are automatically executed once certain conditions are met.

While DLT is promising for payments, such developments are at a nascent stage and not yet experiencing widespread adoption. Limitations include a lack of integration with legacy systems and clarity on regulations, and scalability issues. Several banks and FinTechs are, however, exploring DLT’s potential to overcome inefficiencies in cross-border payments and interbank settlements. The best use cases for DLT may yet be discovered, but it could take some time before this happens and the technology experiences mass adoption.

Some banks are leveraging DLT and AI to automate baseline digital identity, in order to improve security while ensuring superior user experience. Blockchain also has potential to transform digital identity through decentralization and traceability. Self-sovereign ID, digital identification that users can present online without requiring passwords or other verification to certify their identity, is also gaining popularity.

AI, IOT, SMART DEVICES, AND DIGITAL IDENTITY

AI, IoT, and smart devices offer multiple use cases that can help firms improve their operational efficiency and enhance customer experience. With the rise of IoT, there is a growing shift in the payments landscape towards device-initiated payments (the internet of payments, IoP). Integrated authentication measures within wearables and IoT devices ranging from simple PIN to biometrics, prevent fraud and increase customer confidence in the technology. With

¹² "Deutsche Bank pilots game-changing payments solution with IATA", Deutsche Bank Media Release, May 7, 2018, accessed August, 2018 at https://www.db.com/newsroom_news/2018/deutsche-bank-pilots-game-changing-payments-solution-with-iata-en-11574.htm

increasing use of home automation solution and AI-powered personal assistants such as Amazon Echo and Google Home, IoT is expected to grow.

Federated digital identity management is also gaining prominence. Such systems offer identity access to all stakeholders, thus facilitating frictionless payments for users across devices, channels, and financial institutions.

This is important especially when authentication must be transformed to suit specific needs.

CHALLENGES OF THESE TECHNOLOGIES

There are some challenges that are limiting the adoption of these emerging technologies. Once such challenges are addressed their true potential will be unleashed.

Technology	Challenges
APIs	Security vulnerabilities (malware, social engineering and man in the middle attacks), lack of standardization
RTP	Interoperability, standardization, synchronization
DLT	Security, interoperability, scalability, cost-effectiveness, lack of regulatory clarity

DEEP DIVE OF EMERGING TECHNOLOGIES IN NEW PAYMENTS ECOSYSTEMS

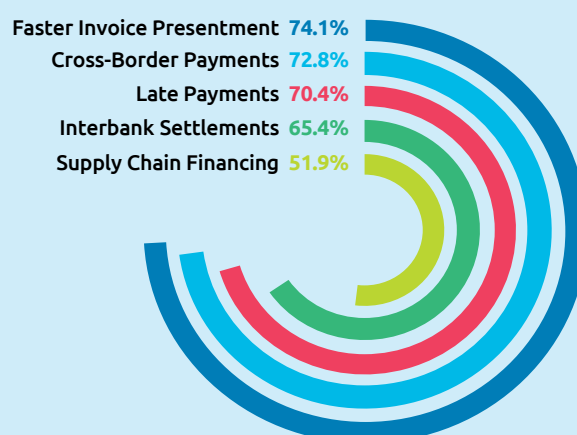
API and RTP

At present, APIs are more prominent in B2C and C2B payments than in the B2B sector, where they are mainly used to upgrade technology to support existing infrastructure. Several leading banks have implemented APIs to facilitate data sharing and collaboration with third parties in different countries. Other corporate API examples include DBS Bank's PayNow solution, which deploys an API to enable businesses to pay their corporate customers. PayNow can support payments between seven banks in

Singapore. Standard Chartered, in collaboration with Tencent's WeChat Pay, has created a one-stop online collection solution for corporates in China. This will deliver e-commerce improved reconciliation and payment processing to e-commerce companies.

Multiple API and RTP solutions are available, giving banks and PSPs a wide range from which to choose the optimal solutions that in combination can create a super highway of networks. Banks have a role to play in helping corporate clients to identify the most appropriate solutions. Respondents to the WPR 2018 executive survey identified five top use cases for RTP (see Figure 3.7).

Figure 3.7 Executive Responses on Top 5 Use Cases of RTP (%), 2018

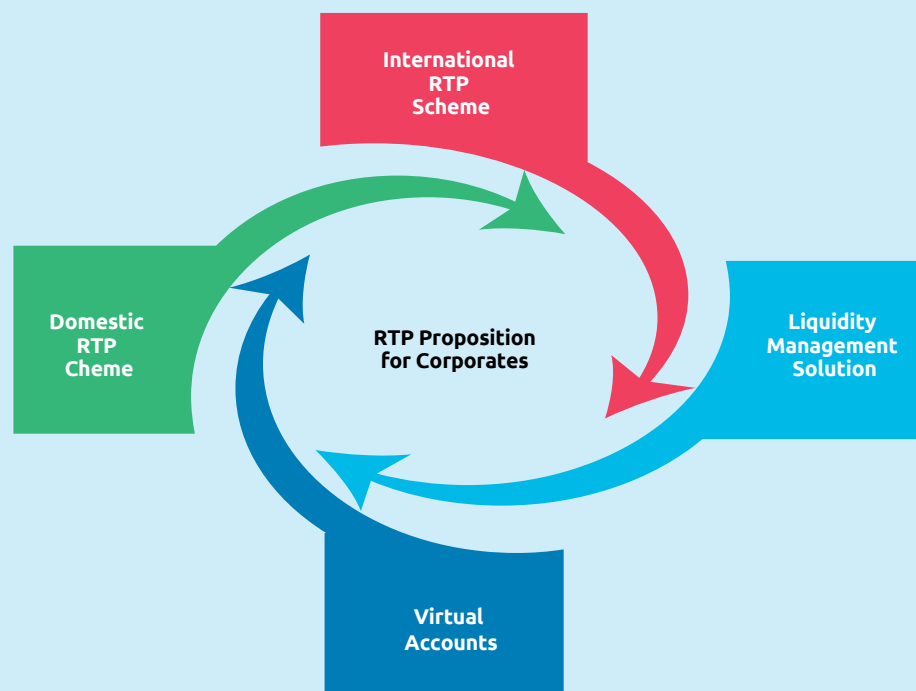


Source: Capgemini Financial Services Analysis, 2018; Capgemini and BNP Paribas WPR Executive Survey 2018; Total 101 responses received.

RTP proposition for corporates

Domestic and international RTP schemes, combined with virtual accounts and liquidity management solutions, could form the basis of a number of corporate business propositions (see Figure 3.8)

Figure 3.8 RTP Propositions for Corporates



Source: Capgemini Financial Services Analysis, 2018.

Domestic RTP Scheme	<ul style="list-style-type: none"> • In addition to instant availability of funds, RTP gives corporates traceability and finality of payments. • Request to pay (pull), soon to be enabled in the US and Europe, will enable new innovative offerings in B2C and B2B payments.
International RTP Scheme	<ul style="list-style-type: none"> • Large businesses operating in multiple countries are looking for speed and convenience for cross-border transactions. • Several firms, such as Ripple, are building DLT-based cross-border solutions; however SWIFT, with its gpi, remains the standard for international payments due to its reach.
Liquidity Management Solution	<ul style="list-style-type: none"> • Corporates are not used to managing their liquidity in real-time and need robust real-time liquidity monitoring and management tools, which will help them to more efficiently manage their liquidity.
Virtual Accounts	<ul style="list-style-type: none"> • RTP will provide instant clearing and availability of funds for corporates, but the full benefits cannot be utilized without an instant reconciliation mechanism. Virtual account solutions (for example virtual IBAN) can address this challenge as they provide superior cross-currency payments and collections management in an in-house bank set-up.

Based on interviews with our banking clients, WPR 2018 has observed that although most banks have made significant progress in creating APIs for PSD2 compliance, only a few leading banks have gone beyond compliance to offer other API-based services. They have made much more progress, however, on RTP initiatives during the past year. Banks are reaping considerable value from integrating RTP with APIs to create new business propositions, often in collaboration, to reach out to customers.

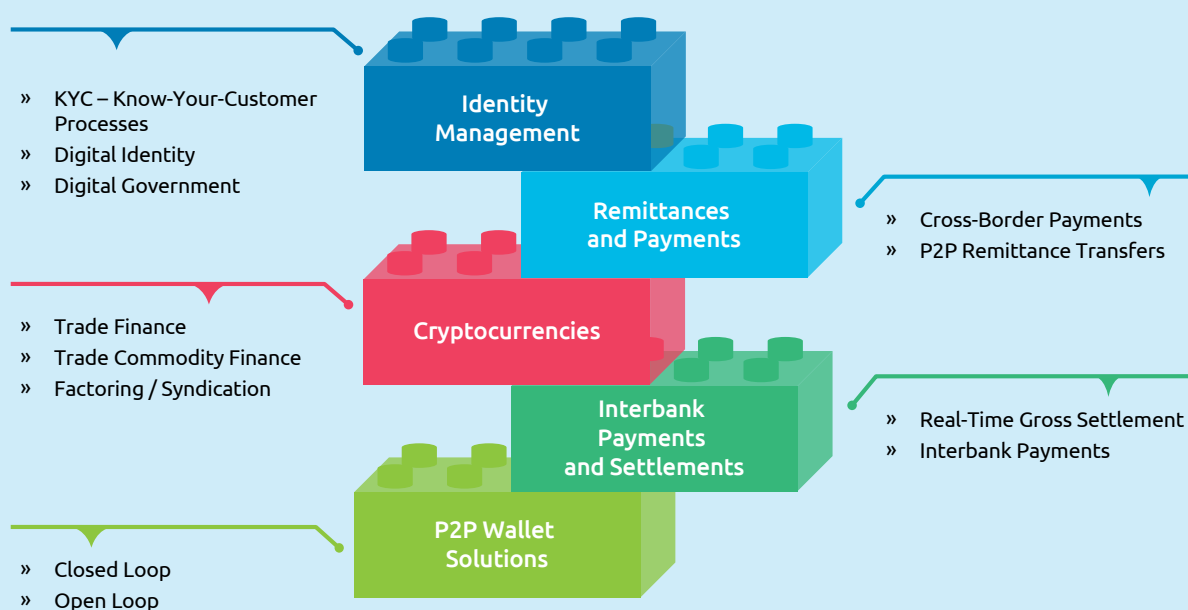
Distributed ledger technology

Banks are examining the potential of DLT in the short term to enhance customer experience (through its data integrity and security features). Over the longer term, DLT's potential to bring efficiency to some

payments functions, including identity management, remittances, and interbank payments and settlements, is also being considered (see Figure 3.9).

There are numerous DLT efforts under way in the payments industry. Within identity management, initiatives include Sovrin, a self-sovereign identity framework, and Civic, an e-KYC application. In remittances and payments, initiatives include Ripple, which enables users to send digital representations of real euros. Crypto currency developments include Veem and Mastercard. In interbank payments and settlements, the Bank of England (BoE) is developing a DLT-based RTGS solution while UBS' Utility Settlement Coin could enable FIs to directly transact securities with each other. Two wallet developments of note are Bitcoin Wallet and Exodus.

Figure 3.9 Potential Benefits from Various Features of DLT



Source: Capgemini Financial Services Analysis, 2018.

AI, IoT and Smart Devices

AI technology offers a wide range of use cases that can help banks orchestrate different elements of the payments landscape.

Conversational Commerce	<p>Voice payments enabled by AI-based assistants such as Alexa and Google Home will enable customer service representatives to focus on more value-added requests based on previous conversations with the voice assistant.</p> <p>Spending via voice assistants is expected to grow as much as six-fold in three years.¹³</p>
Digital Identity	<p>Adaptive authentication is capable of supporting AI use cases for high risk and dynamic transactions.</p> <p>Behavioral biometrics is an efficient tool for checking “liveness proof” to authenticate transactions, whereby an individual undertakes a particular action (reading out text or numbers) during the authentication process.</p>
Customer Retention	<p>The growing popularity of AI agents such as Siri and Alexa will push PSPs to offer value-add services and new business models.</p> <p>Companies can monitor and understand customer behavior by using big data and analytics, expanding their portfolio of services.</p>
Commercial Payments and Collections	<p>Optimized treasury pricing will enable firms to capture more revenue while advanced analytics can help to avoid price leakages.</p> <p>Collections and debt restructuring for detecting payment patterns, borrowing trends, and their financial health in terms of delinquencies and late payments.</p>
Analytics and Machine Learning	<p>AI-based analytics for validating user ID as users have increasingly complicated digital histories.</p> <p>Deeper insights into customers and sales prospects, drawing on a wider variety of internal and external data than traditional tools.</p> <p>Customer segmentation according to their needs, enabling new opportunities for cross-selling and up-selling.</p>

Examples of AI and IoT payments applications include Fitbit Pay, which enables customers to use the fitness tracker to pay at stores with NFC technology. Amazon’s Dash enables customers to replenish grocery items, with the purchase complete via the Amazon wallet. Ant Financial has integrated its payment service with VR shopping product Buy+. Jaguar and

Shell have partnered to develop an in-car payments app. As more purchases are made via devices, banks’ orchestrating role is expected to become more important as they provide a comprehensive platform that manages devices, and reports on their purchases and activities.

¹³ “Conversational Commerce: Why Consumers Are Embracing Voice Assistants in Their Lives”, www.capgemini.com, January, 2018, accessed August, 2018 at <https://www.capgemini.com/wp-content/uploads/2018/01/dti-conversational-commerce.pdf>

DIGITAL IDENTITY IS ASSUMING GREATER SIGNIFICANCE, ESPECIALLY IN THE WAKE OF PSD2 AND GDPR

Cybersecurity is an increasingly important concern for banks and PSPs, with attacks intensifying and fines for breaches of security regulations also rising. One of the main weapons in the fight against cyber attacks is digital identity, which plays a vital role in two-factor authentication under PSD2's SCA. Under the two-factor authentication stipulated by PSD2's RTS, users have to prove their identity with two separate elements of the following:

- Knowledge (something they know, a PIN code or password)
- Possession (something they possess, such as a mobile device, a card)
- Inherence (something they are, such as fingerprints, iris, or face, via biometrics)

These elements create an extended digital identity scenario (see Figure 3.10). User credentials, such as username and password, and the possession of a device coupled with the behavior of the user will fortify the authentication of that user. While the former serves the purpose of customer authentication,

the latter two factors present a contextual view of the customer. The concept of extended digital identity assumes greater importance in the scenario of orchestrated authentication across multiple devices and channels.

Further, the concept of federated digital identity management that promulgates offering identity access to all stakeholders is also accelerating. (see figure 3.11).



With the onset of new ecosystems and platform-based services, there is a need to redesign client journeys through TPP, where authentication and consent will suit the new model and maintain security at all times."

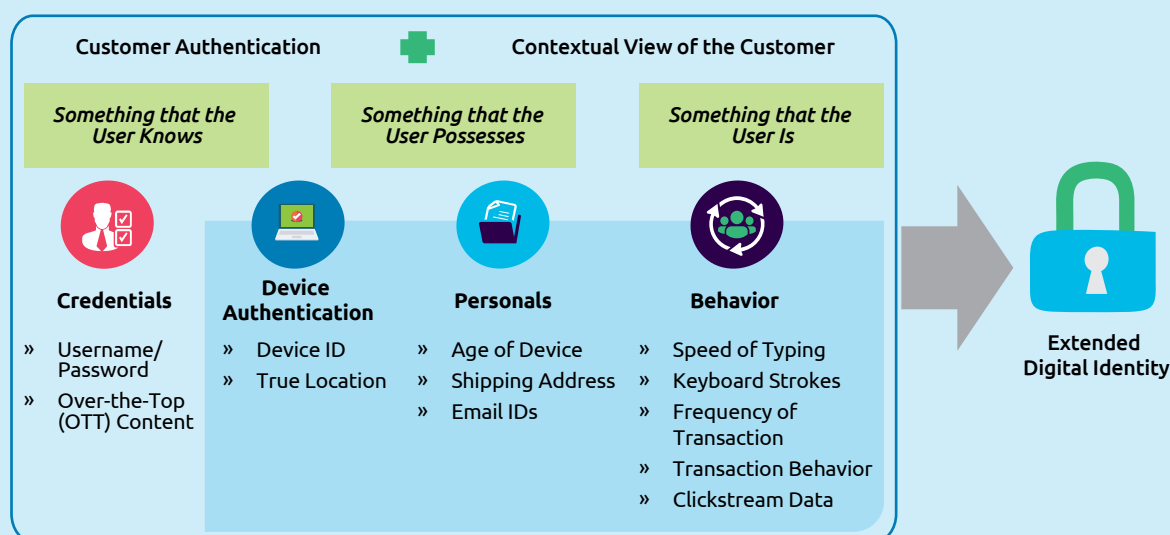
—Jean-Luc Smadja

Global Chief Information Officer –
Global Transaction Banking

—Nicolas Cailly

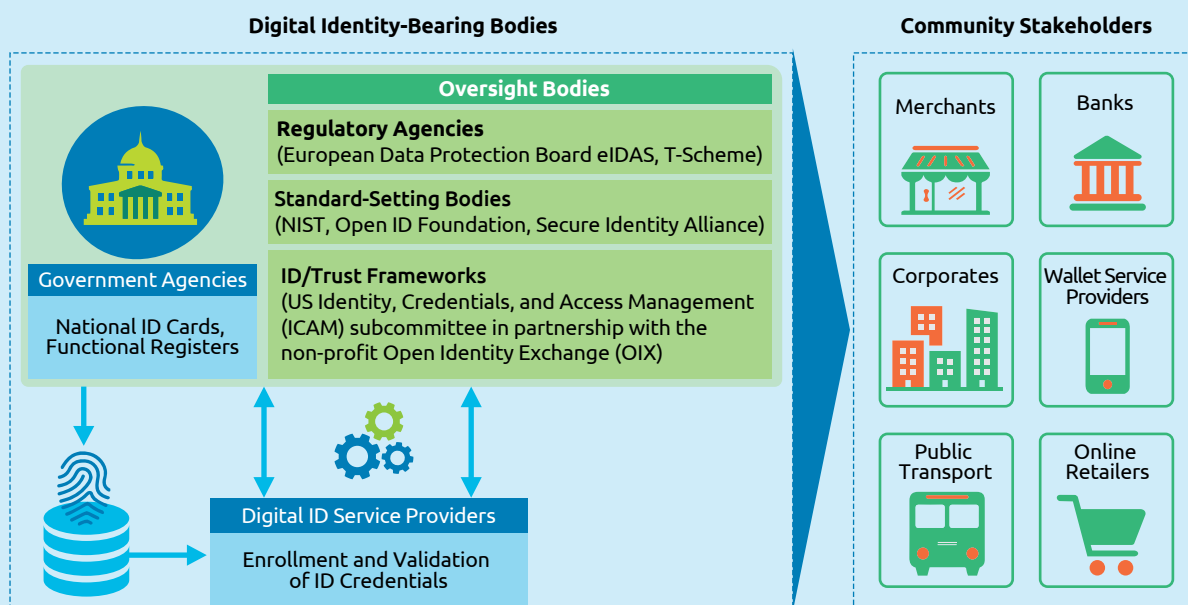
Global Head of Marketing – Payments
& Cash Management,
Société Générale CIB

Figure 3.10 Extended Attributes to Safeguard Digital Identity Information



Source: Capgemini Financial Services Analysis, 2018.

Figure 3.11 Growing Importance of Federated Digital Identity



Source: Capgemini Financial Services Analysis, 2018.

CHALLENGES WITH NEW TECHNOLOGIES AND INNOVATION

API challenges

Some third parties have implemented standards to ensure secure data sharing through APIs, while some industry stakeholders at a country level have started collaborating to create standardized APIs. Multiple security standards have emerged for secure data sharing among the industry stakeholders through APIs. Among these initiatives are the Berlin Group, STET France, CAPS, PRETA, and NACHA.¹⁴

At present, standards are developed at an industry level, but over time it is likely that standards will consolidate at the regional level, further cascading to other regions. Eventually the standard with the highest reach and strongest network effects could emerge as a global standard. Once the standardization and security aspects of API are addressed, the true potential of other enablers such as RTP and DLT – which rely on APIs for connectivity – will be unleashed.

On the security front, several API standards are emerging, which banks are using to share data in secure manner with third parties. OAuth, a token-

API standardization initiative	Features
Berlin Group	APIs support PSD2 AIS, PIIS and PIS. Based on RESTful, JSON, and ISO 20022 standards. Open and royalty-free for data processes, interfaces, and infrastructure
STET France	PSD2 server initiative for AIS, PIIS, and PIS. Uses REST, OAuth2, JSON, and HTTP. ISO 20022 for structuring data to be exchanged between TPPs and ASPSPs
Controlled Access to Payment Services (CAPS)	Founders are Equens Worldline, NETS and other supply side organizations. PSD2/RTS compliance, API aggregation, and premium services for ASPSPs and TPPs
PRETA	Wholly-owned subsidiary of EBA CLEARING. XS2A service building blocks include directory, testing, and certification, helpdesk, and dispute resolution
NACHA	Leads the API Standardization Industry Group for APIs in the US Financial Services industry. Developing standards for account validation and access to bank contact information

¹⁴ "PSD2 sparks innovation in Open Banking ecosystems", Deutsche Bank, accessed August 2018 at http://cib.db.com/docs_new/PSD2_Open_Banking_Ecosystems_Innopay_DB_Article_June2017.pdf

based authentication system, is being used by Wells Fargo, Capital One, and Fidor Bank for secure data sharing. Open Financial Exchange (OFX) is used by JPMorgan Chase and Intuit to share data in a secure manner through OFX 2.2 API.¹⁵ Durable Data API (DDA) is a lightweight, modern, concise, and more flexible specification that places greater emphasis on developers' needs. DDA also calls for authentication through OAuth, however it allows flexibility. Fidelity is using DDA for data sharing.

RTP challenges

To accelerate the adoption of RTP by corporates, interoperability challenges must be mitigated. The main issue for large corporates operating across multiple regions is the lack of standardization and synchronization between regional RTP schemes of data transfer, screening, validation, and authorization (see Figure 3.12). Global ecosystem partners may help to reduce multi-country heterogeneity and provide a unique entry point for corporates.

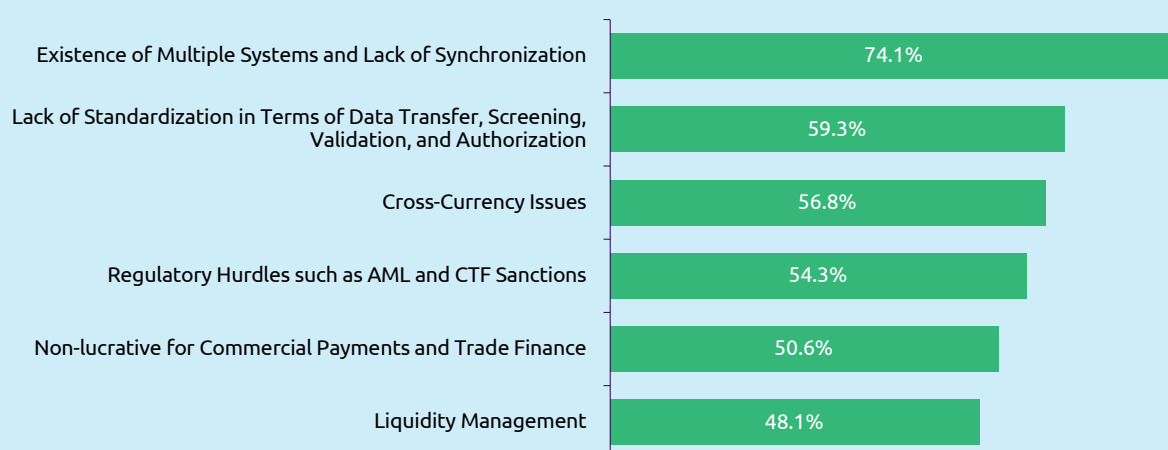
Another problem for corporates are value limits and cut-off times for RTP-based payments. Several countries across the globe have implemented diverse RTP schemes, but there is no interoperability between them. SWIFT GPI could address the interoperability issue as it is enabling real-time international payments with a network of more than 160 banks in over 220 countries. SWIFT, with its GPI, is looking to partner

with various regional IP schemes to retain its position as the standard for international payments.

DLT challenges

Several DLT innovations have largely been restricted to research labs, or to the proof of concept (PoC) stage due to interoperability, security, scalability, cost effectiveness, and regulatory issues. A lack of interoperability between DLT systems and existing banking systems prevents the implementation of scalable solutions. Multiple DLT systems create a fragmented market with limited connectivity between solutions, which leads to inefficiencies and limited adoption. Blockchains are resilient but not immune to cyber attacks, as evidenced by the attacks on crypto currencies such as Bitcoin. Blockchain applications become difficult to operate with increasing size, especially public blockchain. Consensus algorithms used in DLT systems, along with cryptographic verification, introduce latency in the system thus limiting the number of operations systems can handle. As blockchain gets bigger it tends to consume more power; in November 2017, the power consumed by the entire Bitcoin network was estimated to be higher than that of the Republic of Ireland. An uncertain regulatory environment and an absence of formal legal frameworks in most countries creates a legal risk for DLT technology. The Netherlands' central bank, De Nederlandsche Bank (DNB), recently announced the results of three years of experimentation with DLT,

Figure 3.12 Executive Responses on RTP Challenges for Corporates (%), 2018



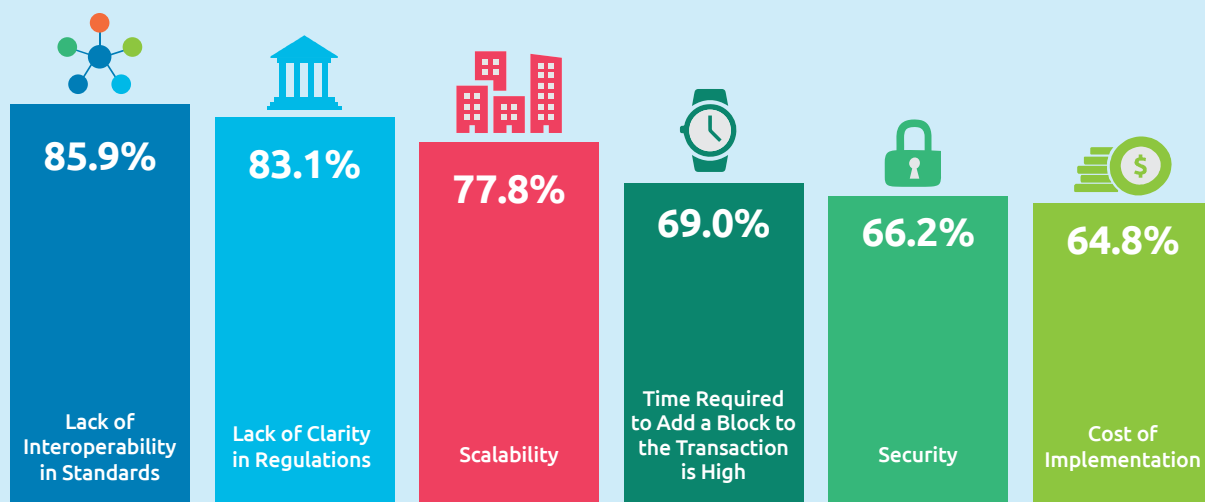
Source: Capgemini Financial Services Analysis, 2018; Capgemini and BNP Paribas WPR Executive Survey 2018; Total 101 responses received.

¹⁵ "JPMorgan Chase and Intuit to Securely Share Data Through APIs", Karthick Viswanathan, Feb 08, 2017, accessed August 2018 at <https://www.infoq.com/news/2017/02/chase-oxf2>

concluding that in its current state it fails to meet the very high demands of a financial market infrastructure.¹⁴ Despite the significant experimentation that has been undertaken with DLT, DNB found that a pressing requirement is to focus on areas where the technology can replace current market infrastructures. For

example, the industry must identify targets such as interbank settlements and cross-currency transactions where DLT can be leveraged to its fullest potential and the benefits will outweigh the costs incurred. Figure 3.13 shows the main factors industry executives believe are preventing the adoption of DLT.

Figure 3.13 Factors Limiting the Adoption of DLT (%), 2018



Source: Capgemini Financial Services Analysis, 2018; Capgemini and BNP Paribas WPR Executive Survey 2018; Total 101 responses received.

¹⁴ "DNBulletin: DNB experiments with blockchain technology", [www.dnb.nl](https://www.dnb.nl/en/news/news-and-archive/DNBulletin2018/dnb376502.jsp), June 7, 2018, accessed August, 2018 at <https://www.dnb.nl/en/news/news-and-archive/DNBulletin2018/dnb376502.jsp>

In Anchoring New Ecosystems, Banks Must Identify the Best FinTech Partners, Based on Complementary Services and Value

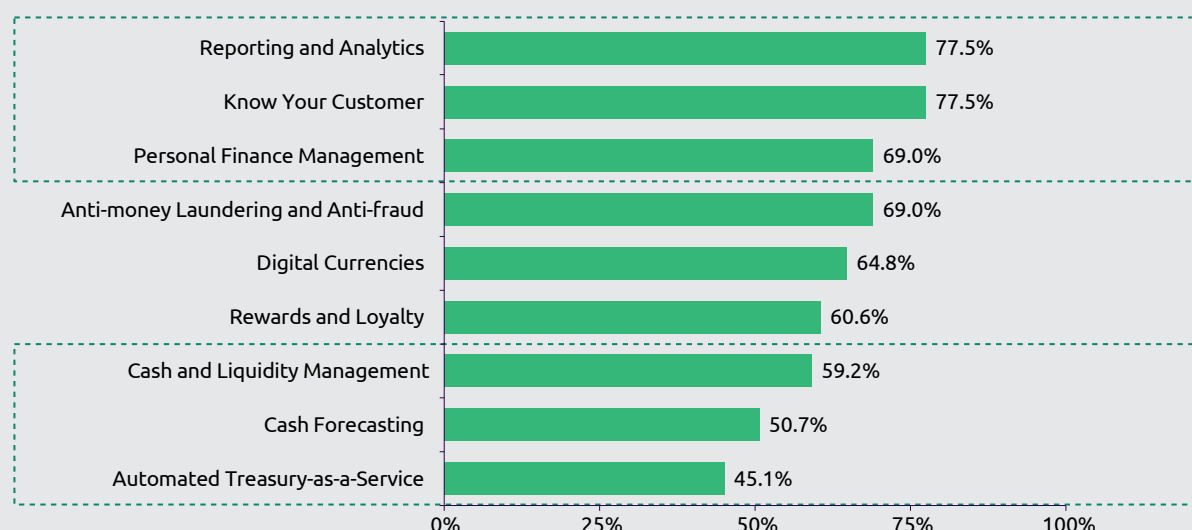
FinTechs and BigTechs can play a key role in filling the gaps between changing customer demands and existing services provided by the incumbent payments firms. Such firms are considered better at developing and adopting emerging technologies. In the orchestrated ecosystem, banks that wish to be leaders must take an anchor role and choose the best technology firms with which to partner, to ensure that customers benefit from the best that each provider in new payments ecosystems has to offer.

Payments industry incumbents are partnering with FinTechs mostly at the customer-facing end of the value chain in areas such as reporting and analytics, KYC, and PFM, according to the WPR 2018 executive survey (see Figure 3.14). These are the areas that incumbents perceive FinTechs to be better at in terms

of leveraging technology. The results suggest that at present, incumbents believe they are well-equipped on their own to address changing corporate needs in cash and liquidity management, cash forecasting, and automated treasury as a service.

In payments, FinTechs are emerging in areas such as invoice discounting and cross-border payments. Many FinTechs are offering invoice discounting as an alternative solution to traditional types of business finance such as overdrafts or loans. This approach provides instant access to cash required for paying outstanding invoice; Populous, Investly, Propspa, and Advanon are examples. Loyalty and analytics, security, payments acceptance, cross-border payments, and wallets are other areas where FinTech presence can be strongly felt.

Figure 3.14 Executive Responses on High Impact areas of FinTech Collaboration (%), 2018



Source: Capgemini Financial Services Analysis, 2018; Capgemini and BNP Paribas WPR Executive Survey 2018; Total 101 responses received.



In the future payments ecosystem, partnering with FinTechs is the most likely model that may be sustainable, with Fintech players concentrating more on the front-end part of the value chain in services such as initiation and authorization.”

—Arif Ismail

Head FinTech Program, South Africa Reserve Bank

The dynamic of risk and revenue sharing in bank-FinTech collaboration continues to evolve, as the current risk to revenue sharing ratio is unfavorable towards banks, and needs to be addressed for long-term sustainability. While banks bear the largest part of the risk in any collaboration, the revenue share is split evenly between the banks and FinTechs. In areas such as the GDPR, the monetary risk for banks of any breach is significant.

There are different ways in which corporates can engage with FinTechs (see Figure 3.15).

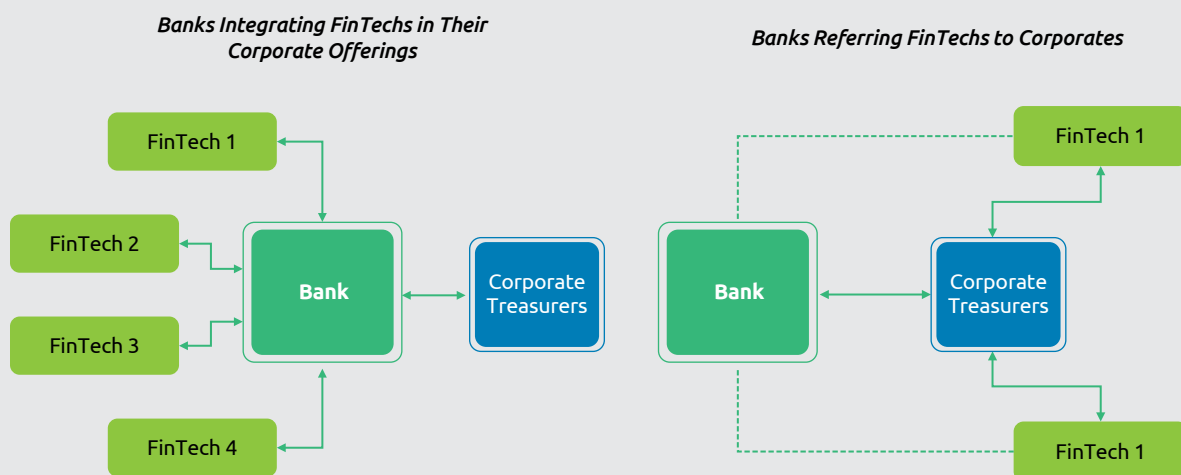


“For corporate treasurers, two models of engagement with FinTechs are emerging: one where banks become the center of ecosystem collaboration with FinTechs and reach out to customers and the other where banks refer FinTechs to corporates, who deal directly with them. For robust ecosystems, corporates must weigh the pros and cons of the collaboration models and choose that which not only adds value, but is also sustainable over the long term.”

—Bruno Mellado

Head of International Payments and Receivables, BNP Paribas

Figure 3.15 Engagement Models in Bank-FinTech Collaboration for Corporate Treasurers



Source: Capgemini Financial Services Analysis, 2018.

BigTechs have also started to collaborate with banks at the customer-facing end of the value chain. For example, BNP Paribas is supporting WeChat Pay for its retailer sector clients in France, and subsequently, across Europe. Amazon and JP Morgan are collaborating to offer checking accounts. Apple is offering voice-controlled payments in partnership with OCBC bank.



Currently, banks and BigTechs are in a co-creation stage to leverage each other's capabilities for a common interest, there is more of an interest to work together as there is value for both BigTechs and Banks."

—Bruno Mellado

Head of International Payments and Receivables, BNP Paribas



For the formation of an ecosystem, it is necessary to have a service that is the center of the ecosystem, for example Apple has smartphones and Google has OS. We think it is best to play a key role in the area of payment as a part of some ecosystem."

—Arata Matsutani

SVP (Strategic Innovations Department), JCB

The Roadmap for Banks to Lead Orchestrated Payments Ecosystems

The strategies deployed by banks that have an ambition to become leaders in new payments ecosystems include identifying use cases and technologies, selecting strategic partners, facilitating the ecosystems, and establishing governance and control (see Figure 3.16). Based on our interviews with banks, we have observed that although almost all

banks are collaborating with FinTechs across various payment functions, there are only a few that take a structured approach to identifying strategic partners. CapGemini's ScaleUp Qualification¹⁶ is an end-to-end methodology that evaluates a FinTech's level of maturity on four criteria – people, finance, business, and technology.

Figure 3.16 Roadmap for Banks to Lead Orchestrated Ecosystems



Source: Capgemini Financial Services Analysis, 2018; Capgemini and BNP Paribas WPR Executive Interviews 2018.

¹⁶ "FinTech Co-Innovation with Capgemini's ScaleUp Qualification", [www.capgemini.com](https://www.capgemini.com/service/fintech-innovation-and-engagement/), accessed August, 2018 at <https://www.capgemini.com/service/fintech-innovation-and-engagement/>

Methodology

Payments Open Banking Assessment

In WPR 2018, we have introduced the Payments Open Banking Assessment to demonstrate the state of open banking from a payments perspective in select markets. We have chosen 16 countries across various regions for the assessment. The assessment will help readers understand how these countries are performing with regards to open banking and how prepared they are for the transformation/performance of the banking and payments industry in that particular market. This assessment is based on multiple criteria broadly classified into four categories: industry governance, market dynamics, demographics, and enabling infrastructure. We have gathered information through secondary research and a subjective score has been given to these categories for each country. For generating the output chart, we have plotted all the countries with cumulative scores of market dynamics and enabling infrastructure on the X-axis (open-banking potential), and demographics and governance on the Y-axis (open-banking readiness).

WPR 2018 Executive Survey

Our primary research for WPR 2018 included an online survey (sample size 101) that was distributed to industry participants across banks and non-bank FSIs in June 2018. Executive interviews were also conducted. Findings from the survey and interviews have been incorporated into our analysis throughout the report.

For our methodology on non-cash payments, non-cash transactions estimates, and global e-wallet transactions estimates, please visit www.worldpaymentsreport.com



Glossary

ADIs

Authorized deposit-taking institutions

AI

Artificial intelligence

APAC

Asia-Pacific

API

Application programming interface

AMLD5/5AMLD

Fifth Anti-money laundering

B2B

Business-to-business

B2C

Business-to-consumer

BEPS

Base Erosion Profit Shifting

BigTechs

Large global technology firms such as Google, Amazon, Facebook, Apple, Alibaba, and Tencent

BOJ-NET

The Bank of Japan Financial Network System

CAGR

Compound annual growth rate

C2B

Consumer-to-business

CEMEA

Central Europe, Middle-East, Africa

CFPB

Consumer Financial Protection Bureau

CHIPS

Clearing House Interbank Payment System

CSM

Clearing and settlement mechanism

DLT

Distributed ledger technology

EBA

Euro Banking Authority

ECB

European Central Bank

eIDAS

Electronic Identification and Trusted Service

EPC

European Payments Council

ePR

Electronic privacy regulation

ELN

Electronic Lodgment Network

EU

European Union

E-Wallet

Electronic Wallet

FATF

Financial Action Task Force

FCA

Financial Conduct Authority

FI

Financial institution

FPS

Faster Payments System

GDP

Gross domestic product

GDPR

General Data Protection Regulation

HKMA

Hong Kong Monetary Authority

IATA

International Air Transport Association

IFR

Interchange Fee Regulation

IoT

Internet of things

IoP

IoT-enabled payments

IP

Instant payments

ISO

International Organization for Standardization

KRII

Key Regulatory and Industry Initiative

KYC

Know your customer

mPOS

Mobile point of sale

mada

Saudi Payments Network

MNO

Mobile network operators

NACHA

National Automated Clearing House Association

NCPS

National Card Payment System

NIS

Network and Information System

NPP

New Payments Platform

NPCI

National Payments Corporation of India

NPSO

New payments system operator

OBWG

Open Banking Working Group

P2P

Peer-to-peer

PBoC

People's Bank of China

PSD2

Revised Payment Services Directive

PSP

Payment services provider

RBA

Reserve Bank of Australia

RPA

Robotic process automation

RTP

Real-time payments

RTS

Regulatory Technical Standards under PSD2

SCT Inst

SEPA credit transfer (Instant)

SEPA

Single Euro Payments Area

SSIF

Self-sovereign identity framework

SWIFT gpi

Society for World Interbank Financial Telecommunication global payments initiative

TIPS

TARGET Instant Payment Settlement

UPI

Unified Payments Interface

XS2A

Access to accounts

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