Taking off or going slow: what is the optimum pace for open banking to thrive?

Open Banking. A Global perspective.
EY Open Banking Opportunity Index: where open banking is set to thrive

Consumer sentiment: will value be the key to unlocking consumer trust?

Hamish Thomas, Anita Kimber, Wayne Brown
Building consumer trust is crucial to success for banks. The most important decision for consumers is likely who to trust with their money.

Market perspectives.

How innovation and security could unlock open banking in Australia
Mike Booth
Australian consumers are positive but cautious about open banking, requiring regulators to control security and participants to innovate.

How new open banking opportunities can thrive in Canada
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How open banking could fast track Hong Kong’s FinTech innovation

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How open banking in Singapore may pivot or remain organic

Andrew Gilder
Singapore is one of the leaders in EY’s Open Banking Opportunity Index, ranking high across all four Index indicators.

How regulation is unlocking the potential of open banking in the UK

Hamish Thomas, Anita Kimber and Wayne Brown
With strong regulatory direction and industry innovation, open banking in the UK is off to a positive start.

How a rapidly evolving US open banking ecosystem will take shape

Sean Viergutz
Innovation, collaboration and competition are rapidly shaping the open banking ecosystem in the US.
Open banking will change the financial services landscape, but its global acceleration and adoption will be shaped by four critical pillars.

Open banking is fast becoming a global phenomenon. Fueled by regulatory action, changing consumer behavior and the innovation and collaboration inspired by FinTechs, open banking is bringing new benefits to customers’ lives and fresh opportunities for the financial services industry.

Yet adoption of open banking varies widely around the world. The EY Open Banking Opportunity Index explores just why the pace of change differs across markets and assesses how four high-level pillars are playing a key role for open banking to thrive:
Overview of the four pillars

- **Regulatory environment**: How conductive is the regulatory environment for open banking?
- **Adoption potential**: What is the potential for consumers to adopt open banking services based on existing behaviors?
- **Consumer sentiment**: How do consumers feel about open banking, and the data sharing involved?
- **Innovation environment**: How strong is the environment at fostering innovation, especially among financial services firms?

For each of the pillars, we assessed a wide range of indicators to develop insight into the conditions in each market. We applied a lower weighting to the regulatory environment pillar. Unlike adoption, consumer trust and innovation, regulation is not a pre-requisite for open banking to succeed.

**How can two divergent models succeed in open banking?**

The overall index leader board paints a revealing picture of how open banking is evolving. The UK and mainland China are clear leaders, despite being poles apart in policy and with markets that contrast sharply in key areas.

**Divergent regulatory models can deliver strong open banking environments**

<table>
<thead>
<tr>
<th>UK</th>
<th>Mainland China</th>
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<tr>
<td>• A prescriptive model</td>
<td>• An organic model</td>
</tr>
<tr>
<td>• Banks mandated to use open APIs</td>
<td>• Open banking not mandated by legislation</td>
</tr>
<tr>
<td>• Mandatory API specifications and standardized formats</td>
<td>• No mandatory API specifications, but the financial services industry is using open APIs</td>
</tr>
<tr>
<td>• Strong innovation environment and adoption potential</td>
<td>• Strong adoption potential and innovation environment</td>
</tr>
<tr>
<td>• Consumers are cautious about sharing data</td>
<td>• Less data protection, but consumers are comfortable sharing data</td>
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</table>
Both countries share strong consumer adoption potential and innovation environments. But while UK consumers still have doubts about security and data protection, customers in Mainland China are more comfortable opening up their banking data in exchange for better services.

Regulatory environment – push or pull?

Index results demonstrate that there is no single regulatory recipe for open banking success.

In the EU, the Revised Payment Services Directive (PSD2) mandates banks to share data with third-party providers (TPPs), once consumers consent. UK and German regulators have been the most proactive, with both involved in determining standards for the application programming interfaces (APIs) that will connect banks and TPPs. The UK’s Open Banking Implementation Entity (OBIE) is also closely overseeing the development of the market’s open banking ecosystem.

Other countries favor a market-driven approach. Mainland China demonstrates this best. Here, banks and FinTechs are already making significant use of open APIs, even though there is no legal mandate to drive this, nor are there any standards in place.

The US also wants the market to drive open banking adoption, although a July report from the U.S. Treasury discusses how changes to the regulatory environment can also support FinTech innovation.

Consumer worries

Will consumers embrace or avoid open banking?

Open banking will only succeed if it wins the trust of customers and makes them feel comfortable about sharing their data with third parties. But our research shows that, in most markets, consumers still need winning over.

Consumer trust remains low or moderate in nine of the 10 markets we surveyed, irrespective of the regulatory environment. Only customers in mainland China score strongly in their willingness to share information with third parties – about half (49%) say they are comfortable sharing transaction data with FinTechs for better services. Forty percent of Chinese consumers’ online discussion of open banking was positive. Technological innovation in digital payments, as well as government-mandated sharing of personal data, may help explain positive consumer sentiment in Mainland China.
A matter of trust

Realizing the true potential of open banking – both for consumers and financial institutions – hinges on gaining consumer trust. Regulators can play their part by building environments that support innovation and reassure consumers. But, as the Chinese experience demonstrates, it is ultimately the ability to engage customers that will determine whether open banking succeeds.

Consumer education about risks and benefits can help accelerate adoption. However, perhaps the greatest lever to shift consumer sentiment will be showing customers the payoffs that open banking can bring. As seen with the adoption of popular social media platforms, people will willingly share information if they perceive benefit and if they can do it via easy-to-use, fun apps. Innovation by financial institutions, particularly in market-driven environments such as the US, may convince consumers of the value of open banking and accelerate its adoption across global markets.
Taking off or going slow: what is the optimum pace for open banking to thrive?

Building consumer trust is crucial to success for banks. The most important decision for consumers is likely who to trust with their money.

Open banking is gaining momentum globally – fueled by a regulatory impetus in many markets. It is creating opportunities to develop new services that can enhance consumers’ lives and drive loyalty. To fulfil this potential, banks must ask their customers to put faith in a new delivery model, one that opens their financial data to an ecosystem of partners in return for a better experience.

EY’s Open Banking Opportunity Index, which measures the potential for open banking to succeed across 10 different markets, finds that consumer sentiment toward open banking could be a major factor affecting its progress. This is the case even in those markets that have established a strong regulatory and innovation environment.

The UK, for example, sets the global benchmark with its regulatory framework for open banking but does not rank as highly when it comes to consumer sentiment.

For open banking adoption to take off globally, it is paramount that banks overcome the trust hurdle, so consumers feel confident that sufficient data protection and security is in place to embrace this new trend.

A major indicator that the industry is succeeding will be when customers no longer perceive open banking as out of the ordinary. As open banking becomes intrinsic to how better, customer-centric financial services are delivered, consumers will expect this elevated service offering as a standard from their providers – with the same guarantees of quality and protection that apply to every other service.

To get there, all of the stakeholders in the open banking ecosystem – including banks, FinTechs, regulators and others – will need to play their part.

Will value be the key to unlocking consumer trust?

By Hamish Thomas
EMEIA Payments Leader and UK Advisory Banking Technology Leader

By Anita Kimber
UK Digital and Innovation Partner

By Wayne Brown
UK Advisory Digital Banking Operations Leader
Taking off or going slow: what is the optimum pace for open banking to thrive?

As part of our index, we analyzed social media and online discussion to gauge consumer sentiment. This social listening exercise covered three main areas:

- **Open banking**: Consumer discussions talking explicitly about the trend
- **Sharing financial data**: Conversations related to the sharing of financial and bank data with third parties
- **Services**: Posts discussing apps, tools or services of the type enabled by open banking

On balance, we found that positive sentiment outweighed negative sentiment across all of the markets we assessed, though there were substantial differences between them. European markets – particularly Germany, the UK and Spain – tended to have lower net sentiment scores while consumers in Asia-Pacific markets were more positive.

### Consumer sentiment insights: Market comparison

<table>
<thead>
<tr>
<th>Market</th>
<th>Net sentiment percentage</th>
<th>Positive percentage</th>
<th>Neutral percentage</th>
<th>Negative percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>37%</td>
<td>40%</td>
<td>57%</td>
<td>3%</td>
</tr>
<tr>
<td>China (mainland)</td>
<td>32%</td>
<td>40%</td>
<td>51%</td>
<td>9%</td>
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<tr>
<td>Singapore</td>
<td>27%</td>
<td>32%</td>
<td>63%</td>
<td>5%</td>
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<tr>
<td>Netherlands</td>
<td>23%</td>
<td>30%</td>
<td>62%</td>
<td>8%</td>
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<tr>
<td>Canada</td>
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<td>31%</td>
<td>59%</td>
<td>9%</td>
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<tr>
<td>Hong Kong SAR</td>
<td>21%</td>
<td>34%</td>
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<tr>
<td>Global</td>
<td>19%</td>
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<tr>
<td>US</td>
<td>19%</td>
<td>28%</td>
<td>63%</td>
<td>9%</td>
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<tr>
<td>Spain</td>
<td>18%</td>
<td>20%</td>
<td>78%</td>
<td>2%</td>
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<tr>
<td>UK</td>
<td>17%</td>
<td>30%</td>
<td>58%</td>
<td>12%</td>
</tr>
<tr>
<td>Germany</td>
<td>9%</td>
<td>23%</td>
<td>63%</td>
<td>14%</td>
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</tbody>
</table>

Countries are listed by overall net sentiment percentage: The proportion of positive posts minus the proportion of negative posts.

Source: EY Open Banking Opportunity Index; Consumer sentiment analysis conducted by Alva Insights.
Global open banking sentiment

40%

The proportion of positive social media posts relating to control and innovation in open banking.

What’s driving sentiment?

Our analysis also identified a series of discussion themes among the consumer content that we harvested. These themes indicate the issues driving positive and negative sentiment toward open banking.

Of the posts expressing positive sentiment around open banking, the most common discussion themes were “control” (consumers taking charge of their banking data and services) and “innovation” (the potential for new types of banking services to emerge).

But dampening sentiment were discussions on “data protection” and “cybersecurity” concerns, which accounted for 48% of all negative posts worldwide, as consumers worry about the potential for fraud and the misuse of their data by third parties.

One consumer noted that: “This new open banking scheme bothers me a little. The idea of allowing multiple businesses access to my details increases the chances of fraud.”

While another said, “This open banking idea is one of the most ill-thought out things I have ever heard. It will give third parties more access to your bank account and if things go wrong, you’ll be liable. This serves banks, not customers.”

These comments highlight legitimate concerns, in that more firms handling customer data could increase their exposure to fraud if the ecosystem is not managed properly. But they also reflect misperceptions, in that most regulators do not intend that the liability for fraudulent or unauthorized transactions will be borne by customers. Rather than serving the industry, open banking is primarily about better serving the customer.

So, how do providers in the open banking ecosystem persuade consumers with neutral sentiment, as well as convincing those with negative sentiment, to get over the trust threshold to drive adoption?
Three ways to overcome the consumer trust threshold

To elevate consumer trust, banks, regulators, FinTechs and others will need to help ensure that progress is made in three key areas:

1. **Cyber protection**: Using more sophisticated digital tools and techniques to keep consumers’ data safe.

2. **Regulatory protection**: Embedding a framework with sufficient consumer safeguards, including rights to recourse and penalties for any providers that contribute to causing damage against consumers.

3. **Adding value**: Providing open banking services that consumers feel support them in achieving their goals.

### Cyber protection

Open banking models will distribute risks more broadly, but the technologies to strengthen cybersecurity are evolving all the time too. If banks and third-party providers (TPPs) can embrace new security solutions in the right way they can create a secure ecosystem.

For instance, advances in artificial intelligence are already enabling better identity validation and authentication in payments, and more effective monitoring of suspicious and fraudulent activity. These tools will help to secure the open banking ecosystem. Indeed, the UK’s OBIE is assessing machine-based learning and behavioral analytics tools to help monitor fraud risk.

Shared intelligence will be important in fraud prevention too. If Account Servicing Payment Service Providers (ASPSPs) and TPPs can work together to share information on anomalies, fraud or data breaches in real-time, it will help to minimize the impact on the end customer and protect the integrity of the ecosystem.
Regulatory protection

Regulators globally have taken vastly different approaches on open banking policy and implementation to date—and many have work to do to put the necessary consumer safeguards in place.

In some markets, regulators are stipulating that firms must meet certain thresholds if they want to participate in open banking activities. In the UK, for example, businesses that provide payment initiation services must be authorized by the Financial Conduct Authority, maintain a minimum of €50,000 in initial capital (or higher if they provide certain other payment services) and must hold professional indemnity insurance. For account information service providers, there is an option to become registered, but presently, it is only voluntary.

While the UK is creating a customized, targeted approach to open banking, other markets are tackling related regulatory change in a different way. Singapore, for instance, is looking to consolidate existing legislation into a new combined regulatory framework. The Monetary Authority of Singapore (MAS) has said that, “A more calibrated regulatory regime, applied on an activity basis to payment service providers, rather than specific payment systems, would allow the MAS to better address specific issues, such as consumer protection, access and corporate governance.”

Whichever approach is taken, the knowledge that participants in open banking ecosystems are being effectively vetted and monitored will be important in providing consumers with peace of mind.

Implementing the right protective mechanisms for consumers that suffer losses is critical too. The payment initiation access granted to TPPs may complicate the issue of liability between banks and TPPs where an unauthorized transaction occurs, but this cannot be allowed to affect the customer. From the customers’ perspective, the status quo should be preserved in providing access to an immediate refund from their bank in such cases.

When it comes to TPPs accessing consumers’ bank account information, consumers are better protected in markets where there is a regulatory framework in place to ensure providers use an open API mechanism. In markets where such frameworks do not yet exist, for example, the US, there is still some reliance on "screen-scraping" practices, whereby consumers are required to share their account login details with third parties. In such cases, banks may claim consumers have breached their online banking contracts and so disavow any liability on their part if customers become fraud victims as a result of sharing their login credentials.

Adding value

Regulatory and cyber protections are crucial enablers of trust, but ultimately helping consumers understand how open banking services can support them in achieving better financial outcomes, more easily, could prove the most influential factor.

Open banking allows consumers to get more from their financial services providers as their own data powers better services. Already, open-banking-enabled apps offer consumers the ability to better monitor their spending, to get a holistic view of their personal finances or to find more suitable and cheaper financing options. These services are becoming more mainstream globally.

Looking ahead, there are potential services that go much further in supporting consumers. In Australia, for example, there are plans to expand the open banking ecosystem to include energy, telecommunications and eventually other industries such as health and retail. This opens the door to services that help consumers manage other aspects of their lives. Financial services providers could play a role in finding the best deals for customers in these sectors or helping them to switch providers.

In Mainland China, where the financial services industry has been quick to embrace open banking, banks have leveraged APIs to expand their customer service coverage, offering financial services across other lifestyle services such as e-commerce and creating a vast ecosystem of products across sectors. Some are now seeking to position themselves as lifestyle partners for their customers.

These developments clearly show that financial services providers globally will need to start using open banking to add more value for their customers—if they want to remain competitive. Over time, these services, which can help individuals to achieve both financial and non-financial goals, will simply become part of the fabric of consumers’ daily lives. And as this unfolds, it is up to the industry and regulators to ensure that they maintain the highest standards of quality and protection for consumers.
What’s the secret to open banking success?

**EY Open Banking Opportunity Index** explores the key factors that impact the pace of open banking progress – and finds that no particular regulatory model will determine success.

**UK and China lead the world in open banking**

Fueled by regulatory developments, changing consumer behavior and the innovation inspired by FinTechs, open banking is fast becoming a global phenomenon. But it takes different forms in different countries, and adoption rates vary widely. We reviewed the status of open banking in several key financial markets, ranking its progress across several key financial markets:

**UK**

The UK ranked first in our Index, with success due largely to the world’s most prescriptive implementation of open banking standards and industry innovation. While mass adoption is probably still three to five years away, strong regulatory direction and enthusiastic FinTechs set the scene for a positive open banking future. Consumer reluctance remains the biggest hurdle, partly due to a cultural mindset, but also because of some high-profile data breaches.

**China**

Mainland China ranks second after the UK, though its laissez-faire regulatory environment is a polar opposite of the UK. Rapid adoption rates are driven by the enthusiasm of China’s fast-expanding digitally-connected middle class, which prefer to transact via their phone. Mobile banking has taken off faster here than anywhere else.

**Singapore**

Singapore ranks highly – third in our Index, though its organic approach to open banking so far is limited to the traditional incumbent banks. Regulators are prioritizing the stability of the country’s financial sector over mandated openness; however, the approach is not hindering strong rates of innovation. High trust among consumers signals further adoption.

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**Overall global ranking**

- UK
- China
- Singapore
- US
- Hong Kong SAR
- Australia
- Netherlands
- Canada
- Germany
- Spain

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US
Open banking is being shaped without a strong regulatory mandate. Instead, the world’s highest rate of innovation, a thriving FinTech environment and fierce competition among banks places the US fourth in our Index. Strong consumer sentiment bodes well for future success, though the hands-off approach of regulators leaves banks to work out standards among themselves, which may potentially slow down progress.

Hong Kong
It’s a global financial hub, but Hong Kong SAR ranked only fifth in our Index. Progress should accelerate with the introduction of a suite of financial initiatives. These include the mandated introduction of APIs, the entrance of virtual banks and a faster payment system to support less costly and immediate payment transfers across ecosystem players.

Australia
In 2019, Australia will begin a mandated open banking rollout. Its principles will also extend to other industries, starting with energy and telecommunications. But implementation may be slow and costly due to the need to reach agreement among a complicated ecosystem of regulators. Australian consumers are positive about the potential benefits, though they will need to be convinced that it is safe to share data with FinTechs.

Netherlands
The Dutch sector ranks seventh for open banking adoption, with regulatory delays and consumer reluctance hindering its potential. But, the situation should improve in 2019 as the Senate moves to legislate the EU’s PSD2, which is an important platform for open banking in Europe. Winning the trust of consumers will be the biggest barrier – our survey found only 18% of digitally active consumers willing to share transaction data with FinTechs.

Canada
Its “go slow” approach placed Canada eighth in our Index, due mostly to regulatory caution and a lack of consumer enthusiasm. While regulatory progress is unlikely until the country updates its major privacy law, banks can accelerate their own initiatives, particularly in coordinating internal initiatives, opening their platforms to innovators, and proactively promoting digital adoption to consumers.

Germany
It’s a global leader in regulatory readiness, ranking second on that pillar after the UK, though Germany’s standards are not as prescriptive. But despite the positive environment, open banking has yet to reach its potential here due to consumer uncertainty around the concept and cybersecurity concerns.

Spain
Spain lags its European neighbors in open banking, partly due to government delays in implementing PSD2. But despite ranking last in our Index, the potential looks positive. Spanish consumers are relatively more willing to share transactional data and the EU is set to transpose PSD2 into law over the next 12 months.

No one regulatory formula for success
Our Index results show that no single regulatory model can determine success. Open banking is thriving in both Mainland China and the UK, which host vastly different regulatory environments.

The divergent approaches show the importance of each market taking an individual approach to open banking. Regulators, governments and the industry can learn lessons from other markets. However, each should ultimately design a regulatory framework and innovation initiatives that suit their own financial sector and consumer sentiment.
Taking off or going slow: what is the optimum pace for open banking to thrive?

Market perspectives.
How innovation and security could unlock open banking in Australia

Australian consumers are positive, but cautious about open banking, requiring regulators to control security and participants to innovate.

What has been described as Australia’s open banking “revolution” follows extensive reviews by the Productivity Commission and Treasury. Now, after extensive discussions among many interested parties – government, banks, energy and telecommunication firms, FinTechs and consumer groups – its mandatory rollout is underway, starting with the major banks in 2019.

Australia’s version of open banking is delivered through the Consumer Data Right (CDR). This provides consumers with the right to direct that their data is shared with other organizations they trust, so they can benefit from its value. This will allow consumers to easily switch between financial institutions, compare products and, it is hoped, boost competition, efficiency and innovation in the sector. Australia’s timeframe around its phased implementation of open banking has been deferred, but is still ambitious:

- **July 2019**: Australia’s major banks will be required to publicly share product data for credit and debit cards, deposit accounts and transaction accounts.
- **February 2020**: Major banks will share credit, debit, deposit, transaction and mortgage account customer and transactional data.
- **There will be a phased pilot for consumers and other participants (other banks, FinTechs etc.) beginning July 2019.**
A complicated regulatory environment may slow rollout

In our Open Banking Opportunity Index, we assessed the readiness of 10 different markets around the globe to thrive in an open banking environment. Australia ranked fifth overall, and fourth on how supportive its regulatory environment is toward open banking, which came as a surprise to some who expected a higher result.

**Australia – open banking opportunity index ranking**

<table>
<thead>
<tr>
<th>Overall</th>
<th>Regulatory environment</th>
<th>Consumer adoption</th>
<th>Consumer sentiment</th>
<th>Innovation environment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>How conducive is the regulatory environment for open banking?</td>
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<td>5</td>
<td>4</td>
<td>4</td>
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<td>6</td>
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Ranking Key: 1 = highest; 10 = lowest

Source: EY Open Banking Opportunity Index research.

While Australia’s regulatory environment is strong, it’s also complicated, with four key bodies responsible for setting the new framework that will govern open banking in Australia.

- **Treasury** drafts the legislation establishing the statutory rights and powers.
- **Australian Competition and Consumer Commission (ACCC)** creates the rules covering sector designations, outcomes, accreditation criteria and the required infrastructure.
- **Data61** (part of government agency, the Commonwealth Scientific and Industrial Research Organization - CSIRO) sets the technical standards through consultation with the industry.
- **Office of the Australian Information Commissioner (OAIC)** manages data privacy law changes and adherence to the Australian privacy principles.
Coordinating across each organization, while securing industry input, is likely to be more difficult during the tight initial implementation timeframes. Reaching agreement on complex topics of accreditation, consent, enforcement, penalties and data security may be difficult – and could delay the rollout.

A complicated regulatory environment is also likely to increase the cost and complexity for Australia’s financial institutions to meet open banking rules. Making the most of open banking will depend on their ability to do more than just comply.

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**EY GLOBAL BANKING**

**Regulation, trust and consumer sentiment**

![Diagram showing the relationship between regulatory environment score and consumer sentiment score for different countries.]

**Ranking Key:** 1 = lowest index score and 10 = highest index score

*Source: EY Open Banking Opportunity Index research.*

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**Banks must think beyond compliance**

Maximizing the benefits of open banking, both for consumers and financial institutions, will depend on companies’ ability to use innovation to drive more value from the mandated changes that are on their way.

For Australia’s big four banks, which dominate about 80% of the markets, the challenge will be to embrace, rather than resist the impact of open banking. Our Index ranked Australia sixth in terms of innovation — not a poor result, but with room to improve. Where are the greatest opportunities for banks to innovate?

At the simplest level, open banking offers opportunities to financial institutions to redesign the customer experience.
journey, by making it easier to assess, select and manage their finances through rich interface. For example, banks could, with customer consent, help customers select the most appropriate product, maximize their savings, avoid fees and monitor their “financial health” across institutions. Banks could also look at the “whole of customer” transactional information across institutions to advise on appropriate loans, or suggest the best savings accounts.

Australian consumers are relatively mature adopters of FinTech services, with 37% of digitally active consumers using two or more services. For Australia, the adoption challenge will be providing open banking services that consumers feel support them in achieving their goals. The findings reflect the interesting disparity of views among Australian consumers, who are mostly urban, often early technology adopters, but also have conservative attitudes toward privacy and security.

The innovation environment will continue to grow as Australia’s vibrant FinTech community looks to leverage open banking, and increasing internet speeds in rural areas, coupled with rising mobile adoption. This will reduce consumer barriers to entry.

Moreover, once adopted, Australia has the potential to amplify the consumer benefits as the CDR expands to other industries.

Building consumer trust is the priority

Our Index surveyed consumer sentiment toward open banking, using online discussion analysis. We found Australian consumers were largely positive toward the concept, but trust around security of data came through as a concern.

Australia was the top performer on net online sentiment, with 40% of all posts expressing positive sentiment – positive discussion was focused on service innovation and consumer choice. In the consumer survey, Australians ranked ninth on sharing transaction data with FinTechs. They jumped to fifth when asked the same question, but with a further assurance that there would be effective controls over the security of the data exchange.

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<td>10%</td>
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</table>

Source: EY Open Banking Opportunity Index; Consumer sentiment analysis conducted by Alva Insights.
Educating consumers about the benefits of open banking, which include offering products and services that help them save and better manage their money, can enable open banking participants to rebuild trust, and position them to innovate more broadly. This could include using a holistic view of consumers’ financial behavior to design entirely new products and services. Or, as Australia’s open banking ecosystem expands to include energy, telecommunications and eventually other industries such as health and retail, banks could consider cross-sector partnerships to further drive innovation.

Progressive participants can leverage their brand beyond finance to offer consumers an entire suite of “lifestyle” services. This is similar to models adopted by some of Australia’s biggest airlines and retailers, and has proven successful in other Asian markets. These models succeed because they have a holistic view of customers – including the products and services they want and how they like to experience them. If banks can use the data available in open banking to develop that deep understanding, they can design and deliver different products and services that add more value and build deeper customer loyalty.

Challenger banks should move early

But, open banking is also a huge opportunity for Australia’s tier-two and challenger banks. These banks have a further one-year delay to adopt open banking. They could be tempted to use this as an opportunity to wait and see. However, global experience is that this delays the compliance activity, leaving others to test and learn their competitive positioning and partnerships. Our advice would be to move now to understand how to compete, rather than wait for the compliance deadline.

With both the big and smaller banks subject to the same open banking rules, the challengers have a rare opportunity to leverage customer insights and gain market share from the major institutions. Those that think cleverly about how compete, rather than just comply, will be in an excellent position to unlock the value of a market currently dominated by incumbents. They will benefit by using their own brand strengths, which are often in customer experience. Tier-two banks may want to consider collaborating as a group, to better leverage their investment in open banking and compete more effectively.
Taking off or going slow: what is the optimum pace for open banking to thrive?

Both Australia's big four and tier-two banks will need to consider strategies to compete against new players in an open banking world.

The commonality of Australia's open banking standard with that of the UK and other jurisdictions lowers barriers of entry for global companies, both from the financial sector and beyond.

Many of the world's tech giants already offer payment services. They have won huge consumer favor with Australians who, as our survey found, are relatively mature adopters of FinTech services – 37% of digitally active consumers use two or more services.

The ability of newcomers to the sector to use APIs to access a wealth of customer data previously available only to incumbents puts them in a position to move fast. These new competitors often bring new technologies and platforms, a nimble culture and an ability to innovate and iterate more quickly than any incumbent.

The onset of open banking in Australia will change the nature of the competitive landscape, not just in finance but across sectors. Consumers will benefit from better services and prices, and more choice. For financial institutions, the opportunities to use open banking to deepen relationships with customers, develop new products and services, and even explore new roles are huge – but there will be lots to do to unlock the real value of the upcoming changes.

The key message to all players is to recognize the complexity and diversity of the work required to prepare for open banking. While it’s true that the right technology tools and capabilities will be imperative, this is not just a technology problem. Innovation will be central to success in open banking, but standalone initiatives will not be enough. Embedding a culture of innovation, collaboration and partnerships will be essential – and may offer smaller banks and newcomers an edge over the incumbents.

For Australia’s major banks, open banking presents a strategic dilemma about where they would like to position themselves in this new ecosystem. Will they merely comply and risk becoming relegated to the status of a utility provider? Or move to own the customer experience? Can they innovate and pioneer the next game-changing ecosystem with frictionless access to financial products and services? Do they want to become the go-to institution for customers – not just for financial services, but in many aspects of their lives? And, how could new partnerships help achieve these goals?

Whichever strategic direction they choose, maintaining consumer trust must be a priority – without it, banks simply cannot move forward to leverage the opportunity of Australia’s open banking revolution.
How new open banking opportunities can thrive in Canada

Open banking is progressing steadily. Innovative initiatives and digital adoption could fast-track delivery of greater value to consumers.

Open banking is slowly but steadily progressing in Canada. Leading banks have launched initiatives to study the opportunities open banking offers and are using APIs to partner with FinTechs to deliver new products. Canada’s Department of Finance established an Advisory Committee on Open Banking in September 2018 to explore the potential and pitfalls of open banking for consumers. The Committee delivered a consultation document in January 2019, which identified the potential benefits and risks of open banking. The wider stakeholder consultation that follows will likely result in legislative action in the near future.

To make meaningful progress on the open banking agenda in Canada – and start delivering greater value to consumers – banks will need to consider three key steps.

1. Coordinate their internal initiatives either through an industry group or through regulators to help consistent standards emerge.

2. Adopt an open approach to spur innovation at scale and provide a level playing field to all participants versus the current “walled garden” approach.


By Abhishek Sinha
EY Canada Partner, Technology Consulting, FSO Advisory

By Anthony Rjeily
EY Canada Advisory National Leader, Digital Transformation & Innovation
It remains to be seen how proactive banks will be, especially since most consumers are not clamoring for these services, at least not yet. But banks would be wise to move the initiative forward, or risk being caught off guard by new competitors that are quickly emerging from within and outside of the industry.

For now, the industry seems to be taking a go-slow approach, leading Canada to place eighth in the EY Open Banking Opportunity Index, which assessed the readiness of 10 different markets around the globe to thrive in an open banking environment.

In the Index, open banking is defined as “online banking and financial services enabled through consumers’ ability to offer third-party providers access to their personal bank account data and payment initiation.” TTPs can use a variety of mechanisms and tools, including “screen scraping” and APIs.

The Index also shows that most individual markets need to strike a better balance between implementing regulatory structures, building consumer trust and encouraging innovation.

### EY GLOBAL BANKING

**Canada – open banking opportunity index ranking**

<table>
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<tr>
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<td>10</td>
<td>10</td>
<td>8</td>
<td>5</td>
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</table>

Ranking Key: 1 = highest; 10 = lowest

Source: EY Open Banking Opportunity Index research.
Regulators begin to study the pros and cons

As noted, the Canadian Department of Finance Advisory Committee released a consultation document that identifies the potential impact on consumers, small businesses and the risks to consumer privacy, data security and financial stability.

The Canada Department of Finance has said that making it easier for people to let third parties access their banking data could spur providers to offer more tailored products and services, and thus start delivering greater value to consumers. In addition, customers could benefit from greater transparency, helping them to make more informed decisions and better manage their finances.

Now that the Advisory Committee’s report is released, concrete regulatory action will likely be 18 to 24 months in the future. One of the big questions is whether Canada will adopt a more prescriptive approach, similar to the UK, or continue down a principles-based regulatory framework. A principles-based approach, in this context, is likely to lead to variability in standards and a hurdle to innovation. That might depend in part on how willing banks are to pursue open banking on their own.

Also, Canadian regulators would likely wait to take any specific action on open banking until the country’s big data privacy law, The Personal Information Protection and Electronic Documents Act (PIPEDA), is updated to include some key provisions, such as data portability, outlined in the General Data Protection Regulation (GDPR) in Europe. Having the right legal framework in place to manage customer privacy and consent before layering open banking on top will be essential for success. These factors help to explain why Canada’s open banking regulatory environment ranked 10th in the Index.
Taking off or going slow: what is the optimum pace for open banking to thrive?

Millennials could help drive adoption

Given this background, it is not surprising that Canada ranked 10th in the Index for consumer adoption potential: only 18% of its digitally active population are using two or more FinTech services, and only 44% of smartphone users have adopted mobile banking. However, those are averages. Consumer behavior differs by demographic segment. Many baby boomers and older senior citizens still prefer visiting branches and talking to customer service staff face-to-face. Canada’s demographic skews toward these age groups.

But there is every reason to believe that adoption potential among younger consumers – millennials in particular – is much higher and more in line with other countries. For now, however, the features and products offered in Canada are not nearly as advanced as in the European, Asian and Australian markets. This comparatively limited value proposition might be delaying the adoption potential among younger demographic segments.

Consumer sentiment remains a hurdle

In general, open banking is generating less interest among consumers in Canada than in the US. However, Canadian consumers are becoming more enthused about the possibilities of open banking.

According to the Index, Canada placed eighth in terms of consumer sentiment among global peers. The consumer sentiment analysis in our Index was derived from social media, blogs and forums. Overall, 31% of consumer social media posts and comments were positive and 9% were negative, for a net positive score of 22%.

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**EY GLOBAL BANKING**

**Consumer sentiment insights: Canada vs. global**

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<tr>
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<th>Net sentiment percentage</th>
<th>Positive percentage</th>
<th>Neutral percentage</th>
<th>Negative percentage</th>
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<tbody>
<tr>
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<td>31%</td>
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<tr>
<td>Global</td>
<td>19%</td>
<td>28%</td>
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Source: EY Open Banking Opportunity Index; Consumer sentiment analysis conducted by Alva Insights.
Taking off or going slow: what is the optimum pace for open banking to thrive?

This overall score derived from sub-scores in three broad categories:

- **Open banking**: posts mentioning “open banking” explicitly or referring to the revised PSD2. The net positive sentiment here was 21%.

- **Sharing financial data**: posts that discuss sharing of financial or bank data with third parties. The net positive sentiment was 36%.

- **Services**: posts that discuss apps, tools or services of the type enabled by open banking. The net positive sentiment was 25%.

Discussions about innovation (38%) were by far the top driver of positive sentiment. Consumers’ major concern was cybersecurity, which accounted for 41% of all negative posts on open banking. There is also clearly some fear and skepticism of change, with innovation accumulating 19% of negative posts. Data protection was the subject of 15% of negative comments.

The bottom line is that many Canadians are uncomfortable sharing their data online; however, that sentiment is improving as more innovative offerings emerge, at least among younger consumers.

### Innovation projects begin to take root

Among the four pillars, Canada’s innovation environment was the strongest of the pillars, placing Canada in fifth place. Canada has a thriving FinTech industry, plenty of private investment, government support for start-ups, with Toronto ranked as a leading global tech hub. The Index ranked Canada third after China and the US for the number of patents filed by its main banks and FinTechs in 2017. It also ranked first for its broader research and development environment.

Data aggregator Flinks already claims to connect to more than 250 million Canadian financial accounts, and several of the big banks have announced individual initiatives of their own. In March, RBC was the first large Canadian bank to launch an API developer portal. The portal will allow eligible external software developers, industry innovators and clients to access select RBC APIs so they can more easily integrate the bank’s services into their own products.

The Platform Organization (also known as PLATO) is a group within Scotiabank that rapidly develops new services and tools. It is now sharing applications it has developed with the open-source software community. While neither of these initiatives are technically open banking, they will lay the important groundwork for future open banking initiatives.

### Open banking’s future in Canada

Open banking in Canada does not yet exist as it does in the other markets in the Index, and considering the current environment, the transition toward open banking is more cautious.

But there are powerful incentives for banks to pick up the pace. It is likely that consumers will begin to demand the kind of individually tailored products and services that open banking makes possible. Banks that are prepared can better withstand competition, and perhaps become the competition — winning new customers from those not as advanced in open banking. Bankers should also bear in mind that regulators may become more assertive if the industry resists adopting technology that is deemed in the best interest of consumers.

For these reasons, we believe it is critical that banks follow these three steps to move open banking forward: coordinate their internal initiatives, open their platforms to innovators, and proactively promote digital adoption to consumers. If these steps are taken, it could put Canada on the fast-track to delivering greater value to consumers.
How China’s open banking experiment is unfolding

Open banking is thriving in China, driven by an innovation-focused economy and the world’s most digitally-connected consumers.

EY’s Open Banking Opportunity Index offers a view across 10 markets, revealing insights into the indicators for open banking to thrive in one country and lag in another. One of the most interesting findings is that the Index’s top two ranked countries – the UK and Mainland China – share strong consumer adoption potential and innovation environments, but differ significantly in terms of the regulation that underpins open banking.

And while it’s widely acknowledged that the UK’s approach is the global benchmark in our Index, China’s less regulated approach has yielded results that have defied many expectations.
In China, the lightning-fast development of open banking reflects the rapid growth of the internet and smartphone, which are now central to everyday life for Chinese consumers. The internet has enabled the creation of direct banking, which allows consumers to set up online accounts to access banking services without ever setting foot in a branch. Direct banking was adopted by both traditional banks and a host of new start-ups with no physical branches - there are now more than 3,000 banks in China.

As direct banking grew, banks leveraged APIs to expand their customer service coverage, offering financial services across other lifestyle services such as e-commerce and creating a vast ecosystem of products across sectors. Now China’s banks are using their open banking portals to redefine their entire role, positioning themselves not just as financial institutions, but as technology companies and lifestyle partners for customers.

Until recently, much of the growth in China’s open banking has occurred in the absence of any mandates, API standards or regulatory protection of customer data. But this is changing, with Chinese regulators cracking down on the questionable practices of some peer-to-peer (P2P) lenders and cryptocurrency traders.

China’s approach to regulation, both in the financial sector and beyond, is best described as pragmatic and organic – allowing industries to develop through experimentation and stepping in to tackle problems as they appear. The Government is treading carefully, anxious not to slow down innovation, but instead establishing frameworks that support its growth in a manner that offers greater protection to consumers.

China reportedly will introduce regulation that mirrors that of Europe’s GDPR, though timing of any implementation is unclear. It is expected that regulation of China’s open banking sector will continue to unfold as the country considers its evolution in other markets.
The world’s most connected consumers

A laissez-faire approach to regulation may have allowed the expansion of open banking in China, but demand from China’s fast-expanding, digitally-connected middle class is the biggest driver for its success. Today’s typical Chinese consumer carries no cash, or even cards, preferring to transact via mobile banking, which has taken off faster in China than anywhere else in the world.

This high digital adoption rate is encouraged by Chinese consumers’ willingness to share data with institutions. Unlike banking customers in many western economies, our consumer sentiment research indicates that consumers in China were more positive and happy to share their transactional data with FinTechs. Roughly half of the online discussions about open banking were positive, focusing on its benefits of innovation and new services.

FinTech services

of the digitally-active population uses two or more FinTech services.

Consumer sentiment insights: China (mainland) vs. global

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Source: EY Open Banking Opportunity Index; Consumer sentiment analysis conducted by Alva Insights.
Chinese consumers are happy to swap data for services

While Chinese attitudes to data security may be, in large part, explained by cultural norms, it’s clear too that consumers perceive big payoffs for sharing information. The pace of Chinese progress in creating innovative products and services, including in financial services, is dizzying, with China rating second only to the US in terms of innovation in our Index.

In the past, this innovation may have been largely derivative of that seen in Western economies, but no more. A vibrant homegrown innovation culture is thriving, with young entrepreneurs inspired by the success of tech magnates (such as Alibaba founder Jack Ma) to create products and services specifically geared to the Chinese consumer. In 2017, China registered more FinTech patents (171) than any other country.
Taking off or going slow: what is the optimum pace for open banking to thrive?

Can regulators balance security with speed of innovation?

China’s open banking experiment has seen innovation thrive and consumer adoption accelerate faster than anywhere else in the world.

Effie Xin
EY Principal and Financial Services Greater China Advisory Leader.

How will open banking in China evolve? The country’s financial sector is at a crossroad. Regulators face critical decisions about how to put in place the frameworks that support a sustainable, secure sector while still allowing firms to innovate at the breakneck speed demanded by consumers.

Designing effective policy will best be done in collaboration with the industry and enhanced by regulators themselves. Together, they will embrace technology and digital tools to help shape specific regulatory regimes for China’s different regions.

For FinTechs and TechFins, increased regulatory scrutiny highlights the need to establish a strong reputation in the market, perhaps through partnerships.

Firms that embed themselves into the fabric of China’s expanding financial ecosystem stand a better chance of surviving its fierce competition. Collaboration with traditional banks can deliver benefits both ways – helping FinTechs build trust while bolstering the innovation quotient of the incumbents.

As mainland China progresses with open banking, it may take notes from more balanced regulatory regimes in the region, such as that of Singapore and Hong Kong SAR. But equally, more established markets could do well to learn lessons from China’s open banking “experiment” where agility, speed to scale (and sometimes fail) and the use of customer data to drive innovation is leading the world in customer adoption.
Taking off or going slow: what is the optimum pace for open banking to thrive?

Open APIs and other digital banking initiatives offer opportunities for Hong Kong’s traditional financial sector to become a global leader. Hong Kong may be an international financial services hub, but it has not yet reached the heights of FinTech innovation seen in some of its Asia-Pacific neighbors. That may be about to change, following the launch of a series of potentially transformational regulatory and infrastructure initiatives. These include moves from the Hong Kong Monetary Authority (HKMA) to:

- Mandate retail banks to adopt open APIs in a phased approach beginning January 2019.
- Authorize a range of new, branchless (or virtual), retail banks starting in Q1 2019, with several new market entrants expected by the end of 2019.
- Facilitate a faster payment system (FPS) to support less costly and immediate payment transfers across ecosystem players.

Hong Kong’s approach to open banking may be inspired by the UK’s Open Banking initiative, as well as the EU’s PDS2, but it is clearly being adapted for local market conditions. The HKMA launched its own “Open API” initiative in July 2018 to kick off the rollout described by its chief executive, Norman Chan, as: “One small step for a bank, but a milestone for financial innovation in the banking sector.”

How open banking could fast track Hong Kong’s FinTech innovation

By James Lloyd
EY Asia-Pacific FinTech Leader

Open APIs and other digital banking initiatives offer opportunities for Hong Kong’s traditional financial sector to become a global leader.
Taking off or going slow: what is the optimum pace for open banking to thrive?

Virtual banks will disrupt Hong Kong’s incumbents

Chan’s statement highlights the ambitions for Hong Kong’s financial sector, which are driving this progress in the territory’s regulatory environment. It is currently ranked fifth in EY’s Open Banking Opportunity Index.

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<tr>
<th>EY GLOBAL BANKING</th>
<th>Hong Kong SAR – open banking opportunity index ranking</th>
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<td>Overall</td>
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Ranking Key: 1 = highest; 10 = lowest

Source: EY Open Banking Opportunity Index research.

It’s the combination of several initiatives that differentiates Hong Kong’s introduction of open banking from that seen in other markets. In particular, the entrance of new “virtual” banks – including well-capitalized multi-party joint ventures – is likely to bring the disruptive innovation the industry has long needed.

In addition to local market opportunities, newcomers are expected to look beyond the territory’s borders – leveraging Hong Kong’s status as a highly credible regulatory market to help launch innovative propositions with regional or even global ambitions.

The ability of these banks to leverage Open APIs and faster payments services will allow them to create a
powerful digital offering for Hong Kong consumers, who appear increasingly envious of the more innovative financial solutions available in Mainland China. It’s likely that these new online-only banks will use open banking-inspired services to build extended ecosystems beyond the financial sector, integrating other parts of a consumer’s digital life – such as retail, transportation, travel, and telecommunications.

For traditional banks, Open APIs also bring new opportunities – as well as a significant program of work.

Incumbents have begun to upgrade legacy technology systems, deploy more digital tools and adopt a more competitive mindset, but progress is often slow and timelines can be tight.

Huge consumer adoption potential

Consumers are to be the big winners as Hong Kong’s banking sector opens up and signs are strong that they will take full advantage of the changes.

Compared to other markets, Hong Kong consumers are not active mobile banking users, however, they show huge adoption potential. They are some of the world’s most digitally-active banking customers, with 98% owning a smartphone and 78% using social media. Consumers in Hong Kong ranked third (after Mainland China and the US), for their propensity to share transaction data with FinTechs in return for better services.

### Regulation, trust and consumer sentiment

<table>
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<tr>
<th>Regulatory environment score</th>
<th>Consumer sentiment score</th>
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**Mainland China**

**US**

**Hong Kong SAR**

**Singapore**

**Canada**

**Spain**

**Australia**

**Netherlands**

**Germany**

**UK**

**Source:** EY Open Banking Opportunity Index research.
Strategic choices will determine future success

Open banking in Hong Kong will intensify competition within a historically staid retail banking sector. Several virtual bank entrants are likely to come to market around the same time in mid-to-late 2019. Winning in this environment, whether for traditional or challenger banks, will require the development of truly differentiated value propositions.

Partnership strategies may be a smart way forward – offering incumbents the opportunity to integrate non-financial products into their offerings and giving newcomers the ability to build a customer base for their new digital offerings more rapidly. Hong Kong customers are eager for more innovative products, and strong customer engagement to explore exactly what services consumers want will be critical to success.

With aggressive timelines to meet, Hong Kong’s financial institutions will need to move fast to take advantage of emerging open banking initiatives and stay relevant in a changing competitive landscape. Making the right strategic choices now will determine their own future success and help fuel Hong Kong’s ambitions to become a global leader in financial innovation.
How innovation can accelerate adoption of open banking in the Netherlands

Regulatory delays and consumer trust are hindering the open banking rollout in the Netherlands. How can Dutch banks fulfill their potential?

So far, the story of open banking in the Netherlands is one of unfulfilled potential, with the country sitting in seventh place on EY’s Open Banking Opportunity Index, and sharing sixth place in terms of the regulatory environment. Among the main stumbling blocks are regulatory delays, which have created significant uncertainty for Dutch banks about exactly how open banking will play out in the Netherlands.
The EU’s PSD2 is the regulation that underpins open banking across Europe. While it has been implemented in many countries, regulators in the Netherlands have been slow to transpose the directive into local law. Initial timelines laid down by the Dutch Ministry of Finance were missed.

Much of the delay is due to difficulties reaching agreement between banks, the Data Protection Authority (DPA) and other stakeholders on key aspects of the rollout, particularly around data privacy, consumer due diligence and the conflicting priorities of PSD2 with the GDPR. In December 2018, the Dutch Senate finally approved the legislation, with implementation 1 January 2019.

The passing of PSD2 into law should help accelerate open banking, although a current lack of consistency around API frameworks across Europe may still slow down the pace of progress. This is not a concern specific to the Netherlands. Initiatives from European regulators to standardize APIs across the continent would be welcomed by many EU countries that are also experiencing challenges in realizing the potential of open banking.

Regulatory certainty and standards should help incentivize more investment in open banking initiatives. They may also help overcome the other big barrier to accelerating open banking’s potential in the Netherlands – consumer concerns.

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### Netherlands – open banking opportunity index ranking

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<tr>
<td>Rating</td>
<td>7</td>
<td>6</td>
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**Ranking Key:** 1 = highest; 10 = lowest

**Source:** EY Open Banking Opportunity Index research.
Consumers will need to be convinced of open banking’s benefits

**Consumer adoption**

78% of smartphone users in the Netherlands have adopted mobile banking, with more than 70% using multiple financial services products.

Dutch consumers are digitally savvy and relatively early adopters of technology. Our Index of customer adoption potential for open banking found consumers in the Netherlands ranked halfway — in fifth place.

Despite, or perhaps because of their high degree of digital use, Dutch consumers are wary of some aspects of open banking, according to the consumer sentiment research conducted for our Index.

Dutch consumers are primarily concerned about what open banking means for them in terms of data protection. They are also worried about cybersecurity, and express skepticism about the need for, and benefits of, both consumer control and choice.
Taking off or going slow: what is the optimum pace for open banking to thrive?

EY GLOBAL BANKING

Consumer sentiment insights: Netherlands vs. global

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<td>Netherlands</td>
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<td>62%</td>
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<tr>
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Source: EY Open Banking Opportunity Index; Consumer sentiment analysis conducted by Alva Insights.

Sharing financial data

18%

of digitally-active Dutch consumers are comfortable sharing transaction data with FinTechs in return for better services.

Fears over privacy and security have been fanned by recent Dutch media coverage and not helped by indecision from regulators around just how to address data safety issues. Getting Dutch consumers past the trust barrier will be difficult, but important for open banking’s future adoption. The question will be whether Dutch banks can inspire trust through innovation.

What will the killer open banking app be?

Dutch consumers have shown willingness to share information when the payoff is perceived to be worth it. Social media use is high in the Netherlands. The country has been home to innovative financial services apps such as Tikkie, an app which lets friends repay small loans quickly and has attracted more than 3 million users (about 20% of the population) in just two years. It is likely to be a similar “killer app” that leverages PSD2 and convinces Dutch consumers of the benefits of open banking.

Developing killer apps requires innovation. Our research found the Netherlands comparatively lower down the Index on innovation, but we see many signs of strong progress on this front. In particular, collaboration between banks and FinTechs is growing and boosting innovation in the sector. Notable recent examples include: a partnership between ING and a British firm Funding Options to launch a platform that helps SMEs compare different funding options; and a partnership between Dutch private
bank Van Lanschot and German FinTech Fidor, which allows Van Lanschot to leverage Fidor’s open APIs to offer customers a better payment experience.

For FinTechs, partnering with a bank is the easiest route to high customer volume while, for banks, these initiatives are part of a wider strategy to build, buy or invest in innovation. As many Dutch banks move on from the risk and regulatory projects that dominated focus in recent years, innovation is a bigger priority and institutions are considering how to best transform for a digital future, which will include open banking.

Preparing to compete in this future will require banks to develop a clear strategic path, by first determining just which role they will play in an expanding financial ecosystem, enabled by open banking and powered by technology. Banks will need to provide innovative products and services that win over consumers, or excel in outstanding customer experiences. Others may focus on providing banking operations and technology. However they shape their digital future, Dutch banks will need to embed flexibility into their business model, and be prepared to adapt and innovate in response to the evolution of open banking and the new competition it brings.

Can Dutch banks drive open banking adoption?

The January 2019 implementation of PSD2 is a positive indicator for the accelerating adoption of open banking in the Netherlands. But this will need to be accompanied by initiatives from European legislators to introduce consistency around API standards and clarity on key regulatory sticking points. These include customer due diligence around PSD2 services and the inter-relationship of open banking and GDPR.

Once regulators have done their part, it will be up to banks to drive their digital future and create innovative new financial products. Only then can they convince Dutch customers of the benefits of open banking and maximize its potential across the financial sector and beyond.
How open banking in Singapore may pivot or remain organic

Singapore is one of the leaders in EY’s Open Banking Opportunity Index, ranking high across all four Index indicators.

Singapore’s regulatory approach to open banking scored third on our EY Open Banking Opportunity Index, and the highest in the Asia-Pacific region. But the country’s open banking policy is not quite as it seems.
## Singapore – open banking opportunity index ranking

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Ranking Key: 1 = highest; 10 = lowest

Source: EY Open Banking Opportunity Index research.

The high ranking is driven by proactive efforts by the Monetary Authority of Singapore (MAS) to progress open banking since 2016, when it first published API guidelines. Since then, MAS has initiated a suite of measures designed to promote the opening of its financial sector, including the planned establishment of a shared “know your customer” (KYC) utility. Perhaps most notably, in 2017 MAS produced what is acknowledged as one of the world’s most comprehensive API playbooks, which serves as a reference guide for the financial services industry.

But while the guidelines for open banking are robust, their adoption is voluntary, with MAS believing that this approach will be more successful than mandated timelines. Explains MAS’s Chief Data Officer, David Hardoon, “You can come and say ‘thou shall do it’ but then nothing happens effectively.”

Instead, what the MAS describes as an “organic” approach to open banking is so far limited to Singapore’s established, traditional banks, with third parties excluded from taking part and no licenses issued to neo or digital-only banks. While regulators may take cues from the evolution of open banking in other markets, particularly Hong Kong SAR and Australia, we are unlikely to see major policy shifts any time soon. The cautious stance of Singapore’s regulators makes it clear that the government prioritizes the soundness and stability of its financial market over any perceived benefits of a more open, competitive landscape.
Collaboration boosts innovation

Singapore’s different approach to open banking policy is partly explained by the high levels of innovation already seen within its financial sector. Banks here simply don’t need the mandated push required in other markets.

In our Index, Singapore ranked fourth for innovation, scoring second-highest in the Asia Pacific after China. The country’s financial sector is one of the most dynamic in the world and considered one of the top hubs to start and grow a FinTech business. Much of the innovation we see in Singapore’s financial sector is through collaboration between FinTechs and traditional banks, mostly in developing new technology solutions for banking products.

We also see some banks using APIs to establish cross-sector partnerships and create ecosystems focused on financial services. For example, Standard Chartered’s Good Life service offers customers access to discounts on services with a range of other providers. Citi is exploring similar partnerships.

These initiatives did not originate in Singapore – they are being rolled out across global markets – but they do boost the presence of technological innovation. Another driver is a push by Singapore financial institutions to grow beyond their borders to maximize the growth potential of the rising middle class within the region, particularly in Malaysia and Indonesia.

While this strong culture of innovation is not hindered by voluntary open banking adoption, Singapore’s current lack of API standardization may threaten the pace at which collaboration among banks, FinTechs and third parties can come to fruition.
Consumers trust banks, so embrace innovation

Within this environment of innovation, it’s not surprising that Singapore’s banking customers show high adoption potential, ranking third in our Index in this category.

While their innovation benchmark is not as high as that of Chinese customers, it’s likely that further innovation from open banking will be consumer-led, and focused on leveraging APIs to improve the consumer finance experience. For example, institutions may use a full picture of a customer’s spending habits to deliver more accurate credit scores or offer instant loan approvals.

Singapore’s consumers are willing to share information for a better banking experience, with higher levels of customer trust toward banks than seen in some other markets. Our Index ranked Singapore third for consumer sentiment toward open banking, with about a third of online discussion posts expressing positive views.

### Consumer sentiment insights: Singapore vs. global

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<thead>
<tr>
<th></th>
<th>Net sentiment percentage</th>
<th>Positive percentage</th>
<th>Neutral percentage</th>
<th>Negative percentage</th>
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<tr>
<td>Singapore</td>
<td>27%</td>
<td>32%</td>
<td>63%</td>
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<td>Global</td>
<td>19%</td>
<td>28%</td>
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Source: EY Open Banking Opportunity Index; Consumer sentiment analysis conducted by Alva Insights.
How will Singapore’s open banking evolve?

It’s difficult to argue with the country’s organic approach to open banking. While Singapore’s financial sector continues to grow and thrive, banks are able to push their own innovation agendas – and customers remain content.

Regulators are closely watching the introduction of open banking in markets such as Hong Kong and Australia and, over time, Singapore’s own policy is likely to adapt in line with other developments. But, it remains to be seen whether the country’s current voluntary regulation will ever move toward mandates – or if it will need the enforcement seen in other markets to retain its position as one of the world’s leading financial markets.
Taking off or going slow: what is the optimum pace for open banking to thrive?

With strong regulatory direction and industry innovation, open banking in the UK is off to a positive start. Open banking is getting a boost from regulators and industry groups in the UK; indeed, no other country’s regulators are taking such a prescriptive approach.

The Competition and Markets Authority (CMA) rolled out mandatory API specifications for payment initiation and customer account information. It also mandated standardized formats and coding languages for APIs, and is supervising TPPs via a TPP register. This regulatory activity has spurred a thriving FinTech industry, a wave of bank and FinTech partnerships and investments, and the introduction of a first generation of open banking products and services.

Although it is still early for open banking in the UK – the regulatory rules only went into effect in early 2018 – the stars are aligning for open banking. The biggest hurdle is probably consumer sentiment. There is still a reluctance among many consumers to share their data, which is partly a cultural mindset, but also a reaction to several massive data breaches.

Regulatory involvement and consumer protections may help put consumers at ease and allow open banking adoption to take off, potentially creating a hockey stick effect in the not-too-distant future. In fact, the UK ranked first in EY’s Open Banking Opportunity Index, which assessed the readiness of 10 different markets around the globe to foster a vigorous open banking environment.
**UK – open banking opportunity index ranking**

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<tr>
<th>Overall</th>
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<th>Innovation environment</th>
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Ranking Key: 1 = highest; 10 = lowest

Source: EY Open Banking Opportunity Index research.

In the Index, open banking is defined as online banking and financial services enabled through consumers ability to offer TPPs access to their personal bank account data and payment initiation. TPPs can use a variety of mechanisms and tools, including “screen scraping” and APIs.

The Index research assessed four areas: the regulatory landscape, adoption potential, consumer sentiment and the innovation environment. We believe these four pillars are key indicators for open banking success.

The Index also shows that most individual markets need to strike a better balance between implementing regulatory structures, building consumer trust, and encouraging innovation.
Regulators are boosting the open banking agenda

As noted, UK regulators are taking a very active approach to open banking and have transposed the PSD2. The Cash Management Account (CMA) has implemented its own open banking reforms, publishing mandatory specifications, formats and deadlines. Further, the CMA has set up the OBIE to support industry transformation, and has created a TPP registry.

Interestingly, the UK’s approach is almost the complete opposite of that taken by regulators in China, which has taken a more organic hands-off approach. China placed second overall in EY’s Open Banking Opportunity Index thanks to strong adoption potential and consumer sentiment.

That dichotomy shows that there is no single regulatory path or approach to open banking; local customs, standards and expectations will dictate what is best.

In the UK, not only are regulators spurring institutions to adopt open banking, but their very presence may be critical to getting consumers comfortable in sharing their data and turning public sentiment in favor of open banking.

### Regulation, trust and consumer sentiment

<table>
<thead>
<tr>
<th>Regulatory environment score</th>
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<th>Nascent regulation, high consumer trust</th>
<th>Advanced regulation, high consumer trust</th>
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<td>6</td>
<td>Australia</td>
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Ranking Key: 1 = lowest index score and 10=highest index score

Source: EY Open Banking Opportunity Index research.

Unlike banking customers in the UK, the consumer sentiment analysis indicated China’s consumers are happy to share their transactional data with FinTechs. While Chinese attitudes to data security may be, in large part, explained by cultural norms, it is clear that consumers perceive big payoffs for sharing information.
What feature will drive “hockey stick” adoption?

Based on the consumer adoption analysis, and data from the 2017 FinTech Adoption index, the UK tied for first in consumer adoption potential with China. One reason is that the big banks are investing and taking the first generation of open banking products and services directly to their consumers, leveraging the inherent trust that many consumers have in their banks.

Today, these offerings are mostly in the form of account information service providers and exist in the personal financial management space. These are entry-level features that banks will use to get customers comfortable sharing data and interested in open banking.

However, to really power adoption, banks need to decouple data sharing from privacy concerns in the minds of consumers, and align it with convenience and normal, everyday behavior.

Contactless payment is an excellent example of how adoption can create a “hockey stick” effect. A few short years ago, many consumers worried that contactless payments would lead to scams, such as digital pickpockets. Today, consumers are more likely to be miffed at the inconvenience if a shop does not accept contactless payment.

The million dollar question for open banking is what feature will offer that kind of overwhelming convenience to change behavior and drive mass adoption. One thing is certain, that “killer” feature will need to offer more than an incremental improvement.

Consumer sentiment is the biggest hurdle

According to our Index, UK consumer sentiment scored seventh out of the 10 markets we surveyed, by far the UK’s lowest score among the four pillars. The major takeaway is that while the UK is leading in establishing the regulatory framework and conditions for open banking to succeed, consumer sentiment could be a critical hurdle.

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<th>EY GLOBAL BANKING</th>
<th>Consumer sentiment insights: UK vs. global</th>
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<tr>
<td></td>
<td>Net sentiment percentage</td>
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<tr>
<td>UK</td>
<td>17%</td>
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<td>Global</td>
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Source: EY Open Banking Opportunity Index; Consumer sentiment analysis conducted by Alva Insights.
The consumer sentiment analysis in our Index was derived from social media, blogs and forums. Overall, 30% of these references were positive and 12% were negative, for a net positive score of 17% (rounded).

This overall score was derived from sub-scores in three broad categories:

- **Open banking**: posts mentioning “open banking” explicitly or referring to PSD2. The net positive sentiment here was 17%.

- **Sharing financial data**: posts that discuss sharing of financial or bank data with third parties. The net positive sentiment was 20%.

- **Services**: posts that discuss apps, tools or services of the type enabled by open banking. The net positive sentiment was 24%.

The largest driver of positive discussion was innovation, which accounted for 28% of positive posts in the market. Consumer control also featured strongly with 13% of positive posts. Excitement about the changing environment contributed 9%, closely followed by education.

But the big takeaway in the UK was around what worried consumers and thus weighed on public sentiment. In our analysis, 50% of negative posts in the UK were related to concerns about “data protection” (28%) or “cybersecurity” (22%). Innovation, despite driving large volumes of positive sentiment, also generated 18% of the negative posts in the UK.

The trick with improving sentiment, as noted earlier, may be the presence of a strong regulatory hand to maintain data privacy. That might be especially true in the UK, which has experienced some high-profile data breaches.

Engaging the public on open banking and educating them on security will be key to winning consumer trust. Banks and FinTechs will need to think very carefully about how they communicate with consumers about open banking. For example, instead of framing the question as “Will you share your data?” it is better to ask: “Would you like to see all your bank accounts in one app?”

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**FinTechs are thriving and innovating**

The UK has a thriving FinTech industry, which is generally enthusiastic about the prospects for open banking given regulatory involvement and bank investment.

Among respondents to EY’s UK FinTech Open Banking Snapshot survey, 94% said open banking is a major opportunity, 81% are actively preparing for the opportunities it presents and 29% already consider themselves prepared. Given this engagement, it is not surprising that the UK placed third for its innovation environment, after the US and Mainland China.

Open banking also seems to be changing the competitive dynamics in the UK, with more FinTechs open to partnering with financial institutions as a strategy to access customers, thus forgoing the need to build a critical mass of customers themselves. We found that 59% of FinTechs are reconsidering their strategies for collaborating with financial institutions.

Where might that innovation lead? Our snapshot survey found that 23% of FinTechs are prioritizing account and data aggregation. In addition, 16% are prioritizing enhanced credit scoring, intelligent financial management, and new payments.

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**Open banking’s future**

Eventually, open banking should play an important socioeconomic role by helping more vulnerable, underbanked elements of UK society to access and navigate the financial markets. Open banking could be a way to more easily gather the necessary information to open a bank account or qualify for a loan, for example, or offer alternative methods of calculating lending risk. In other words, open banking could be more than just a way to push products, but a way to truly open opportunities for people and help guide good financial behavior.
Open banking was only initiated in the UK at the start of 2018, but the industry is moving forward ambitiously. For example, the Open Banking Implementation Entity (OBIE) and the top nine banks are planning to debut a mobile open banking product in 2019.

Even so, mass adoption is probably three to five years away. That will happen when consumers do not think of these transactions as open banking per se, or even a conscious act of sharing data, but as a natural way to make their lives more convenient. Ultimately, consumers may not be the ones who lead the charge. One of the main reasons that the CMA set up OBIE was to spur competition in the small business market. So it is quite possible that open banking will get its first big boost from the small business segment, which is looking to eliminate manual processes, access working capital, and work more efficiently across borders.
How a rapidly evolving US open banking ecosystem will take shape

Innovation, collaboration and competition are rapidly shaping the open banking ecosystem in the US.

Open banking in the US benefits from robust innovation and a thriving FinTech environment. Moreover, intense competition among banks is prompting many regional banks to partner with FinTechs to secure their place in the open banking vanguard, and, avoid being outmaneuvered by the global banking giants.

Interestingly, the US is moving toward an open banking environment organically without a strong regulatory mandate. Most in the financial services industry appreciate that US regulators are taking a largely hands-off approach to open banking, and they consider it the best way to foster continual innovation and ensure the market develops in a way that best serves customers. However, in the absence of regulatory guidance, financial services companies will need to settle on standards among themselves, something that could delay open banking adoption.

Even with this caveat, the dynamics of the US open banking market are potent, drawing added energy from very strong consumer sentiment toward open banking and the convenience it could make possible. Ultimately, weighing all these factors, the US placed fourth in our EY Open banking Opportunity Index, which assessed the readiness of 10 different markets around the globe to foster a vigorous open banking environment.
Taking off or going slow: what is the optimum pace for open banking to thrive?

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<tr>
<td></td>
<td>How conducive is the regulatory environment for open banking?</td>
<td>What is the potential for consumers to adopt open banking services based on existing behaviors?</td>
<td>How do consumers feel about open banking, and the data sharing involved?</td>
<td>How strong is the environment at fostering innovation, especially among financial services firms?</td>
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Ranking Key: 1 = highest; 10 = lowest
Source: EY Open Banking Opportunity Index research.

In the Index, open banking is defined as online banking and financial services enabled through consumers ability to offer TPPs access to their personal bank account data and payment initiation. TPPs can use a variety of mechanisms and tools, including “screen scraping” and APIs.

The Index research assessed four areas: the regulatory landscape, adoption potential, consumer sentiment and the innovation environment. We believe these four pillars are key indicators for open banking success.

The Index also shows that most individual markets need to strike a better balance between implementing regulatory structures, building consumer trust, and encouraging innovation.
Regulators are taking a wait-and-see approach

As noted, US regulators are taking a very light touch to open banking. Their “organic” approach to open banking is in sharp contrast to the UK’s highly prescriptive regulatory model.

That’s not to say that regulators in the US have been silent on the matter. In July 2018, the Treasury released a report advising the Bureau of Consumer Financial Protection to affirm that third parties authorized by consumers, including data aggregators and FinTech providers, would be entitled under the Dodd-Frank Act to access financial account and transaction data. The Treasury also wants to move firms away from screen scraping to more secure methods of data access, but says the solution should be developed by the private sector.

The question remains, however, how fast US banks can settle on industry standards and move ahead with open banking without firmer regulatory involvement.

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**EY GLOBAL BANKING**

Regulation, trust and consumer sentiment

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<tr>
<th>Regulatory environment score</th>
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<tr>
<td>Consumer sentiment score</td>
<td>Mainland China</td>
<td>US</td>
<td>Hong Kong SAR, Spain, Australia, Singapore, Germany, UK</td>
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<td>6</td>
<td>Nascent regulation, high consumer trust</td>
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Ranking Key: 1 = lowest index score and 10=highest index score

Source: EY Open Banking Opportunity Index research.
A culture of convenience could spur adoption

Based on 2017 data from our FinTech Adoption Index, US ranks sixth on consumer adoption potential. However, that might somewhat underestimate the true potential. Millennials, for example, are a cohort that are by and large fairly comfortable sharing data and transacting online; they are also entering their prime earning years and may begin to expect open banking services. Open banking also fits neatly into the US culture of convenience. It’s possible that any misgivings users may have about sharing data and transacting online will be outweighed over time by the enormous convenience of open banking.

Moreover, given the hands-offs regulatory approach and the intense competition among banks to win US consumers, institutions and their FinTech partners are likely to develop open banking products and services that are highly tailored to consumer needs. This hyper focus on the customer – as opposed to regulatory mandates – may help to spur consumer adoption.

Consumer sentiment is strong despite privacy concerns

According to our Index, US consumers have the second-best consumer sentiment score regarding open banking, behind only Mainland China. Thirty-four percent of digitally-active consumers were comfortable sharing transaction data with FinTechs for better services – a finding that implies that consumers put a premium on convenience, even as questions about data privacy and cybersecurity persist.

The consumer sentiment analysis in our Index was derived from social media, blogs and forums. Overall, 28% of these references were positive and 9% were negative, for a net positive score of 19%.

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### Consumer sentiment insights: US vs. global

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<tr>
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<th>Net sentiment percentage</th>
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<th>Neutral percentage</th>
<th>Negative percentage</th>
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<tr>
<td>US</td>
<td>19%</td>
<td>28%</td>
<td>63%</td>
<td>9%</td>
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<tr>
<td>Global</td>
<td>19%</td>
<td>28%</td>
<td>62%</td>
<td>10%</td>
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Source: EY Open Banking Opportunity Index; Consumer sentiment analysis conducted by Alva Insights.
Taking off or going slow: what is the optimum pace for open banking to thrive?

This overall score derived from sub-scores in three broad categories:

- **Open banking**: Posts mentioning “open banking” explicitly or referring to PSD2. The net positive sentiment here was 18%.

- **Sharing Financial Data**: Posts that discuss sharing of financial/bank data with third parties. The net positive sentiment was 26%.

- **Services**: Posts that discuss apps, tools or services of the type enabled by open banking. The net positive sentiment was 16%.

Consumers were most positive about innovation – 27% of positive posts on open banking referenced innovation. And despite the many high-profile data breaches in the US, consumers’ control of data accounted for 18% of positive posts. That said, the biggest concern is still data protection, which accounted for 36% of all negative posts. Cybersecurity concerns accounted for another 13%. And, in a sign that there is still resistance to change, innovation was discussed in 16% of negative posts.

Overall, however, US consumers seem to feel positive about the pace of innovation and are growing more comfortable with sharing data. To build on this trend, banks will need to ensure they frame open banking as a way to make consumers’ lives easier, their experiences more personalized, and their transactions more secure. Banks need to avoid debating about who owns the customer data, and how they plan to monetize customer data. These sorts of conversations only make consumers cautious, while the idea of convenience and improving their experience will continue to resonate and improve sentiment.

Innovation is strengthening US open banking

Among the four Index pillars, the US really stands apart when it comes to innovation, where it placed first. The country has a thriving FinTech industry: 141 FinTechs received venture capital funding rounds in the last three years; meanwhile, banks and FinTechs filed 128 patents in 2017. On both these metrics, the US led all the other nine markets surveyed.

Not only that, the intense competition in the industry is prompting regional banks to partner with FinTechs. They feel some urgency to do so given what’s occurring in the UK, where regulators are mandating the transition to open banking. Once global banks roll out those services in the UK, the theory goes, it’s only a matter of time before they extend open banking into the US. Regional banks hope to leverage their lack of legacy systems and relative agility compared to global banks to get a jump on open banking.

Ironically, while the UK’s regulatory approach may indirectly prompt more banks to partner with FinTechs and pursue open banking, the light touch of US regulators may allow players to develop an ecosystem that can react more precisely to customers and be more conducive to meeting needs. That said, one of their biggest challenges may be meeting customers’ high expectations. Products and services must continue to evolve and be relevant or consumers simply won’t adopt them.

Open banking’s future

Looking further into the future, the industry may evolve to a hub-and-spoke model, where the bank assumes the central role of managing the customer relationship, while third-parties provide the individual products and services – from mortgages, consumer loans, commercial loans to know-your-customer and Bank Secrecy Act compliance. Before that can occur, institutions must agree on standards for how they will transact and connect with each other.
Meeting our leadership team

**Abhishek Sinha**  
EY Canada Partner,  
Technology Consulting,  
Financial Services Advisory  
Toronto

**Andrew Gilder**  
EY Asia-Pacific Banking and Capital Markets Sector Leader  
Singapore

**Anita Kimber**  
EY UK Digital and Innovation Partner  
London

**Hamish Thomas**  
EY EMEIA Payments Leader and UK Advisory Banking Technology Leader  
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**James Lloyd**  
EY Asia-Pacific FinTech Leader  
Hong Kong

**Jan Bellens**  
EY Global Banking & Capital Markets Deputy Sector Leader  
Singapore

**Jeroen van der Kroft**  
EY Netherlands Financial Services Advisory Associate Partner  
Amsterdam

**Kai-Christian Claus**  
EY Global Payments Leader  
Hamburg

**Sean Viergutz**  
EY North America Financial Services Payments Leader  
Chicago

**Wayne Brown**  
EY UK Advisory Digital Banking Operations Leader  
London
Taking off or going slow: what is the optimum pace for open banking to thrive?

EY Open Banking Opportunity Index 2018 – Methodology

About the Index model

EY has developed an open banking opportunity index to assess the conduciveness of 10 selected market environments for the success of open banking. Success is viewed as the potential for more consumers to adopt open banking-enabled services within a market.

Our model uses a wide range of measures – 22 indicators and 13 sub-indicators – to assess each country's potential, across four key conditions needed for the success of open banking:

1. Regulatory environment – the impetus from policymakers to support open banking:
   - To test regulatory readiness, we assessed a wide range of qualitative indicators, which included: policy and legislation on open banking, the extent to which governments or regulators are working with stakeholders to promote its adoption and oversee third parties, the implementation of standards and guidelines for APIs, and data privacy and security measures.
   - For calculating our scores, we took the view that best-in-class countries would be those where the implementation of open banking is mandated, government or regulator engagement is high, and APIs are prescribed as the model of choice to facilitate open banking.

2. Adoption potential – the potential for consumers to adopt open banking services on the basis of existing behaviors:
   - To test consumer adoption potential, we assessed current consumer behaviors with respect to the use of digital services and financial services. Our indicators included: the use of mobile banking, uptake of financial technology (FinTech) services, the use of social media and the use of multiple financial products.
   - For calculating our scores, we took the view that an existing preference for digital services implies a lower barrier to the entry or adoption of open banking-related services. And a greater prevalence of consumers with multiple financial products may create a greater demand for open banking services (e.g., account aggregator tools).

3. Consumer sentiment – the impact consumer sentiment toward open banking, and the data sharing it involves, has on the buy-in for such services:
   - To test consumer sentiment, we used a combination of responses from consumer surveys, and opinions and thoughts from social media content and prominent consumer forums.
   - The survey responses assessed the comfort level of consumers in sharing transactional data with FinTech companies in exchange for improved services. The online sentiment analysis assessed the views of consumers on using open banking services as well as sharing financial data with third parties, and related apps and services (e.g., account aggregators and spending tracker).

4. Innovation environment – the strength of the environment in fostering innovation, especially among financial services firms:
   - To test the innovation environment, we assessed broad indicators related to a country’s ability to foster innovation as well as specific indicators related to FinTech innovation.
   - Our indicators included: Global Innovation Index scores related to R&D and investment, measures of financial services innovation (e.g., FinTech start-up numbers), FinTech VC investment, patents filed by major retail banks and FinTech companies, and the extent to which regulatory sandboxes for financial services are in place.
   - For calculating our scores, we took the view that the absolute number of FinTech start-ups was an important determinant of innovation that could contribute to open banking, irrespective of the size of a particular market (assessed in absolute terms rather than as a proportion of the gross domestic product). And the existence of a sandbox for financial services was a relevant indicator of preparedness from an innovation perspective.
About the data sources

The data used for the Index comprise 15 metrics and 15 qualitative assessments. Most quantitative measures were each obtained from a single source respectively (e.g., details of investments in FinTech companies were obtained from Venture Scanner). All qualitative measures were obtained from national sources such as government bodies (e.g., financial regulators and ministries), law firms and specialized media. In cases where the information available was scarce, Longitude contacted the relevant authorities to obtain the required inputs.

While all quantitative data is for the latest full year available, all qualitative assessments were made on the basis of information available until the end of August 2018 and based on a criteria discussed with EY.

1. Regulatory environment:
   - National sources such as government bodies (e.g., financial regulators and ministries)
   - Law firms
   - Specialized media

2. Adoption potential:
   - EY FinTech Adoption Index 2017
   - EY Global Banking Consumer Survey
   - Statista
   - International Telecommunication Union (data on information and communication technologies)
   - Newzoo Global Mobile Market Report

3. Consumer sentiment:
   - alva Group sentiment analysis on discussion posts sourced from Twitter, Weibo, WeChat, forums and blogs
   - EY FinTech Adoption Index 2017

4. Innovation environment:
   - Venture Scanner
   - World intellectual Property Organization
   - S&P Capital IQ
   - World Bank
   - National VC associations
   - Global Innovation Index

We applied a lower weightage to the following areas:

- Regulatory environment pillar – It is not a prerequisite for the success of open banking in some markets, but each of the other three pillars are.
- Consumer sentiment – There are significant differences in discussion volumes among some of the markets.
- Number of FinTech start-ups – There are differences in approach to start-up funding across different markets.

About the scoring

In order to calculate the Index scores and rankings, the data was normalized, i.e., all inputs were converted to a scale of 0 to 10, whereby 10 represents the best score achievable and 0 represents the worst.

For qualitative indicators, the maximum score achievable was determined by the responses to the questions we asked to rate each country. For quantitative metrics, we used a minimum-maximum methodology with fixed benchmarks. We set the equivalent of a score of 10 to a data value (up to 33%) above the best-performing country; a score of 0 was attributed to countries with a value of 0. This approach ensured the possibility of adding more countries to the Index without compromising year-on-year comparability.

All indicators were then aggregated into their respective subindex, which were, in turn, aggregated into the overall Index score using a weighted sum. All rankings at all levels are based on each country’s score rounded to the second decimal point.
About EY
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