





TABLE OF CONTENTS

Executive summary: Dawn of the open API economy	5
Part 1: Introduction and background - What impact will the open API economy have on retail and corporate banks? - Strategic response options for banks - Banks should proactively respond to the strategic challenge of the open API economy - Key operational challenges to succeeding in an open API economy Part 2: Approach Part 3: Detailed analysis and outcomes Evolution of the open API economy	6 7 7 8 9 10
 The development of the open API economy in Europe and the regulatory road ahead What are the key principles of PSD2? Could the UK define the regulatory and technical standards for all European banks under PSD2? 	10 11 12
Impact of the open API economy on banks' value chain - How will banks with predominantly retail and SME customers be impacted by the rise of the open API economy and related by the rise of the open API economy and related by Especial Section in the proof of the property of the open API economy and related by Especial Section in the proof of	14 14 15 15
 Key operational considerations for banks' strategic response 1. What is the right operating model to drive profitability in an open API economy? 2. How will your organization establish suitable security and permissions for all parties? 3. What data strategy will ensure maximum value is created for banks? 4. What are the appropriate service levels for performance of the banks' open APIs? 5. How will governance work to maintain open APIs among financial service players? 	22 22 23 23 23 23 24
Conclusion: What are the key takeaways for banks in this new open API economy?	26
Secondary research	26



Executive summary: Dawn of the open API economy

A new dawn for the financial industry is fast approaching with the advent of the open API economy. Bank regulators and politicians are looking to drive a better deal for customers by generating more competition, innovation, customer information sharing, transaction initiation, and payment mechanisms.

Their efforts, along with changing customer sentiment, are creating both threats and opportunities as the open API economy emerges. Banks have a clear strategic choice to make:

Operate either as a "white-label" service provider, delivering products and services for other banks and third-party providers (TPPs), or evolve into a trusted lifetime advisor to customers, operating at the epicenter of a new breed of customercentric banking models.

Retail banks are not alone in seeking to respond to the changing needs of customers. Corporate banks are facing declining satisfaction and increasing levels of churn among their corporate customers. Many corporate customers believe that shortcomings in the design and delivery of corporate banking services are impeding their business operations.

While increased competition and data aggregation among banks is leading to improvements in bank services, many corporate banking customers receive different bank services from multiple banks and, thus, are seeking better integration and harmonization. In light of these trends, the challenges and opportunities for delivering more customer-centric services are on the rise. The increased use of open APIs will enable both retail and corporate banks to better respond to the growing demands of their customers.

How can banks proactively respond to the strategic challenge of the open API economy? Here are a few recommendations based on timeframe:

- Short-term (0-12 months): Revisit business and technology strategies that seek to exploit future markets and revenue streams through emerging business models
- Medium-term (12-36 months): Actively seek to "test and learn" by exploring the use of new business models—leveraging both internal expertise and appropriate partnerships
- Long-term (post 36 months): Adapt business models and invest in new technologies and partnerships that drive new products and services, as well as provide a strong distribution channel to customers

The next 18 months for banks, particularly in Europe with the advent of Payment Services Directive 2 (PSD2) legislation, will be crucial in establishing the right operational and technical standards for open APIs and ensuring a framework within which all can operate.

This will inevitably raise important operational challenges for banks in terms of the following:

- 1. Implementing the right operating model to drive profitability
- 2. Establishing security and permissions among parties
- 3. Setting the right data strategy that will deliver maximum value
- 4. Providing appropriate service levels for performance of the APIs
- 5. Establishing appropriate governance among financial service players

Despite these strategic and operational challenges, as well as other regulatory and balance sheet imperatives, leading corporate and retail banks realize that the time to act is now. The rise of the open API economy is underway, and represents, not only a threat, but also a great opportunity to gain a competitive advantage in an increasingly complex and customer-centric marketplace.

Part 1: Introduction and background

Two key challenges banks will face in an open API economy are deciding how best to develop and distribute new products and services, as well as with whom to partner and for what purpose.

Change is inevitable as banks explore opportunities to gain competitive advantage by leveraging open APIs in their business models. This exploration is fuelled by increasing demands from customers, regulators and politicians to drive innovation and competition within financial services. For banks in Europe with retail and small and medium enterprise (SME) customers, the open API economy will likely develop (at least initially) out of the PSD2 legislation due to take effect in January 2018 within European Union (EU) member states.

For corporate banks not explicitly covered by PSD2 legislation, open APIs can address declining satisfaction and high churn among their corporate customers. In particular, many customers are frustrated with corporate banks' progress in seamlessly integrating their services into customers' increasingly digitized supply chains and harmonizing interface standards across banks. Not only do open APIs offer both sides a way through this standoff, but third-party services could be more easily accommodated and encouraged by corporate banks.

Financial institutions worldwide are keeping a watchful eye over open API developments in Europe and are likely to follow suit should European banks generate competitive advantage and new revenue streams by embracing the open API economy. Success in Europe is likely to spur customers, regulators and politicians in non-European countries to drive similar changes in an attempt to achieve the same benefits.

Many observers see the rise of an open API economy as game changing for the industry worldwide, and inevitably there will be winners and losers among banks as a result. Those that decide not to respond directly to the challenge and unlock the value of customer data will find it difficult to increase revenue and profitability in an ever more competitive customer-centric marketplace.

What impact will the open API economy have on retail and corporate banks?

Banks with retail and/or SME customer bases in Europe will be forced by PSD2 legislation to pursue one or both of the following courses of action:

1. Make customer transaction data held by banks available to authorized third-party service providers

PSD2 will force banks to share certain data they hold about customers with third-party providers known as account information service providers (AISPs). These AISPs will have access to customer data and, once authorized, will seek to use it for commercial purposes. The intention is to provide AISPs and, indeed, other banks and financial institutions with a defined level of data to encourage competition, increase product innovation and improve customer service. Banks can seek to respond to this challenge on their own or partner as they aim to monetize customer data in new ways.

2. Establish a new service for customer payments to be processed and charged

PSD2 allows third-party payment initiation service providers (PISPs) to provide customers with an alternative payment mechanism linked directly to their bank accounts, which could result in the disintermediation of existing card networks and their associated merchant service fees. This is good news for merchants because it should result in a reduction in absolute fees for customers who opt for a PISP-initiated payment rather than one made by debit or credit card. Moreover, merchants can benefit from the removal of liquidity risk within the transaction and the faster clearance of funds from the customer (assuming the underlying payment is made via a real-time payments rail).

If the merchant is of sufficient scale, such as Amazon or Carrefour, we may even see these players vertically integrate to become full-fledged PISPs, retaining 100 percent of the merchant service fee. In this scenario, banks' current revenue levels from payment transactions will be under threat as new entrants offer a PISP service. With the reduction in merchant service fees, customers should expect to see some of these savings passed on to them in the form of cash rebates or more generous loyalty schemes.

Corporate banks, while currently not tied to explicit regulatory timescales like PSD2, are likely to come under pressure to leverage open API technologies to address declining satisfaction and high churn among their corporate customers. As noted previously, many customers are frustrated with corporate banks' slow progress in harmonizing and seamlessly integrating their services into customers' increasingly digitized supply chains and harmonizing interface standards across banks. Open APIs offer not only a solution to these issues, but enable third-party services to be more easily accommodated and encouraged by corporate banks.

Strategic response options for banks

Most banks in Europe are currently thinking seriously about their strategic response to the rise of an open API economy. Notably, some banks have started to invest in FinTech platform solutions that protect revenue and maintain client proximity.

Banks face two key strategic choices for the future:

Operate either as a "white-label" service provider, delivering products and services for other banks and TPPs, or evolve into a trusted lifetime advisor to customers, operating at the epicenter of a new breed of customer-centric banking models.



"White-label" banking services provider

Trusted lifetime advisor to customers

However, some bank executives remain unconvinced the rise of the open API economy will really disrupt banking, even with legislation such as PSD2 coming into effect in the short to medium term. There is a degree of risk for banks taking this "wait and see" approach.

Banks should proactively respond to the strategic challenge of the open API economy

In terms of responding to the rise of the open API economy, CGI believes there are three key responses:

- **1. Refuse to change:** Accept regulator fines based on an assumption that the fines are less than expected revenue loss from new competitors enabled by PSD2 and the cost of transformation
- 2. Comply at a minimum: Keep current business models largely intact
- **3. Proactively respond:** Develop new customer driven products and services and/or create new distribution channels, either alone or by leveraging third-party providers

Leading banks are opting for the third response. For those banks that go with option three, the European Banking Association suggests there are four roles from which they can choose, each of which will change the traditional "producer-distributor" model banks employ today and are described below.

The four roles emerge as a result of using open API technology to interface between product development and distribution, which enables banks to decouple those two functions. The combination of decoupling and opening up bank APIs to third parties allows banks to play one of the following new roles:

- A. Integrator: Bank continues to control both production and distribution of products and services
- B. Producer: Bank focuses on development of products and services and distributes those via third parties
- C. Distributor: Bank focuses on distribution of products and services created by third parties
- **D. Platform:** Bank retains a stake in both production and distribution by acting as a market intermediary that facilitates activity among customers, producers and distributors in the market

In the coming years, bank platforms may become the norm for all financial services and products. Traditional banks that refuse to change their business model may be disintermediated from the customer and could become limited to the role of producer and, at best, play the role of back-office integrator for a number of "over the top" product and service providers in the marketplace (e.g., know your customer checks).

In light of these new roles and opportunities, we are recommending the following actions:

- Short-term (0–12 months): Consider your overall strategic direction in light of the rise of the open API economy:
 - » Refresh your business and technology strategy
 - » Determine your future markets and revenue streams based on existing/new products and services powered by an open API economy
 - » Define the pathway(s) to future operating model(s) based on specific products and services, recognizing the market will evolve over time

Note: The formation of potential new partnerships with FinTechs will enable banks to be more competitive in an increasingly customer-centric, insight-driven marketplace.

- **Medium-term (12–36 months):** Actively seek to "test and learn" using key strategies that leverage internal expertise and appropriate partnerships in the open API economy:
 - » Prepare for PSD2 regulation to be enacted (retail banks)
 - » Respond to emerging standards around open APIs
 - » Confirm your initial operating model, including your customer data approach
- Long-term (post-36 months): As the open API economy in banking continues to develop, consider the following:
 - » Respond to competitive threats and opportunities that emerge post-PSD2 implementation in the form of PISPs and/or AISPs in the marketplace (retail banks)
 - » Adapt your business model to protect revenue streams and customer relationships
 - » Build institutional capability to screen for new technologies and partners, ensuring you stay at the forefront of product and service development and distribution

Key operational challenges to succeeding in an open API economy

We are still in the early days of the open API economy within banking; however, time is of the essence for banks. The next 18 months, particularly in Europe with the advent of PSD2 legislation, will be crucial in establishing the correct operational and technical standards for open APIs and ensuring that banks and third parties have an agreed upon framework within which to operate.

This will inevitably raises important operational challenges for banks, including the following:

- 1. Implementing operating model changes to drive profitability
- 2. Establishing security and permissions among parties
- 3. Setting the right data strategy to ensure maximum value
- 4. Providing appropriate service levels for performance of the APIs
- 5. Establishing appropriate governance among financial service players

In light of the fact that banks will need to figure out how the open API economy will impact their business model and revenue streams, there is a distance to travel before banks can operationalize these changes.

Part 2: Approach

There are many papers, studies and blogs from government and industry bodies, leading consultancies and experts within the banking industry that explain the technical and operational concepts behind the open API economy and related legislation such as PSD2, as well as national initiatives such as the UK Open Banking Standard. It is not our intention to add any weight to this growing library of insight, but rather this white paper focuses on how retail and corporate banks and other financial institutions will be impacted by the rise of open API economy.

We want to take a look at the new competitive model for banking, enabled through open API technology and standards, and what banks can do now to address some of the challenges and opportunities.

We have structured this paper to include four key areas of focus for the reader:

- 1. Evolution of the open API economy
- 2. Impact of the open API economy on banks' value chains
- 3. Strategic responses from banks to the rise of the open API economy
- 4. Key operational considerations for banks

Our research was conducted by CGI banking and payment experts within Europe and North America through a series of structured interviews with financial services clients. We spoke with banking executives that are facing the need to develop and implement a compelling, executable strategy that addresses the challenges and opportunities presented by the open API economy in light of increasing regulatory and competitive pressures.



Part 3: Detailed analysis and outcomes

Evolution of the open API economy

An open API economy will accelerate competition and innovation within banking in Europe and beyond, creating new demands on banks' business strategies, pressure on future revenue streams, and challenges to profitability. Bank leaders of the future will have a clear focus on their end customers and markets and will collaborate with other organizations to accelerate their market position either through increased use of digital technology platforms and/or digital insight that supports their specific business strategies. An open API economy will enable the delivery of new products and services through collaboration among business units within a bank, among banks across the industry, and between banks and other related sectors of the economy, particularly technology and data businesses.

Currently, Europe is leading the way in thinking about an open API economy in banking, with the rest of the world looking closely at how innovation and competition will change in the European banking sector as a result of open API economy initiatives by regulators and politicians. If implementation of legislation in Europe, such as PSD2, proves successful, we are likely to see similar moves outside of Europe. In an increasingly globalized, connected and complex world, the open API economy in banking will truly only develop when non-EU countries and regions also jump on board.

This is not to say that financial services industries within non-European countries have been passive spectators to the open API economy. In North America, for example, collaborative partnerships are developing among traditional industry players, FinTechs and other organizations to drive innovation and differentiation in bank products and services.

Citi, for example, has leveraged the IBM cloud platform and industry APIs to enable third-party developers to create new products and services via its mobile banking platforms. Multiple card payment services providers, such as Braintree and PayPal, have APIs to support e-commerce sites that connect merchants to their services, and BBVA (a Spanish bank) has partnered with Dwolla (a bank transfer platform) to support real-time payments by leveraging the latter's FiSync API.

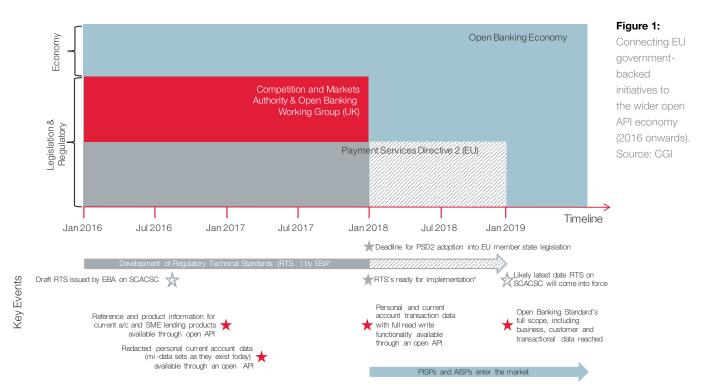
The open API economy should not be viewed in purely retail banking terms. Although much of the regulatory thrust is consumer targeted, the legislation will also include small business banking. After all, in many countries, the business banking sector is more concentrated with less innovation than its retail sibling.

For corporate banks, not explicitly included in PSD2 legislation, there is a clear demand from both corporates and the banks for the harmonization of interface standards, multi-bank portals and an improved customer experience. The majority of bank respondents in a recent joint GTNews and CGI survey saw APIs as a means to delivering such benefits.1

The development of the open API economy in Europe and the regulatory road ahead

Within Europe, there are currently two main strands of related activity occurring simultaneously, as seen in Figure 1 below. First, there is the adoption of PSD2 into EU member state legislation by mid-January 2018 and subsequent implementation by European banks based on a defined set of regulatory technical standards (RTS) defined by the European Banking Authority (EBA). Second, there are efforts by the Competition and Markets Authority (CMA) in the UK to force banks to openly share their customer data with trusted TPPs, which will be discussed later in this section.

By and large, all the timelines for delivery of various RTSs will be before the regulatory adoption deadline of January 2018. However, there is currently one major exception to this; the RTS on strong customer authentication and common and secure communication is intended to come into force some 18 months post adoption by the EU Commission. Given that the earliest date for adoption is January 2017, the earliest date this RTS could come into force would be September 2018—eight months after the deadline for PSD2. However, it would be vital to successful implementation of PSD2 by banks to have all RTSs in place prior to January 2018.



^{*} except standards on Strong Customer Authentication and Common and Secure Communication (SCACSC)

What are the key principles of PSD2?

Overall, at the heart of this legislative activity is a requirement for banks to allow TPPs to access customers' online payment services and account information in a regulated and secure way. The PSD2's Access to Account (XS2A) rule mandates banks or other account-holding payment service providers to facilitate secure access via APIs to their customer account data and payments initiation service if the account holder consents. To provide this access to accounts, banks also must enable customer and provider identity verification and authentication to control access.

In particular, under PSD2 proposals, access to customer accounts via APIs will enable the provision of entirely new types of services, including the following:

- **1. Third-party payment initiation (provided by PISPs):** Enables new payment solutions, as third parties will be able to initiate online payments to a beneficiary from the payer's bank account via an online portal
- 2. Third-party account access (provided by AISPs): Enables new services that use customer data, including transaction history and balances

Figures 2 and 3 below illustrate how the impact of PSD2 will change payment flows and interaction models for banks.

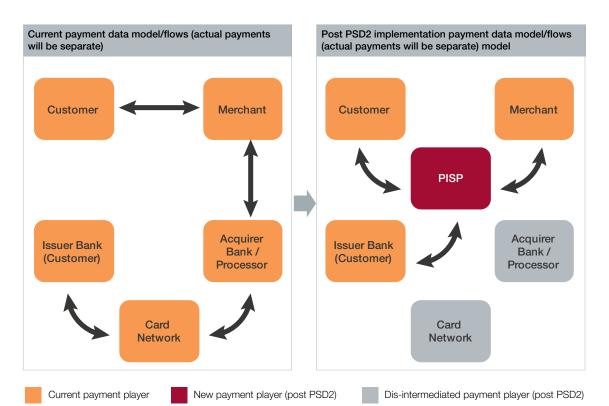


Figure 2: Impact of PSD2 for payment data model/flows (actual payments will be separate) and the rise of the PISP

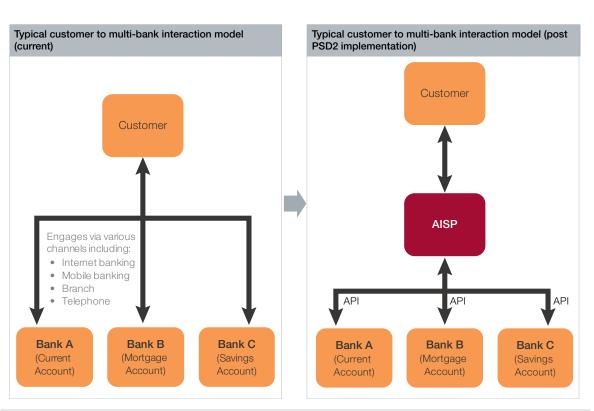


Figure 3: Impact of PSD2 on new financial service providers and the rise of the AISP

Could the UK define the regulatory and technical standards for all European banks under PSD2?

The Competition and Markets Authority (CMA) within the UK is separately pushing for the adoption of open API standards with respect to the sharing of customers' personal and current account transaction data by larger retail banks. The CMA wants banks in the UK to implement recommendations developed by the UK government-appointed Open Banking Working Group (OBWG) by no later than January 2018. The CMA believes the development of open APIs and the sharing of customer data with third parties will address a market that is

"still not as innovative or competitive as it needs to be." Moreover, it is possible the UK will influence what shape PSD2 takes from a standards and implementation perspective based on two main factors:

- **1. Wider remit:** The UK government and CMA have indicated that the open API banking standards they want retail banks in the UK to adopt may be farther reaching than PSD2.
- 2. More aggressive implementation timescales: The CMA has called for personal and current account transaction data with full read/write functionality held by large retail banks to be made available through an open API no later than January 2018. European counterparts may not be able to implement so quickly, given standards on strong customer authentication and common and secure communication may come into force only in late 2018.

At this point in time, the finer aspects of regulatory and technical standards are yet to be defined and agreed upon, both from a PSD2 and OBWG perspective in the UK.

It is noteworthy, at this point, to highlight that both initiatives are primarily focused on retail and SME customers. Although the potential benefits could support innovation in the corporate banking sector, this sector of banking will not be forced to adopt PSD2 legislation.

Impact of the open API economy on banks' value chain

Corporate and transaction banks should not ignore the impact and potential of open APIs. The emphasis on APIs in the retail and SME sectors by regulators, in particular, does not mean that open APIs cannot be used to drive competition and innovation within corporate and transaction banking.

However, many corporate banks currently are distracted by other regulatory and balance sheet imperatives. Others have embraced API technology (private or closed) to create bespoke and hybrid services for their clients. For example, in Germany, banks are using it to help private and corporate customers deal with tax and treasury issues. In the U.S., corporate banks are using it to deliver bespoke modular services (e.g., cash forecasting). In addition, corporate banks are offering finance aggregation tools across multiple geographies, banks and accounts based on a consolidated view of cash management made possible by API technology. It is anticipated that the rise of the open API economy in time will accelerate the move to real-time, open API-enabled financial aggregation tools.

Although from a geographic footprint and a business model perspective, corporate banking may be viewed as more complex than retail and SME banking that, in itself, is no reason to believe the open API economy isn't and won't be equally as important.

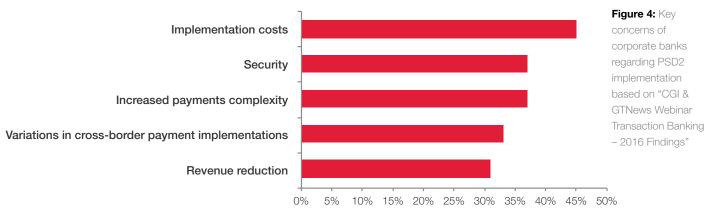
Corporate customers surveyed jointly by GTNews and CGI in 2016 indicated their impatience with banks' progress in improving their services and the true integration of banking into their businesses. Corporate customers showed they are ready to use non-bank services, albeit with caution, given the lack of focus from banks to address these core issues.³ Corporate customers see banking as a part of their supply chain and the efforts they have made to digitize needs to be mirrored by corporate banks. The stark reality of high customer churn and declining satisfaction is a loud warning bell for banks to speed up their own transformation.

Not only do open APIs offer both sides a way through this standoff, but TPP services could be more easily accommodated and encouraged by banks. The same survey highlighted corporates' desire for harmonization of bank interface standards, multi-bank portals, and an improved customer experience, which, with the exception of multi-bank portals, was echoed by banks.⁴ And, although banks had issues with APIs (seen through a PSD2 lens), as shown below, it is clear that both corporates and banks would benefit from the introduction of open APIs.

^{2 -} CMA, PSD2 and API: A solution for open banking, August 23, 2016, Finextra.

^{3 - &}quot;CGI & GTNews Webinar Transaction Banking - 2016 Findings," September 2016, CGI, slide 5.

^{4 - &}quot;CGI & GTNews Webinar Transaction Banking - 2016 Findings," September 2016, CGI, slide 12.



Given that corporate banks are increasingly regionalized and focused on specific products and services, and with the intensifying pressure on margins, it makes sense for corporate banks to connect into a wider ecosystem of TPPs that can offer complimentary products and services in regions where a corporate bank's client has a presence, but the bank may not (or may have a smaller presence).

This benefits not only the bank by providing access to new revenue streams through its partners, but also improves customer service by giving customers access to a wider range of complimentary products and services, creating a one-stop shop for the customer. For example, open APIs transmitting real-time data among financial institutions would enable corporate banks to connect trade financing, cash management and merchant acquisition with a broader range of services from partners, such as e-invoicing companies, inspection companies and tax authorities, in a much more integrated and seamless way than exists today.

Transaction banks also have an opportunity to leverage innovative payment solutions to drive value for their corporate customers. Helping corporates manage capital more efficiently to drive shareholder value will ultimately grow banks' own bottom line-and lead to the adoption of immediate payment services-first across Europe and then the wider world.

How will banks with predominantly retail and SME customers be impacted by the rise of the open API economy and related PSD2 legislation?

As discussed in the previous section, the key focus for legislation such as PSD2 and the wider move to an open API economy is competition and innovation in the retail and SME banking markets. These results may be more difficult to achieve in EU countries with hyper-regulated financial markets, such as France. However, incumbent banks in these countries (the six largest banks share 95 percent of the current account market share) will maintain their market positions, at least for now.

Merchants will be key for customers to benefit from PISP services

In regulating PISPs, PSD2 presents a simplified payments value chain in which the card network can be fully disintermediated; thus, potentially displacing various fee elements that constitute the merchant service charges (MSC) from the issuing banks, acquiring banks, processors and schemes. This is further bad news for the bottom lines of banks that act as issuers or acquirers in card transactions after the enactment of interchange fee regulation in Europe, although the magnitude of the impact from PSD2 will be largely determined by the adoption level of PISP services by customers.

Additionally, banks in certain European countries will be less exposed to the shift away from card transactions where there are currently low card transaction fees (e.g., France) or where other payment forms are traditionally preferred over cards (e.g., cash transactions in Germany).

Nevertheless, the forecast drop in revenues is significant. Accenture estimates that 27 percent (c. €2.2bn) and 9 percent (c. €740m) of potential retail payment fee value in the UK will be eroded by a cap on interchange fees and the rise of PISPs, respectively, by 2020.5

The merchant will be key in convincing customers to shift away from using cards to make payments, and customers may require an incentive to switch to an alternative form of payment from the relative security and convenience of paying by card. The merchant may have to offer a financial incentive in the form of reduced prices, special offers and/or enriched customer loyalty schemes to achieve this aim. The evidence does not look favourable for the customer though. In the U.S., merchants have saved c. \$10bn annually in fees as a result of the Durbin Amendment, but have failed to pass this on to customers in the form of lower prices and/or improved loyalty schemes.⁶

Retail banks will lose interchange fee revenue under the PISP model, putting further pressure on their business model

Banks will need to carefully consider their response to the loss of revenue as a result of PISPs entering the market. More banks may elect to start charging customers for making bank transfers over and above a certain volume per month to offset the loss of revenue from card transaction fees. This could be a gamble. PSD2 states banks cannot discriminate in pricing between credit transfers initiated via a PISP or directly by the payer, which means increased fees for many customers who enjoy free bank transfers today via SEPA instant credit transfers or faster payments (UK).

Other banks may become PISPs themselves in order to take the entire PISP fee on offer. Moreover, banks could start to unbundle their payment account products from more profitable credit and debt products and services to offset the loss in transaction fees, with the introduction of fee-based accounts (which we see in some markets today) and a segmented account service based on customer profile.

Banks may have greater liabilities around payments under the PISP model

There are currently a number of fraud control processes supplied by the card schemes that support and work with the card issuing bank account in terms of security and risk management. These processes are all based on the channel used and whether the customer is present at the point of sale.

Additional card scheme security is associated with using chip and pin for point-of-sale shopping and "Verified by Visa" or "3D secure" supplied by MasterCard for online Internet shopping. In a PSD2 world of PISPs, APIs will facilitate the connection between the PISP or merchant and the customer's bank account, including obtaining authentication and authorization to secure the transaction (first two steps in Figure 5 below).

Authentication Authorization Clearing Reconciliation Settlement Liquidity

Figure 5: Typical payments life cycle.

Source: CGI

This connectivity among parties will require considerable technical work to make it viable without a scheme present to intermediate. Without an intermediary, banks likely will have less appetite to assume some of their current liabilities for transactions that go wrong or are fraudulent. The development of a common set of standards that all parties follow will be very important to determine exactly where future liabilities reside in this payment model.

Banks with retail and SME customers will see accelerated fragmentation of their value chain from new competitors entering the market and potential disintermediation from their customers

The rise of the open API economy will see an unprecedented number of new players entering the financial services markets within Europe, taking advantage of both PISP and AISP models. CGI believes the most significant shift from PSD2 and the rise of an open API economy will come from banks being forced to open up proprietary data about their customers to TPPs. In theory, this will hand back control over customer data held by banks to the customer, who will be free to order banks to share the data with TPPs that offer the customer relevant and personalized services.

This should accelerate the move to customer-centric business models within banking, as customers in the near future will enjoy a world where they can find simple answers to their questions about financial products and services, benefit from pay-per-use of these products and services, have these products and services tailored for their personal situation, and be able to compare across a range of providers the relevance and performance of the product or service. The services offered by banks in this environment have to be more efficient in reaching the customer and differentiated from similar products and services offered by rival institutions.

Entrants will take many forms, some of which are already establishing themselves in anticipation of the open API economy in banking:

- 1. Challenger banks are entering the market and offering a more customer-focused model that connects the customer to their own products and services, as well as relevant third-party products and services. Their banking platforms and business models are "API first," and they operate more like FinTechs than traditional banks. Current examples of these include N26 and Fidor in Germany, as well as Starling and Atom in the UK.
- 2. Financial Technology (FinTechs) firms specialize in a particular bank product or service but leverage a model that is more transparent and generally less costly to the customer. For example, Transferwise (UK based) is revolutionizing foreign exchange transfer by leveraging a peer-to-peer (P2P) model where Transferwise's platform connects buyers and sellers of different currencies and facilitates currency transfers among customers in a secure and low cost way.
- 3. Technology giants such as Facebook, Apple, Google and Samsung will be interested in leveraging financial information available via open APIs in a PSD2 world to augment their own customer data, refine their marketing strategies, expand their product and service offerings, and increase their brand presence and share of wallet with customers. Three of these technology giants (Apple, Google and Samsung) already have entered into the world of payments through offering payment services linked to customers' debit and credit cards.
- 4. Non-financial service sectors with retail customers such as utility companies may expand into offering financial products and services traditionally reserved for banks as a way to grow revenues and enhance monetization of their existing customer data sets. For example, in France, the telecommunications company Orange has recently bought a 65 percent stake in Groupama Banque to muscle its way into mobile banking services.7
- 5. Aggregators will take advantage of both PISP and AISP aspects of PSD2 legislation to develop services such as personal financial management (PFM) tools. Current aggregators in the marketplace, such as Mint in the US, aggregate basic product information today and offer simple budget planning software for retail customers. The ability to initiate payments directly and obtain transaction information from a customer's account will support the development of "over the top" applications to aggregate multiple account balances across EUbased banks where customers have accounts, providing customers with access to a consolidated view of their overall financial status.
- 6. Payment service providers (PSPs) and schemes also will be impacted, both adversely and favourably, by PSD2 and the rise of the open API economy. As mentioned before, the idea behind initiatives such as PSD2 is to increase competition and lower the cost of transactions in the market for both merchants and customers. Therefore, acquirers (e.g., WorldPay and First Data) and card schemes (e.g., Visa and MasterCard) all will see a reduction in revenues from a lower volume of card transactions. They will all look seriously at becoming a PISP and/or AISP post-PSD2 implementation in the EU markets. PSPs will need to respond by offering this new payment mechanism to customers at point of sale, although some providers such as PayPal already offer similar account-to-account payment services.

7. ERP providers in the SME market, such as Sage and Xero, both of whom already provide comprehensive accounting services to small businesses, also could take advantage of PSD2 legislation to further strengthen their relationship with the customer by providing new products and services tailored for clients around tax advice, cash management and forecasting activities.

Even traditional banking incumbents are creating 100 percent digital banks, removed from their parent bank's legacy IT infrastructure. In France, many of the large banks have launched 100 percent digital banks that are separate subsidiaries and brands from their parent companies to minimize cannibalization of revenues from their parent brand. Examples include BNP Paribas' Hello Bank and Credit Mutuel Arkea's Monabang.

Banks also will seek new revenue streams from opportunities enabled by open APIs

In response, CGI believes banks with large retail and SME customer bases also will look to evolve their revenue models along the lines of a producer-distributor model, with options discussed as part of the strategic response from banks in the next section. This will inevitably involve important decisions about whether banks will "build, buy or partner" with competitors in the marketplace, especially FinTechs that offer quicker routes to market and more flexible banking platforms than traditional banks.⁸

It is worth noting that the real prize with open APIs will be the rise of real-time payment transactions and data flows, which empower the customer with near real-time financial information from their account(s). This is key for real innovation in product and service delivery to customers. And, banks need not wait until the last minute to implement the spirit of PSD2 around payments. They can leverage the infrastructure (payment rails) that will enable real-time payments within Europe as part of the SEPA instant credits implementation due to be completed in late 2017 (prior to adoption of PSD2 into law within each EU member state).

Only time will tell who will be the winners and losers within this new world

What is certain is that payments are likely to become less lucrative for many of the established players in the market, and the rise of data and customer insight will become more important as a source of revenue. Key players' revenue models will need to be adjusted as result. There is a fear among banks that they will be relegated to the role of a utility and lose control over customer interactions as non-banking organizations embrace the open API economy. They, therefore, face a stark strategic choice. Do they want to become another utility providing commoditized, "white-label" banking products and services or do they want to maximize future shareholder value by becoming trusted lifetime advisors to both existing and new customers?

However, banks should think positively about the rise of the open API economy. The opportunity is for banks to understand what open APIs will mean to their business strategy and how to execute against their strategic response. Some key questions banks should ask themselves when developing a strategy are the following:

- 1. How can open API technology support innovation in terms of my existing or potential customer bases?
- 2. What partnerships can we leverage to bring new products to the marketplace?
- 3. What role will open APIs play in my overall digital business strategy?

Strategic responses from banks to the rise of the open API economy

CGI believes banks should embrace the opportunities afforded by the rise of the open API economy, a trend being accelerated by legislation such as PSD2, but also one increasingly demanded by customers, regulators and politicians who see it is an enabler to a more competitive, innovative and dynamic sector. Therefore, CGI believes banks have three key responses from which to choose:

- 1. Refuse to change: Accept regulator fines based on an assumption that the fines are less than the expected revenue loss from new competitors enabled by PSD2 and the cost of transformation
- 2. Comply at a minimum: Keep current business models largely intact
- 3. Proactively respond: Develop new customer-driven products and services and/or create new distribution channels, either alone or by leveraging third-party providers

CGI believes the third option would be the preferred response for banks wanting to position themselves to play well in an open API economy. And, this response involves more than banks treating PSD2 implementation as just another compliance project and remaining oblivious to the multitude of agile, fast moving competitors joining the ecosystem. Instead, it will increasingly involve collaboration (either through partnership and/or acquisition) with TPPs offering product and service innovation at a speed that banks cannot match. FinTechs have the distinct advantage of being unencumbered by legacy IT infrastructure issues and close scrutiny of regulators.

Conversely, FinTechs also will be keen to capitalize on forging strong partnerships with banks to access both the banks' established customer base and expertise in the industry. For example, ING has invested in the FinTech Payconiq in the Belgian market to take advantage of a similar payment technology to that enabled by PSD2 (direct bank account transfer). The Payconiq model allows a customer to make a direct debit from his or her bank account at point-of-sale using QR code technology.

Other new "challenger" banks to the market have adopted business models more akin to FinTechs to win customers directly from their larger incumbent rivals. In Germany, Fidor Bank is using social media to engage its customers to crowd source new ideas for products and services that better fit its customer base.

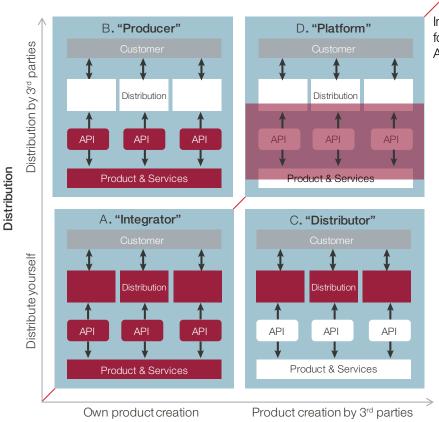
Based on a European Banking Association model for understanding the relevance of open APIs in banking⁹, CGI agrees there are four viable roles for banks to adopt if the third response above is selected. These roles are based on two important questions:

- · Product and service creation: Who develops the products and services my organization will be selling to my own customer base?
- Product and service distribution: Who is distributing my organization's products and services via an open API to existing and new customers?

The four potential bank roles include the following:

- A. Integrator: Banks can continue to control product and service creation and distribution in a similar way they do today. The rise of competition in an open API economy from traditional and non-traditional players will mean banks adopting this model will need to match others in terms of speed to market and putting customer demands at the heart of what they do as a bank. This would make it challenging for banks to remain in this position and still compete in the marketplace effectively in the years to come.
- B. Producer: Where applicable in the B2C space, banks could focus on product and service development, but leave the distribution of these products and services to others, such as FinTechs. This has the effect of lowering acquisition costs for new customers, but also could result in disintermediation of banks from the customer, as both the producer and distributor will want to control branding and the customer relationship. PSD2 will in effect push banks into a "producer" role around payment initiation services and access to account information. Banks are increasingly looking at the producer role and partnering with the right FinTech to maximize market penetration, as evidenced by the increasing number of collaboration events

^{9 - &}lt;u>Understanding the business relevance of Open APIs and Open Banking for banks</u>, May 2016, EBA Working Group on Electronic Alternative Payments, pp. 17-21.



Increasing value creation for banks in the open API economy

Figure 6: Strategic choices for banks to make in response to

Figure 6: Strategic choices for banks to make in response to the open API economy. Source: European Banking Association Working Group paper, "Understanding the business relevance of Open APIs and Open Banking for banks – Information Paper."

Product creation

(e.g., hackathons, etc.) among banks and start-ups.

- C. Distributor: Although somewhat a departure from current banking models, banks may want to move away from product and service development to distribution. Banks that adopt this strategic approach are still likely to run into conflict with the "producer" around branding and customer ownership, but there also is an opportunity to develop their customer base and leverage their established Internet and mobile channels with customers to distribute TPP products and services. Conversely, banks also could extend their role as "distributor" by becoming a TPP to other banks, offering account aggregation and payment initiation services for customer accounts held across multiple banks and FinTechs.
- D. Platform: With this model, banks retain stakes in product and service development, as well as distribution, by acting as a market intermediary, facilitating activity among customers, producers and distributors in the market. Many analysts and experts think this "Uberization" of financial products and services is the way banking will ultimately go in 5-10 years. Gregory Guermonprez, country director for France at Fortuneo Bank agrees: "I think it [banking] will evolve into a 'producer-distributor' model much less integrated than today, where a bank, to be relevant, will distribute the products of others when it is not positioned best to meet customer demands."10

Adding to the EBA model, CGI believes that banks have an overarching strategic choice to make about whether they want to become a "white-label" banking services provider or a trusted lifetime advisor to customers—a choice that will have an impact on value creation for their organization and their longer-term standing with the customer.

In the coming years, "banking as a service" platforms may become the norm for all financial services and products. Traditional banks that refuse to change their business model may be disintermediated from the customer and could get stuck in the role of "producer" and, at best, play the role of back office integrator for a number of "over the top" product and service providers in the marketplace (e.g., know your customer checks).

Retail banks will need to consider sustainable and profitable business models for open APIs

In the future, banks are likely to minimize the costs of operating payment accounts as their revenues dwindle from interchange fees and they look to comply with regulation such as PSD2 at a minimum cost. Banks also will want to minimize the cost and liabilities associated with granting access permissions to a customer's payment account(s) from TPPs by looking for ways to share costs among financial institutions. How this will work has not yet been determined, but it will likely lead to greater cooperation among banks. Banks may even take the opportunity to charge customers for registering access permissions from TPPs against their payment account.

In addition, banks could consider segmenting products and services (rather than bundling them as they do today) and use open APIs within the banks' proprietary products (e.g., loans, mortgages and credit). Banks could then, for example, sell credit lines directly to retail customers as credit options with drawdown to payment accounts. This product could replace the overdraft attached to a payment account, but with more transparent fees and charges attached to it.

What strategic responses should corporate banks employ?

Based on client conversations across Europe, CGI believes many corporate banking organizations are currently not leading the conversation around the development of an open API economy, but are following events as they unfold. Potentially, banks are treating the rise of the open API economy as more of a threat than a value enhancing opportunity and therefore are adopting a "wait and see" approach to the impact of PSD2.

Others are more active in their response. In France, for example, a consortium of leading commercial banks has created a working group specifically to address their collective response to the advent of the PSD2 and the rise of the open API economy. One initiative they are considering is to develop a single API that works for all banks and allows authorized TPPs easy access to all of banks' customer data. The banks would own and maintain the single API and, in theory, it may be cheaper to implement and maintain technical standards when shared across banks.

In the longer term, it is imperative for corporate banks across the EU to seriously explore the opportunities created by the open API economy to create value, especially with the development of real-time payments and data flows, continuing pressure from shareholders to drive growth from new revenue streams, and pressure from customers to increase product and service innovation.

Corporate banks may choose to follow one of the four options described in the previous section. Which option they choose will depend on their individual circumstances, as well as their unique strengths in the production and/ or distribution of products and services, while partnering with third parties to strengthen their offerings.

However, CGI recommends that, in order to position themselves for the longer term, corporate banks should consider acting now. Banks can determine what an open API economy means for their business by taking the following steps:

Start internally first:

- » Leverage internal APIs to break down silos among bank services and products that exist today
- » Learn from wealth and retail banking divisions about how they use customer data insights to create single customer views and how this translates to additional value-added products and services for both customers and the bank

• Expand internal thinking to the wider banking ecosystem:

- » Understand the security model around open APIs
- » Map out detailed scenario plans (which relevant products and services could the bank develop and which customer segments and geographies should the bank target)
- » Invest in innovation and make products and services that are API driven
- » Establish a culture of testing and learning in the market through internal innovation labs. For example, at one American bank, gone are the days of a mobile-first approach. The bank is now taking an API-first approach to customers' requirements, enabled by a center of excellence driving innovation within the organization.
- » Consider developing a different strategy for internal (or private) APIs where you can innovate and launch products in a controlled environment versus external open APIs with third parties
- » Develop your organization's "digital talent" pool to drive innovation around open APIs

In the medium to long term, CGI believes there is real opportunity for corporate banks to create an ecosystem of products and services with third parties, and the creation of this ecosystem can be accelerated by the implementation of legislation such as PSD2 (and, in particular, the creation of AlSPs). Corporate banks may take this opportunity to partner with the large ERP and TMS players, such as SAP, Oracle and Murex, to increase their market share by seamlessly integrating their products and services with major ERP players' platforms (e.g., HSBC and SAP are currently doing this).

What should banks do in the short-, medium- and long-term in response to the rise of open API economy and the implementation of PSD2?

In light of these strategic choices, CGI recommends that banks complete the following activities in the short-, medium- and long-term:

- Short-term (0-12 months): Consider your overall strategic direction in light of the rise of the open API economy:
 - » Refresh your business and technology strategy
 - » Determine future markets and revenue streams based on existing/new products and services, powered by an open API economy
 - » Define the pathway(s) to future operating model(s) based on specific products and services, recognizing the market will evolve over time

Note: The formation of new partnerships with FinTechs will enable the banks to be more competitive in an increasingly customer-centric, insight-driven marketplace.

- Medium-term (12-36 months): Actively seek to "test and learn" using key strategies by leveraging internal expertise and appropriate partnerships in the open API economy:
 - » Prepare for PSD2 regulation to be enacted (retail banks)
 - » Respond to emerging standards around open APIs
 - » Confirm your initial operating model, including your customer data approach
- Long-term (post 36 months): As the open API economy in banking continues to develop, focus on the following:
 - » Respond to competitive threats and opportunities that emerge post-PSD2 implementation in the form of PISPs and/or AISPs in the marketplace (retail banks)
 - » Adapt your business model to protect revenue streams and customer relationships
 - » Build institutional capability to screen for new technologies and partners, ensuring you stay at the forefront of product development and distribution

Key operational considerations for banks' strategic response

From CGI's point of view, there are several practical considerations for executing any proactive strategy when retail, SME and corporate banks respond to the opportunities and challenges presented by an open API economy in banking.

Overall, open banking standards initiatives and the European Banking Authority have so far not established detailed standards around how open APIs will work in reality for interested parties. Practical considerations must be addressed to ensure transactions and data transfers can take place among parties, securely and in real time, as well as addressing other challenges such as where liability sits in the event of a customer data breach or fraudulent activity.

Assuming the challenge around detailed standards develops through natural market innovation and/or further definition of standards by the European Banking Authority and regulators within the EU, CGI believes that the following practicalities are important to consider for any banking institution thinking about doing business in the open API economy:

1. What is the right operating model to drive profitability in an open API economy?

Bank services come with associated costs, and, without revenues to offset these costs, bank business models become unsustainable. Legislation such as PSD2 creates both costs and additional revenue opportunities for banks, but many in the industry argue there should be some consistent financial incentive agreed upon among the banks with regulators in a similar way interchange fees are charged by an issuing bank for card transactions.

So, what is a fair charging mechanism from banks to TPPs for maintenance and use of the banks' open APIs? An important aspect of PSD2 is that TPPs must be able to compete fairly with banks' own products and services, which means pricing should be identical in both cases. At the moment, banks struggle to understand today what the end-to-end cost of one data request via an open API would be due to historic product cross-charging issues.

Therefore, CGI suggests, as a starting point, that banks choose a monetary amount they would charge to TPPs and then match this amount to internal costs. Evidence of the charging mechanism and structure would, of course, have to be ratified by the regulator in the EU member state. This monetary amount could be refined over time as banks better understand their end-to-end cost models and/or regulators express a desire to cap charges to drive better value for the customer.

Where does this leave banks' operating models? To show compliance with PSD2, banks might need to segregate payment accounts and payment initiation as a generic service from other more profitable products and services. That would lead to an unbundling of services, but this would redefine not only their operating models but their cost structures as well.

Therefore, differentiation among banks with retail customers would lie in new and innovative lifestyle and personal financial services or in credit and lending services created and distributed by a combination of the banks and/ or partnerships with FinTechs. Some banks will have to make painful choices to balance the cost of compliance versus the cost of transformational change to their operating model given other competing priorities. This is highlighted in CGI research, which shows the number one concern for banks is the potential cost of implementing PSD2.11

Gazing into the future, if blockchain models for payments become commonplace, then this segregation between payment accounts and value-added products and services would fit well. Payment accounts and transactions might become open distributed services used by all, separated from banks, and administered by a neutral entity such as a central bank. This would, in effect, create a cheap and standardized payments service, with banks free to concentrate on innovative and value-added customer products and services.

2. How will your organization establish suitable security and permissions for all parties?

For secure transfers to take place among parties on open APIs, appropriate security and permissions must be established for all parties. There are three parties to be clearly identified and verified as part of the process:

- The instructing customer
- The intermediary service provider (e.g., PISP, AISP, agent)
- The host bank for the customer's account/service

Once all parties are correctly identified and verified, banks must provide suitable permissions to third parties wishing to access banks' data via APIs. However, banks would need assurances that third parties accessing data or requesting to initiate a customer transaction have the relevant authority from the instructing customer to do so. There are two ways this may work:

- Provide third parties with digital passports to prove identities and for customers to sign permissions for them
 - » In Sweden, for example, there is a national digital ID scheme owned by the banks that provides a public key interface (PKI) infrastructure on a customer's mobile device, which makes customer authentication a quicker and more seamless process than using traditional username and password type mechanisms.
- Third-party permissions could be registered in bank systems in advance by the bank's customers, with a live
 feed of permitted institutions (PIs) taken from the appropriate governing body. This approach is likely to have
 cost implications for banks in terms of maintaining a register of permitted organizations that can access a
 customer's data or initiate a transaction on the customer's behalf.

In addition, banks also must consider constraints around whether permissions are single use or are available for a period of time (whether this is a defined period or until a customer retracts permission).

3. What data strategy will ensure maximum value is created for banks?

Third parties that want to provide enriched customer products and services would require meaningful financial data (AISPs) held by banking institutions. This, in turn, would focus a spotlight on what banks are willing to share based on agreed upon data sharing standards and whether this is over and above the regulatory minimum to be meaningful for TPPs to use. This could include details such as important definitions of what constitutes a payment account and whether financial information is (near) real-time. For example, it is no use providing a customer's account balance if the AISP does not know when the snapshot was taken and what transactions are included to create the balance. Data taken out of context is meaningless in providing an enriched customer experience.

Moreover, a typical customer bank statement or customer dataset held by a bank is limited today. For example, bank statements typically do not capture the exact time a transaction occurred on a given date, which would have implications in the future should third parties or banks want to offer services that rely upon real-time data about a customer's account balance. Therefore, to create any meaningful insight for enhancing the customer experience, banks will need to be encouraged or incentivized to offer up additional data they may hold or to capture additional data. This will largely depend on the banks' individual strategies and whether they want to play and collaborate with third parties.

4. What are the appropriate service levels for performance of the banks' open APIs?

Once access rights are resolved, then service level agreements (SLAs) for the performance of data transfer among banks and third parties must be established. Again there are several practical considerations to bear in mind:

- 1. Standardized service levels across banks for data transfer performance should be established in order for TPPs to provide a consistent product or service to the customer. In particular, TPPs will want to understand the following:
 - » How long will a bank take to respond to a data request from a verified TPP?
 - » How frequently can a verified TPP make requests to a bank in a defined period of time?
 - What would be the maximum number of data requests accept by a bank in a given period from a certain TPP?
- 2. Banks will have to balance whether they can be compliant with a restricted service level that impacts the frequency and volume of data requests from TPPs. They may choose to implement some form of "demand throttle" to restrict the number of requests in a defined time period and limit API bandwidth for TPPs, especially at peak times, much like the mobile and fixed line broadband networks do. Ensuring that a low volume verified TPP user gets its fair share of capacity will be challenging for banks. At the same time, internal bank activity requiring the use of the same APIs for data transfer will need to compete for space with these external data requests.
- 3. Banks will need to put in place protections against capacity overload within the system Online services are vulnerable to both legitimate peaks in data requests from verified TPPs at given points during the day and illegitimate attacks such as distributed denial of service (DDoS). Banks will need to ensure that they are maintaining and monitoring their APIs for such issues.

5. How will governance work to maintain open APIs among financial service players?

Banks will need to be aware of the key governance elements for open APIs, which include the following:

- Testing of open APIs: Regulators or other official bodies are advised to create "sandboxes" (pre-production environments), so that banks can thoroughly test open APIs before they are made available to TPPs. Certification and assurance around testing by TPPs will ensure an interbank standard is created.
- Registering and publishing of open APIs: A directory of all banks' open APIs in a standard naming convention would need to be established and maintained in order for approved AISPs to easily find and connect to APIs.
- · Certifying open APIs and legitimate TPP requests: It will be important to establish at what point a bank's open API adheres to regulatory standards or not. In addition, a list of approved TPPs will need to be certified and approved by the regulators to ensure customer data is managed and used in accordance with the principles of PSD2 and customer data protection laws (e.g., "Right to be Forgotten" and counterparties in transaction data).
- Policing and sanctioning of organizations not following standards: Banks will need to be aware of the penalties (legal and/or commercial) for non-compliance with open API standards.
- Financial and operational liabilities: In the case of payments made via a PISP service, banks will need to work with regulators and PISPs to determine where liability resides for fraud, disputes, and chargebacks for transactions that go wrong.



Conclusion: What are the key takeaways for banks in this new open API economy?

Regardless of whether you are a retail or corporate and transaction bank, consider acting now. The rise of the open API economy is here, and CGI advises banks not to wait for politicians and regulators to force you to change. We believe banks should see the open API economy, not only as a threat, but as a great opportunity to do the following:

- Maximize payment transaction revenues for current and future payment mechanisms
- Exploit customer transaction data to offer tailored products and services, leading to profitable growth
- · Implement new business models to challenge more agile competitors to safeguard your market position

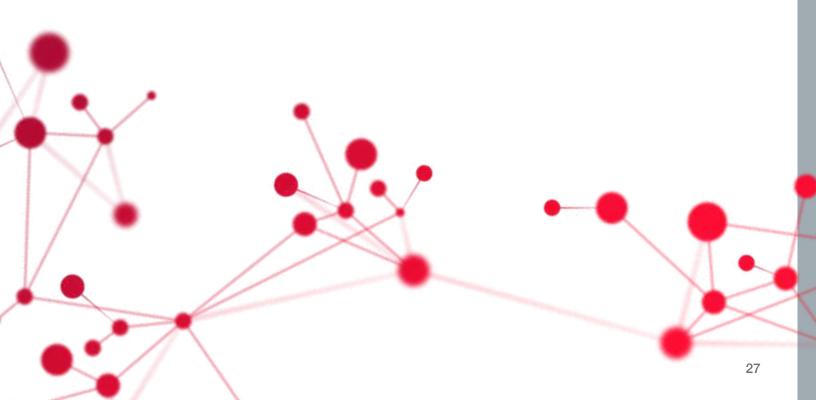
Banks that respond quickly to these changing market dynamics will be able to shape and lead conversations with customers, legislators and regulators. Those that adopt a "wait and see" approach will find it increasingly difficult to keep pace and maintain market position.

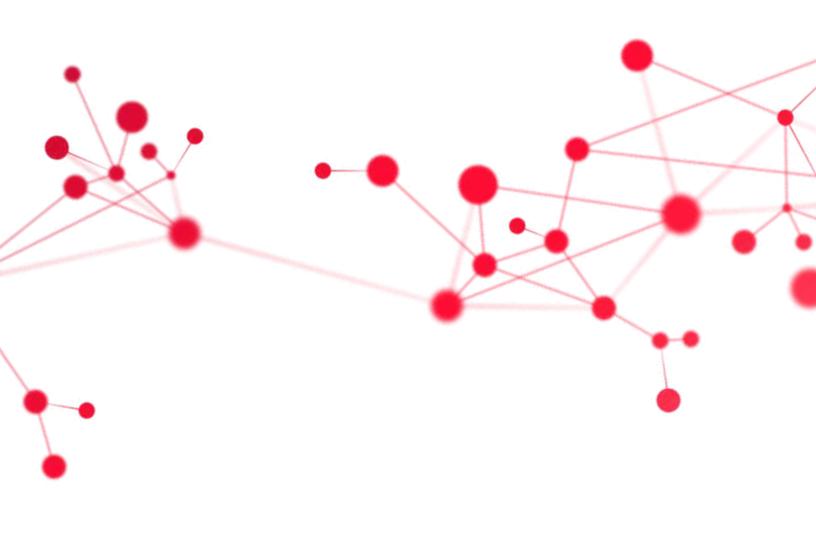
CGI believes the winners among banks in this competitive battle will be the ones who can "uber-ize" their operating model—providing a flexible and open "banking-as-a-service" platform to develop and distribute tailored products and services to customers, utilizing third parties when required. This way banks can ensure their survival as trusted lifetime financial partners for their customers.

Secondary research

- "CGI & GTNews Webinar Transaction Banking 2016 Findings," September 2016, CGI.
- Monetising Others' Success, November 2, 2016, Liri Andersson, INSEAD Knowledge.
- <u>UK sets out open banking API framework</u>, February 9, 2016, Finextra.
- Understanding the business relevance of Open APIs and Open Banking for banks, May 2016, EBA Working Group on Electronic Alternative Payments.
- <u>Seizing the Opportunities Unlocked by the EU's Revised Payment Services Directive</u>, May 5 2016, Accenture Payment Services.
- PSD2, why the confusion? Oh, that's why!, February 11, 2016, Finextra.
- PSD2 Timelines, Digital Baobob.
- Multi-Fee Interchange Regulation MIF / IFR, Emoneyadvice.com.
- PSD2 Strategies Banks need to start thinking and acting like FinTechs, March 28, 2016, Finextra.
- Competition and Markets Authority Retail banking Market Investigation: Provisional decision on remedies, May 17, 2016, Competition and Markets Authority.
- 5 Things About the Macron Law, March 9, 2015, Wall Street Journal.
- Open banking APIs will require a rulebook to ensure "good outcome," July 15, 2016, Banking Tech.
- Preparing for PSD2: Exploring the business and technology implications of the new payment services directive,
 March 2016, Finextra.

- PSD2 APIs, will the UK effectively determine them?, March 15, 2016, Finextra.
- CMA, PSD2 and API: A solution for open banking, August 23, 2016, Finextra.
- CMA paves the way for Open Banking revolution, August 9, 2016, Competition and Markets Authority.
- CMA intervention to accelerate adoption of Open Banking Standards, May 27, 2016, Bond Dickinson.
- EBA consults on strong customer authentication and secure communications under PSD2, August 12, 2016, European Banking Authority.
- PSD2 Future Business Models and Strategies for Banks, April 7, 2016, Finextra.
- Why the real beneficiaries of the Durbin amendment are networks and acquirers, March 9, 2015, Finextra.
- Orange buys 65 per cent stake in Groupama Banque, April 22, 2016, FT.com.





cgi.com

© 2016 CGI GROUP INC.

Founded in 1976, CGI is one of the largest IT and business process services providers in the world. We combine innovative services and solutions with a disciplined delivery approach that has resulted in an industry-leading track record of delivering 95% of projects on time and within budget. Our global reach, combined with our proximity model of serving clients from 400 locations worldwide, provides the scale and immediacy required to rapidly respond to client needs. Our business consulting, systems integration and managed services help clients leverage current investments while adopting technology and business strategies that achieve top and bottom line results. As a demonstration of our commitment, our client satisfaction score consistently measures 9 out of 10. Visit cgi.com.