

Key Trends in Digital Payments Markets and Strategic Infrastructure

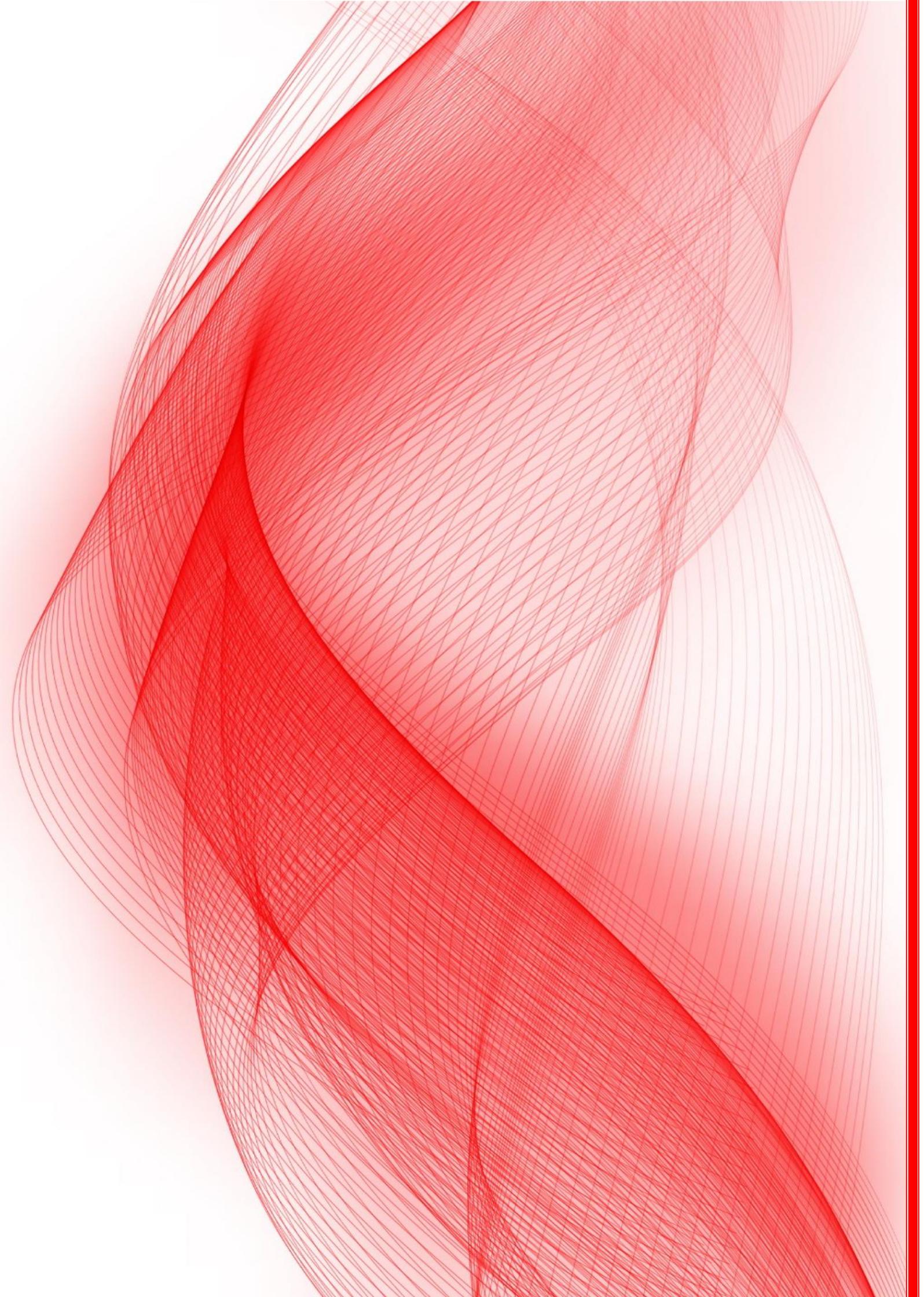


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Executive Summary

Globally, payments are going digital—whether they are cash moving to cards, QR codes at point of sale (POS), purchases moving from physical to online stores with electronic forms of payment, or payments becoming seamless with in-app experiences. This phenomenon is not new, but does appear to be accelerating. This increased speed of adoption is driven by multiple factors, including an abundance of new electronic payment methods—many of which are layered on top of existing payment methods—focused on convenience, speed and the overall consumer experience.

This white paper looks at the key trends currently shaping digital payments markets around the world and the supporting ecosystem of technologies and players, including:

- Real-time payments;
- Regulatory interventions—often focused on streamlining digital payments;
- Open banking—potentially bringing new players into the arena.

Although these (and other) trends vary in their intensity and construct across different regions and countries of the world, the way they drive digital payment growth is clear. Given the geographic variation in payment methods and digital adoption rates, we compare the differences between:

- Europe—where all three trends are in play;
- Asia Pacific—where there are distinct geographic differences, with some countries at the forefront and others just beginning their journey;
- The Americas—where the U.S. has polarized payments activity, with some of the leading-edge payments players sitting alongside the abundant use of cash and checks.

Interconnecting payments

The digital payments ecosystem involves an array of different players, including the merchant accepting the payment, payment service providers, payment acquirers, networks (e.g., Visa, MasterCard), payment issuers and loyalty programs.

The handling of the payment, the ability to recognize returning customers and cross-linking potential offers need to happen fast, securely, and efficiently be delivered locally to users. Delivering these services to local populations of customers, users and partners requires a distributed presence that can challenge traditional architectures—this is where interconnection and co-location play a role. Having the data, applications, networking controls, and associated technologies of all the components of the transaction interconnected at secure points of presence—close to end-users—helps deliver an enhanced digital experience.

Therefore, it is critical to choose an interconnection and co-location provider based on its ability to reach all target users, interconnect the required cloud and payment partners, and integrate the required payment rails and governance controls.

To ensure market coverage, you need to replicate your interconnected value chain in strategic locations within your target markets, enabling you to effectively serve end users. This means identifying co-location providers with data centers that not only have all the players in your value chain, but are also in the geographies you serve. Providers furnishing high-speed, low-latency interconnection at strategic points around the world play a critical role in optimizing the performance of the payments network, with lower costs, higher security and greater agility.

Indeed, Gartner Research Vice President Bob Gill describes the relationship between digital business and co-location-based interconnection as follows: “Digital business is enabled and enhanced through high-speed, secure, low-latency communication among enterprise assets, cloud resources, and an ecosystem

of service providers and peers. Architects and IT leaders must consider carrier-neutral data center interconnection as a digital business enabler.”

While those making and receiving payments generally have little understanding of how their digital payments happen, they do expect a convenient, reliable, fast and secure payments experience. It is the architecture underpinning the digital payments value chain that ultimately determines the level and scope of this performance.

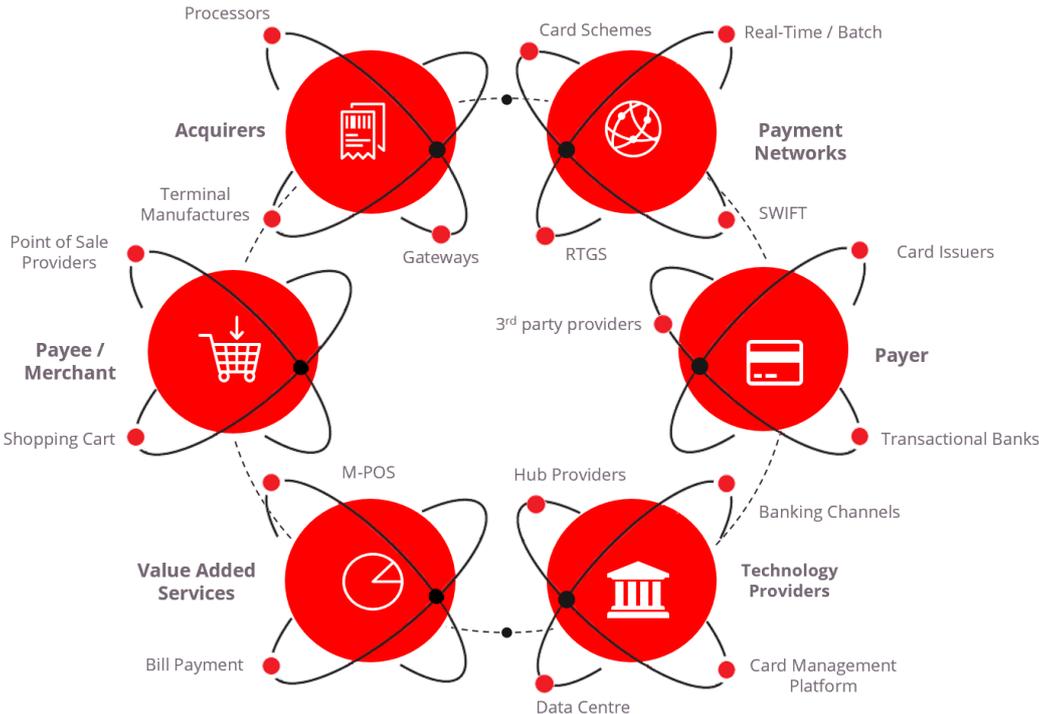
The Payments Ecosystem

The constantly evolving payments ecosystem is a complex network of different, often unconnected systems. From cash to cards to mobile in real-time, the payments ecosystem continues to expand. History has led to many country-specific electronic payment methods, which are not interoperable.

The continued expansion of payment methods, along with these country-by-country legacy systems, causes difficulties for global merchants, such as airlines, who need to offer the right payment method in each locality they service. As the globalization of commerce and consumer spending continues, the capability to “plug and play” in a world payments hub gets stronger, but not necessarily easier to deliver.

The need to deliver global interoperability is driving more interconnection among participants in the payments market. Just like people gather together in cities to gain the synergies of a social network¹, for business and leisure, there is a parallel in the “urbanization of IT,” with payments players creating infrastructure with direct access to data sources, service providers, networks and clouds to gain the performance and cost benefits of interconnection.

The graphic below is a general representation of the thousands of different payments players actively participating in the market, some locally and some globally:



Global players need global connectivity

A company such as Paysafe, for example, operating in over 46 countries, wants to deliver against a merchant proposition of “plug into Paysafe,” with a unique suite of processing and acquiring solutions covering online acceptance, in-store acceptance, alternative acceptance, pay later solutions and access to a global payment network. It is looking to deploy these solutions while managing the burden and complexity of compliance for its customers, in particular PCI and data protection.

Data center selection has played a key role in achieving this outcome: “Equinix has offered us multiple options for connectivity to customers, partners and clouds everywhere we need it,” says Sev Kelian, Director, Infrastructure and Cloud Architecture at Paysafe. “The enhanced connectivity gives us the agility to use and hook-up to cloud partners much quicker, and with lower latency; e.g. direct connect to AWS, Microsoft, etc, with quick onboarding.”

Companies like Paysafe and others note the critical need for minimal latency. Another global payments company interviewed noted that “even a 100 millisecond reduction in transaction processing time can lead to a meaningful lift in ‘completions;’ hence, revenue.”

Trends in Global Payments

Global electronic payment volumes are increasing at approximately 11% annually, and this double-digit growth is likely to continue through 2020.ⁱⁱ This growth in electronic payments is in part driven by the continued growth of the world economy generating more payments transactions, but also by the displacement of cash and checks as payment methods. Indeed, some central banks and governments are strongly supporting the replacement of cash, both to gain the efficiencies provided by electronic payments and to address the tax avoidance issues associated with the “Black Economy.”

Increasing competition

As electronic payments have moved to the forefront, the traditional market participants, banks, have also been facing increased competition from innovative financial technology firms (FinTechs) focusing on niches within the payments value chain. Such firms have been enabled by advances in technology, including the ability to develop their systems in the cloud and with a green field that is not tied to a mainframe and old code.

In many countries, FinTechs have also benefitted from a favorable regulatory stance taken towards them as “up and coming” competitors—the same factors that are now facilitating market entry by neobanks, who are looking to compete directly with the incumbents.

To contend with these start-ups, traditional banks may need to transform their IT architecture, moving some applications to the cloud, offering competitive “micro-services” abstracted away from the old code/mainframe, and reconfiguring to enable faster partnering.

The recent arrival of open banking carries an inherent threat of commoditization for incumbent banks. This is because it can enable third parties to own the primary customer relationship, by allowing access to accounts from different providers via one single interface that is not necessarily owned by an incumbent bank.

It also potentially heightens competition by enabling more personalized comparisons between accounts held at different providers.

As a result, banks may move to more of a platform configuration.ⁱⁱⁱ Banks could deliver a range of third-party services on their platforms (including feeds from Facebook, Twitter and others), but will need to

co-locate infrastructure in the same data centers to provide seamless and instant delivery to the customer.

This paper looks at three key trends in the sections below.

	Trends	Implications
 <p>Real-time payments</p>	<ul style="list-style-type: none"> Connectivity required for real-time payment systems needs higher levels of resilience than legacy batch processing, to support transactions and fraud-prevention between payment participants and new overlay service providers Tokenization to replace authentication via account credentials 	<ul style="list-style-type: none"> This requirement will likely develop into meet-me points for the infrastructure supporting the ecosystem More entities will be required to deploy their own token vaults (democratization), but this will also drive the need for interoperability between parties
 <p>Regulation</p>	<ul style="list-style-type: none"> A growing number of regulators are mandating that personally identifiable information, encryption keys and payment related data be kept within the country 	<ul style="list-style-type: none"> Companies providing services in markets with these regulations will require an in-country data centre to deploy their servers and hardware security modules
 <p>Open Banking</p>	<ul style="list-style-type: none"> Banks are creating API gateways for third-party providers which have authorisation to access customer data 	<ul style="list-style-type: none"> At scale, banking API gateways will shift from public Internet to private application peering over private connectivity to reduce the risk of improper access and increase reliability and availability

Real-time Payments

To date, discussions about real-time payments have been dominated by the core functionality—speed, availability and rails on which money is moved, together with the challenges associated with their implementation. However, conversations are now shifting towards value-added products and services that an enhanced infrastructure will allow financial institutions (and others) to bring to market.

This is in the hope that these new consumer and commercial payments functionalities can create additional revenue streams, and help banks and third-party providers realize a return on their investment in the real-time payments system. As noted in a recent FIS survey for its “Flavours of Fast” white paper, it found that in projects across the world, two key questions remain: “What is the business case?” and “What are customers willing to pay for?”^{iv}

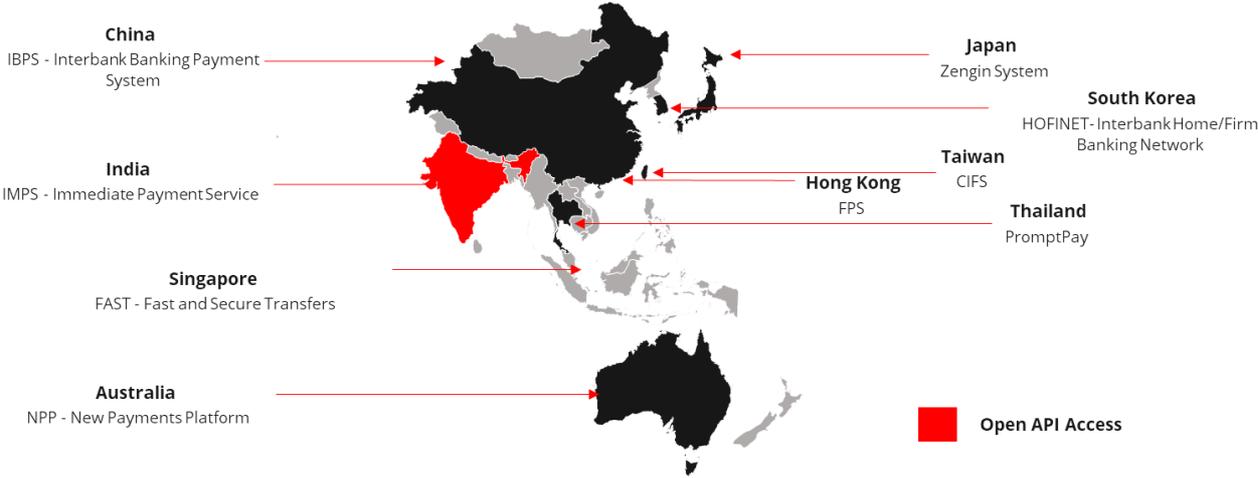
Initially, developments were focused on consumer payments (especially P2P); however, the business case remains elusive as consumers are reluctant to pay to make a payment.

This has shifted the focus to businesses and merchants, where we are now seeing a proliferation of solutions to enable seamless and contextual payments—including the advent of “request to pay” functionality, with the associated document attached.

However, these contextual payments require additional data to be passed and analyzed by the systems, placing higher demands on the underlying technology infrastructure than previously required. Co-located, interconnected systems with low end-to-end latency are critical in completing the secure transfer of funds within a matter of seconds.

In addition, real time payments must be supported by highly available public internet with sufficient bandwidth to withstand DDoS attacks for large numbers of low volume connections from diverse sources. Despite these developments, the adoption of real-time payments by consumers in many markets suggests that only through open access and application programming interfaces (APIs) will real-time payments become widely adopted.

Real-time payment developments in Asia-Pacific



A notable example of the importance of this is the rollout of India’s Universal Payments Interface (UPI), which provides real-time access by allowing direct payments integration with external business applications, for both “push and pull” payments across a wide range of channels.

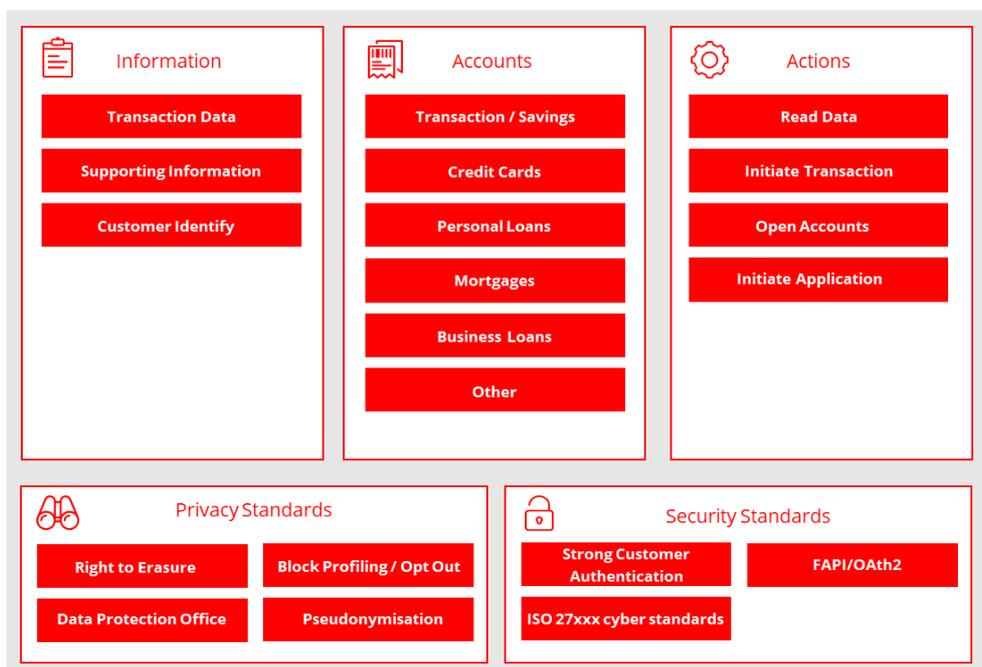
However, the true test of these solutions will be twofold: Will they become the preferred method of payment for consumers and merchants over traditional card-based payments? And can they compete on a cost-basis with alternative payment schemes that seek to disintermediate the banks?

Regulation

Concurrently, regulatory changes and technology advances have been driving what some think will bring about a revolution in retail banking—open banking and greater choice. Regulators are seeking to capture the economic efficiencies embedded in electronic transactions, and to drive increased competition and innovation by opening up customer banking data to third parties. This is taking place at two levels:

- Across the EU, in the form of the revised Payment Services Directive (PSD2);
- In the UK, with the Competition and Markets Authority (CMA) mandating the UK’s largest banks to adopt the Open Banking Standard;
- In Australia, with the Consumer Data Right that is to be applied to a number of industries but starting with banking.

In Europe, the PSD2 requires banks to expose payments data and to provide the ability to transact (known as “read” and “write” privileges) to third parties. The legislation came into effect in January 2018, with full operational compliance to technical standards required by August 2019. At the same time, the General Data Protection Regulation (GDPR), which took effect in May 2018, enumerates the rights and obligations of banks (and other organisations) as the custodians, and consumers as the owners, of their data. The high-level effect of these two regulations is summarized below:



Adapted from PwC - Banking Matters – Opening Banking

Efficiency and privacy concerns

Regulators are also continuing to scrutinise and assert control around the costs associated with electronic payments, to ensure that their widespread adoption is not hindered (and related efficiencies gained), and there is transparency in pricing (with consumers and businesses able to make valid comparisons). The most obvious examples of this are regulatory interventions focused on the interchange fees charged by the major international card schemes, which began in 2003 in Australia with the central bank publishing standards limiting the weighted average credit card interchange to 0.55% (since lowered to 0.50%).

At the same time, data privacy concerns have led regulators in some jurisdictions, particularly in Asia-Pacific, to require that payment data stays “in country”. One global payments player noted that the need to process in-market has impacted its infrastructure approach, moving to operate the same system and architecture everywhere through the use of interconnected data centers situated in key geographies. As well as meeting regulatory conditions, being closer to the users has improved transaction speeds.

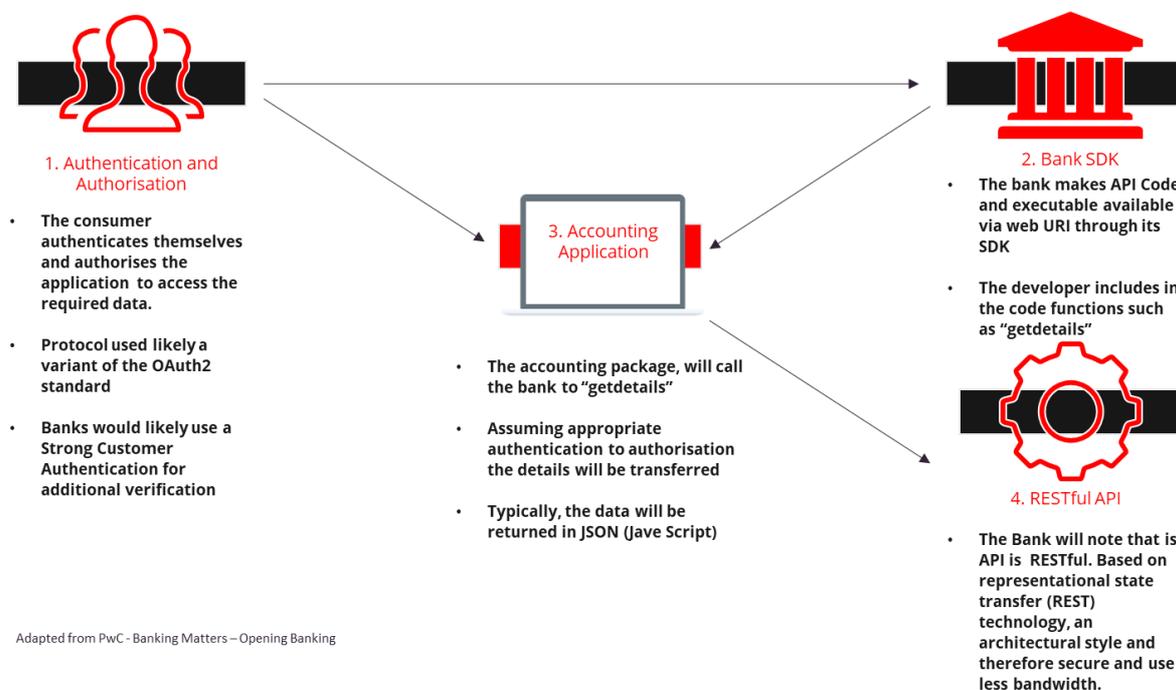
Open Banking

As with real-time payments, open banking will facilitate the creation of new products and services, driven by regulation and enabled by advances in technology. While this will continue the commoditization of transaction banking, it also brings new opportunities to add value through data.

In most cases, participants will use a core set of concepts and tools to bring this about, including APIs, authentication protocols, a hierarchy of permissions and data architecture. The UK’s Open Banking Working Group (OBWG) recommended an Open Banking Standard using APIs, which should allow:

- Open access to open data—i.e., allowing anyone, from third parties to individual customers, to access publicly available data, such as pricing and product information;
- Controlled access to shared data—i.e. granting regulated third-party access to customer-account transaction data, provided that the relevant customer consent has been given.

For example, imagine an accounting application needs access to account information from a bank:



While the value proposition of open banking is clear, it is difficult to identify extreme use cases, especially for banking executives hoping to recover the cost of developing this capability (including the cost of cannibalized revenue). In an extreme scenario, some banks could be relegated to the background as merely infrastructure providers, while other entities—for example FinTechs, tech giants and price-comparison websites (PCWs)—could come to own the customer relationship.

Alternatively, banks themselves could use open data feeds for their own benefit, for example, to:

- Provide multi-banked customers with a single, holistic dashboard of all their financial affairs, regardless of the provider;
- Conduct credit assessment and serviceability analyses by reviewing the applicant’s actual income and outgoings from their existing banking facilities, wherever they might be held.

However, as the data set created as a result of open banking grows in volume, market economics and business models will demand efficient and secure methods to access this data. Therefore, banks need to pre-position their infrastructure at the heart of the ecosystem, where they can directly interconnect to the highest number of data sources, service providers, networks, clouds and other key elements of the digital payments supply chain. This reduces the cost of transferring large volumes of data (safely and at low latency) for competitive real-time decisioning and the deployment of new data-driven services.

Asia Pacific Region—Focus on Australia and Singapore

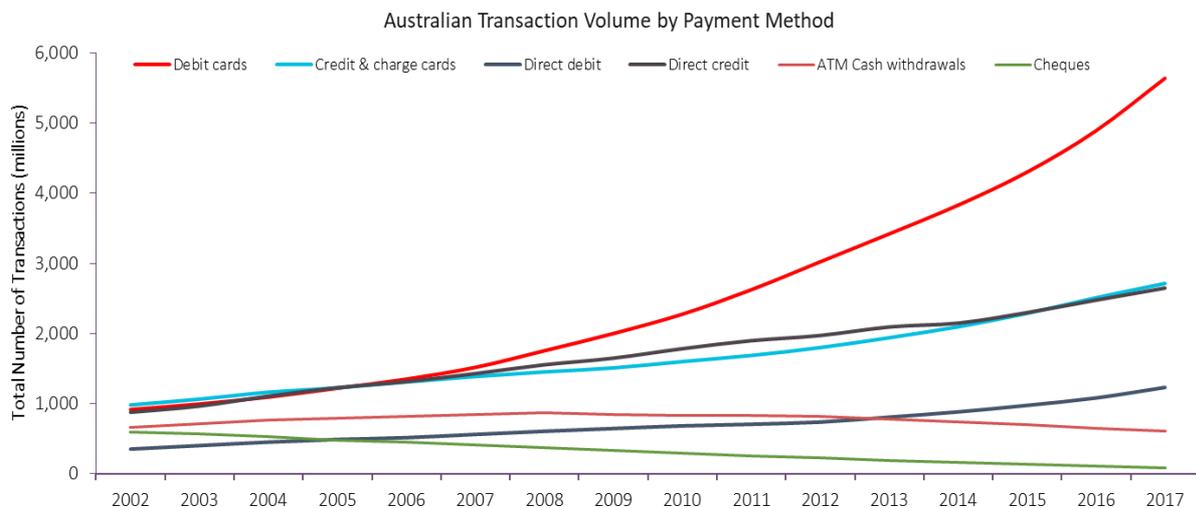
As elsewhere in the world, each country in the Asia Pacific region has a different mix of payment systems, primarily for historical and cultural reasons, with many having their own domestic debit card schemes. That said, all countries are experiencing the growth of digital payments and a decline in the market share of cash. Indeed, the city states of Singapore and Hong Kong are similar in many ways, being major financial centers both focused on driving FinTech acceleration and cashless payments.

To provide a more definitive picture, we will focus on two specific markets, Australia and Singapore.

Australia

The latest payment research conducted by the Reserve Bank of Australia (RBA), shows continued preference for electronic payment methods over paper-based methods, such as cash (now below 45% of all transactions) and checks (almost extinct), with consumers making over 450 electronic payments per person from January to June 2017. This is driven largely by a highly banked and card carrying population, with less than two percent of Australian adults now being without a bank account.^v

In 2017, credit and debit cards combined were the most frequently used methods of payment, accounting for just over half of the total number of transactions—around 7.8 billion card payments worth US\$411.8 billion (A\$571 billion). This is an increase of approximately 13 % and 6%, respectively, from the previous year. Growth in the number and value of debit card transactions continues to outpace growth in credit card transactions, with the younger demographic eschewing credit cards.



Source: RBA Data, The Initiatives Group market research and estimates

While the number and value of card payments continue to grow, the average value of each of these transactions has fallen. This trend can be explained by consumers' preference for contactless card transactions (Australia is leading the world in open-loop contactless transactions per adult) and a greater willingness of merchants to accept cards for low-value transaction (partly driven by the lower cost of card acceptance, due to regulation by the RBA). Indeed, Visa states that over 90 percent of face-to-face payments on a Visa card are now made using the contactless interface, with Australia also permitting "Tap & PIN" for transactions over its US\$72.12 (A\$100) "Tap & Go" limit.

This trend towards lower average value, but significantly increased volumes, puts pressure on the payment companies to scale their infrastructure and many are starting to leverage cloud service providers

for lower cost Infrastructure as a Service. Most are adopting a hybrid approach by co-locating their own security and control infrastructure in co-location facilities that can provide direct multi-cloud access.

Changes in Australia's payments mix

The majority of debit card payments are now made through the international card schemes (MasterCard and Visa), while the eftpos (Australia's domestic debit card scheme) share of transactions has been steadily declining. The shift can be explained in part by the strong adoption of contactless transactions, which eftpos has not offered until recently.

This is in line with a global trend of domestic debit card schemes coming under pressure from their lack of functionality (often missing online and/or cross-border payment capability) and/or being outspent on issuer incentives and innovation.

The past few years have seen a significant rollout of e-wallets in Australia, with the majority of financial institutions now offering this functionality, either through OEM wallets, such as Apple Pay and Google Pay, or by integrating this functionality into their own mobile banking applications. Despite this, Australian consumers have been slow to adopt this technology, with estimates of e-wallet transactions accounting for less than 1% of the value of total contactless transactions—consumers currently see little value added in mobile over card.

A key development for commercial payments in Australia is the New Payments Platform (NPP). The NPP is an industry-led, regulator-backed program to deliver real-time, data-rich payments. The platform has the potential to both create new business opportunities and disrupt some of the current payment offerings. For example, in the long run, its Request To Pay functionality could also become an alternative to card and direct debit transactions—offering lower transaction costs and real-time settlement, with no chargeback regime (chargebacks being an inconvenience for online merchants).

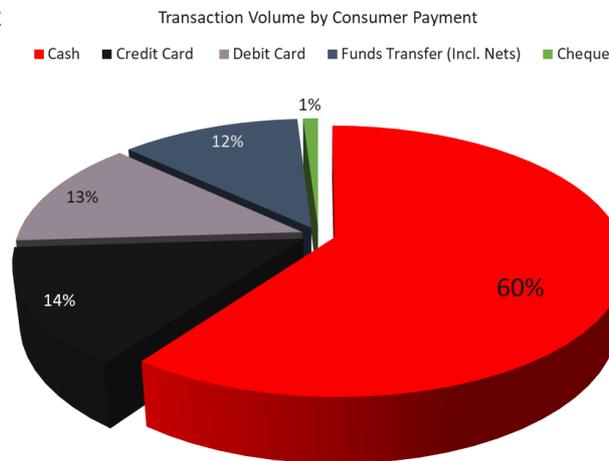
NPP can also create new offerings in the payments environment by leveraging the ability for rich data to be transmitted along with the value transfer itself. For example, processes such as reconciliation could be further automated, and insights could be used to provide more targeted offerings. Some verticals, such as health, superannuation and others, could develop customized offerings through the NPP layered infrastructure by developing bespoke “overlay services.”

Singapore

Consumer payments in Singapore are somewhat unique amongst highly developed economies, with consumers still relying quite heavily on cash. Research conducted by the Monetary Authority of Singapore (MAS), suggests that approximately 60% of the 2.2 billion consumer transactions per year are made in cash. This is reflected in consumers having made only about 200 electronic payments per person, per year, in the 2016/17 financial year.

Debit and credit cards combined account for 25 percent of consumer payments. These numbers include Stored Value Facilities (SVFs), including closed-looped, pre-paid cards predominately used in transportation (for example EZ-Link). However, the figures exclude non-card mobile payments, such as Alipay. While mobile payment volumes in Singapore remain relatively low, it is a growing market with a reported 42% increase in use between 2013 and 2016, with the Government looking to see more widespread adoption—especially in low-value transactions.

Singapore's Payments Mix



Source – KPMG - Singapore Payments Roadmap

Government keeps pushing innovation in Singapore

Moreover, mobile payment growth is expected to increase in Singapore. MAS recently launched a single standardized QR (Quick Response) code for electronic payments, likely to expand merchant acceptance.

Interestingly, Singapore is one of the few markets in Asia that has embraced both QR codes and NFC contactless payments. Singapore Quick Response Code (SGQR) will be adopted by 27 separate payment schemes, including key domestic systems such as NETS (the Singapore domestic debit card network), PayNow (bill payments) and FAST (real-time payments).

Singapore's domestic payment networks are regarded as some of the most successful in the world. This has been achieved through the continued development of innovative products, tailored to the specific needs of Singapore's consumers and businesses.

A notable success using this approach is in Singapore's motoring sector, where it has achieved a cash-free ecosystem through a tailored offering, developed in close collaboration with the Singapore Land Transport Authority. This has led to one in three Singaporeans using NETS every day to pay for purchases (including tolls and parking), amounting to over US\$17 billion (SG\$24 billion) in value processed in 2016.

Another important development is the government announcement that it will open the interbank payment gates to FinTech firms by 2019. This will bring non-bank e-wallets into the national electronic payment networks, and also spur digital innovation. Singapore has already formed a Direct FAST industry working group, which includes banks, non-banks and the MAS, to develop business and technical requirements for non-banks to connect directly to FAST.

More players means more connectivity

The linkage of so many new players into the backbone payment systems requires a turnkey setup, which again turns the spotlight on data center co-location, where private direct connects between various payment players can be made quickly and securely. Traditional methods such as an MPLS network can take weeks or even months to turn on connections to new partners, whereas direct connection within the same data center can occur overnight, or in minutes, in the case of virtual connections on a cloud exchange. Moreover, direct interconnections that replace point-to-point network connections are not metered, therefore flattening bandwidth cost trajectories. This becomes increasingly important as data volumes rise.

Because of this, the industry is seeing a shift toward direct interconnection at co-location facilities that are rich in payment system companies and cloud service providers, where physical and virtual

interconnections to partners are increasingly quick and simple. One global payments provider noted that new direct connects within their co-location facility took 24 hours or less, whereas external links took “days if not weeks.”

Focus on the UK & EuroZone

EuroZone

In terms of preferred payment methods, European consumers are increasingly divided. As research by Boston Consulting Group in 2016 shows, while consumers in Sweden, Finland and Norway make over 450 electronic payments per person, per year, those in Spain, Italy, Austria and Portugal make less than half that amount. Moreover, this divide increased further between 2011 and 2016. Nonetheless, the total electronic payments volume in Europe (including the eurozone) grew by 6.5% in 2016.^{vi}

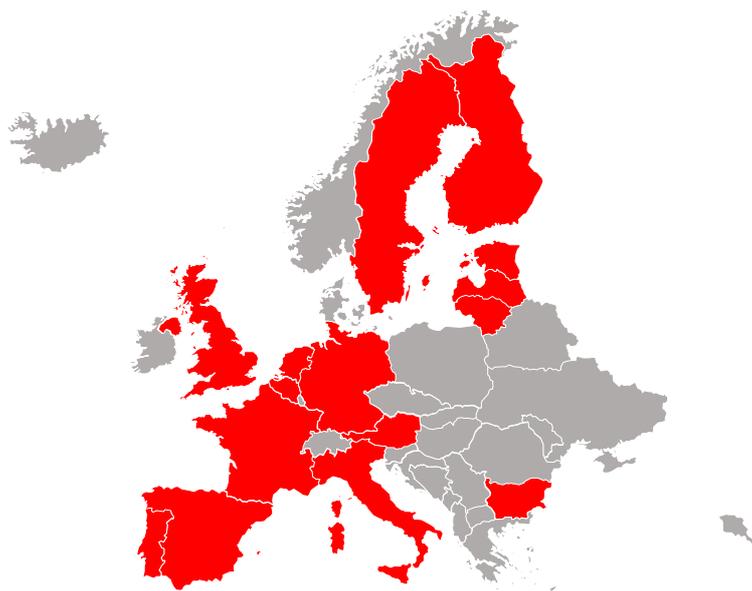
This growth in electronic payments is likely to continue (if not accelerate) with the combined impact of the second Payment Service Directive (PSD2) and the launch of SEPA Instant Credit Transfer (SCT Inst).

Additionally, PSD2, which as previously noted came into effect in January 2018, will lower the barriers to entry for third-party providers, such as FinTechs.

In conjunction with PSD2, the Euro Retail Payments Board identified the need for a pan-European Euro-denominated instant payment solution on the back of several European countries developing their own real-time payment approach. Without one there was the risk that these national schemes would have stopped at national borders, creating a fragmented payment landscape across Europe.

The solution derived was a voluntary real-time payment scheme for low-value transactions up to US\$16,898 (€15,000) currently, however participants can agree to increase this amount through bilaterals. To date, 1,098 payment providers across 17 markets (of the 34 SEPA countries and territories) have joined the scheme. According to the Europe Payment Council, this accounts for approximately 26% of the players in the market.

The 17 markets where SCT Inst. is currently live:



Combined, these developments provide an opportunity for FinTech and other nonbank participants to develop overlay services through direct access to instant payment infrastructures, particularly in the

eurozone’s developing markets. This is supported by Visa’s 2016 Digital Payments Study, which suggested that consumers in markets such as Romania and Turkey are embracing digital payments and “leapfrogging” traditional electronic payment methods.

However, PSD2 stops short of stipulating common API standards. This means that individual banks may make their data available through different technical standards. This may create an additional layer of complexity for account aggregation tools—complexity that the Open Banking Standard will try to mitigate in the UK. However, in other industries, such as electronic stock and bond trading, even when there were common messaging standards there were still variances in implementation, leading to the appearance of aggregators who could normalize access.

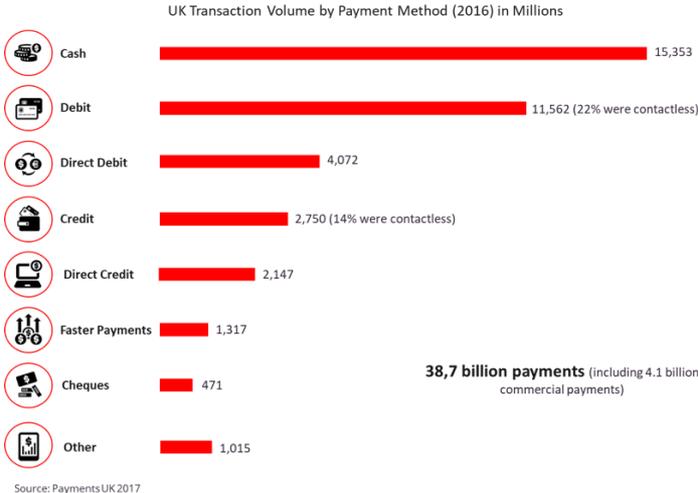
The payments industry is already seeing service providers who are offering APIs that will try to abstract the variations across the different participants. In addition to resolving different technical standards, the service providers providing these normalization capabilities will likely require robust connectivity to all of the payments platforms with which they are communicating, at high speeds.

United Kingdom

The UK is a market in transition. Research by Boston Consulting Group in 2016 shows that UK consumers make approximately 300 electronic payments per person per year, and this has increased by 8.5% annually since 2011. This growth in electronic payments has largely been driven by the increased adoption of contactless payments. In fact, the popularity of contactless has led Payments UK to bring forward the predicted date when debit cards will overtake cash as the most frequently used payment method in the UK to this year—three years ahead of its prior forecast.

Despite this growth in electronic payments, there were still 15.4 billion cash payments made during 2016. While this reflected an ongoing decline in cash usage in the UK, cash still remained the most frequently used payment method, amounting to nearly 40% of the total. And while cash payment volumes continued to decline during 2016, there were still 2.7 million consumers who relied mainly on cash to manage their day-to-day spending.

Debit card payments continued to grow in 2016, increasing by 14% over the year to 11.6 billion payments. There were 2.8 billion payments made using credit cards in 2016, an increase of 9 percent compared with the previous year. In total there were just under 2.9 billion contactless payments made in the UK during 2016, but this was more than 2.7 times the volume in 2015. By the end of 2017, 70% of debit cards and 51% of credit cards in the UK had contactless functionality.



Real-time payments growing in the UK

Payments processed via the Faster Payments service also grew, with 2016 seeing the number of real-time payments increased to 1.3 billion, an increase of 16%. The growth rate is expected to increase with the implementation of both Open Banking and PSD2. Among other things, Open Banking raises the potential for services to be launched that would allow consumers to pay for their online shopping using account-to-account payments at the online checkout, rather than paying using a card or PayPal (or similar service).

The UK Faster Payment service is currently looking for a service provider to create the next generation real-time payments platform. Not only will it be important whom they choose, but where they choose to co-locate the infrastructure. The Faster Payment service requirements for the new platform envision a much broader ecosystem of participants. They may want to look to the success of exchanges in the capital markets that embraced co-location for their matching engines and positioned open access adjacent to those platforms in third-party facilities, which did not compete with the providers of the services.

However, currently Bacs (the legacy ACH in the UK) Direct Credits are still the primary method of payment for businesses and government, where the value and timing of the payment are known in advance, due to the significantly lower cost of Bacs processing. As a result, Bacs Direct Credits overwhelmingly remained the most common method for organizations to make payments during 2016. For example, over nine in ten employees are paid by Bacs Direct Credit. The government also uses this service to pay nearly all recipients of state benefits and pensions.

“The future of real-time payments will let your fridge order and pay for your weekly essentials when they run out, and your home will sell energy back to the grid when you’re not in. This ‘economy of things’ will transform the commercial landscape with new behaviors, new expectations and new business models that change the way we buy, provision and use an emerging generation of products and services.

“Monetizing these opportunities will require increasingly open access to high-volume, high-resilience real-time payment services. Having pioneered and scaled Faster Payments, the UK’s payments industry must now look forward to a brave and bold second act—building on its success to enable a new wave of disruptive businesses.”

Philip Clarke, Founding Partner of Hunch

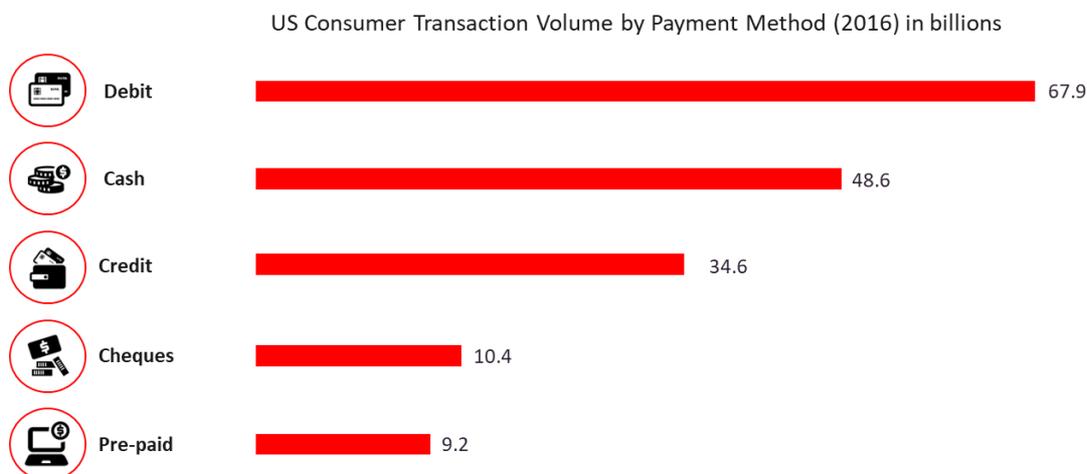
The Americas—Focus on the U.S. and Brazil

United States

The United States displays somewhat polarized payments activity, having some of the leading-edge payments players while the use of cash and checks still remains significant. However, consumers each make just over 400 electronic payments per year on average, and like many developed markets, growth in the number of electronic payments has primarily been driven by card payments displacing cash.

But what makes the U.S. more unique is the existence of almost 300 million general-purpose pre-paid cards (both reloadable, private label and one-time use) that were in circulation in 2016. The number of purchases using these cards has grown 26 percent on average annually since 2012. But in the overall

number of payment transactions, pre-paid is immaterial when compared to the volumes generated in debit and credit cards.



Source: Nilson Report and The Federal Reserve Payment Study 2017

Additionally, credit card payments registered their highest growth rate in the last 5 years in 2016, up by over 10% year-over-year, against an average of 8% between 2012 to 2015. This has been driven in part by competition in the credit card segment: issuer spending on rewards is approaching record levels, FinTechs are vying for market share, and large merchants are looking to extract more revenue from co-branded deals. Unlike in Europe and Australia, credit card issuers are not fettered by tight interchange regulations, and therefore have a revenue stream allowing them to waive annual fees and provide rich rewards programs for their cardholders.

Growth in debit card payments in the U.S. was more subdued than in some other countries, increasing just 6% in 2016, down from an average of 7.2% from 2012 to 2015.

High levels of card-not-present activity in the U.S.

Interestingly, card-not-present (CNP) transactions represented 22.0% of all types of card payments, up from an estimated 20.7% in 2015, and at a much higher proportion than seen in other countries. However, by value, CNP transactions represented a much larger 44% of all card payment value, indicating the significantly higher average transaction value of CNP. This is indicative of the massive growth in online shopping in the U.S., with the growth of Amazon being just one example.

Online shopping, with its one-click checkout (consumers expect ease and speed), requires security and connectivity to safely service the consumer within their expected timeframe—studies have shown that exceeding the consumer’s expected time to completion (which varies by individual) can significantly raise rates of “drop out.” The co-location of financial services and payments providers in the same data centers as major online merchants delivers the benefits of speed and security, and has seen major banks and major merchants come together in key city locales as way to create a seamless digital supply chain.

A Paysafe research piece, “Lost in Transaction: Payment Trends 2018,” suggests that the high CNP activity can in part be explained by the U.S. having been slow to see the benefits of contactless payments, which has spurred the growth of card-present transactions (eroding the share of cash) in other markets, such as Australia, Canada and the UK. Contactless touch pads are still being rolled out to merchants in the U.S. and are currently less widely available to shoppers, with many consumers having yet to experience those benefits at all. For example, last year 54% of UK consumers had used contactless in the past month while only 3% of U.S. consumers had used contactless as a payment method in the same period.

U.S. playing catch-up on real-time payments

Another area where the U.S. market has been noticeably behind others, has been in the adoption of real-time payments solutions. This is likely due to a number of factors, including the highly fragmented banking environment and the lack of a centralised regulatory system to lead efforts, as was the case in the UK, Singapore, Europe and Australia. However, The Clearing House (TCH), a banking association and payments company, has recently launched its own real-time payment initiative.

This new real-time payment system is being developed through the collaborative efforts of TCH's 25 owner banks and Vocalink, a payment infrastructure company now owned by MasterCard. Vocalink has already driven the deployment of real-time payments systems in several countries, including the UK, Singapore and Thailand. TCH notes that the launch of real time payments would mark the first new core payment system in the U.S. for more than 40 years.

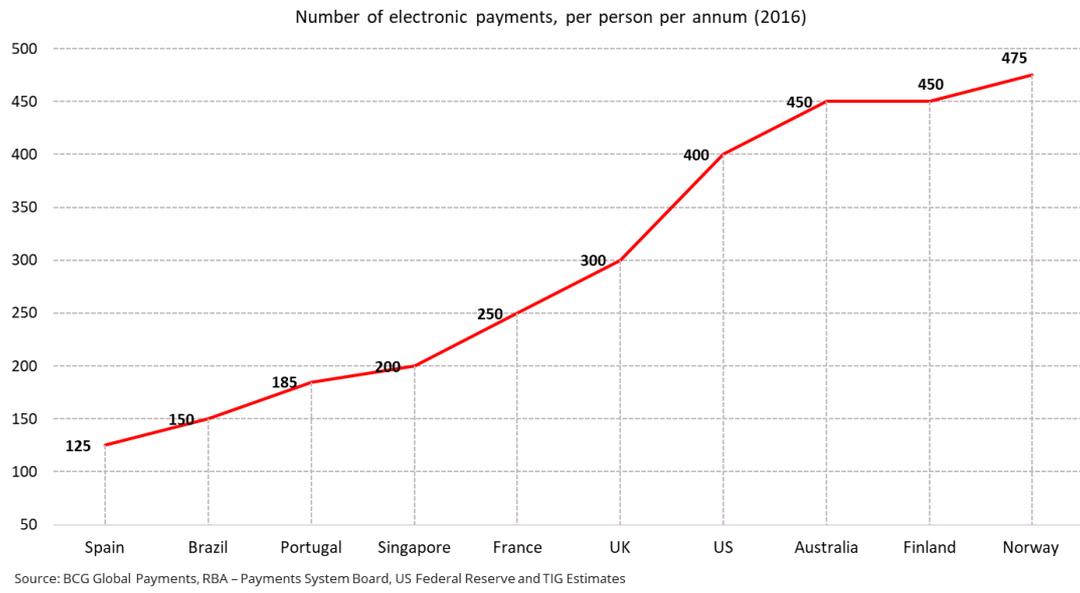
Clearly, a lot has changed in the last four decades, and sites where multiple banks have co-located their infrastructure now exist, making this the ideal place for the new core payment system to meet and deliver services. This is similar to what Amazon, Microsoft, Google, Oracle and IBM have done with their cloud services.

However, in the U.S., the gap in some of the core payment systems has been filled by FinTech players, such as Venmo (a PayPal company) and SquareCash in the consumer person-to-person (P2P) transfer market. According to a Federal Reserve Payments Study, this led to over 70% growth in P2P mobile payments in 2016, both in terms of value and volume. This subsequently caused a consortium of US banks (including Bank of America, Capital One, Chase and Wells Fargo) to develop Zelle, which allows people to send money instantly through the mobile applications of the participating banks. In order for Zelle to work across a consortium of banks, the banks are securely sharing account directories primarily through Early Warning Services. As more banks participate and the transaction volumes increase, Early Warning Services should perhaps look to what Amazon has done with AWS Direct Connect or Microsoft with Azure Express route, and adopt meet-me locations where the banks can connect. A seemingly large opportunity exists in moving these P2P networks into the B2C space to challenge the card schemes.

Brazil

Annually, Brazilians make approximately 150 electronic payments per person per year (significantly below the other countries considered in this report). The adoption of electronic payments is being hampered by the 55 million population of unbanked adults, representing nearly 30% of the population of Brazil. Despite this, payment cards are well established within the market, with approximately 300 million debit cards and nearly 150 million credit cards issued—accounting for approximately 40% of the total number of electronic transactions.

Datamonitor research in 2017 suggests that, while international card networks cards are the most popular method of payment, consumers also widely use alternative payment methods such as Boleto Bancário (used for bill and online payments) and PayPal. In addition, according to Worldpay's findings, the popularity of e-wallets is expected to double over the next five years, increasing from 15% to 31% of e-commerce by 2021 in Brazil.



Additionally, installment payments for consumers are very common in Brazil. Adyen (a leading payment service provider) reports that these types of payments account for as much as 80% of online sales value. These installment payments are typically used in merchant categories with a high average ticket value, such as airlines. Frequently, these are interest-free for the buyer and are collected month-by-month by the merchant (ranging from 2 to 12 months). Usually businesses are charged an “anticipation fee” by the acquirer or service provider for setting these up.

In 2017, in-app payments represented 27.3% of all online purchases and are forecast to increase by 37% this year, according to local research firm Ebit. In addition, PayPal’s research suggests that over 80% of services in Brazil are now purchased via smartphones. Wanting to capitalize on this trend, PayPal has been investing in integrating its online payment service to Brazilian brands that have a strong mobile presence. Examples include the partnership with one of the four local mobile operators, Claro and Shell, where users can make in-app purchases using PayPal.

Latin America is one of the world’s fastest growing markets for FinTechs. This growth is spurred by governments supporting FinTechs in the region, to the point where Mexico could soon become the first country in the Americas to adopt specific regulations for the sector. Brazil is no exception and is home to the largest number of FinTech startups in the region (with 244 FinTech firms in 2017) according to EY research.

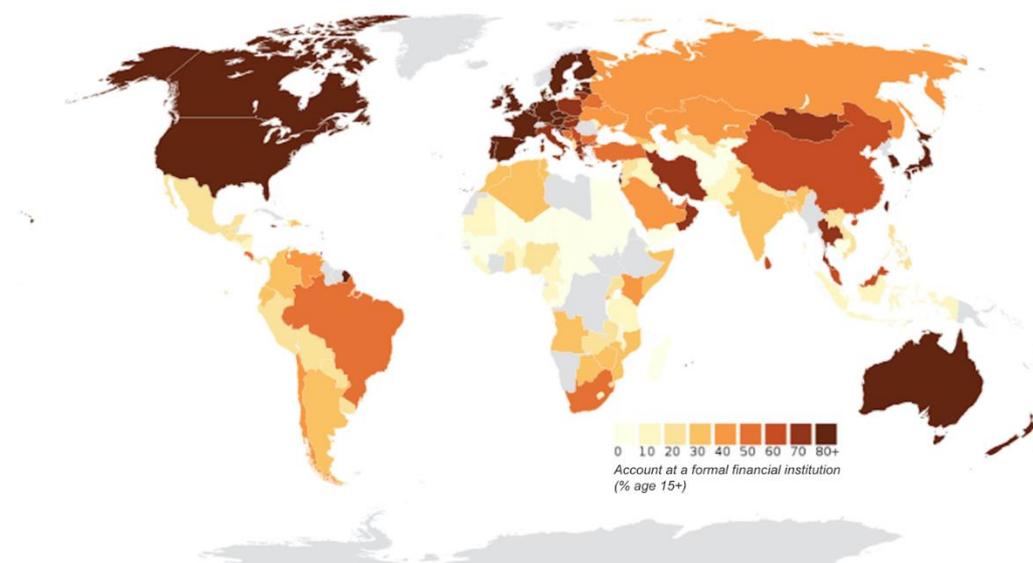
Furthermore, market studies suggest that 40% of Brazil’s digitally active consumers use two or more FinTech services, demonstrating the market’s eagerness to embrace digital banking and electronic payments. To further stimulate FinTech growth, Brazil’s Central Bank has enacted its first regulations for FinTechs, authorizing two types of FinTechs - Peer-to-Peer Lending (SEP) and Direct Credit to Borrowers (SCD). It aims to increase competition in loans, in a country with notoriously high consumer interest rates.

With FinTechs needing to connect and integrate with the banking system, where the consumer’s funds are situated, the connectivity, security and speed offered by co-location in data centers used by the banks makes perfect sense. Brazil is a challenging market for IT equipment due to tariffs, time delays, etc., so payment providers need a partner who can supply managed services and hardware in-country.

More Banked, More Electronic, More Connected

As the global economy grows and the proportion of the world's population engaging in electronic financial transactions increases (both those with bank accounts and those with a phone or prepaid card as their transaction account), the requirements for security, speed and convenience around those payments will only increase.

Proportion of the Population with a Bank Account



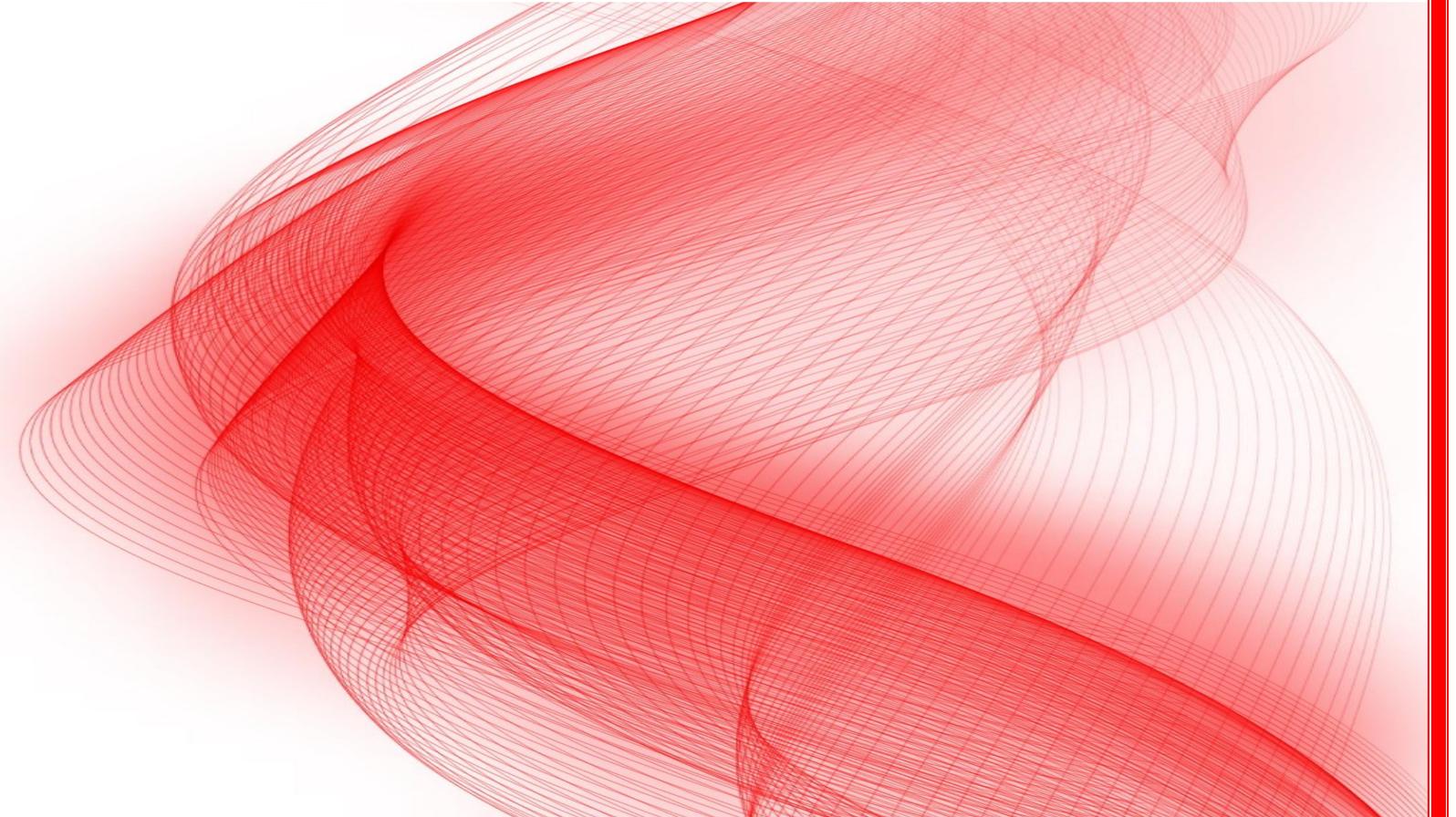
Source: Mapping the Invisible Market, Center for Financial Inclusion, 2015 data

What's Next for the Digital Payments Ecosystem?

Evolution in the digital payments ecosystem continues to accelerate, which increasingly challenges existing business models as well as the infrastructure that supports them. Currently the various rails on which money is moved are not only distinct in messaging formats and protocols, but often the infrastructure that supports them is distinct. Moreover, these messages and rails are purpose built for just passing the details of the payment, and there is often no room for additional data that can create value around the transaction. Open APIs are going to change this model for payments.

As a result of being able to use open APIs, participants in the payments ecosystem will begin deploying payment hubs that not only service current existing rails in a combined environment, but will also be capable of supporting new networks (e.g., blockchain-based) that compete with those rails. Additionally, open APIs will drive more overlay services that allow participants to create new value in the transaction, aside from just moving the money. These overlay services will depend upon additional data being passed along with the traditional payment details.

These trends are going to drive payment hubs into locations where payment providers can leverage application peering over private networks to connect with their partners, exchange data and handle payments traffic in ways that are not possible with today's limited messaging protocols and architecture. It is therefore critical that payment companies begin with the end in mind, so that they can pre-position their deployments in a way that they are prepared for this future.



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The Initiatives Group is a specialist payments consultancy that helps participants across the payments sector to generate more value from their markets and customers. The consulting team at The Initiatives Group has advised participants in the payments market since the 1990s—including issuers, acquirers, third-party processors, technology providers and associations. We help solve many of the financial industry’s most significant issues, such as payments strategies, customer profitability and retention, credit and fraud risk, leveraging new technologies, and assessing new market and product opportunities.

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ⁱ https://www.ted.com/talks/geoffrey_west_the_surprising_math_of_cities_and_corporations

ⁱⁱ Capgemini, 2017 – World Payments Report

ⁱⁱⁱ <https://thefinancialbrand.com/60019/the-platformification-of-banking/>

^{iv} FIS, 2017 - Flavors of Fast

^v E.g. most welfare recipients are required to have a banking facility in order to receive Government payments

^{vi} Capgemini, 2017 – World Payments Report