

WORLD PAYMENTS REPORT 2017



Capgemini 



BNP PARIBAS

The bank for a changing world

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Preface

We are pleased to present the *World Payments Report (WPR)*, an in-depth analysis of today's dynamic payments environment. *WPR 2017*, our 13th such effort, marks the second year of partnership between Capgemini and BNP Paribas, a global banking player and recognized leader in transaction banking and cash management. Our partnership enables a unique perspective of the global non-cash transaction environment as it relates to banks while also offering in-depth research on payment-related topics, particularly relevant for the corporate sector.

The report studies the growing demand for corporate value-added services coupled with structural changes in the financial industry that are forcing banks and industry participants to build a new payments' ecosystem collaboratively. *WPR 2017* also analyzes forward-looking non-cash transaction volume, corporate payments, and the evolution of next-generation payments instruments.

Global non-cash transaction volumes showed the highest growth of the past decade, with volumes growing 11.2% during 2014–2015¹ to reach 433.1 billion. Emerging Asia, with a growth rate of 43.4% and Central Europe, Middle East, and Africa (CEMEA, with growth of 16.4%) were growth-rate drivers.

Our 2017 report also forecasts future growth rates of non-cash transactions, and explores the key drivers of this growth. Based on our model and hypotheses, we estimate that global non-cash transactions will increase at a CAGR of 10.9% from 2015–2020, with developing economies growing at 19.6%. E- and m-payments are expected to take a significant 32% share of the total global non-cash transactions volumes, which are forecast to record a CAGR of 10.5% during 2015–2020. As corporates increasingly embrace digital payment methods, worldwide non-cash wholesale transactions are estimated to record CAGR of 6.5% from 2015–2020.

To encourage adoption of innovative solutions that will eventually improve customer experience, Key Regulatory and Industry Initiatives (KRIs) are focused on substantive standardization and transparency results.

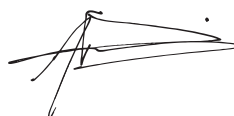
Our core theme this year focuses on a deep-dive analysis into the new payments ecosystem. Changing corporate and customer expectations for value-added services, a dynamic regulatory landscape, FinTechs, and an increase in payments-enabling technologies are driving the emergence of a new payments ecosystem.

Banks must embrace this opportunity to enhance their offerings in collaboration with other stakeholders such as FinTechs and third-party developers. Breakthrough technologies and significant industry developments are facilitating this collaboration between players, thereby leading to development of the new ecosystem.

However, an open collaborative environment introduces technical hurdles such as a lack of standardization and cybersecurity vulnerabilities, which is slowing the pace of the new ecosystem's emergence. As the way forward of the ecosystem is still ambiguous, all the stakeholders must be prepared to face uncertain future and assess their roles accordingly.



Anirban Bose
Head, Banking & Capital Markets
Capgemini (FS SBU)



Jean-François Denis
Deputy Global Head of Cash Management
BNP Paribas

¹ 2015 is the most recent complete year for which full analysis is available



Historical Non-Cash Transaction Volume Analysis

SECTION 1

Key Findings²

- **Global non-cash transaction volumes grew 11.2% during 2014–2015 to reach 433.1 billion, the highest growth of the past decade, and slightly above last year's prediction.**³ This growth was driven to a large degree by developing markets, which recorded a 21.6% increase in 2015 while mature markets grew by 6.8%, a nominal rise over the 6% recorded in 2014. Within the top-10 markets for non-cash transaction volumes, China climbed to third place with 38.1 billion transactions, surpassing 2014's number three market Brazil.
- **Debit cards and credit transfers were the leading digital instruments in 2015, while check usage continues to decline globally.** Debit cards accounted for the highest share (46.7%) of global non-cash transactions followed by credit cards with 19.5% in 2015. Although credit cards volume grew 10.3% globally in 2015, growth rates across regions declined or grew marginally, except in Emerging Asia. Owing to growing usage of electronic payment methods, the volume of checks continued to fall in 2015 as well, by 13.4% globally. While countries including the U.K. and Australia plan to phase out checks in the near future, no other country's authorities have set a date on phasing out check usage.
- **Despite the increased adoption of digital payments, cash continues to be in the mainstream, especially for low-value transactions.** Apart from transaction sizes, the use of cash is strongly correlated with demographics. Other key factors for high usage of cash are the anonymity of transaction associated with cash, lack of modernized payment infrastructure, and lack of access to banking systems in emerging markets. Although the share of cash in the total payment volumes is declining in the majority of countries, cash in circulation (CIC) remained stable or increased slightly over the past five years. The CIC to GDP ratio is increasing at a higher pace globally except in Denmark, the U.K., Sweden, Canada, and South Africa, and this may hamper the progress toward cashless societies. Since CIC is increasing, it is expected that cash will continue to stay in the system for a longer term than estimated. Several countries in Asia Pacific have higher CIC to GDP ratios and there is an opportunity to increase their per capita non-cash transactions to accelerate their transformation into digital economies.

² For more expansive analysis of non-cash transaction volumes see the mid-year preview of the 2017 *World Payments Report*, <http://www.worldpaymentsreport.com>, originally published July 2017

³ In *WPR* 2016, we estimated that the global non-cash transaction volumes would grow to reach 426.3 billion in 2015

Global Non-Cash Transaction Volumes Record Highest Growth Of Past Decade

DOUBLE-DIGIT GROWTH FOR NON-CASH TRANSACTION VOLUMES

Global non-cash transaction volumes grew 11.2% during 2014–2015 to reach 433.1 billion, the highest growth of the past decade, and slightly above last year's prediction. Two regions fueled this increase: Emerging Asia⁴ with a growth rate of 43.4% and CEMEA (Central Europe, Middle East, and Africa⁵), with 16.4% growth.

Expansion in Emerging Asia was due to impressive growth across all geographies as increased adoption of mobile payments and wallets generated a proliferation of card use. Electronic Bill Presentment and Payment (EBPP) solutions that leverage real-time payments networks and infrastructures boosted credit transfers. CEMEA recorded the highest growth in cards transactions and credit transfers in countries such as Saudi Arabia and Poland. This was particularly true in countries where card network development is immature.

Non-Cash transaction volumes in mature markets witnessed a growth rate of 6.8%, a nominal rise over the 6% recorded in 2014. Within this segment, total non-Eurozone and North America regions saw the highest growth rates of 10.2% and 5.4%, respectively, during 2015. The greatest growth rate increase (although not the highest growth rate) was recorded in North America (United States and Canada) with 5.4% in 2015, compared with 4.4% in 2014. In the United States, increased adoption of mobile payments led to a growth rate of 5.6%. In comparison, Canada's volume growth slowed during the period from 6.6% in 2014 to 4.1% in 2015 due to several factors, including a reduction in growth rates of debit card and direct debit transactions as contactless technology proliferated.

Contactless payments are becoming the new normal, and the trend is being observed in Europe as well in countries such as France where the circulation of Visa contactless cards doubled from 20.3 million in 2014 to 40 million in 2015. The U.K. tops the contactless markets in Europe with contactless cards in circulation reaching as high as 106.9 million in 2015.⁶

DEVELOPING NATIONS INCREASE GLOBAL NON-CASH TRANSACTIONS SHARE

Emerging markets contributed to 32.1% of the global volume and witnessed a growth rate of 21.6% from 2014–15 while mature markets contributed to 67.9% share with a 6.8% growth rate. Developing markets witnessed phenomenal 21.6% growth in 2014–15, compared with 16.6% in 2009–10 and volume of share 19.6%. Mature markets enjoyed a share of 80.4% in 2009–10 with a growth rate of 16.6% that dropped to 6.8% in 2014–15.

Emerging Asia recorded the highest increase in transaction share—2.9%—thanks to stellar growth in China and India. At the same time, North America and Europe witnessed a decline in their share of non-cash transaction volumes of 1.8% and 0.7% respectively.

However, the regions account for a majority share of 34.0% and 23.4%, respectively, of total non-cash transaction volumes globally.

DEBIT CARDS, CREDIT TRANSFERS LEAD DIGITAL INSTRUMENTS WHILE CHECK USE DECLINES GLOBALLY

Transaction volumes for all payment instruments except checks grew during 2015. Check use continued to decline throughout the period. Payments by cards grew faster than other instruments, an indication of superior convenience and security, particularly for in-store and online purchases. Cards increased their share of global non-cash transactions by 1.2%.

While debit card market share increased to 70.5% of total card transactions in 2015 (up from 69.9% in 2014) credit card market share dropped from 30.1% in 2014 to 29.5% in 2015.

The total number of debit card transactions reached 202 billion and the share of debit cards increased from 87.9% to 89.6% of the total volume of cards in circulation between 2014 and 2015. Volume growth

⁴ Including China, Hong Kong, India, and other Asian markets

⁵ CEMEA (including Poland, Russia, Saudi Arabia, South Africa, Turkey, Ukraine, Hungary, Czech Republic, Romania, and other Central European and Middle Eastern markets)

⁶ "Visa Europe cardholders make 1 billion contactless payments in 12 months", <https://www.visaeurope.com/newsroom/news/1-billion-visa-contactless-purchases-made-in-last-year>

rates were the highest in Emerging APAC—31.5%—a region where financial inclusion measures such as increased issuance of debit or debit-like and prepaid cards have been rolled out in countries including India, Malaysia, and Thailand. The next strongest growth was 18.1% in CEMEA.

Credit cards transaction volumes grew by 10.8% globally in 2015 to reach a total of 85 billion. Strong growth was recorded in Emerging Asia (76.1%), CEMEA (13.6%), and North America (8.7%), respectively.

During the past 10 years, debit-card-to-credit-card ratio shifted from 59:41 to 90:10 as a result of Basel III and credit policy changes. Credit margin is no longer a key value proposition for payment activity through credit cards.

During the coming years, credit cards transaction volumes are expected to be affected by the interchange fee cap in Europe, rising costs of credit card issuance, and the reluctance of banks to issue credit cards in an uncertain economic environment. Further, several banks have initiated providing credit from debit card payments, which might further accelerate the decline in market share of credit card transactions.

The growing use of electronic payments methods is contributing to the decline of checks, the use of which fell by 13.4% in 2015.





Forward Looking Analysis Of World Non-Cash Markets And Trends

SECTION 2

Key Findings

- **Initiatives to promote cashless societies, technological innovation, and financial inclusion emerge as the key drivers of the significant growth rates of the non-cash transactions in the emerging markets.** While the proliferation of mobile payments and digital innovation are expected to be the levers of high growth across all the regions, differences in adoption patterns and development of new use cases are likely to shape the individual regional trends. Developing economies will continue on a growth path for the next five years. This will be due to the entry of new players, the ability to leapfrog to new technologies, and the expansion of traditional payments infrastructures into the digital world.
- **Financial inclusion measures in Emerging Asia will fuel high growth rates of non-cash transactions, particularly in India, Vietnam, and Indonesia, as mobile and other forms of digital payments are deployed.** This is also an important driver in Latin America. Examples include the Indian Government's Bharat Interface for Money (BHIM) mobile phone app; the Indonesian Government's National Strategy for Financial Inclusion (SNKI), which aims to increase the proportion of banked citizens from 36% to 75% by 2019; and Peru's BIM, which enables peer to peer, cash-in/cash-out, mobile top-ups, and merchant payments.
- **In mature markets, a combination of NFC/contactless technology and mobile payments may lead to the development of new payments use cases.** Countries such as Australia, Canada, and the U.K. are exhibiting this trend.
- **Based on our model and hypotheses, we estimate that global non-cash transactions will increase at a CAGR of 10.9% from 2015–2020, with developing economies growing at 19.6%.** By 2020, emerging economies that currently enjoy a one-third share of global volumes are expected to grow at thrice the rate of mature economies, which have a two-thirds share of the present global volume. Driven mainly by China and India, Emerging Asia is expected to witness stellar CAGR of 30.9%, due to sustained digital innovation and adoption of digital payments for financial inclusion. However, mature markets including North America, Europe, and Mature Asia Pacific will likely witness stabilized growth rates for the next five years.

Chapter 1: Future Non-Cash Transaction Volume Analysis

CHINA, INDIA, AFRICA, AND BRAZIL MAY BECOME POWER HOUSES OF FUTURE GLOBAL NON-CASH TRANSACTIONS GROWTH

In Emerging Asia, China and India are expected to be the markets with huge potential and significant future growth rates. China is expected to experience stable growth of 36% during 2016–2020, due to the sustained adoption of proximity mobile payments. In 2015, China witnessed phenomenal growth of 63.2% due to high increases in credit transfers and cards usage. This unprecedented growth rate is expected to continue at a CAGR of 36.5% over the next five years. The payments habits of users in China are transitioning directly from the use of cash to mobile payments. This is reflected in healthy growth rates of e-commerce and m-payments. Proximity mobile payments were estimated to have grown by 45% in China during 2016⁷ and it has been estimated that more than 50% of smartphone users will adopt proximity mobile payments by 2020. Chinese shoppers are more willing to store their payment information on their smartphones and are also willing to experiment with alternative payment methods, suggesting higher growth rates of mobile payments in the near future.

Currently, the usage of mobile payments in China is concentrated in large cities; a large portion of the rural market is untapped. However, in the coming years, while growth in the urban markets is expected to stabilize, rural markets might record higher growth rates. Eventually, it is expected that the very high growth rates will taper off and normalize in the next five years, by 2020. As m-payments growth in the rural China will eventually plateau due to market saturation and there are some regulations on PSPs that will increase cost and probably price for users over time, this growth rate might taper off. Further, an increased need for fraud detection and other filtering will undermine customer experience, hence possibly slowing the growth rate.

China's mobile payment business grew to 25.71 billion transactions in 2016, up by almost 85% from 2015,⁸ and expected to grow at 68% over the next two years.⁹ While such growth is probably achievable given the high number of users and average usage per citizen, it will be difficult to go much beyond that.

Another country expected to witness higher growth in Emerging Asia is India, although its growth will not be on par with that of China. Initiatives of the Indian Government and the National Payments Council of India (NPCI) will help non-cash transactions to grow at a CAGR of 26.2% during 2016–2020. Further, the Government has an aggressive target of 25 billion non-cash transactions for 2017–2018, with priority areas being mobile, government benefits/subsidy transfers, and micropayments. That total is expected to comprise of 11 billion card systems transactions, 6 billion mobile transfers, and 8 billion online transfers. A focus on contactless payments for public transport is the next item on NPCI's agenda to boost digital payments in India. The demonetization efforts of the Indian Government that began in November 2016 led to increased volumes of digital payments and expansion of the e-payments infrastructure.

In Taiwan and Thailand, mobile payments are expected to grow along with increased usage of cards. In countries such as Indonesia and the Philippines, where card usage is low and expanding the POS infrastructure is expensive, leveraging mobile payments for financial inclusion may spur growth in mobile money schemes, wallet services, and stored value facilities.

Within CEMEA, Africa is likely to witness healthy non-cash transaction volume growth through to 2020,¹⁰ fueled by a growing population of those aged 15–24 years, and a proliferation of smartphones. It is expected that an additional 400 million smartphone connections will be added in the region by 2020, which will help drive the implementation of new mobile money and digital payments schemes. Also, mobile money providers are able to reduce the cost of transactions by partnering with traditional banks, which has led to increased adoption levels. This is expected to continue in the near future. Kenya has emerged as a regional leader in the implementation and uptake of mobile payment solutions such as M-Pesa. At the same time, oil-rich Nigeria is a noteworthy medium-term adopter of emerging settlement technologies with an industry-wide e-payment incentive scheme and awareness campaign that aims to encourage usage of e-payments. Ethiopia is taking steps to implement technology-based settlement options. South Africa, with significant trade flows, FDI activity, and related payment traffic, is expected to help shape the future of payments in the region.

⁷ <https://www.emarketer.com/Article/China-Boasts-Worlds-Largest-Proximity-Mobile-Payments-Market/1014053>

⁸ <https://www.chinainternetwatch.com/19994/payment-business-2016/>

⁹ <https://walkthechat.com/china-mobile-payment-report-2017/>

¹⁰ "The Mobile Economy: Sub-Saharan Africa, 2015", <https://www.gsma.com/mobileeconomy/subsaharanafrica/>

Increased economic activity in regional trade and commerce across regional blocks, such as the Economic Community of West African States (ECOWAS) and East African Community (EAC), may also drive digital payments. Mobile technology plays a central role in addressing a range of socio-economic developmental challenges across the region, particularly digital and financial inclusion. Overall, we expect a stable growth of 8-10% in the region over the next five years.

Latin America also promises a steady growth during the same period with high levels of digital innovation taking place as banks move away from their traditional retail banking strategies and invest in digital technologies including mobile apps, wallets, mPOS, and e-commerce.

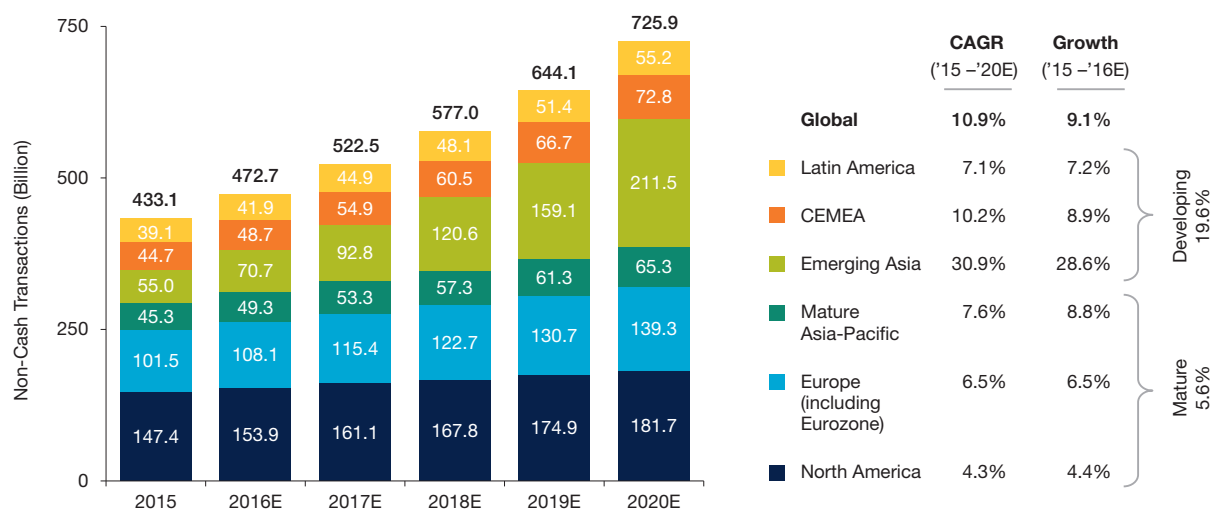
Brazil will continue as the dominant market in Latin America, although its economic forecast looks less promising, although revised GDP forecasts from 2016 have been positive. The higher growth rates for the country (compared with the rest of the region) may translate into growth of non-cash transactions. Regulatory and central bank initiatives to encourage mobile money and digital wallets are accelerating non-cash transactions in Brazil. In tier 1 and tier 2 cities in the country, retail segments are witnessing increased spending. Further, with slower GDP growth, a saturated market and high levels of debt, banks are facing declining margins on their consumer credit cards portfolios, compared to previous issuance

growth rates of 20% per annum for the past ten years. At the same time, mobile payments volumes are surging, with specific developments such as the use of bitcoin for in-game micro payments, or as an alternative to mobile payments. During 2015, 19.0% of e-commerce transactions were carried out with mobile phones, and the percentage is expected to increase. This may emerge as a key driver for increasing non-cash transaction volumes. While Brazil's non-cash transaction volume growth rate will be the strongest in the region, mobile spending in Mexico is expected to increase fourfold by 2019 to USD1.7 billion, with the rise of new local PSPs such as MercadoPago.¹¹ At the regional level, the political and economic situation in the dominant market of Brazil will contribute to flat growth.

GLOBAL NON-CASH TRANSACTION VOLUMES ESTIMATED TO GROW AT DOUBLE DIGIT RATES

Globally, we estimate that non-cash transaction volumes will record a CAGR of 10.9% during 2015–2020 (see Figure 2.1). Developing markets are expected to boost the global growth rate of non-cash transaction volumes with a sustained CAGR of 19.6% during this period, while mature markets are expected to grow by a modest 5.6%. Europe, including the Eurozone, is expected to witness stable growth of 6.5% over the next five years.

Figure 2.1 Number of Worldwide Non-Cash Transactions (Billion), by Region, 2015–2020E



Note: CEMEA (Central Europe, Middle East, Africa) now includes Algeria, Bulgaria, Croatia, Kenya, Nigeria, Egypt, Israel, Morocco, and UAE in Other CE and MEA countries; Latin America now includes Argentina, Colombia, Venezuela, Chile, Peru, Uruguay, Costa Rica, Bolivia, and Paraguay in Other Latin American countries; Emerging Asia now 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 U.S. and Canada; Chart numbers and quoted percentages may not add up due to rounding

Source: Capgemini Financial Services Analysis, 2017; ECB Statistical Data Warehouse, 2015 figures released October 2016; Bank for International Settlements Red Book, 2015 figures released December 2016; Internal Estimates

¹¹ "Payments in Latin America: Under Digital Transformation", Americas Market Intelligence, October 2016

In North America, non-cash transaction volumes are expected to grow at a modest CAGR of 4.3% from 2015–2020. This may be attributed to significant growth in proximity mobile payments, which will in turn be supported by growth in the usage of mobile wallets such as Apple Pay, Android Pay, and Samsung Pay. Further, increased adoption of mPOS by merchants and incentives including integrated promotions and loyalty programs will attract new users and push growth upwards. The growth rate in Europe (including the Eurozone) will be due to several factors including innovation, entry of new players, and increased competition from legislation such as PSD2. However, these growth rates might stabilize or slow in the event of another banking crisis or declining customer satisfaction because of increased cybercrime and fraud rates.

IMPLICATIONS OF FUTURE GROWTH FOR THE PAYMENTS INDUSTRY

By 2020, it is highly likely that emerging economies will be the power houses of global non-cash transaction volumes growth, with China most likely challenging the U.S. as the leading market. China, which currently enjoys the third position in terms of the total non-cash transaction volumes, may emerge as the market leader over the next five years. This growth will be fueled by the multiple initiatives designed to create cashless economies, improve financial inclusion, and increase digital payments innovation.

For any PSP with global ambition, Asia is the place to grow in terms of volume and to gain scale. In new and fast-growing markets, positions are moving and shares of business can vary. But regional or local players should also consider this region as it is a potential benchmark for the industry in terms of innovation and best practices that can be rolled out globally in the future.

China is expected to witness investment in new payment solutions that will give rise to new market players. Financial technology firms from China and India may start to export their services. Global corporates could also relocate their treasury head offices to countries such as Singapore to benefit from proximity with China and the payments innovations in the region.

Other than China, India could potentially make its way into the global top ten markets in terms of non-cash transaction volumes. India has lower per capita non-cash transactions, therefore there is substantial opportunity for growth, particularly as financial inclusion and digital payments initiatives are rolled out.

It is highly likely that PSPs from China may enter other regional markets, where margins are higher. For example, China's Ant Financial, an Alibaba affiliate company, is trying to buy Moneygram, and Tencent plans to invest in the Indian e-commerce and wallets market.



Chapter 2:

Evolution Of Next-Generation Payments

Key Findings

- **Technological innovations such as the Internet of Things (IoT) and blockchain are expected to transform the payments market landscape as data becomes central to payments.** Mobility, connected homes, entertainment, and media are expected to augment the volumes of non-cash transaction volumes significantly. By 2021, more than 15 billion machine to machine (M2M) and consumer electronic devices are expected to be connected.¹² Several mobile wallets and P2P payment schemes are being experimented on blockchain technology, some of which may see increased adoption in the future.
- **The proliferation and adoption of alternate payment channels such as contactless, wearables, and augmented reality, coupled with modern authentication and authorization techniques, is expected to further catalyze growth of mobile payments by changing the user experience.** With significant adoption of wearable payments, the overall payments marketplace is expected to be disrupted by evolving adoption of online and mobile channels. Mobile payments is expected to expand in the areas of payments made via wearables and smart phones, branded mobile wallets from retailers, and mobile wallets from credit card issuers or banks. Authentication and authorization measures such as biometrics will aid the adoption of mobile payments and increase the overall volume of digital payments.
- **E-and m-payments¹³ are expected to take a significant share of 32% of the total global non-cash transactions volumes, which are expected to record a CAGR of 10.5% during 2015–20 and this growth will likely be challenged by new propositions based on biometrics data and artificial intelligence.** By 2019, it is estimated that about half of the transactions carried out using a credit or debit card will be made either online or through a mobile phone. E- and m-payments constituted about 31.2% of the total cards transactions volume in 2015¹⁴ and their share is estimated to increase to 45% in 2019.
- **The growth and adoption of next-generation payments, mostly through technology innovation, is likely to be driven by retail customers, with central authorities expected to play a key role in enabling a level playing field through key initiatives.** Deep collaboration among the incumbents, new entrants, and the regulators is needed to avoid complexity and delays in adaptability of next-generation payments. Regulators can help to ensure level playing fields for all players in the new financial infrastructure by implementing changes to existing regulations, standards of practice, and creating new legal and liability frameworks.

¹² <https://www.ericsson.com/assets/local/news/2016/03/ericsson-mobility-report-nov-2015.pdf>

¹³ We define e-payments as digital payments that are made over the internet for e-commerce activities. M-payments are a form of payments where the mobile phone is used as a payment method, not just as an alternative channel to send the payment instruction, and the payment information flow takes place in real-time.

¹⁴ According to Historical Non-Cash Transaction Analysis in World Payments Report 2017 – A Preview

PAYMENTS USE CASES ARE BEING RE-DEFINED DUE TO NEW TECHNOLOGIES

Forays into new technologies such as IoT and blockchain, continued disruption by new entrants, and growth in emerging markets, are expected to shape and drive future payments growth. While new service offerings from FinTechs will continue to disrupt, consolidation in the mobile payments space could be a key theme as technology advances and other developments, such as the proliferation of in-app payments, continue. Corporate adoption of blockchain technology is also expected to accelerate the growth of next-generation payments. In the future, there are expected to be many use cases of IoT and blockchain although they can only be adopted for specific areas of payments industry once the scalability issues are addressed. For example, in the mobility segment, connected cars may turn into new POS for in-car services, including infotainment and real-time navigation. Such services are estimated to grow significantly from current volumes.¹⁵ Other mobility use cases include automatic parking and tollway payments, and cashless carpooling services. It is estimated that by 2030, about 400 million people may use such autonomous car sharing services.¹⁶ Also, connected in-store devices will enable better online experiences for customers. For example, based on an analysis of a shopper's past purchases and payments behavior, in-store beacons can alert the shopper via his or her smartphone to offers and promotions that will be of most interest. Firms such as mobile payment company Abra are experimenting with blockchain technology to enable mobile P2P payments and cross-border payments. Blockchain also can be leveraged for digital cash by mobile wallet providers such as Coinprism and Xapo; the Reserve Bank of India (RBI) recently embraced blockchain as the basis of a digital currency within the country.

Initially, adoption of new technology enabled payments will be driven by retail customers. To capitalize on the emerging trends, some banks have begun efforts to incorporate IoT enabled payments (IoP) into their digital offerings. The IoP will create more digital touchpoints for banks, which can be leveraged to analyze large amounts of data for greater insights into consumer behavior. This will enable banks to track changing customer preferences and create differentiated offerings. While current applications of blockchain in the retail space are restricted to security applications, more use cases of

the technology are expected to be created in the future. While not all of these will necessarily succeed, there might still be enough disruption to significantly redefine payments use cases.

As the new technological innovation is transforming the payments landscape, regulators and central authorities are taking an interest in understanding the digitalization trends of the evolving payments industry. It is highly imperative for them to create a level playing field for all stakeholders in addition to implementing consistent standards for cybersecurity, data privacy, messaging formats, and interface standardization.

E- AND M-PAYMENTS VOLUMES MAY STEADILY GROW DURING THE NEXT FIVE YEARS

E-payments are forecasted to grow at a CAGR of 17.6% from 2015–2019 (see Figure 2.2), due to adoption of instant payments and growth in emerging markets. However, the year-on-year growth rate of e-payments is expected to slow down from 19.2% in 2016 to 15.3% in 2019. It is expected that the slowdown is primarily due to the growing acceptance of m-payments and a shift of transaction volumes from e-payments to m-payments.

The wider adoption of instant payments in several countries across the globe is accelerating the war on cash and driving usage of non-cash instruments. Emerging Asian markets are playing a pivotal role in the ongoing global acceleration of e-payments. For example, in APAC, it is expected that middle income earners, which are the largest e-commerce sector, will number more than 1.7 billion people by 2020. In Europe, local regulations such as the Interchange Fee Regulation (IFR) are driving down card revenues.

Mobile payments are expected to witness a steady CAGR of 21.8% from 2015–2019 (see Figure 2.2), aided by a wider proliferation of mobile payment devices. The global mobile wallet market, for example, is expected to record a CAGR of 32% between 2017 and 2022.¹⁷ Between 2014 and 2015, mobile payments are estimated to have grown by 41.4%, totaling 49.5 billion transactions in 2015 compared to 35.0 billion transactions in 2014.¹⁸ China has emerged as the growth engine for global mobile payments. The transaction value of Chinese mobile payments reached 10 trillion Chinese Yuan (USD 1.45 trillion) in 2015 and is projected to reach 22 trillion Yuan (USD 3.20 trillion) in 2017.¹⁹

¹⁵ The car infotainment market is expected to grow to USD 6,539 million from the current USD 1,396 million: Automotive Infotainment Market Size to Reach \$37.62 Billion By 2025', Grand View Research, May 2017

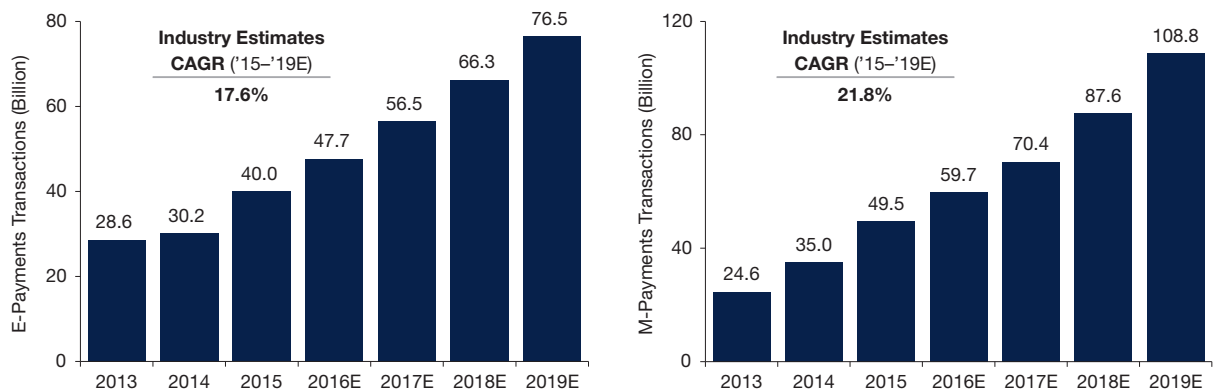
¹⁶ <https://www.abiresearch.com/press/new-car-sharing-economy-disrupts-automotive-indust/>

¹⁷ <https://globenewswire.com/news-release/2017/01/19/909307/0/en/Global-Mobile-Wallet-Market-will-reach-USD-3-142-17-billion-by-2022-Zion-Market-Research.html>

¹⁸ As estimated in World Payments Report, 2014

¹⁹ <https://kraneshares.com/how-chinese-mobile-payments-are-quietly-conquering-the-world>

Figure 2.2 Global E-Payment and M-Payments Transactions Volume (Billion), 2013–2019E



Note: E-commerce includes retail sales, travel sales, digital downloads products or services ordered using the internet via any device, regardless of the method of payment or fulfillment; excludes travel and event tickets; Mobile payments or m-payments are defined as a form of payment where the mobile phone is used as a payment mode – not just as an alternative channel to send the payment instruction – and the payment information flow takes place in real-time; Chart numbers and quoted percentages may not add up due to rounding

Source: Capgemini Financial Services Analysis, 2017; http://www.emarketer.com/public_media/docs/eMarketer_eTailWest2016_Worldwide_ECommerce_Report.pdf; <https://www.nfcworld.com/2016/02/04/341939/global-mobile-payment-revenue-to-hit-620bn-in-2016>



Chapter 3: Corporate Payments²⁰

CORPORATE ADOPTION OF DIGITAL PAYMENT METHODS IS PUSHING UP THE GROWTH OF WHOLESALE NON-CASH TRANSACTIONS

Corporates are increasingly embracing digital payment methods, attracted by the operational and financial benefits of such methods. Although the rate of adoption is good, corporates are not leveraging all the benefits of the digital transformation to provide new propositions to their clients to help them move away from checks and increase overall efficiency in reconciliation and fraud. Instruments that are widely used in B2B payments include cash, checks, direct debit, credit transfers, and cards. Cash usage is the highest in emerging markets including Asia Pacific and Latin America, while in North America, cash usage is very low. Wire and credit transfers are predominantly used by corporates, with higher usage in most of the B2B use cases such as wages, supply chain financing, cross-border remittances, invoicing and bill presentment, and trade finance. However, checks, which traditionally found the highest usage in wages and invoicing and bill presentment, might slowly fade out.

The increasing digitization of corporate B2B payments is manifested in specific regional trends across the globe. In mature APAC markets, for example, SMBs are

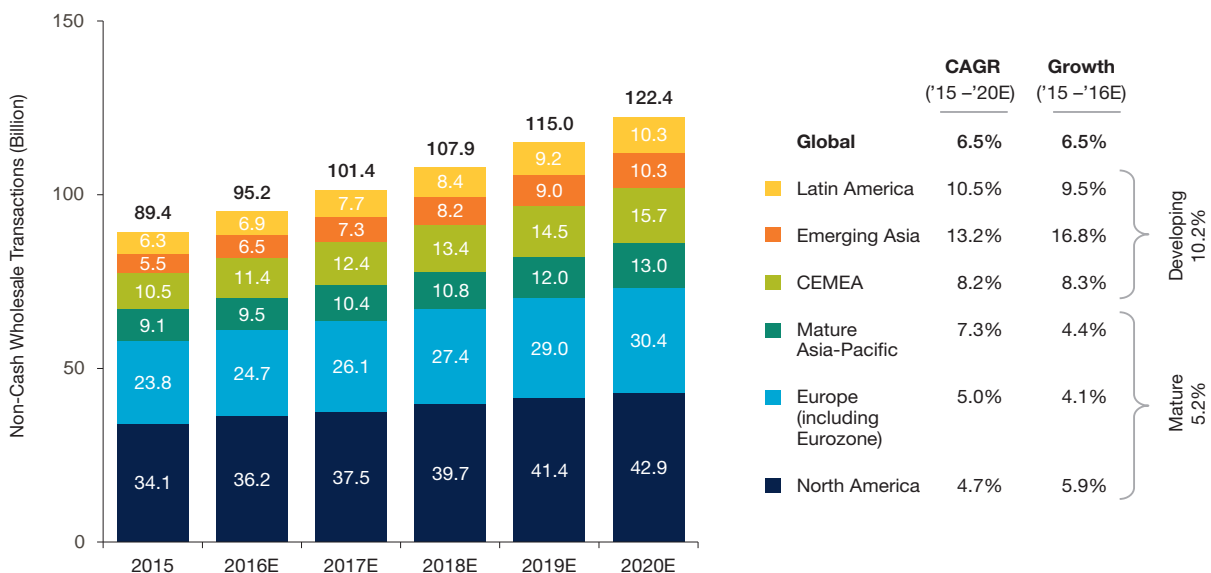
increasingly using digital invoicing, virtual cards, and cloud-based finance and accounting to process and receive payments quickly. In Emerging Asia, charge cards are growing in popularity among corporates. Further, commercial cards are increasingly used to simplify and secure supply chain payments.

In CEMEA, electronic bill presentment and payment (EBPP) solutions and the automation of accounts payable (AP) services are on the rise. The enhancement of supply chain financing efficiencies through electronic invoicing solutions and implementation of instant payments are emerging as a top agenda item for corporate treasurers and banks in North America.

WHOLESALE TRANSACTIONS ARE ESTIMATED TO GROW AT A HEALTHY RATE, ALTHOUGH LOWER THAN THE OVERALL GLOBAL NON-CASH TRANSACTIONS

Worldwide non-cash wholesale transactions initiated by businesses and corporates, including public authorities, are estimated to record CAGR of 6.5% from 2015–2020 (see Figure 2.3). This is less as compared with 11.2% CAGR of overall global non-cash transactions. Lately, growth has been observed in the C2B area comprising

Figure 2.3 Number of Non-Cash Wholesale Transactions (Billion), by Region, 2015-2020E



Note: CEMEA (Central Europe, Middle East, Africa) now includes Algeria, Bulgaria, Croatia, Kenya, Nigeria, Egypt, Israel, Morocco, and UAE in Other CE and MEA countries; Latin America now includes Argentina, Colombia, Venezuela, Chile, Peru, Uruguay, Costa Rica, Bolivia, and Paraguay in Other Latin American countries; Emerging Asia now 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 U.S. and Canada; Chart numbers and quoted percentages may not add up due to rounding

Source: Capgemini Financial Services Analysis, 2017; ECB Statistical Data Warehouse, 2015 figures released October 2016; Bank for International Settlements Red Book, 2015 figures released December 2016; Internal Estimates

²⁰ We define corporate payments as the transactions initiated by businesses and corporates, including public authorities

of merchants and utilities. Additionally, e-merchants—especially those operating in the B2C segment (such as utilities and insurance companies)—might grow faster and next-generation payment technologies such as IoT may help them in specific use cases. Other B2B corporate segments that are more risk averse will benefit from the new technologies and solutions at a later stage.

Emerging Asia and Latin America are emerging as the front runners, with growth rates of 13.2% and 10.5% respectively. The growth in economic power of the emerging markets, coupled with increased reach of the domestic businesses in these markets, have led to growth in wholesale non-cash transaction volumes. Increasing trade and supply chain finance from Emerging Asia to other geographies is the key contributing factor of growth of non-cash wholesale transactions in the region.

Within the mature markets, Mature APAC is likely to witness the highest CAGR of 7.3% from 2015–2020. The growth momentum of global trade volumes in mature APAC markets is pushing the volumes of overall business payments in the region. Increased adoption of commercial cards, including procurement and distribution cards, is a catalyst for healthy growth of the region's B2B eCommerce volumes. Latin American is witnessing significant traction through small and medium sized businesses reducing costs by adopting digital payment methods.

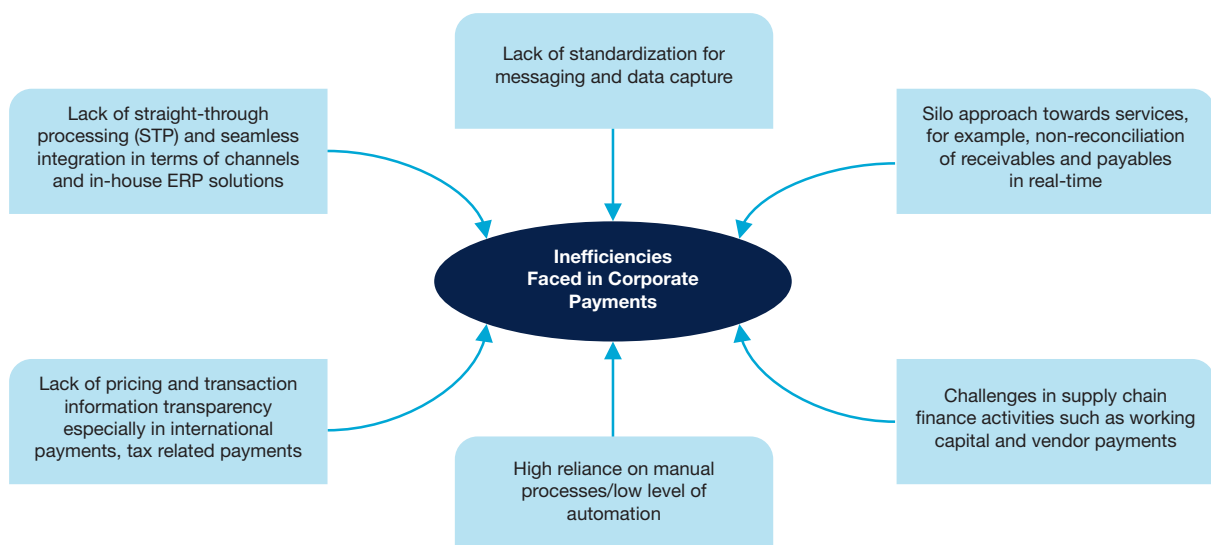
DESPITE RISING DIGITIZATION, THE CORPORATE PAYMENTS SEGMENT IS WEIGHED DOWN BY CERTAIN INEFFICIENCIES

Although adoption of digital payment methods by corporates is increasing, certain inefficiencies are weighing down the corporate payments segment (see Figure 2.4). A lack of standardization of messaging and data capture and of real-time synchronization between receivables and payables create inconsistencies and operational inefficiencies in corporate payments.

Other pain points include a high reliance on manual processes and a lack of seamless integration between multiple channels and in-house ERP solutions.

However, by leveraging new technologies and harnessing centralized payment solutions, corporates will be able to address the existing inefficiencies. By harnessing the centralized payment solutions such as payment hubs, payments on behalf of (POBO) and collections on behalf of (COBO), corporates can also create more efficient payments environments. Integration of payment service offerings with ERP systems, and leveraging new technologies such as blockchain, are also expected to produce results. Finally, ensuring compliance with standardization initiatives related to data capture, messaging, and reporting, will further corporates' journey along the path to efficient payments operations.

Figure 2.4 Inefficiencies in Corporate Payments



Source: Capgemini Financial Services Analysis, 2017; <http://paymentsviews.com/2013/06/11/the-future-of-b2b-payments>



Key Regulations and Industry Initiatives

SECTION 3

Key Findings

- **Activity by Third-Party Players (TPPs) continues to spur regulation to improve collaboration within the payments' ecosystem.** Regulators have taken a transformative approach to encourage payments' services competition and innovation. KRILs have the potential to achieve results in terms of standardization and transparency, which are expected to bring substantive and long-term changes to customers in terms of innovative solutions.
- **KRILs introduced since the 2016 World Payments Report focus on digital currency, reduction of cash use, platforms to enable FinTechs to flourish, and APIs that help to evolve the payments ecosystem.** To advance the payments ecosystem, KRILs concentrate on competition and innovation. But since the financial crisis a focus on risk reduction and standardization continues to be an underlying theme.
- **With the onset of the revised Payment Services Directive (PSD2) at the beginning of 2018, Europe is taking an important step toward becoming a fully interoperable digital market.** This is expected to have far-reaching effects across banks, payment service providers (PSPs), FinTechs, and corporates.
- **Banks and PSPs face pressure from regulators to conform to Anti-Money Laundering (AML) standards and maintain reporting and liquidity norms.** At the same time, banks must leverage digital platforms to control pricing and maintain revenue share in the increasingly competitive global market. The lack of regulator coordination and integrated data management at banks may create contradictory objectives and competing agendas while diminishing expected standardization and transparency.

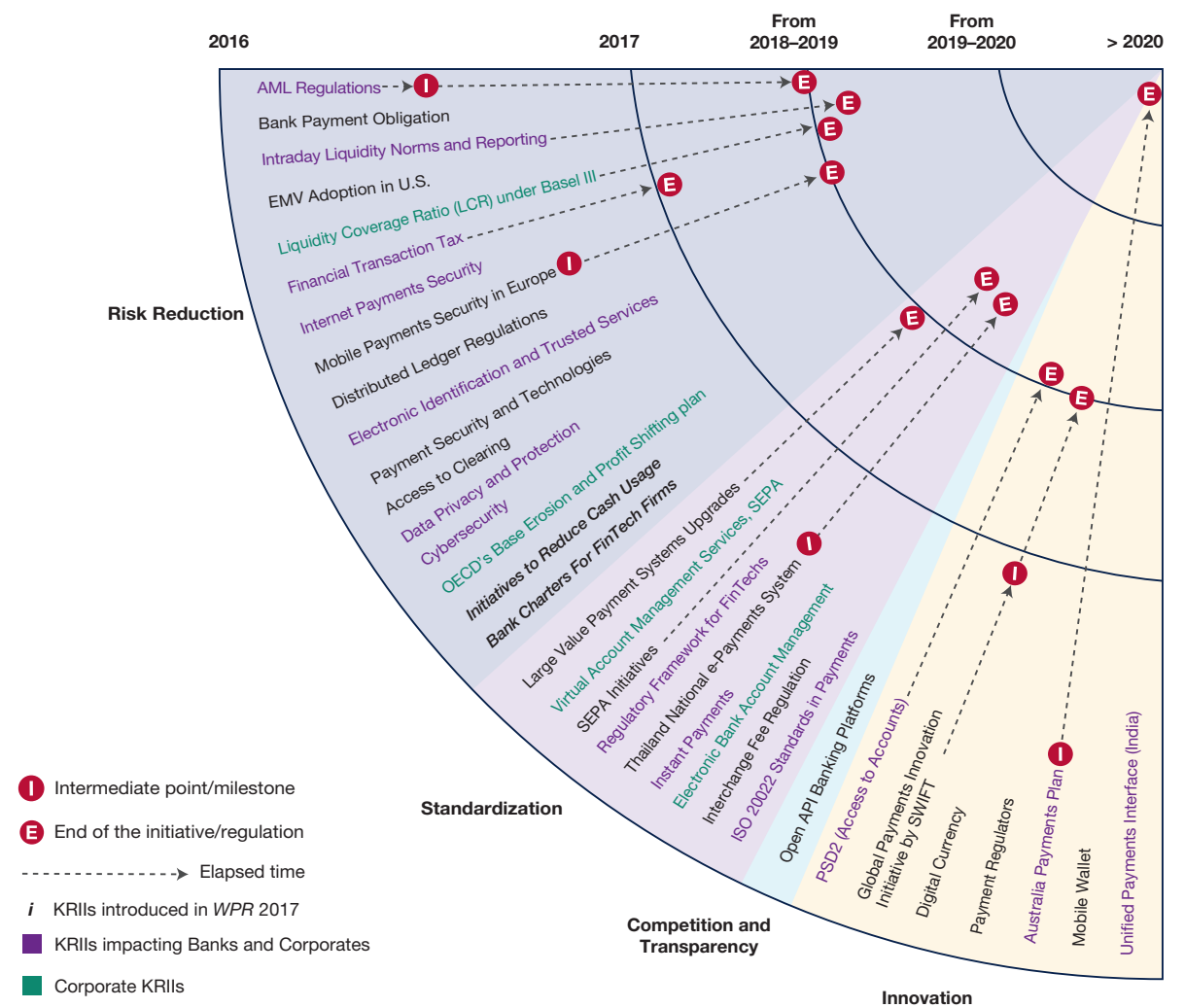
In A Challenging Regulatory Landscape, Competition And Collaboration Are Key As PSD2 Looms

OVERVIEW

The regulatory landscape remains challenging and new KRIs aimed at competition and risk reduction have added to the complexity. In recent years, KRIs have taken a transformative approach, acting as a catalyst to infuse competition among service providers and to disrupt inertia in various segments of the payments’

value chain. The resulting changes have become visible to customers in the form of innovative solutions. Such solutions give relevant KRIs the potential to achieve substantive results in terms of regulators’ primary objectives—risk reduction, standardization, competition and transparency, and innovation—in the short term (Figure 3.1).

Figure 3.1 Key Regulatory and Industry Initiatives (KRIs) Clustered by Regulators' Primary Objectives, 2017



Note: Timelines have been provided for regulations where they are specified, no timelines are specified for industry-trend KRIs; SEPA – Single Euro Payments Area; Emerging Payments Security and Technology includes Contactless, Near Field Communication (NFC), Tokenization, Biometric authentication, and Mobile Point of Sale (mPOS)

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

In terms of the primary objectives of KRIs, there are interesting trends. An increasing emphasis by regulators on the reduction of risk at banks has given traction to initiatives such as Basel III's Liquidity Coverage Ratio (LCR). Also, cybersecurity and data protection are witnessing a renewed focus, especially within the EU through the General Data Protection Regulation (GDPR) and Network and Information Security (NIS) directives.

Cash reduction initiatives were given a major boost by emerging economies such as India demonetizing high denomination currencies. Various initiatives are being developed to encourage digital transactions initiatives. India is expected to witness a six-fold growth in digital transactions to reach 25 billion transactions during 2017-18, (up from 4 billion in 2015-16), according to the National Payments Corporation of India (NPCI).

The arrival of PSD2 in early 2018 is expected to meet regulators' ambitions to create a level playing field for all stakeholders and promote competition by opening the payments' market to new entrants in Europe. However, the Regulatory Technical Standards (RTS) will not come into force until at least April 2019, delaying the full roll-out of PSD2 and its benefits. PSD2 is expected to shape similar initiatives around across the globe.

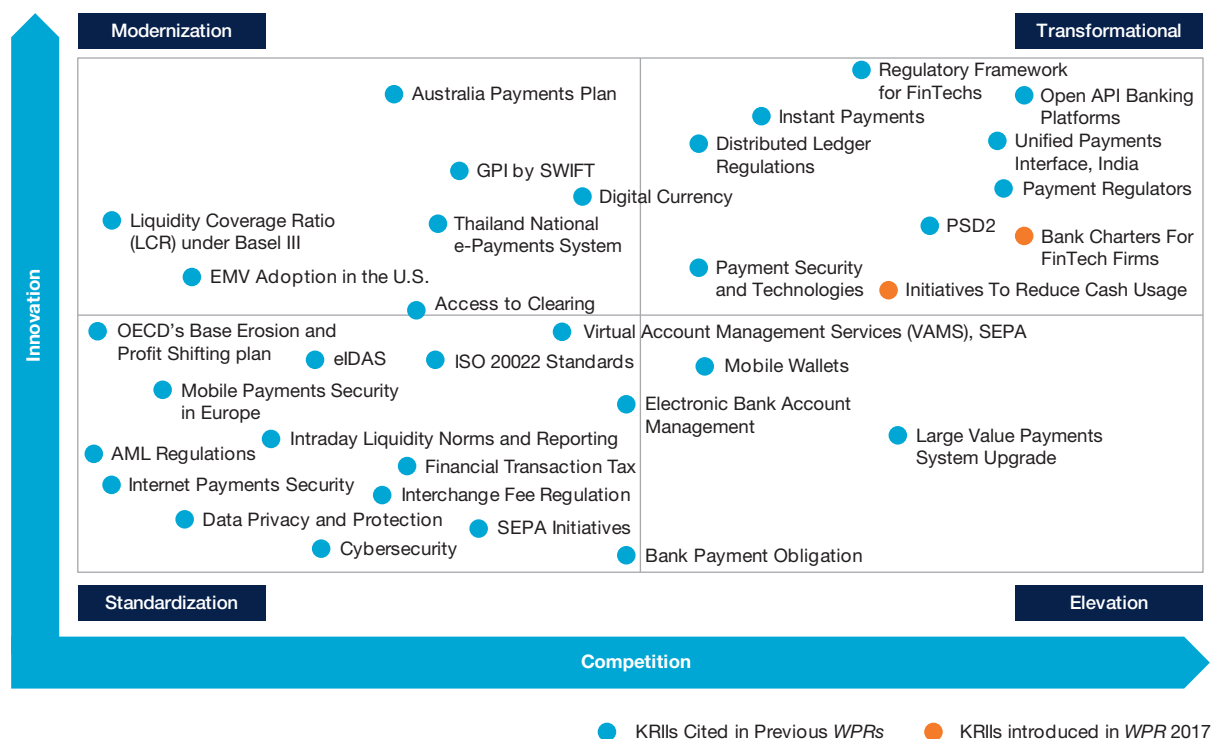
VARYING SCOPE OF COMPETITION AND INNOVATION ACROSS MULTIPLE KRIS

Immediately following the financial crisis of 2008, regulators across the globe sought to standardize protocols, placing an emphasis on compliance through KRIs such as intraday liquidity norms and reporting, and AML Regulations. Since then, regulations have taken a more transformational approach to become innovation focused, in areas such as instant payments, open API platforms, PSD2, virtual currency, and distributed ledger (Figure 3.2)

Transformational KRIs such as PSD2 and open API platforms presented new challenges to banks but at the same time provided a new set of opportunities via customized digital solutions. The onset of new providers such as Account Information Service (AISPs) and Payment Initiation Service (PISPs) are expected to transform the payments markets in Europe.

For effective risk management, banks are investing in data storage repositories such as data lakes, which can handle large volumes of data from infinite sources. Traditional data warehouses have limited functionalities as they are specifically structured for queries and are slow to respond.

Figure 3.2 Current Regulatory Landscape – Varying Scope KRIs



Source: Capgemini Financial Services Analysis, 2017; SME Inputs

There is renewed focus on cybersecurity globally, and developing countries are influenced by the regulations adopted by the more developed geographies such as the EU and the U.S. The New York State Department of Financial Services (DFS) announced new cybersecurity laws in March 2017 that are likely to provide the standard template for other U.S. states. In response to evolving cyber-criminal behavior, central regulatory authorities are increasing their focus on data privacy and protection. The GDPR is expected to come into force in May 2018. It mandates fines of up to 4.0% of the global turnover of the firm that has breached the rules.

LEVERAGING CUSTOMER-CENTRIC KRIIS TO PROVIDE INNOVATIVE SOLUTIONS

KRIIs across the globe have varying potential levels to impact innovation and competition, and they also affect PSPs and customers to varying degrees. PSPs can leverage the KRIIs that have the most impact on users to enhance customer experience and satisfaction. For example, initiatives related to open API banking platforms, as seen in countries such as the U.K. and South Korea, have the potential to significantly alter the payments landscape as PSPs utilize the potential of these platforms to provide new innovative and personalized offerings to meet specific customer requirements.

Regulations related to KRIIs such as instant payments, cash reduction, and cybersecurity could act as catalysts for PSPs to create solutions that enhance customer satisfaction. There are significant opportunities for PSPs, which can be leveraged to provide benefits to payments service users (PSUs). However, there are challenges, including the

competitive payments' industry environment and the need to adapt to constantly evolving technologies. Many financial regulations have taken on a global flavor, creating a disruptive impact on the payments' ecosystem.

As part of the various Single Euro Payments Area (SEPA) initiatives still under way, the European Cards Stakeholders Group (ECSG) has announced the launch of the latest version of SEPA Cards Standardization (SCS) Volume. This eases compliance with some aspects of the Interchange Fee Regulation (IFR) related to contactless payments. These measures are expected to make contactless payments an increasingly attractive proposition for PSPs. However, the transaction limits on contactless payments have restricted the perceived payments value for the PSUs.

The EC's aim to create a single, innovative European market with PSD as a fully interoperable legal framework continues. The introduction of new players such as AISP and PISP has created an opportunity for new players to step into the payments market. With the growing interest among merchants and new entrants to provide payments services, competition in the payments market is expected to intensify in the coming year.

The expectation that PSD2 will provide an efficient, competitive, and secure payments market in Europe, has captured the attention of payments markets elsewhere in the world. For example, KRIIs across APAC and the EU such as new payments plans in Australia and Thailand are focus areas for PSPs and are expected to bring new and agile payments solutions to meet the growing need for innovative offerings for specific business segments.



Key Regulatory And Industry Initiatives (KRIs) In Payments, 2017

See our mid-year preview of the 2017 *WPR*, published in July, for a complete list of KRIs in Payments, <http://www.worldpaymentsreport.com>

Key #	Key Regulatory and Industry Initiatives (KRIs)	Brief Description/Update
KRIs #1 and #2 were added since the 2016 <i>World Payments Report</i>		
1	Cash-Use Reduction Initiatives	<ul style="list-style-type: none"> The global mobile wallets market is growing steadily with mobile proximity payments expected to grow from USD \$3 billion in 2013 to USD \$53 billion by 2019. In the EU, mobile wallet transactions are expected to grow at a CAGR of 61.8% during 2016-2021. India has seen a rise in mobile wallet adoption since the demonetization measures adopted on November 8, 2016. The market is forecast to reach USD \$4.4 billion by 2022, with a CAGR of over 148.0% during 2017-2022. The Consumer Financial Protection Bureau (CFPB) in the U.S., which was introduced to foster usage of mobile wallets, creates a safe harbor for customer liquidity as it requires a 30-day waiting period before extending mobile wallets and prepaid cards credit to cover overdrafts. In Europe, the EPC plans to reduce use of cash, with SEPA devised to remove cash machines and replace them with plastic money or mobile phones for transactions across all consumer outlets. The cashless society project by EPC is expected to start in November 2017. Most Nordic countries have taken the lead in going cashless, with Sweden topping the list. About 2.0% of the total value of transactions in Sweden are cash with a target to lower this to below 0.5% by 2020. Most retailers and public transport systems refuse cash, and even churches increasingly prefer online or mobile app payments. Nigeria in 2012 introduced the cashless society project to become a top-20 economy by 2020. The Central Bank of Nigeria (CBN) reintroduced charges for cash handling in April 2017, starting with 1.5% for cash deposits and 2.0% for cash withdrawals between 500,000-1 million Naira. In 2015, the electronic payments regulation in Ghana simplified the business rules for e-wallet providers, which resulted in a surge in e-wallet adoption for activities such as utility bills and school fees payments. From early 2017 onwards, e-wallet customers in Ghana can also receive interest between 1.5% and 7.0% every three months. In the Netherlands, about 98.0% of the population use debit cards and close to 85.0% of the non-cash payments share in the total consumer payments are made via debit cards. The growth in non-cash payments has come as the result of the Hotspot project launched in 2012 by the Foundation of Promoting Efficient Payments (SBEB).
2	Bank Charters for FinTech Firms	<ul style="list-style-type: none"> In December 2016, the United States' OCC announced it would allow FinTechs—that offer loans through online platforms and payments services through apps and online channels—to apply for a federal charter to become 'special purpose national banks.' Such a move is expected to reduce costs and complexities of doing businesses for FinTechs, while increasing government oversight of the sector. On March 15, 2017, the OCC released the draft licensing manual for FinTechs. The manual clarifies the process to apply for the charter and the review of the application. Similarly, in Europe under PSD2, TPPs will also be able to offer payment initiation services (PIS) at the order of the PSU. In January 2017, India Post became the third firm to receive a payments bank license after telecom firm Airtel, and Alibaba-backed mobile wallet company Paytm. The new model of banking is expected to allow telecom, supermarket, and other firms to cater to the banking requirements of individuals and small businesses.
3	Mobile Wallet	<p>The global mobile wallets market is growing steadily with mobile proximity payments expected to grow from USD \$3 billion in 2013 to USD \$53 billion by 2019. In the EU, mobile wallet transactions are expected to grow at a CAGR of 61.8% during 2016-2021. India has seen a rise in mobile wallet adoption since the demonetization measures adopted on Nov. 8, 2016. The market is forecast to reach USD \$4.4 billion by 2022, with a CAGR of over 148.0% during 2017-2022. The Consumer Financial Protection Bureau (CFPB) in the U.S., which was introduced to foster usage of mobile wallets, creates a safe harbor for customer liquidity as it requires a 30-day waiting period before extending mobile wallets and prepaid cards credit to cover overdrafts.</p>

Key #	Key Regulatory and Industry Initiatives (KRIs)	Brief Description/Update
4	Open API Banking Regulations	<ul style="list-style-type: none"> ▪ In the U.K., HM Treasury has urged banks to open access to customer data to third party developers before PSD2 is transposed to encourage innovation and boost competition. The industry-led Open Banking Working Group (OBWG) has recommended the creation of an Open Banking Standard that will make it possible for banking data to be shared and used securely. It recommended a framework for rolling out the standard in stages, beginning with read-only access to personal customer data sets via the open banking API. The U.K. banking sector could have a fully functioning open data market by the end of March 2019. In response to the work of the OBWG, the U.K.'s Competition and Markets Authority (CMA) will require banks to participate in a similar open banking initiative and implement it by early 2018. The move is intended to accelerate technology changes in U.K. retail banking and ultimately benefit customers by enabling customized banking solutions. ▪ In December 2016, the South Korean Government launched a platform to enable financial institutions to build services that automatically populate financial information for new customers. The platform is expected to serve as a database of consumer financial information that is accessible via an API. The platform will be managed by Korea Financial Telecommunications and Clearing Institute and Koscom Corporation. Sixteen banks and 25 brokerage firms are partners. The move is part of efforts by the Government to diversify revenues from tourism and exports and into a developing FinTech industry. The open API platform is one of many regulatory initiatives undertaken to encourage more FinTech firms to develop products and services in Korea.
5	Regulatory Framework for FinTechs	<p>The U.S. Treasury's Office of the Comptroller of the Currency (OCC), published a discussion paper in December 2016 outlining policy scenarios for FinTechs. In May 2016, the U.K.'s Financial Conduct Authority (FCA) launched regulatory sandboxes, enabling FinTechs to offer new services under relaxed regulatory oversight.</p> <p>The Monetary Authority of Singapore (MAS) had formed a FinTech & Innovation Group (FTIG), which comprises a payments and technology office, a technology infrastructure office, and a technology innovation lab.</p>
6	PSD II (Access to Accounts)	<p>PSD2 entered force on Jan. 13, 2016. Member states have until Jan. 12, 2018 to transpose it into national laws. The first countries expected to transpose PSD2 will be the U.K., Bulgaria, Denmark, Germany, Austria, and France. It is expected that Poland and Iceland will be among the last. PSD2 addresses many issues that emerged since PSD became law in 2009, the most prominent of which is the regulation of third-party payments providers (TPPs). TPPs fall into two main groups: payment initiation service providers (PISPs), and account information service providers (AISPs). PSD2 aims to create open banking technical standards with multiple layers. The first layer of standards will deal with basic PSD2 compliance. There also will be an industry rulebook layer that caters for disputes, liabilities, rejects, returns, refusals, and refunds. The third layer of open banking standards will consist of additional optional services. This is where banks can compete to provide superior APIs and a wider range of digital service to gain a commercial return from the investments they make for PSD2 basic compliance. The EBA's final draft RTS were released on Feb. 27, 2017 and sent to the EU Parliament for approval. Parliament is expected to pass the final version with minimum amendments and the RTS are expected to be adopted by March/April 2019.</p>
7	Instant Payments	<ul style="list-style-type: none"> ▪ In the U.S., The Clearing House launched industrial testing of real-time payments on April 27, 2017. The system will support sending and receiving of credit transfers, remittances, and non-transactional advices in real time. ▪ Australian authorities are planning to introduce an instant payments system in 2019, while the pan-European instant payments system is expected to be operational by November 2017. The Euro Retail Payments Board (ERPB) and the European Payments Council (EPC) have finalized the framework for pan-European instant payments solutions, on which PSPs can develop offerings for retail and corporate customers. The instant payments services are scheduled to begin in November 2017. Automated clearing houses (ACHs) will provide a pan-European approach for clearing instant payments in Euros. This approach should provide benefits such as harmonized risk management, uniform settlement, and fair open access policies to facilitate interoperability. ▪ The EPC launched a pan-European instant payment solutions rulebook in November 2016 to address interoperability issues arising from the development of instant payment services or platforms among the member countries. SEPA instant credit transfers are expected to become a rule by Nov. 21, 2017 to give PSPs enough time to adhere to the scheme. ▪ In Japan, Shenzin clearing is real-time but operates only during business hours. A move to a 24 X 7 operation is planned to coincide with the Tokyo Summer Olympics in 2020.
8	Cross-Border Low-Value Payments Processing	<p>Significant efforts are being made around the world to identify alternatives to correspondent banking for cross-border, low-value payments. Initiatives such as the pan-European instant payments system are driving developments in the area. In Asia, there is an increased focus on cross-border transaction banking in the ASEAN countries. The Asian Payments Network (APN) covers 11 countries: China, Singapore, Malaysia, Thailand, Vietnam, Indonesia, Philippines, South Korea, Japan, New Zealand, and Australia. They clear cross-border payments coming from ATM, POS, and fund transfer. Transactions are cleared in USD and the members use existing infrastructure such as ACH or central banks. Further connections to ECHA members and TCH may transform APN into a global payments network in the future.</p>

Key #	Key Regulatory and Industry Initiatives (KRIs)	Brief Description/Update
9	Internet Payments Security	<ul style="list-style-type: none"> Many countries have implemented internet payment security measures. In December 2016, the Central Bank of India (RBI) mandated two-factor authentication for all online credit card payments above Rs 2000. Two-factor authentication uses two of three independent elements (knowledge, possession and inherence) to authenticate a transaction. The EBA published Guidelines on the Security of Internet Payments in December 2014. These final guidelines provide the legal basis for achieving a minimum security standard for all PSPs in the EU. There is an emphasis on SCA. The deadline to implement the guidelines was Aug. 1, 2015. However, the U.K., Slovakian, and Estonian regulators did not seek compliance by this date. The PSD2 RTS final draft, which details the SCA stipulations, was finalized in February 2017, and is expected to enter force by March 2019.
10	Mobile Payments Security in Europe	<p>The European Central Bank and the EBA formulated security guidelines for retail payments, which are applicable until September 2018 when PSD2 requirements will come into force. The EBA exempted contactless transactions under €50 and card not present low value transactions under €30, provided the cumulative amount does not exceed €150 and €1000 respectively, from the SCA. Additionally, exemption applies for these transactions if the number of times since the last application of SCA does not exceed five consecutive occasions. PSPs must provide strong authentication systems to ensure secure identification and traceability of each interaction in the payments value chain through analytics or other monitoring tools.</p>
11	Cybersecurity	<ul style="list-style-type: none"> On May 17, 2016, the European Council formally adopted new rules to augment the security of network and information systems across the EU, thus legislating the region's first cybersecurity law. The Network and Information Security (NIS) Directive aims to increase cooperation between member states on cybersecurity. The Netherlands has pioneered this initiative through its National Cyber Security Strategy 2, which centrally deals with all cybersecurity issues and practices. In the APAC region, some countries, such as Japan and Taiwan, amended regulations related to personal information protection and have introduced a concept of 'sensitive personal data.' Australia established a mandatory data breach notification obligation scheme through the Privacy Amendment Bill, 2016, which was passed in February 2017. This act is expected to protect the privacy rights of individuals and strengthen the public trust in businesses and agencies. Malaysia has issued the Personal Data Protection Standards, which deal with data security, integrity, and retention requirements for which direct marketing guidelines are expected later this year. It is expected that the region might witness a push toward a comprehensive 'European-style' data protection regulation. On March 1, 2017, the New York State DFS announced new cybersecurity rules designed to promote the protection of customer information and IT systems of regulated entities. Such regulations are expected to be announced in other U.S. states in the coming months. On June 1, 2017, China's new cybersecurity law is expected to come into effect. This focuses on cybersecurity along with data security practices and cross-border data transmissions.
12	Distributed Ledger Regulations	<p>The European Commission is planning to bring virtual currency exchange platforms under the scope of the Fourth Anti-Money Laundering Directive, in order to help identify the users who trade in virtual currencies. In addition, the Commission will examine the possibility of applying the licensing and supervision rules of the PSD to virtual currency exchange platforms.</p>
13	Digital Currency	<ul style="list-style-type: none"> Financial authorities of Japan, the U.S., and China have revealed plans to establish joint regulations. On March 21, 2016, the Australian Government announced it would address the 'double taxation' of digital currencies under the GST, including working with the industry on developing options to reform the GST law, as part of the Treasurer's Backing Australian FinTech statement. On May 3, 2016 a discussion paper calling for submissions was released. In Singapore, MAS plans to test its own digital currency to test blockchain-driven interbank payments that may simplify payments processes and reduce transaction costs. Central banks in China and the U.K. are also investigating the prospects of introducing their own digital currencies.



The New Payments Ecosystem

SECTION 4

Key Findings

- **A new payments ecosystem is emerging, created by higher corporate and consumer expectations of value-added services, the ever-changing regulatory landscape, the emergence of FinTechs, and an increase in payments-enabling technologies.** Within this dynamic environment, payments industry participants must strategically reassess their roles.
- **Corporates are increasingly turning to their banking partners for help in providing value-added services to their clients.** This is an opportunity for banks to enhance their value propositions and develop a competitive advantage. By doing so, banks can not only retain and grow business with existing corporate clients, but also acquire new clients at a time of extremely high competition from other banks and FinTechs.
- **Open APIs, instant payments, blockchain technology, and regulatory standardization are key enablers of the new payments ecosystem.** These technologies aid collaboration between different players. However, there are still issues, such as a lack of harmonization and standardization, which are slowing ecosystem development.
- **Automation of repetitive tasks is enabling corporate treasuries to assume a more strategic role, focusing on activities such as cash forecasting and fraud prevention.** Treasury management is evolving into a more digitized function.
- **Collaboration and open systems threaten security within corporate treasuries.** Corporates increasingly expect their banks to help them improve their security infrastructures. In order to ensure the highest levels of cyber and transaction security, all ecosystem participants must evaluate safety from multiple network sources.
- **With multiple stakeholders involved in the payments ecosystem there could be consistency challenges among solutions and communication.** Ideally, this should be addressed with a robust governance model and use of common communications standards, without which, heterogeneity will present challenges.
- **The new payments ecosystem is in its nascent stages and the path forward is not yet clear.** Ideally, all stakeholders will collaborate to implement appropriate measures as they prepare for an uncertain outlook and overcome any challenges.

Chapter 1: Time To Update Payments Business Models

STRUCTURAL CHANGES IN THE INDUSTRY

Shifting customer expectations, regulations, the rise of FinTechs, and new technologies are driving structural change in the payments' industry.

Corporations move payments' markets, so it's not surprising that corporate demands for better, more reliable end-to-end services are having an impact throughout the payments' ecosystem. Regulators are formulating initiatives to improve competition and innovation. And these regulatory actions are influencing the direction taken by banks, FinTechs, and other stakeholders. Combined with a proliferation of payments-enabling technologies, the ground is fertile for development of a new payments ecosystem; one in which stakeholders must reassess traditional roles.

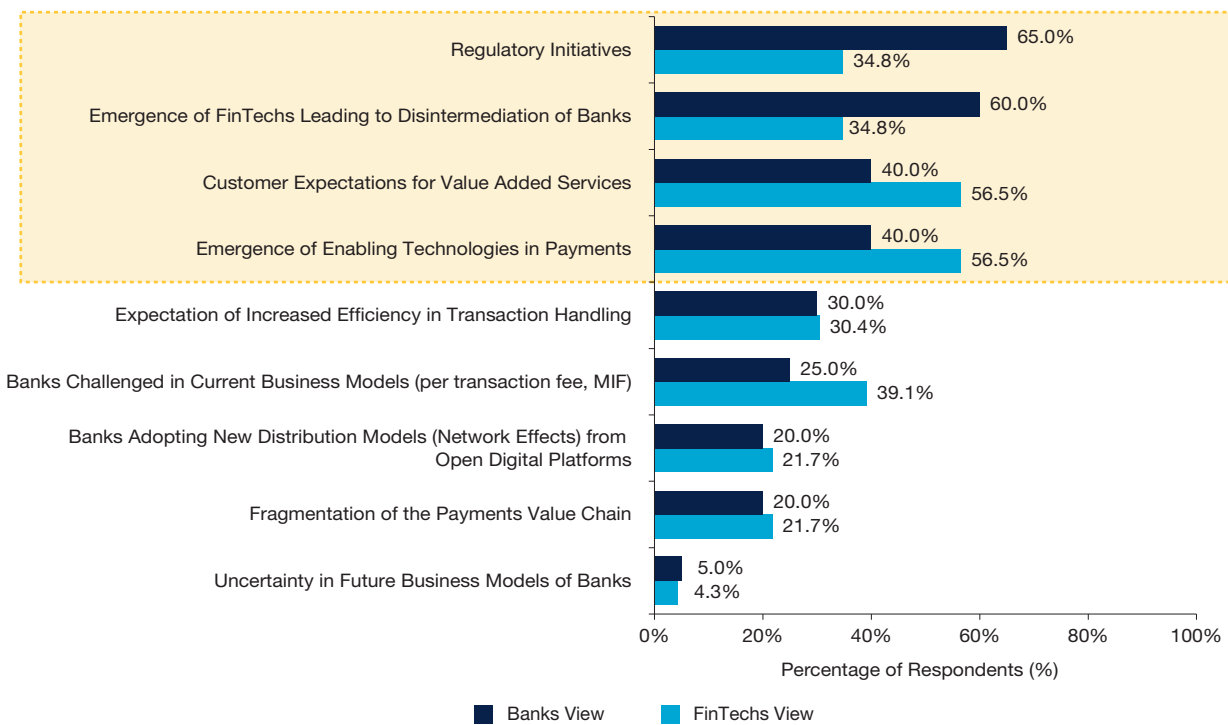
In a survey conducted for WPR 2017,²¹ regulatory initiatives were identified by bank executives as the top driver of structural change (Figure 4.1). Executives

from FinTech organizations, however, identified customer expectations for value-added services and the emergence of enabling technology as the most important drivers. This highlights the differences in attitudes between banks and FinTechs, and the importance they place on these parameters.

Changing Customer Expectations: Increasingly, consumers are demanding personalized offerings and agile payment solutions from their transaction banks, which in turn is expected to drive further collaboration in the industry.²² Corporate demand for value-added services from banks is based on their business priorities and strategies. Goals differ between corporations based on factors such as the nature of the business, targeted customer segments, and geographical presence.

In the B2C segment, for example, the increased digitization of services means retail merchants must find new and better ways to engage with their customers, and payments will be central to this.

Figure 4.1 Executive Responses on Drivers Causing Structural Changes in the Industry (%), Q2 2017



Source: Capgemini Financial Services Analysis, 2017; Capgemini and BNP Paribas WPR Executive Interviews and Online Survey, 2017

²¹ Capgemini and BNP Paribas WPR Executive Interviews and Online Survey, 2017

²² 'Changing Payments Landscape - How 2017 will change the way we pay for good', Payments UK Report, January 2017

Value-added services in areas including customer analytics, fraud management, process optimization, and compliance tracking are expected to supplement payment solutions to improve customer engagement. Retail merchants are demanding value-added services including wallets, secure payments, and improved analytics. They also want these services at a lower cost. On the other hand, in the B2B segment, transaction banks face increasing demand from treasury managers for virtual accounts, fraud management solutions, and compliance tracking.

As collaboration becomes more accepted, merchant and third-party provider (TPP) partnerships are expected to become widespread as banks are bypassed in the development of customized offerings and innovative and secure payments solutions. In terms of geographical presence, global B2B companies want centralized transaction banking processes, to improve transparency across cash positions. Further, to optimize group cash flows and funding at the lowest cost and risk, corporate treasurers are demanding that these centralized transaction banking processes be standardized and optimized.

Other changes in terms of customer expectations include advances in technology, which have enabled agile companies to emerge that can provide financial management solutions, particularly for small and medium enterprises. Also, regulations are being introduced to increase transparency in transaction charges. Greater transparency is expected to lead to further reductions in payment fees, which will benefit corporations and merchants.

Regulatory and Industry Initiatives: The regulatory landscape remains complex, with an increasing number of regulations rolled out across the globe.²³ Initiatives related to cybersecurity, data privacy, AML, payments systems modernization, and PSD2, will have a significant impact on banks' business models. While these initiatives require significant investments for banks to comply with, they do not offer any immediate return on investment, and are at times likely to impact the existing revenues too. New operating processes are likely to emerge as a result.

One of the most significant regulatory initiatives in Europe—PSD2—mandates banks to give access to their data to regulated, non-bank organizations for payment initiation and account information services. On February 27, 2017 the final draft regulatory technical standards (RTS) under PSD2 were released. These provide a set of common standards for communication, strong customer authentication, and transaction risk analysis, which will help the banks to collaborate securely with third parties.²⁴ The RTS define the

rules on transaction limits for which strong customer authentication is exempted. RTS do not allow sharing of sensitive payments data with third parties, with the definition of what is sensitive data left to the bank.

Elsewhere, many cybersecurity and data privacy regulations have recently come into effect. For example, the Chinese Government and the New York State Department of Financial Securities have both introduced new cybersecurity rules. In the EU, the General Data Protection Regulation (GDPR), will come into force in May 2018. Anti-Money Laundering (AML) is another area of regulatory focus. The Fifth AML Directive in the EU and a new, risk-based AML act in the US are addressing gaps in existing regulations in the areas of virtual currencies and anonymous prepaid cards, and preventing transactions with sanctioned bodies or individuals. These are expected to impact the banks' business models as they have to facilitate data sharing with the third parties in a secure environment. Banks could consider the opportunity to extract value from the transaction data in collaboration with third parties and they need to identify ways in which this value can be shared. It is likely that the state, the PSP, and the consumer himself may also be a part of this equation.

Payments modernization efforts to enable the infrastructure for real time payments and to ensure broader market participation are also under way across many countries and will have an impact on banks' business processes raising expectations in the consumer, corporate, and merchant market segments. For example, real-time payments initiatives in Australia (as part of the New Payments Platform), the U.S., and Canada are being rolled out. In Europe, pan-European, SEPA-based instant credit transfers will be rolled out in the later part of 2017, and in the U.K., the payments architecture is being modernized to simplify governance and move towards implementing ISO 20022 and other EU standards.

On the one hand, regulators are pushing for more innovation through increased competition and enhanced and open infrastructure, while on the other hand, they are mandating additional security. This has created a complex agenda for PSPs, particularly as there is a lack of coordination of the content and timing of new regulations among regulators across different regions.

The Emergence of FinTechs: Another key structural change being witnessed is the revenue model of the Fintechs that breaks the traditional cross subsidization (across products and segments) at banks. Within the payments domain, FinTechs are challenging across all the important segments of the value chain including some that traditionally compensate for loss making services at banks. For example, in payments acquiring, FinTechs are providing point of sale (POS) management

²³ For further details, see Section 3 (KRIs), page 20

²⁴ For further details, please refer to 'Section 3: PSD2 — The Road Ahead,' page 27 in the mid-year release of *World Payments Report 2017*

and e-commerce solutions. Recently, FinTechs have also started to disrupt the payments value chain in areas such as clearing and reporting.

FinTechs are becoming more prominent as challengers to incumbents in many corporate payment functions. In the mid-cap to large-cap B2B market, collaboration and co-creation with FinTechs is easing life for corporate treasuries. For example, companies such as CashForce and Taiga have developed sophisticated algorithms for cash flow forecasting. These significantly improve the predictability of the corporate cash flow by combining imported bank balances, real-time data from ERP systems, and multiple bank accounts, as well recurring cash flows including insurance, loans, and salaries.

A significant number of FinTechs, such as Dunforce and CollectAI, work with banks to help corporations improve their working capital through better collection rates. Their platforms use intelligent algorithms to boost collection rates and better anticipate payment of unpaid claims (and the predictability of the collection). Tailor-made dunning plans are created for different types of debtors, together with alternative collection services.

Many initiatives are also under way to increase the speed, transparency, and predictability of cross-border transfers. These initiatives also reduce costs for corporates, complementing and sometimes competing directly with the banks. Companies such as Earthport and Inpay have specialized in the provision of cross-border ACH solutions, offering cheaper, non-time critical cross-border payments. Others, very large FinTechs including TransferWire, Azimo, and INTL, are developing solutions for more complex and exotic currencies, where liquidity and cost are often significant issues.

Risk management initiatives include offerings from companies such as Kantox and NeoCapital, which are providing automatic and dynamic hedging techniques based on business rules defined by clients. These initiatives help the CEOs and CFOs of mid-sized companies to manage their risk exposures.

There also has been a dramatic increase in the deployment of robotics to servicing. Robotic technology is being used to help large corporate to develop sophisticated servicing solutions to further smoothen collection processes for their customers via servicing corners, live chat, and FAQs, without the involvement of human staff. Among the leaders in this field are Nanorep, Ozlo, and Inbenta.

FinTechs have tended to target their services at high growth markets and customer segments including corporates that cater to the payments industry, such as those that provide remittance and digital acquiring services to merchants. These corporates require agile payment services and often find their incumbent banks cannot yet meet their expectations. Also, large corporates that have global operations and niche business segments require the agility of FinTechs and hence deal directly with such firms rather than with banks.

Payment services for corporates are being 'democratized' by FinTechs, which are providing smaller and mid-tier enterprises with faster speed to market, greater transparency, and lower costs than banks. They can do this via readily available plug-and-play solutions in various areas of payments (Figure 4.2). To compete with FinTechs across the payments value chain, card schemes and PSPs are providing easier payment initiation and processing services to enhance

Figure 4.2 FinTech Presence in Payments Industry



Source: Capgemini Financial Services Analysis, 2017

the customer experience. FinTechs are also set to play a significant role in providing e-commerce payment solutions by combining strong security with outstanding customer experience, and the ability to connect with multiple schemes and payment systems.

While some corporations work directly with FinTechs, concerns exist around trust, financial stability, fragmentation, and regulatory uncertainty in comparison with traditional banks. Such challenges may be resolved if banks partner with FinTechs to offer corporates new and innovative services. Such alliances might benefit corporate treasurers, as banks are likely to be savvier when it comes to integrating FinTechs' services. At the same time, corporate treasurers expect to benefit from the innovation and agility of FinTechs, while enjoying the security and expertise of the banks.

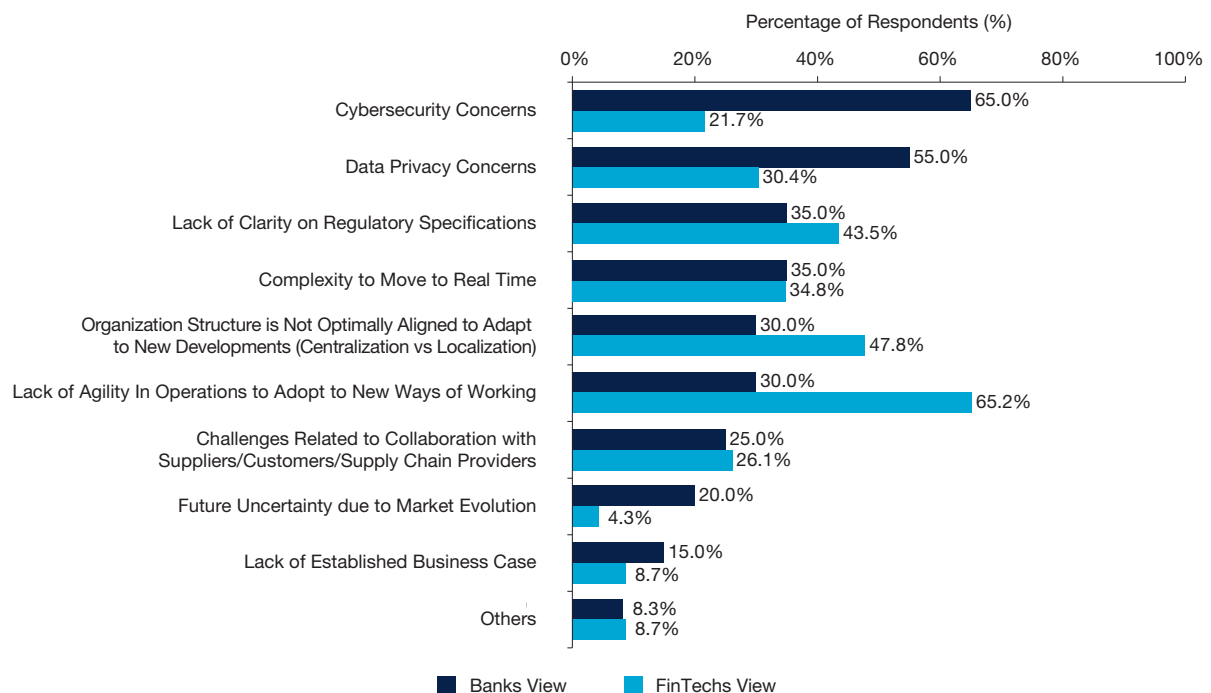
In a survey conducted for World Retail Banking Report 2017,²⁵ an overwhelming 91.3% of banks said they need to collaborate with FinTechs. Banks realize these firms are differentiating themselves by offering innovative products and data-driven propositions via agile operations that enhance customer experience. These capabilities are attractive to the B2C and B2B segments of the corporate market. FinTechs are no longer viewed by banks as competitors, but are increasingly seen as partners, a change in sentiment that might result in changes to banks' operating models.

Emergence of Enabling Technologies: Instant payments, open APIs, blockchain, mobile wallets, AI, and big data are predicted to become the leading technological advancements in the payments industry. These technologies are likely to drive payments innovations in areas that include networking with different stakeholders, accelerating the immediacy of payments, and ensuring transaction security.

Open APIs are an important breakthrough as they provide secure and standardized interfaces across all stakeholders, enabling data to be gathered in one place by aggregators. By aggregating data, providers can deliver better services to consumers and more targeted recommendations for individual payments products, such as card selection or asset management options. Among the use cases, APIs enable requests to be made on account balances in real time, initiating a payment order and facilitating cross-industry cooperation at the client level.

There is a huge potential for large banks to tap into multiple channels and big data in their existing IT landscape, to develop personalized analysis for the defined customer base. They could potentially even leverage their partner ecosystems to implement AI automation in the areas of customer engagement and fraud detection.

Figure 4.3 Executive Responses on Current Challenges Faced by Banks (%), Q2 2017



Source: Capgemini Financial Services Analysis, 2017; Capgemini and BNP Paribas WPR Executive Interviews and Online Survey, 2017

²⁵ World Retail Banking Report 2017, Capgemini

THE CHALLENGES OF THE NEW PAYMENTS BUSINESS MODEL

While banks invest in strategies to meet higher corporate expectations, they are also facing challenges related to cybersecurity, data privacy, fraud management, lack of detailed regulatory specifications, non-optimal organization structures, and less-than-ideal operational agility.

Our survey revealed that bank executives are most concerned about cybersecurity (65.0%) and data privacy (55.0%—Figure 4.3). A lack of clarity on regulatory specifications was also a concern for more than one-third of respondents (35.0%).

The disparity was again revealed in terms of FinTechs' responses, with this group believing banks' biggest challenges lie in the lack of operational agility to adapt new ways of working (65.2%) and in organization structures that are not optimally aligned to adapt to new developments (47.8%). Both groups similarly rated the complexity of the move to real-time payments as a challenge (banks, 35.0%; FinTechs, 34.8%).

In responding to the challenges inherent in cybersecurity, banks, and other stakeholders need to make sure they strike a balance between the controls and user convenience.

BANKS' STRATEGIC RESPONSE TO STRUCTURAL CHANGES

As a strategic response to the structural changes taking place in the industry, and to mitigate challenges faced by industry stakeholders, leading banks should

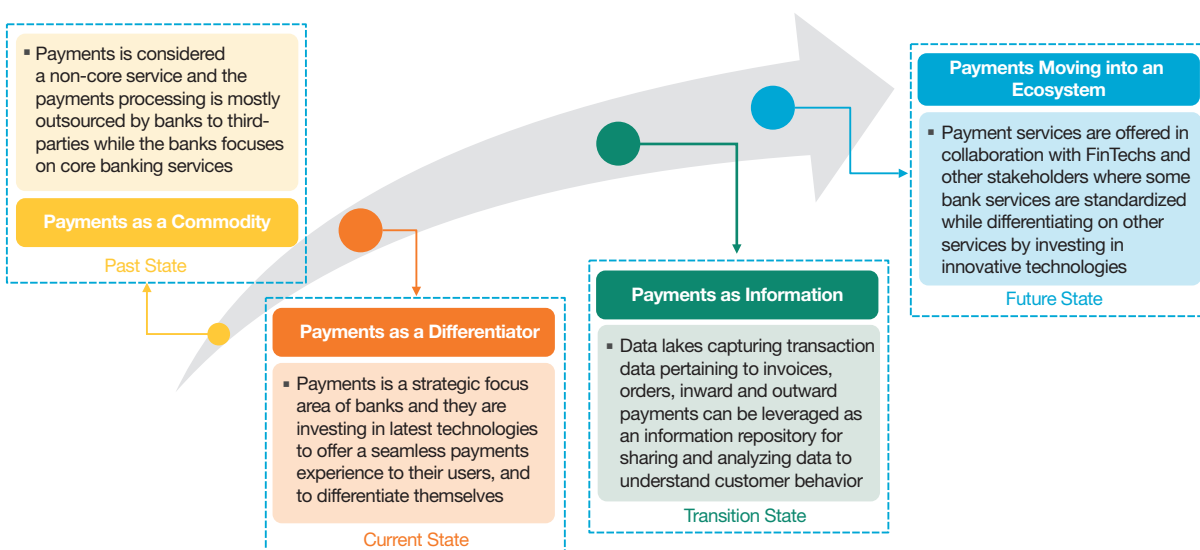
become facilitators for the exchange of valuable interactions between external producers and consumers.

Banks that have an ambition to serve multiple customer segments, and offer top notch customizable service portfolios, should work with other industry participants to develop a new payments' ecosystem as a strategic response to structural changes taking place in the industry (Figure 4.4). Banks are at different maturity levels within the new payments' ecosystem. While many leading banks across the globe have taken ecosystem initiatives, others are in the planning stages, while others lag behind. Among B2C corporates, a segment known for its innovation, many companies have started leveraging the platform model for their banking and payment services. On the other hand, in the B2B corporate segment, which is traditionally risk averse, few efforts have been made to adopt the platform model.

In the past, payments were considered a non-core, commodity service and payments processing (especially for cards) were usually outsourced to third parties, enabling banks to focus on core services. At present, payments are a strategic focus and differentiator. Banks are investing significantly in processing platforms, clearing and settlement infrastructure, as well as in risk and compliance management. Additionally, banks are also focusing on client facing innovation through investments in technologies such as contactless payments and mobile wallets to offer a seamless payments experience to their users, and to differentiate themselves.

In transitioning to a future payments state, some banks have started leveraging information from data lakes that capture transaction data pertaining to invoices, orders,

Figure 4.4 Strategic Responses of Banks to Drastic Structural Changes in Payments Industry



Source: Capgemini Financial Services Analysis, 2017; <https://www.gtnews.com/articles/the-payments-paradox>

and inward and outward payments. They share and analyze this data to understand customer behavior and enhance their services and provide customized offerings. This approach will become more popular as more banks realize its benefits in terms of improved customer service and greater operational efficiency.

In the future, payments will become part of a larger banking ecosystem in which participants, including the PSPs, interact with key partners to offer services to their customers. Banks can play a central role in the governance of such an ecosystem. Within this ecosystem, digital payments will be an important factor for all industries as services are digitized and e-commerce spreads. All parties will consume payments, and banks can take the lead in controlling payments' platforms. For this reason, banks have an opportunity to differentiate on the speed, reliability, efficiency, and attractiveness of their payments services platforms.

In the new payments ecosystem, payments industry stakeholders must reassess their business models and processes to create value for their customers. For example, corporate treasuries in B2C industries will be focused on managing payments data to better service clients.

To spur development of new payments' ecosystems, banks might consider a move away from being product factories only and aim to become platform providers, ensuring they remain central to the new payments' ecosystem. The banking account relationship with clients should form the bedrock of this move, with banks connecting producers of products and services to the appropriate consumers of such products and services (Figure 4.5).²⁶ Producers would include FinTechs, third-party developers, and other banks.

The new ecosystem requires a mix of payments services providers, working in collaboration. Banks can leverage their broad understanding of customer needs and payments expertise to play a leadership role, facilitating the exchange of valuable interactions between external producers and consumers.

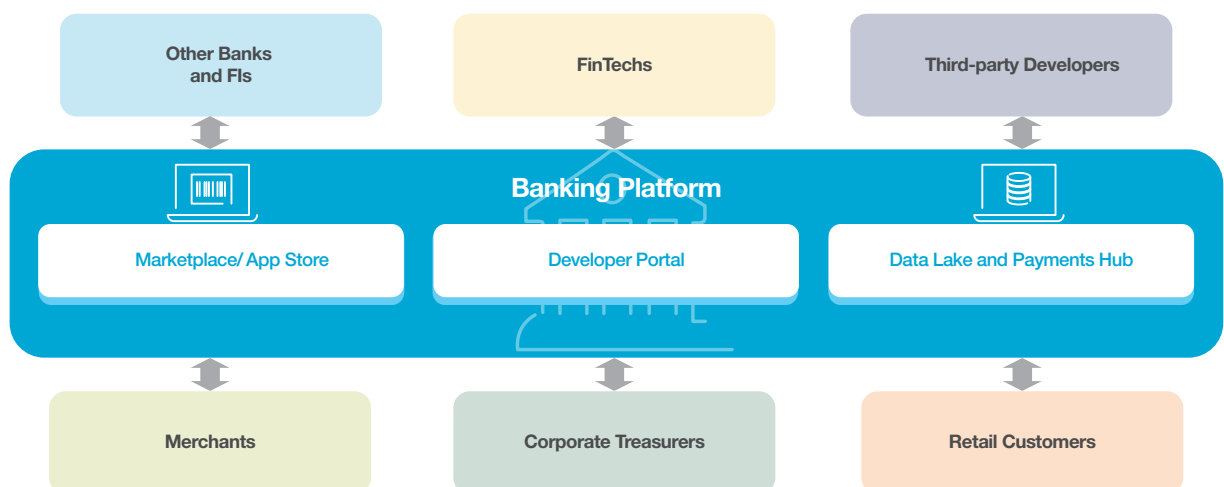
In addition to thoroughly understanding the requirements of their corporate clients, banks' successful migration to a collaborative payments ecosystem for corporate customers will depend on a variety of factors including:

Network effects: The new payments ecosystem has the potential to create feedback loops between producers and clients, known as network effects. Platforms must collaborate with as many producers as possible, ensuring the right consumers are connected with the right producers of payments products and services. This will help banks to enhance their corporate payments' offerings.

New services to clients: The platform model will help banks to explore new services to clients, generating additional revenue streams through monetizing API-based value-added services, delivered in collaboration with other providers.

Internal governance and collaboration standards: The new ecosystem must have a robust governance structure that will set common rules and standards to develop networks and services with clear responsibility split in term of client and risk management. Standards must be established, particularly for APIs, message formats, security, and risk management. Such standards will ensure seamless collaboration between ecosystem participants.

Figure 4.5 Conceptual Model of Collaborative Banking Platform



Source: Capgemini Financial Services Analysis, 2017

²⁶ This is a conceptual model of future evolution of the payments ecosystem and is one of the many possible scenarios of the industry in the future

Chapter 2: The Journey Toward A New Payments Ecosystem

Corporates are important participants in the emerging new payments' ecosystem. To meet the challenges they face, they will increasingly turn to their banking partners for value-added services. Banks should view this as an opportunity to enhance their value proposition and achieve a competitive advantage. This will enable them to not only retain existing corporate clients and grow their business with them but also to acquire new customers at a time when competition from other banks and FinTechs is extremely high.

VALUE PROPOSITION FOR STAKEHOLDERS

The increased collaboration and partnership activity of the new payments ecosystem will create business value for corporates, banks, and FinTechs (Figure 4.6).

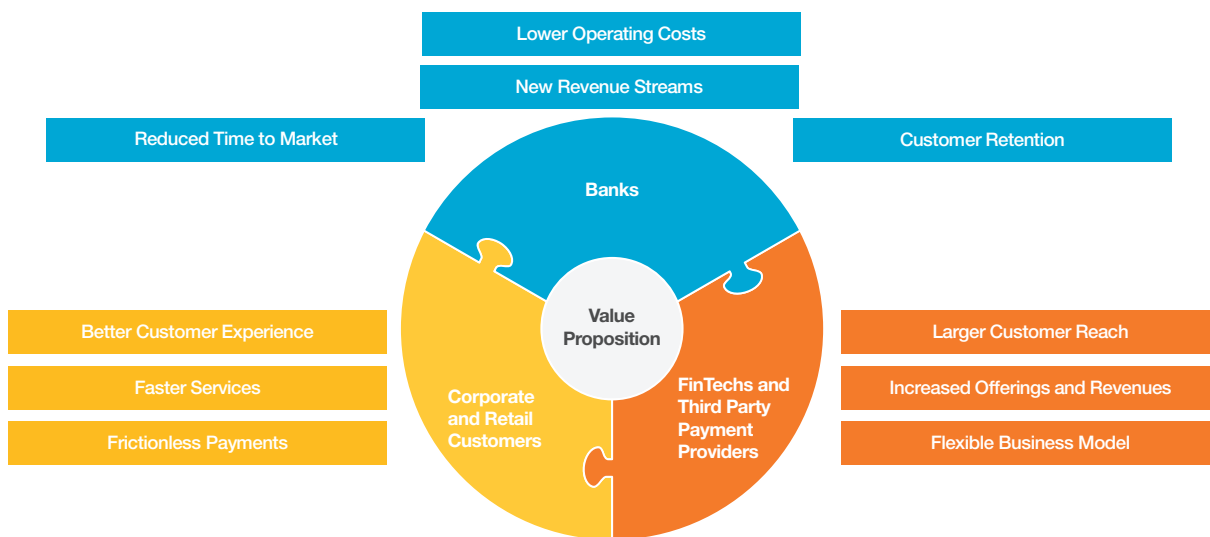
HOW DO EACH OF THESE GROUPS BENEFIT FROM THE NEW ECOSYSTEM?

Corporates: Value propositions include improved predictability of cash flow, a boost to collection rates, better anticipation of payment receivables, lower-cost cross-border payments, and improved risk management. This will benefit not only corporations, but their customers as well. The ecosystem also provides, from a single source, a choice of payment methods for customers, which will reduce the

duplication of data entry, and integrate payments from multiple providers. As banking and payment services are unbundled, integrated services can be delivered to corporates. Greater efficiencies will reduce the role of traditional intermediaries in card processing, reducing costs. Corporations will be able to plug into their systems' collaboratively developed ready-to-use services. The new payments' ecosystem also will enable corporate treasury teams to work with suitable ecosystem partners on incremental initiatives aligned with their overall strategies. The aim will be to improve operating models as part of strategic transformation initiatives.

Banks: By providing a broad range of offerings, banks will be able to retain existing customers and differentiate themselves from competitors. These offerings will also enable banks to acquire new clients in the competitive payments environment. New revenue streams will be created as third-party providers share revenues in exchange for the use of the platform. Banks can retain control over the payments platform and differentiate, based on their ability to match the right producer with the right consumer. In providing cash forecasting and collection services, the producers in the ecosystem (banks, FinTechs, and TPPs) will be able to manage corporates' cash cycles more efficiently and gain insight into corporates' cash needs. This will help banks to gain intimacy with their clients and build long-term relationships.

Figure 4.6 Value Proposition for Stakeholders from New Payments Ecosystem



Source: Capgemini Financial Services Analysis, 2017

FinTechs and TPPs: By participating on payments platforms in the new ecosystem, FinTech startups can reduce customer acquisition costs, thereby achieving scale. They will, therefore, have a larger customer base to reach out to with value-added, differentiated offerings. FinTechs can also access customer payment data, leveraging it to develop customized solutions for clients. In developing a cash forecasting solution, for example, FinTechs would be able to source data related to historical cash flows, corporate client portfolios, and payments from the ecosystem.

A range of technologies and other industry developments are enabling collaboration between different market participants on the new payments' platforms. Among the most significant of these are open APIs, instant payments, blockchain technology, and regulatory standardization.

OPEN APIS AS NEW ECOSYSTEM ENABLERS

Open APIs²⁷ are designed to enable banks to collaborate with external partners and third-party developers to offer innovative services to corporate and retail customers. Although to date APIs have been more commonly deployed in the retail payments market, open APIs could become a standardization tool for corporate treasurers, enabling them to seamlessly integrate systems such as business intelligence, ERP, banking applications, and accounting across the cash and treasury management functions. The implementation of open APIs also

provides quick and flexible plug-and-play options for corporate treasurers to easily integrate any new product or service.

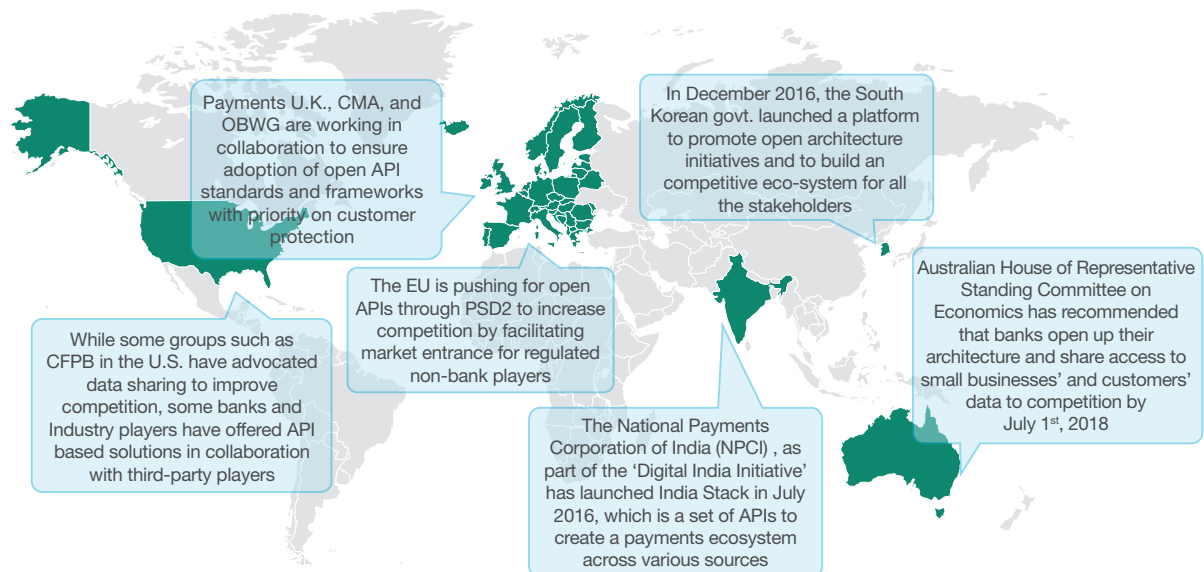
APIs have evolved from being used within an organization or with key partners, to become public, or open. The initial private, or internal, APIs were created to integrate applications within an organization and facilitate the information flow between siloed legacy systems—the producer and consumer of the API were the same organization. Used in this way, APIs increased the agility and efficiency of business processes.

The next step in the development was partner APIs, designed for an organization's partners to access business functions, depending on the relationship with the bank. Although less prevalent than private APIs, banks have used partner APIs for some time. Partner APIs have helped banks to expand their business, add new services, and open new channels.

These developments have led to open APIs, which can be accessed by anyone with the correct identification and authorization. Open APIs are used for banking, payments, and add-on services. Third-party application developers are a strategic channel for acquiring new customers. The next stage of development of open APIs could be productization of open APIs, which will enable TPPs to white label them as solutions.

A global push is under way to increase the adoption of open API technology, and Europe is leading the efforts (Figure 4.7). Initiatives such as PSD2, the

Figure 4.7 Key Open API Initiatives Across the World, 2017



Source: Capgemini Financial Services Analysis, 2017; SME Inputs; <https://www.paymentsuk.org.uk>; <http://www.australianbankingfinance.net.au/banking/why-2017-is-the-year-to-embrace-open-banking/>; <https://www.americanbanker.com/news/the-data-access-debate-is-about-to-get-a-lot-more-interesting>; <https://indiastack.org>

²⁷ In their simplest form, APIs are standardized sets of requirements that govern how one software application can talk to another. These requirements aim to safeguard quality and increase the ease of use of these interfaces

U.K.'s Open Banking initiative, and in the U.S., the Consumer Financial Protection Bureau's (CFPB's) plans for open data, are forcing banks to open their systems to competition. These initiatives are expected to increase collaboration between various stakeholders in the payments industry, which will lead to improved customer experiences.

There are many ways in which organizations can monetize open APIs. These include API calls, which occur every time a user makes a call to a server in the name of an application using an API. For each call or bundle of calls, a fee can be imposed. Other chargeable units could include insight, event, or request. This type of approach is used if the strategy is to be compliant with industry standards. According to *World Retail Banking Report 2017*, the preferred model of both banks and FinTechs (43.5% and 54.3%, respectively), is to charge a fee per API transaction as this is most consistent with the way services are charged to end users.

Monetization can also be achieved based on value delivered or support provided, where transaction, licensing, or support fees for accessing APIs are charged. This approach is used to provide value-added services such as reconciliation as a service, virtual accounts as a service, or insights and data, which will provide new revenue streams (see below). *World Retail Banking Report 2017* found that banks are less inclined to opt for annual or monthly licensing or support fees for providing customer service to application developers as they lose control over the client data.

Finally, another monetization method is based on revenue sharing between organizations, based on a percentage of the sale. This type of approach is expected to increase the network and spur both banks and FinTechs to seek out new business opportunities and greater market share. *World Retail Banking Report 2017*, found banks are much more inclined than FinTechs (47.8% versus 27.2%) to adopt such an arrangement as it enables them not only to seek out business growth, but also to retain control over customer data.

New revenue models can emerge from the monetization of APIs. If payment services are unbundled from banking services in a collaborative payments ecosystem, banks may face lower earnings. Therefore, they must explore new revenue streams to compensate for any losses.

APIs can form the basis of new revenue streams that will be generated by value-added services that differentiate a bank from competitors or enable a bank to distribute its services to new clients such as FinTechs that provide cross-border solutions. Another as-a-service option is reconciliation services, which can be provided to third-party financial institutions through APIs. Finally, banks can leverage transaction data to provide analytics that will help third parties build customized offerings.

INSTANT PAYMENTS INFRASTRUCTURE TO PLAY A VITAL ROLE IN THE NEW ECOSYSTEM

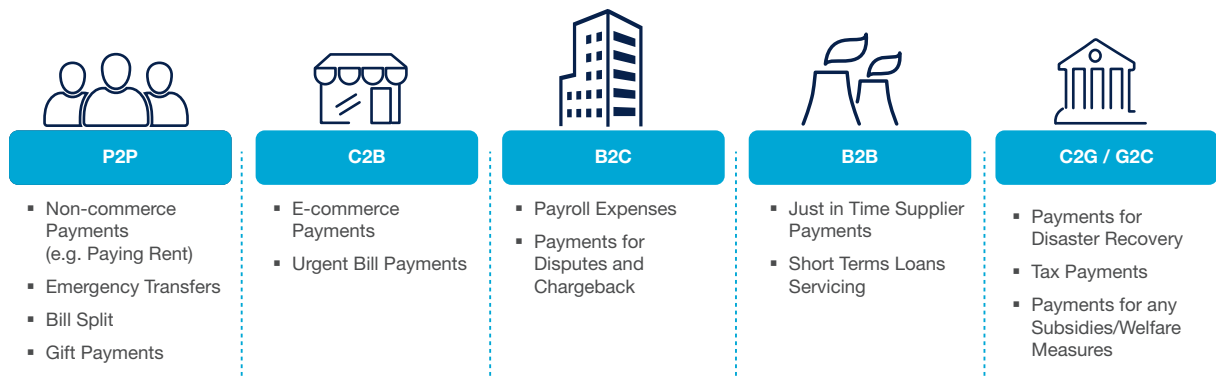
Another significant milestone in the development of a new payments ecosystem is the establishment of instant payments (IP) schemes globally. IP initiatives fall into two categories—community or private initiatives. Community initiatives are supported by financial regulators, and are usually focused on building new, 24 x 7, real-time, account to account payment infrastructures. Examples can be found in Europe, Australia, Canada, the U.S., and India. Private initiatives are based on the networks of PSPs and build on existing payment schemes. Examples include Zelle and Siirto. Private initiatives can provide solutions to market quickly, while community initiatives enable universality and reachability to all beneficiaries, resulting in greater adoption.

For users, instant payments offer many opportunities. In Europe, PSD2 will enable merchants to become PISPs so they can offer instant payments to retail and corporate clients. At present, corporate use cases for instant payments are limited, compared with those in the retail banking environment. Currently, IP is available in only a limited number of countries. As more countries start to implement IP, corporate treasurers could consider upgrading their back-office systems from batch- to real-time processing. However, multinational corporates are dealing in multiple currencies, which will make adoption to the different nuances of implementation across countries a challenge. To derive greater benefit from instant payments, corporate treasurers must upgrade their back office systems from batch-processing to real-time processing. An upgrade will enable corporate treasuries to obtain benefits from the innovation potential offered via instant payments, which in turn will increase the adoption of such payments.

Instant payments as a standalone solution will have only limited benefits to corporates, such as helping them to transfer and collect money faster (Figure 4.8). However, when combined with PSD2, instant payments will present a greater value proposition to e-commerce traders and retailers catering to the B2C segment, enabling increased competition and better services at reasonable prices.

There are benefits and challenges for banks related to instant payments. The benefits include enhanced customer propositions, 24X7 payments functionality, the finality of payments, ease of integration with other applications, and competitive advantage over FinTechs. Challenges include a reluctance to abandon legacy systems, in which they have made significant investments, the high costs and down-times for infrastructure upgrade, lack of harmonization across the globe, impact on liquidity management, and AML and fraud prevention considerations.

Figure 4.8 Instant Payments Use Cases Across Customer Segments



Source: Capgemini Financial Services Analysis, 2017

LEVERAGING BLOCKCHAIN TECHNOLOGY FOR SECURE AND REAL-TIME COLLABORATION

With the scalability issues still being addressed by the industry participants, blockchain technology is currently being explored in specific areas of cross-border payments and trade finance services. Corporate treasurers can take advantage of blockchain technology for real-time transaction verification and automated reconciliation, which may help to reduce processing costs.

Digital identity solutions based on blockchain technology are likely to improve authentication and authorization processes, transaction transparency, and reporting. These solutions provide the foundation for smart contracts and supply chain finance and cross-border payments.

In trade finance, several banks and FinTechs are exploring blockchain technology-based smart contracts to optimize processes, reducing time and costs.

In cross-border payments, many leading banks are experimenting with the technology internally to develop digital payments platforms that can be potentially scaled to deliver cross-border payments. Such banks include BNP Paribas, ANZ, BNY Mellon, DBS Bank, RBC, and Wells Fargo, which are conducting trials with SWIFT of cross-border payments using blockchain technology.

Blockchain technology is expected to play a vital role in the new ecosystem, facilitating secure and real-time collaboration between stakeholders, and enabling transparency of payments transactions.

THE PUSH FOR STANDARDIZATION IN PAYMENTS

One of the necessary conditions for the new ecosystem to thrive is for all participants to use a uniform set of communications standards. Despite several standards harmonization initiatives in the past, competitive forces continue to influence regional adoption, causing a lack of harmonization. For example, there is no consistency in the interpretation of regulations and a lack of accountability in how the collaboration mandated by PSD2 is governed.

Multiple standardization initiatives are being taken up across different regions globally. These include:

- **Single Euro Payment Area (SEPA).** This was introduced in EU region by EPC in collaboration with member states to harmonize electronic payments in the European Union. SEPA provides rulebooks and guidelines for each of the electronic payment instrument to standardize payments processing across EU.
- **ISO 20022:** An XML-based format, it has gained momentum as a standard with many real-time payment systems utilizing it. There are, however, still challenges related to regional differences that need to be addressed to achieve full harmonization.
- **R3:** A bank-led consortium initiated by leading banks including BNP Paribas, Barclays, BBVA, RBS, JPMorgan Chase, and Goldman Sachs, R3 is developing standards for distributed ledger technology in financial services.
- **Banking Industry Architecture Network (BIAN):** This member-led group is collaborating with different stakeholders to develop API standards across banking domains including operations and execution, risk management, and compliance.

- **Fast Identity Online (FIDO) Alliance:** This is the world's largest ecosystem for standards-based, interoperable authentication. The specifications and certifications developed by the Alliance enable an interoperable ecosystem of hardware-, mobile- and biometrics-based authenticators that can be used with many apps and websites.
- **Open Banking Working Group (OBWG):** The U.K.-based group has recommended the creation of standards for banks to share data securely with other stakeholders. The standard is expected to enter into force in 2019.
- **Open Bank Project (OBP):** Managed by Berlin-based software company Tesobe, the OBP is an open source API and app store for banks. It targets both retail and corporate banking applications and provides transaction history, payments, entitlements, and metadata.

MOVING TOWARD THE NEW ECOSYSTEM

Several banks have made progress in developing the new ecosystem by promoting collaboration, launching portals, and conducting hackathons. For example, BNP Paribas conducted a series of hackathons in eight countries, working with start-ups to unlock creativity and apply breakthrough solutions. The aim was to develop solutions that would improve customer experience.

Citigroup has launched a global API developer portal to enable collaboration and partnerships with FinTech developers. Six categories of banking are targeted: account management, peer-to-peer payments, money transfer to institutions, rewards, investment purchases, and account authorization.

Standard Chartered Bank has rolled out an open API developer portal that will enable third-party developers to create value-added services that can be integrated with the bank's offerings. The initial focus is on B2B transaction banking and cash management.

In selecting partners with which to collaborate in the new ecosystem, several key criteria should be considered:

- **Meeting the needs:** A partner should be able to provide solutions that address the needs and objectives of any collaboration.
- **Technology maturity and fit:** The technology used by a partner must be easily integrated with those the other partner is using.
- **Time to market:** The collaboration must result in faster time to market of products and services. This will enable the parties to compete.
- **Cybersecurity:** To ensure cybersecurity and regulatory compliance the solution provided by a partner must have robust security features that can prevent and withstand cyberattacks or data breaches. Although return on investment is a major factor in selecting partners, in the case of cybersecurity this can sometimes be disregarded.
- **Scalability:** A partner's solution must be scalable to suit various customer segments, geographies, and the multiple lines of businesses to which the firm might cater.






Overall, industry participants must reassess their roles to prepare for a sometimes-uncertain future as the payments' ecosystem develops. Larger organizations must avoid the inherent delays associated with acting on what initially may appear to be modest opportunities, but can quickly grow into larger, more financially-rewarding programs.

As the payments ecosystem evolves, the corporate treasury management function is also transforming (Figure 4.9). Treasury management is becoming more digitized, and treasurers are relying on banks to help them overcome some of the related challenges.

As the automation of tactical and mundane operations increases, the treasury management function can assume a more strategic partnership role with business services. The future operating model of the treasury will be one whereby it can play a role in business decisions of the organization as a whole. The scope of treasury management is likely to extend to functions such as procurement and commodity risk management. This extended role will also have an impact on the security and fraud-related decisions of the organization.

While corporate treasuries are currently investing in technologies including cloud, ERP, and treasury management systems to improve efficiency, in the future automation may include the deployment of Robotic Process Automation (RPA) and machine learning. This increase in technology capabilities will enable the corporate treasury team to take on more functions without an increase in personnel.

Figure 4.9 Future Evolution of Treasury Management Function

		CURRENT	FUTURE
Regulations		<ul style="list-style-type: none"> Treasurers are facing increasing complexity due to regulations such as OECD's Base Erosion and Profit Shifting (BEPS) 	<ul style="list-style-type: none"> Standardization will emerge as a key focus area for corporate treasurers Due to rising need for managing compliance efficiently, treasurers may increasingly partner with RegTechs
Structure of the function		<ul style="list-style-type: none"> There is a strong push towards centralization of treasury operations 	<ul style="list-style-type: none"> Scope of treasury management function is quite likely to extend to other areas of the business, such as procurement and commodity risk
Data Management		<ul style="list-style-type: none"> Treasury function is dependent on multiple ERPs/systems for sourcing data which is suffering due to lack of synchronization 	<ul style="list-style-type: none"> Existing data will be leveraged better due to structured formats for data capture such as data lakes and warehouses This will help in the areas of new business generation, cybersecurity, risk management, as well as improving efficiency
Technology		<ul style="list-style-type: none"> Investments in technologies such as Cloud, ERP systems, and Treasury Management System (TMS) for efficiency enhancement 	<ul style="list-style-type: none"> Automation may increase substantially with adoption of RPA and machine learning Adoption of technologies such as Blockchain and AI for improving operational efficiency in trade finance and cross-border payments is expected to witness traction Investments in instant payments for real-time transfer of payment transactions
Operations		<ul style="list-style-type: none"> Currently, focus is primarily on tactical operations and some strategic activities such as cash forecasting 	<ul style="list-style-type: none"> Operating model of the treasury management function will evolve to more matured state influencing other decisions of corporates in the future Such a future operating model is expected to impact security and fraud related decisions of corporates

Source: Capgemini Financial Services Analysis, 2017; 'Digital treasury on the move - Global treasury benchmarking survey 2016', Reval; 'Trends in Treasury 2017', Zanders; 'Treasury and Payments in Uncertain Times: The Corporate Perspective', D+H Financial Services, March 2017



Chapter 3: Technical Hurdles For The New Payments Ecosystem

THE NEED FOR STANDARDIZATION AND HARMONIZATION

The lack of standardization is one of the key vulnerabilities of the new ecosystem and needs to be addressed for effective collaboration by all stakeholders to occur. This lack of standardization is caused by the diverse standards of different national regulators and the different interpretation of regulations. Multinational banks and corporations find this a challenge and require better standardization and harmonization of regulations across the payments industry.

The lack of harmonization between the standards initiatives undertaken by banks and by regulators across the globe poses challenges for treasurers. For example, as PSD2 is transposed into national laws across European member states, a lack of harmonization has occurred. This is a similar situation to that which occurred during the implementation of SEPA.

The absence of a central API infrastructure has resulted in banks in different countries creating open API platforms by collaborating with different industry groups. For example, the Berlin Group is helping banks set up PSD2 interface protocols.²⁸ A lack of consensus among the banks about how to set up API platforms in response to PSD2 is likely to further hinder collaboration between banks and FinTechs.

Corporate treasurers have been forced to maintain different liquidity management solutions for each country within the EU due to operational, tax, and legal issues. This causes inefficiencies, and corporate treasurers want to streamline processes, particularly for international trade transactions.

Different players in the ecosystem will be at various technology maturity levels during the development of the new payments ecosystem. This will also cause a lack of homogeneity in the solutions that will be offered.

With the increasing adoption of the new payments ecosystem, the challenges related to the heterogeneity of solutions will increase. Hence it will be important to choose and work with the right partners that are a strategic fit in terms of culture, regulation, and the feasibility of technology and systems integration. Such partners will help participants in the new ecosystem to identify and deal with the heterogeneity.

Communications between multiple stakeholders within the ecosystem is another area where standardization will be important. The fragmentation of solutions and communications that could occur as a result

of collaboration could be addressed by a robust governance model, secure authentication methods, and common technical and security standards are used for communications.

TACKLING CYBERSECURITY VULNERABILITIES IN A COLLABORATIVE ECOSYSTEM

The price of increasing collaboration among industry stakeholders in the new payments ecosystem could be an increase in cybersecurity vulnerabilities. To alleviate this risk, corporates are increasingly turning to their banks for advice on how to strengthen their infrastructures against cyberattacks. To ensure the highest levels of cybersecurity and the security of infrastructures in the new payments ecosystem, each ecosystem stakeholder must assess security across all the data sources and points of collaboration within the payments ecosystem.

The need for robust cybersecurity solutions to cater to all forms of cyber threats has never been greater for corporate treasurers as new technologies proliferate and collaboration increases. Of prime importance for corporates in developing defense mechanisms are awareness of potential cybersecurity risks, regular updating of security profiles, and continuous training of employees. This is because attacks perpetrated by cyber criminals are unpredictable in both timing and nature.

The vulnerabilities stakeholders face include cybersecurity, data privacy, data breaches, and payments fraud. The utmost vigilance is required to protect organizations against cyberattacks and all stakeholders, including regulators, must be more proactive regarding cybersecurity, with ownership of the issue taken to prevent attacks.

In the new payments ecosystem, third-party developers can directly interact with a partner banks' customers, raising questions about data privacy and security. In an increasingly networked ecosystem, identifying the source of attack will be a challenge.

Verizon's 2017 *Data Breach Investigations Report*²⁹ found that security incidents and data breaches affect both large and small scale financial organizations almost equally. However, the security of larger banks is difficult to compromise as they invest more in cybersecurity solutions. On the other hand, smaller banks, which do not have the same access to resources as the large banks, are more prone to cyberattacks.

²⁸ <http://www.berlin-group.org/single-post/2016/07/08/Berlin-Group-initiates-a-PSD2-Access-to-Account-Framework>

²⁹ *Data Breach Investigations Report*, Verizon, 2017

Financial services are not the only vulnerable industry. A 2017 study by U.S.-based privacy and data security consultancy Ponemon Institute³⁰ ranks the financial sector second in terms of the per capita costs of data breaches (\$245).³¹ The most vulnerable industry is healthcare.

A fraud survey by the Association for Financial Professionals and JP Morgan³² found that the highest levels of fraud in 2016 were perpetrated via checks. However, there was a surge in wire transfer fraud, from 27% in 2014 to 46% in 2016.³³

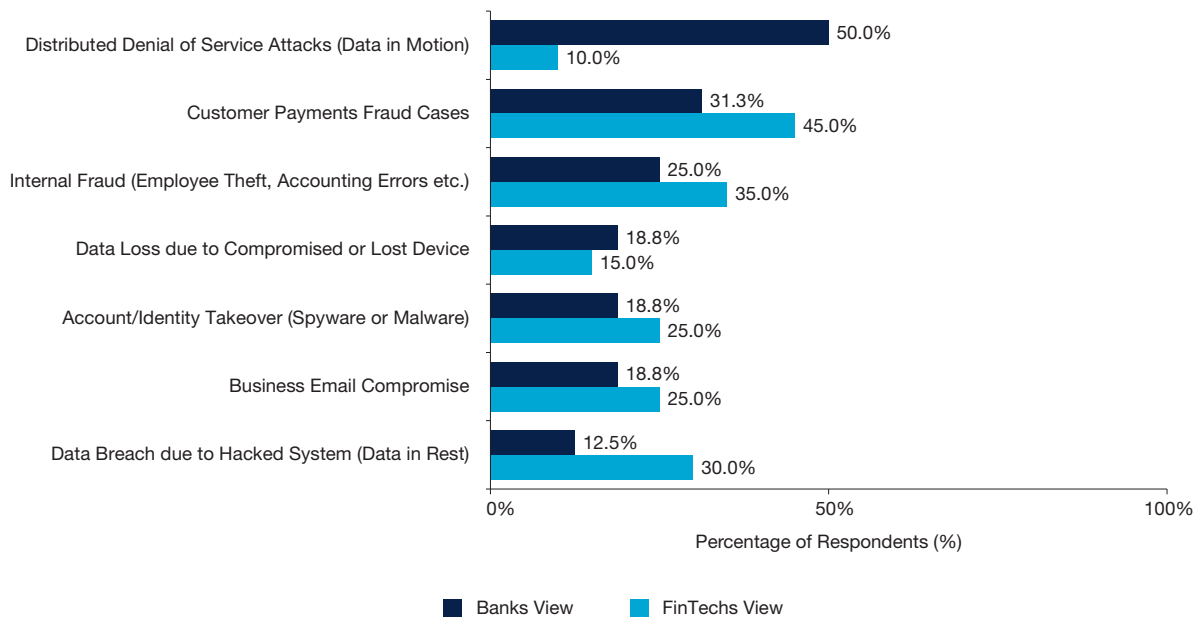
An increasing number of cybersecurity breaches are causing significant losses for banks and corporates across the world. Among recent incidents, in February 2016, a cyber heist at Bangladesh Central Bank resulted in a loss of \$81 million and prevented another \$850 million worth of transactions from being processed on the SWIFT network. Similarly, cybercriminals hacked the SWIFT system and stole \$9 million from Ecuadorian bank Banco del Austro in May 2016.

In May 2017, the WannaCry ransomware attack affected more than 150 countries and 200,000 computers, as attackers demanded each of those affected to pay up to \$300 worth of bitcoins to unlock their systems.

In our survey for WPR 2017, bank executives ranked distributed denial of service (DDOS) attacks (50.0%) and customer payments fraud (31.3%) as the top two security challenges they face (see Figure 4.10). High global levels of card fraud place a significant cost burden on banks, hence its identification as a major concern. The increasing adoption of digital offerings in transaction banking is also giving rise to higher levels of payments fraud, making cybersecurity a top priority for banks and corporates.

Customer payments fraud is the top ranked concern (45.0%) for FinTechs and other survey respondents. This group is much less likely to view DDOS attacks as a threat, with only 10.0% ranking it as a digital security concern. Rather, data breaches due to hacking attacks were of more concern (30.0% versus 12.5% of banks) and internal fraud (35.0% versus 25.0% of banks).

Figure 4.10 Executive Responses on Digital Security Vulnerabilities Faced by Stakeholders (%), Q2 2017



Source: Capgemini Financial Services Analysis, 2017; Executive Interviews for WPR 2017; Online Survey for WPR 2017; <http://www.thebunker.net/blog-psd2-is-a-disruptive-game-changer-and-success-depends-on-security-privacy-and-trust>

³⁰ *Cost of Breach Study*, Ponemon Institute, 2017

³¹ The per capita cost is defined as the total cost of the data breach, divided by the size of the data breach (i.e., the number of lost or stolen records)

³² *Payments Fraud and Control Survey*, Association for Financial Professionals and JP Morgan, March 2017

³³ Wire transfers move funds from one bank to another in one business day, and the funds can even be made available within that day while ACH payments are processed in batches

While banks are investing significantly in cybersecurity solutions, there are still many risks at the corporate level that they cannot manage. Corporates must, therefore, step up their own efforts to manage cybersecurity risk and not leave it all to the banks. They should upgrade their internal systems, train their staff, and review their partners' systems.

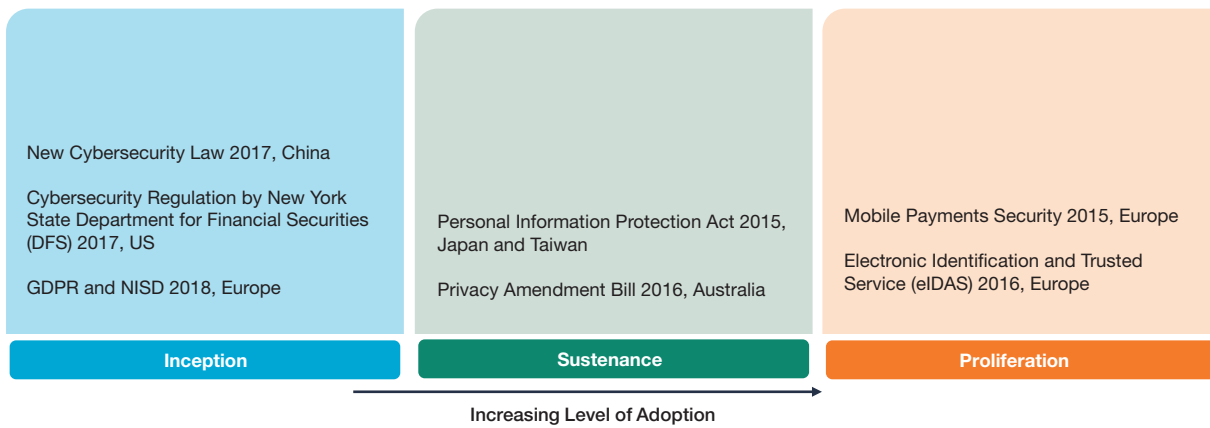
The idea of a cyber attacker as a lone figure hacking into systems is now obsolete. Cyberattacks are perpetrated by entities that are set up like companies, with project managers, key performance indicators, and operations.

Attacks to compromise corporates and banks are designed to be multi-staged, with two main objectives: commercial gain, and industry espionage. In general, the funds received via attacks go into

the coffers of the organization, while the intelligence gained during an attack will be used by perpetrators to gain a business advantage. Attacks can happen at anytime, and over a period of time, therefore all corporates should be vigilant and on constant guard against attacks.

So serious are the growing cyberattack and data breach problems that regulators across the globe should move from their present reactive approach to a more proactive one. Stringent regulations and fines to strengthen cybersecurity laws are required from the regulatory sector. Many regulations related to this are, however, still in the inception stage (Figure 4.11). Europe has relatively the most mature cybersecurity and data privacy laws globally, with recent initiatives including the Electronic Identification and Trusted Service (eIDAS), which was launched in 2016.

Figure 4.11 Evolving Regulatory Agenda on Cybersecurity and Data Privacy Across the Globe



Source: Capgemini Financial Services Analysis, 2017

MEASURES TO IMPROVE CYBERSECURITY

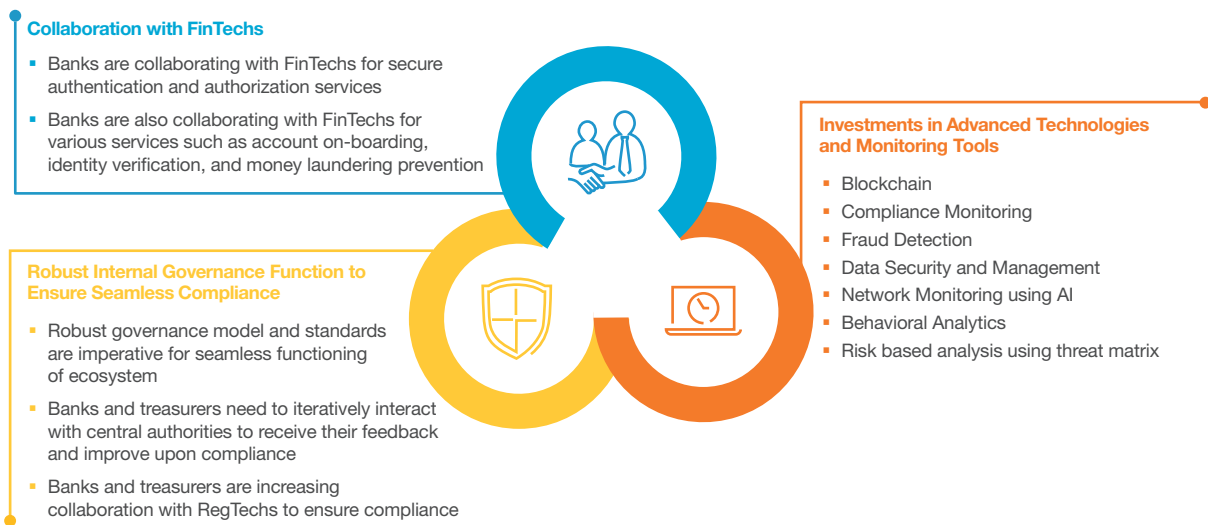
Effective cybersecurity requires organizations to efficiently and quickly identify, mitigate, and manage cyber risks and incidents. All stakeholders are taking measures to strengthen the security of transactions against potential cyber threats. Banks and other stakeholders have three options available to them (see Figure 4.12): collaborating with FinTechs, making investments in advanced technologies and monitoring tools, and strengthening internal governance to ensure seamless compliance.

- Collaboration with FinTechs:** This is occurring in several areas including secure authentication and authorization, account onboarding, identity verification, and anti-money laundering. Banks

can leverage some of the latest technologies and innovations FinTechs offer. Examples include India's Yes Bank and FortyTwoLabs' development of multi-factor authentication tool PI-Control, which enables users to apply for internet banking access, pay bills, transfer funds, seek loans, make remittances and undertake other card transactions. Rabobank in The Netherlands is working with FinTech firm Signicat to provide digital identity solutions that can be easily integrated using API technology.³⁴ As banks collaborate more often with FinTechs and RegTechs, due diligence, adherence to industry standards—such as the International Organization for Standardization (ISO) and the National Institute of Standards and Technology (NIST)—and participation in the development of new industry standards are critical.

³⁴ <https://www.crowdfundinsider.com/2017/05/100229-netherlands-rabobank-forms-partnership-fintech-firm-signicat-launch-new-digital-identity-service/>

Figure 4.12 Measures Taken by Stakeholders to Improve Cybersecurity of Transactions



Source: Capgemini Financial Services Analysis, 2017

- **Investment in advanced technologies and monitoring tools:** Blockchain technology is still in a nascent stage, with its potential as an enabler of digital identity and payment transaction security still being tested. Banks can leverage the technology to differentiate themselves in the provision of digital identity, authentication, and KYC services. Banks are investing in projects that combine advanced cryptography that supports private or permission use of blockchain technology with transaction security elements that provide greater transaction visibility. In order to ensure the highest levels of cybersecurity and transaction security, all the ecosystem participants must assess security from multiple sources in the network. Common security standards and protocols when developing and investing in new technologies and monitoring tools will be increasingly important as collaboration increases. With a common network governing the interfaces between banks and TPPs, various groups are looking to develop network-based security standards to ensure a secure environment is built around the dynamic payments ecosystem. The ability to respond to cyber threats or attacks in real time is hampered by legacy security systems. Traditional security monitoring typically identified and reacted to cyber threats in isolation. A modern approach identifies specific unusual patterns or behaviors and alerts operational teams to anomalous activity. Advanced machine learning algorithms are the logical next step as response mechanisms in the event of a threat. AI systems are being piloted globally, yet

legal issues regarding accountability for the actions of such systems persist. Contextualization of threats (linking the threat to the business and not just to technology) is needed to identify the source and understand the objective behind any attack. Another useful approach is risk-based authentication (RBA) to detect the risk profile of transaction banks and retailers. Using the RBA and analytics processes, banks can create a threat matrix of fraud profiles to triangulate the threat instances to their origin and be able to proactively block fraudulent traffic. Behavioral analytics, AI, machine learning, and threat matrix can help to continuously monitor the ecosystem network and provide threat intelligence. Banks can undertake various activities such as continuously checking all systems for possible threats, observing markets, scenario simulation, examination of previous attacks, monitoring activities and applications, and establishing a payments control center to permanently monitor payments and identify exceptional situations.

- **Robust internal governance:** A robust governance model and standards are imperative for seamless functioning of the new payments ecosystem. Banks and treasurers need to interact with central authorities and regulators to share feedback, which in turn will help to improve compliance. Banks and treasurers are increasingly collaborating with RegTechs to ensure compliance. Industry stakeholders must establish common data, technical, legal, functional, and security standards for robust governance.

LEVERAGING TRUST AS AN ASSET

Trust ensures secure collaboration between various stakeholders. Banks should view the trust they have earned in the market as an asset and use it to attract more partners, aiding the network effects of the ecosystem. FinTechs should collaborate with banks and leverage their trust to reach out to bank customers.

Most customers continue to trust banks to conduct payment transactions as they perceive them to be more secure than FinTechs or TPPs. Corporates should not invest in directly collaborating with FinTechs as banks are already investing in such initiatives and can offer plug-and-play solutions.

Banks can leverage trust as a marketable asset, not only for ensuring security but also for greater data sharing and network effects (Figure 4.13)

To maintain their trusted position as a provider of security in payments, banks must be compliant with the latest cybersecurity standards and regulations. This may require investment in the latest technologies. Banks must selectively partner with reliable TPPs to ensure the privacy and security of their customers.

Banks with higher levels of consumer trust will attract more consumers willing to share their data in return for benefits. Transparency in the use of data by banks and the freedom to opt in or out of data sharing will help build trust and create a win-win situation for both customer and bank. In addition to leveraging trust, banks need to take various steps to ensure that their systems, as well as those of their FinTech and TPP partners, are secure. Organizations should identify cyber business risks by scanning and analyze known and relevant risk factors, including those that may

not be likely to occur. These risks should provide a starting point for establishing an effective cyber-risk management framework. The most important moves various stakeholders can make to improve cybersecurity are to build multi-layered security, ensure regulatory compliance, train staff, and review partners' systems. Today, a financial institution's cyber perimeter extends to locations where data is stored, transmitted, and accessed by internal employees and trusted partners. Therefore, staff must be trained and partners' systems must be reviewed for potential vulnerabilities.

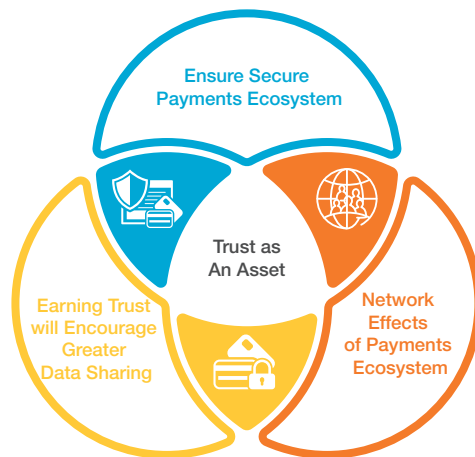
ENSURING DATA PRIVACY AND SECURITY IN THE NEW PAYMENTS ECOSYSTEM

Firms will be well served if they can ensure that security systems have multiple layers to withstand 'flood' attacks. To ensure a foolproof system, firms should identify the data needs of all stakeholders before finalizing the controls to put in place.

With the onset of General Data Protection Regulation (GDPR) and PSD2 in the EU, the focus on compliance with data privacy and security has increased. Firms need to install a dedicated team to continuously review and update security policies. Additionally, stakeholders should work with the local regulatory authorities to understand the complexity of different regional legal requirements and expectations for each country.

Firms must ensure mandatory data privacy and security training is conducted at regular intervals. Educating employees on potential threats and ensuring they keep their systems updated would have prevented, or greatly reduced the impact of, events such as the WannaCry ransomware attack of May 2017.

Figure 4.13 Trust as a Marketable Asset for Banks in the New Ecosystem



Source: Capgemini Financial Services Analysis, 2017; CG SME Inputs; 'The Currency of Trust: Why Banks and Insurers Must Make Customer Data Safer and More Secure', Capgemini Consulting, Total 7600 consumers and over 180 senior data privacy and security professionals surveyed; <http://www.pymnts.com/news/banking/2016/-can-banks-build-the-economy-of-trust>

Contractual agreements with vendors and partners are critical to ensuring there are no vulnerabilities in the system. Agreeing with a security and data privacy review every quarter, and regular audits will go a long way to make sure that there aren't any gaps in security. Regular software updates, a uniform security policy with all stakeholders, and ensuring employees are updated with recent compliance requirements are the key to improve cybersecurity standards.

Central authorities must ensure they maintain a balance between the controls enforced for cybersecurity (such as controls on user authentication, limits on transactions, and controls on data and security) and user convenience (faster payments, improved transparency, and enhanced customer experience). Adopting a globally acceptable approach in cybersecurity and data privacy is expected to help multinational firms to better deal with cyber threats as the regulatory environment in individual countries remains challenging.



A man in a dark suit is shown in profile, looking out a window at a city skyline. The background is a blurred view of a city with several tall buildings under a bright sky. The man's face is partially in shadow, and the overall tone is professional and contemplative.

Collaboration Is The Key To Successfully Navigating The Path To The New Payments Ecosystem

The new payments ecosystem is still nascent and the path forward ambiguous. Therefore, all stakeholders must collaborate to implement appropriate measures as they prepare for an uncertain outlook and overcome challenges. This has been recognized by some stakeholders, and initiatives are under way that will help to develop the new ecosystem. APIs and open platforms are emerging, but it is not yet clear how these initiatives will evolve. As platform owners, banks must ensure that the technology enablers for the new payments ecosystem are seamlessly integrated and the standards set are implemented by all the stakeholders. This will ensure greater homogeneity in the solutions that result from the collaboration.

There are still unanswered questions about the role of each player in the ecosystem, and the trade-off between customer convenience and security, which need to be addressed for the new ecosystem to be fully successful. Central authorities must ensure they maintain a balance between the controls enforced for cybersecurity and user convenience in the new ecosystem. Industry stakeholders across the globe must ensure that the security controls do not hinder the user expectations of speed and convenience. The new ecosystem might not address all challenges faced by stakeholders, and they must collaboratively try to find solutions to overcome those challenges.

Closing Thoughts

Emerging Asia and CEMEA continue to contribute significantly to the growth of global non-cash transactions, while mature markets are growing at a subdued rate. Overall, global non-cash transaction volumes are poised for strong growth. Developing countries are expected to fuel this growth, as the adoption of alternative payment instruments increases, regulatory initiatives promote digital payment adoption, financial literacy improves, and modernized payments infrastructures are built. Other trends are expected to push up non-cash volumes include technological innovations such as the Internet of Things (IoT), blockchain, and new entrants that disrupt the payments market. Disruption is also expected to occur as retail customers, increasingly willing to embrace online and mobile channels, adopt next-generation payments instruments.

In the corporate payments world, corporates are embracing the operational and financial benefits of digital payment methods, but they need to leverage the full benefits of digital transformation to increase overall efficiency. By leveraging new technologies and harnessing centralized payment solutions, corporates could address inconsistencies and operational inefficiencies in corporate payments. The digitization of repetitive tasks that will come with the new payments ecosystem is expected to enable corporate treasuries to assume a more strategic role within the enterprise, encompassing functions such as procurement and commodity risk management.

The higher volumes of non-cash transactions are occurring in an environment of increased regulation. Regulators across the world are focused on opening banking systems to a wider range of competitors, while ensuring data privacy of end users and the security of payments transactions. Regulations are not the only challenge banks face, as TPPs—enabled by regulatory initiatives—are entering the payments market. Financial institutions may seek to collaborate with TPPs,

developing solutions and sharing expenses. Regarding specific regulatory initiatives, PSD2 is imminent, and its smooth implementation depends on the management of any fragmentation that occurs as national authorities take different approaches as they transpose it into law.

The emergence of the new payments ecosystem—identified as a major trend in this year's report—provides many opportunities for banks. To lead the development of the new ecosystem, banks could consider becoming platform providers. Several banks have made progress in developing the new ecosystem by promoting collaboration, launching portals, and conducting hackathons. Network effects, the creation of new services for corporates, and internal governance are the key success factors for development of such an ecosystem. However, as the new payments ecosystem is adopted more widely, ecosystem participants must be prepared for challenges related to the heterogeneity of solutions. Ideally, this should be addressed with a robust governance model and usage of common communications standards.

In leading the development of the new ecosystem, banks must ensure they choose the right partners that are a strategic fit. By doing so, they will address the problems related to the heterogeneity of systems.

Also as platform owners, banks must ensure that the technology enablers for the new payments ecosystem, such as APIs, are seamlessly integrated and that the standards set are implemented by all stakeholders, although the responsibility for this lies with all the network participants. The new ecosystem might mitigate most of the challenges faced by banks and corporates, but they might not address all of them. Overall, industry participants must reassess their roles and take appropriate measures to prepare for a sometimes-uncertain future as the payments ecosystem develops.

Methodology

NON-CASH PAYMENTS

This year's *World Payments Report* offers insights on the payments markets in the following regions grouped by geographic, economic, and non-cash payment market maturity criteria:

- North America: Canada and the U.S.
- Europe:
 - Nineteen Eurozone countries: Austria, Belgium, Cyprus, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Portugal, The Netherlands, Slovenia, Slovakia, and Spain
 - Four non-Eurozone countries: Denmark, Sweden, Switzerland, and the U.K.
- Mature Asia-Pacific: Australia, Japan, Singapore, and South Korea.
- Emerging Asia: China, Hong Kong, India, and other Asian markets.
- Latin America: Brazil, Mexico, and other Latin American markets.
- CEMEA: Poland, Russia, Saudi Arabia, South Africa, Turkey, Ukraine, Hungary, Czech Republic, Romania, and other Central European and Middle Eastern markets.

Data for Australia, Brazil, Canada, China, Hong Kong, India, Japan, Mexico, Russia, Saudi Arabia, Singapore, South Africa, South Korea, Turkey, and the U.S. were taken from the latest Bank for International Settlements (BIS) payment statistics Red Book (2015 data released December 2016). Data for Europe, Romania, Czech Republic, Hungary, and Poland were taken from the ECB Statistical Data Warehouse (2015 data released September 2016). For the remaining countries, data were taken from central bank publications and websites. Macroeconomic indicators (gross domestic product [GDP] and population) were collected from the World Bank. Because of a lack of reliable historical data trends, data for some countries have been estimated and grouped under the appropriate regional heading: other Asian countries, other Latin American countries, or other CEMEA countries.

Wherever official data was available, we used the latest data published, even if restated for previous years. Wherever data was unavailable or substantially

different, data were estimated on a linear basis. In the case of countries where direct debit volumes were not available, we have assumed the data available for previous year. We have included Algeria and Morocco in Other the Middle East and Africa region for better estimation of the region.

2017 NON-CASH TRANSACTIONS ESTIMATIONS

We have introduced estimations for global non-cash transaction volume – which include check, debit card, credit card, credit transfer, and direct debit transactions – from 2016 through 2020. The estimates were calculated using our proprietary forecast model. The model is bottom-up, based on the non-cash transaction volume trends and estimates for each of the countries in-scope, and also takes into account factors such as historical growth rates of non-cash instruments at a country-level, the local regulatory environment, and certain macroeconomic factors that can affect the growth of non-cash payments in a region.

GLOBAL E-PAYMENT AND M-PAYMENTS TRANSACTIONS ESTIMATIONS

In *WPR 2017*, we have introduced estimations Global E-Payment and M-Payments Transactions from 2016 through 2019.

E-payments are defined as digital payments that are made over the internet for e-commerce activities. The largest segment of e-payments is the consumer-to-business (C2B) payments, which are used mainly for goods purchased in online store. E-commerce also includes retail sales, travel sales, digital downloads products or services ordered using the internet via any device, regardless of the method of payment or fulfillment, and it excludes travel and event tickets.

Mobile payments or m-payments are defined as a form of payment where the mobile phone is used as a payment mode, not just as an alternative channel to send the payment instruction, and the payment information flow takes place in real-time.

WPR 2017 ONLINE SURVEY

Our primary research for *WPR 2017* included an online survey (sample size 51) that was distributed to industry participants across banks, FinTechs, non-bank FSIs, and corporates in June 2017. Executive interviews were also conducted. Findings from the survey and interviews have been incorporated into our analysis throughout the report.

Glossary

APAC

Asia-Pacific

AP

Accounts Payable

API

Application Programming Interface

AML

Anti-Money Laundering

B2B

Business to Business

B2C

Business to Consumer

BHIM

Bharat Interface for Money

BIAN

Banking Industry Architecture Network

C2B

Consumer to Business

CAGR

Compound Annual Growth Rate

CEMEA

Central Europe, Middle-East, Africa

CFPB

Consumer Financial Protection Bureau

CIC

Cash in Circulation

COBO

Collections on Behalf of

EAC

East African Community

EBPP

Electronic Bill Presentment and Payment

ECOWAS

Economic Community of West African States

eIDAS

Electronic Identification and Trusted Service

EU

European Union

FDI

Foreign Direct Investment

FIDO

Fast Identity Online

GDP

Gross Domestic Product

GDPR

General Data Protection Regulation

IFR

Interchange Fee Regulation

IoT

Internet of Things

IoP

IoT Enabled Payments

IP

Instant Payments

ISO

International Organization for Standardization

mPOS

Mobile Point of Sale

M2M

Machine to Machine

NFC

Near Field Communication

NIST

National Institute of Standards and Technology

NPCI

National Payments Corporation of India

OBWG

Open Banking Working Group

OBP

Open Bank Project

POS

Point of Sale

PSD2

Revised Payment Service Directive

POBO

Payments on Behalf of

P2P

Peer to Peer

PSP

Payment Service Providers

RBA

Risk-Based Authentication

RBI

Reserve Bank of India

RPA

Robotic Process Automation

RTS

Regulatory Technical Standards

SCT Inst

SEPA instant credit transfer

SNKI

Indonesian Government's National Strategy for Financial Inclusion

TPP

Third-Party Providers

UPI

Unified Payment Interface

VAMS

Virtual Account Management Service

About Us



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www.cashmanagement.bnpparibas.com



For more information, please contact:

Capgemini

payments@capgemini.com

BNP Paribas

payments@bnpparibas.com

For press inquiries, please contact:

Gemma Coleman (EMEA)

Gemma.Coleman@webershandwick.com or +44 (0) 20 7067 0512

Miranda Sanders (North America)

msanders@webershandwick.com or +1 212 445 8120

Mary-Ellen Harn

mary-ellen.harn@capgemini.com or +1 704 490 4146

Carole Djen-Ullmo

carole.djen-ullmo@bnpparibasfortis.com or +32 2 312 52 19

