Aite Novarica

MAY 2022

OPEN BANKING, OPEN FINANCE, OPEN ECONOMY

THE NEW IDENTITY OF FINANCE

RON VAN WEZEL
JOHN HORN

IMPACT REPORT

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SUMMARY AND KEY FINDINGS

Trends in customer demand, technology, and regulation drive the development of an open financial ecosystem in which the consensual sharing of customer data among financial institutions (FIs) and businesses creates new value for consumers and business users. This Aite-Novarica Group report analyzes this trend and the evolution from open banking to open finance and to a truly open economy. The report is based on interviews with executives from banks and fintech firms in Europe and North America. The key findings from this report follow:

- **Consensual sharing of financial data improves the customer experience:** Open banking and finance allow FIs to leverage a customer's financial data (with their explicit consent) to revamp legacy processes and improve the customer experience—e.g., for account opening, loan applications, and mortgages.
- **Open banking and finance offer interesting use cases for FIs and fintech firms:** Open banking/open finance is still an emerging space, but FIs and fintech firms have already developed promising use cases leveraging customer data, e.g., for multibank data aggregation and enrichment, competitive service discovery, credit scoring, and Know Your Customer (KYC) verification. In Europe, payment companies can offer innovative account-based payment services to their clients.
- **Embedded finance is a major opportunity within open finance**: Embedded finance represents the provision of financial services such as payments, consumer lending, insurance, and wealth management to fintech firms and other businesses. This use case is forecasted to grow from US$22 billion in 2020 to US$230 billion by 2025.
- **The connection between FI and non-FI ecosystems will create an "internet of finance":** Over time, customers will gain control over all their data, financial and nonfinancial, and share that under their conditions with their preferred brands. This way, they will access an "internet of finance" with unlimited possibilities for new value creation.
- **Modern identity management solutions are vital for open ecosystems, but they appear lacking:** The challenge is to enable a secure, convenient, and trustworthy open environment for customers in the multiparty "internet of finance" ecosystem. FIs and businesses are in various stages of modernizing their customer identity solutions.

INTRODUCTION

The opening up of finance in which FI clients can share their data with their preferred brands to manage their finances better is one of the future defining trends in banking and finance. This development is called open banking or open finance, which may become a launchpad to a truly open economy. It represents the clear positioning of individuals as rightful owners of their data, the ability for individuals to consent to share their financial data with third parties of their choice, and the technology that makes it possible. If the open economy is successful, data will be liberated, innovation will be accelerated, and all organizations (old, new, financial, and nonfinancial) will be empowered to create new business and revenue models.

Aite-Novarica Group has conducted a research study on open banking/open finance/ open economy, sponsored by Okta, that addresses the following questions:

- What are the requirements and best practices for the end user (i.e., consumers and small businesses) for open banking to open finance and an open economy?
- Why is open finance critical for FIs and fintech firms to meet customer requirements and stay competitive?
- How will sharing data across organizations in an open finance era affect FIs?
- What are the primary use cases of open banking, open finance, and open economy for generating new revenue for banks and fintech firms?
- Why are modern identity solutions at the very core of open ecosystems?

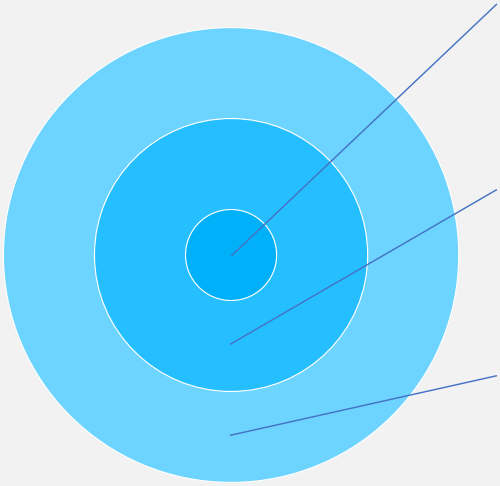
METHODOLOGY

Aite-Novarica Group interviewed 14 executives from large FIs and fintech firms in Europe and North America between March and May 2022. It also leveraged its existing research and expertise, as well as publicly available information from reliable sources.

MARKET OVERVIEW

Trends in customer demand, technology, and regulation are driving the development of an open financial ecosystem in which the consensual sharing of data and services among FIs and third parties (e.g., fintech firms) creates new value for consumers and businesses. This open ecosystem is evolving from open banking to open finance to a truly open economy (Figure 1).

FIGURE 1: DEFINING THE OPEN ECONOMY



Open banking enables third-party access to banking data such as current accounts, card accounts, savings accounts, loan information, and KYC information. In some markets, such as in Europe, open banking also enables access to the bank account for payment initiation, i.e., open payments.

Open finance extends the scope of open banking to all financial data, including mortgages, investments, pensions, and insurance. Open finance also allows fintech firms and other businesses to integrate financial services into their customer engagement platforms, i.e., embedded finance.

Open economy is the end state in which all data is shared among FIs and other players, such as utilities, social media, big tech, and tax authorities. Data can be shared by all connected devices, including automated devices (IoT).

Source: Aite-Novarica Group

Open banking is often associated with regulatory requirements to allow third-party access to bank accounts. It is most notable in the U.K., where "Open Banking," written with initial capital letters, is the national program to implement the legal requirements for access to the current/checking account. However, open banking (or, more broadly, open finance) is also understood as the development of a new financial ecosystem based on connectivity among FIs and businesses, powered by APIs. FIs are enabling fintech firms and other businesses to integrate financial services into their customer proposition, providing access to bank data and delivering entire banking services via APIs.

Table A lists four key market trends and their implications for FIs and businesses. The following sections will discuss these trends in greater detail.

TABLE A: OPEN FINANCE MARKET TRENDS AND THEIR IMPLICATIONS

MARKET TRENDS	MARKET IMPLICATIONS
Customer expectations are increasingly demanding.	Open banking and open finance allow innovative businesses (e.g., fintech firms, FIs) to leverage customer financial data with their consent to develop innovative and personalized financial solutions.
Open API connections are becoming commonplace.	Open APIs reduce the time and investment required for FIs to partner with fintech firms and other companies, allowing them to deliver superior value propositions to their customers.
Customer identity has become a strategic imperative.	The identity of the consumer has unprecedented industry attention. The industry is driven to optimize digital experiences and defend against sophisticated cyberattacks, including API-based attacks.
Regulators are pushing for more competition and innovation in the financial market.	More and more countries worldwide are issuing regulations that impose consumer control of their financial data and allow consumers to give consent to third-party providers (TPPs) to access that financial data. In some countries, such consumer rights have expanded to other sectors of the economy.

Source: Aite-Novarica Group

CUSTOMER EXPECTATIONS ARE INCREASINGLY DEMANDING

Customers expect seamless, real-time, value-added services to meet their financial needs. As consumers demand more personalized financial tools to improve their financial outlook, FIs will compete with fintech firms to maintain customer relationships and generate new revenue.[1]

[1] See, for instance, "Capco Study: 72% of Customers Rate Personalization as 'Highly Important' in Today's Financial Services Landscape," Business Wire, May 26, 2021, accessed May 18, 2022, https://www.businesswire.com/news/home/20210526005143/en/e.

Open banking and open finance allow FIs to leverage a customer's financial data to improve the customer experience and reduce administrative costs for processes like account opening and loan and mortgage applications. For example, HSBC allows intermediaries to share business bank statements of self-employed mortgage borrowers through open banking, reducing the time between mortgage application and offer.[2]

Banks and fintech firms can develop innovative and personalized financial solutions in payments, lending, or personal financial management (PFM), for example. This is fertile ground: Over nine in 10 consumers in North America use digital apps to manage money, ranging from products and services for simple financial tasks like paying bills or digital banking to more complex needs like financial forecasting, investing via cryptocurrency, and crowdfunding.[3]

There is an accelerating movement in countries around the globe to give consumers control over the data they share with TPPs. Therefore, providers need to plan their architectures to accommodate the move to consumer-permissioned data. They should offer their customers a convenient and robust channel to provide or withdraw their explicit consent for data sharing. Providers should also enable customers to authorize recipients to use their data only for a specific purpose, time period, or frequency, or provide other parameters to restrict its use.

One open finance provider in the U.S. mentioned that 66% of all its collected data is already permissioned data; its ambition is to reach at least 85% in the next year.

OPEN API CONNECTIONS ARE BECOMING COMMONPLACE

Open APIs enable FIs to open new distribution channels by partnering with fintech firms. Open API banking can be seen as the next step in the evolution of bank distribution models (Figure 2).

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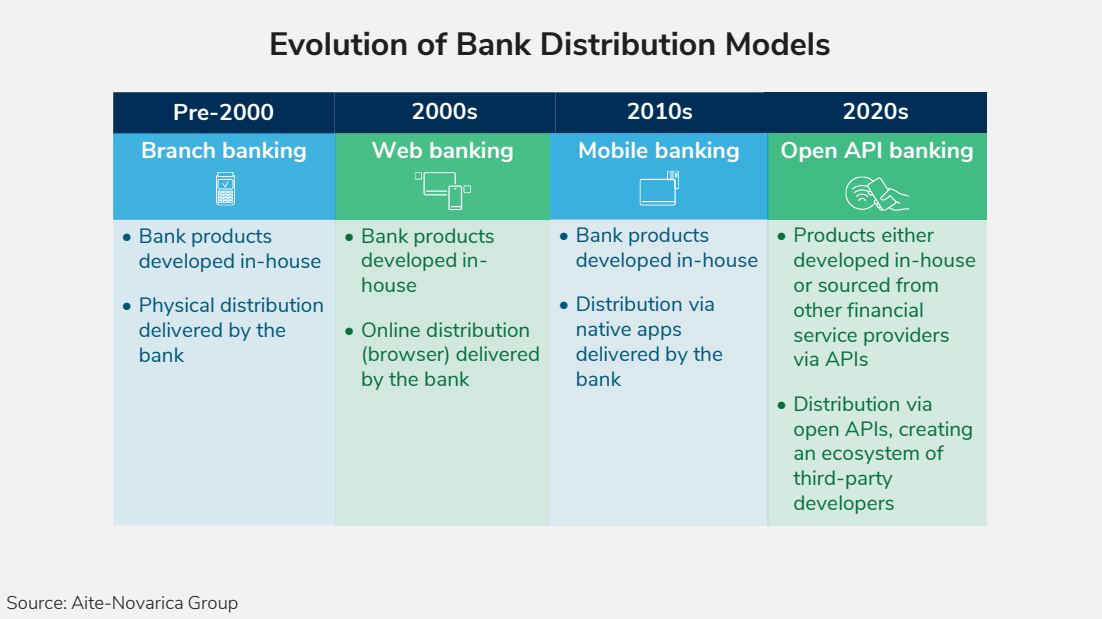
[2] Gary Adams, " HSBC Offers Open Banking to the Self-Employed," Mortgage Strategy, March 8, 2021, accessed May 18, 2022, https://www.mortgagestrategy.co.uk/news/hsbc-offers-open-banking-to-the-self-employed/.

[3] "The Rise of Open Banking in North America," Mastercard, 2021, accessed May 5, 2022, https://view.ceros.com/mastercard-us/openbanking-1-2/p/1.

FIGURE 2: OPEN (API) BANKING IS THE NEXT STEP IN THE EVOLUTION OF DIGITAL BANKING



Source: Aite-Novarica Group

By exposing data through open APIs, FIs allow fintech companies to integrate this data into their apps. The FI can charge the fintech company to use its data or arrange a revenue share if the partner brings new clients to the FI. In this way, the FI creates an ecosystem of third-party developers, providing innovative experiences for its customers without developing everything in-house.

FIs can also connect via APIs to other financial service providers and offer their products to their customers. Doing so allows FIs to bring new products from best-in-class providers to market quickly.

The result is that the traditional value chain of banking and financial services is rearranged from a monolithic approach to a multiparty ecosystem. However, many FIs and large enterprises are still in the middle of their digital transformation journeys. At the same time, the infrastructure of fintech firms has been designed as API-first and cloud-native. The challenge for FIs is to modernize their infrastructure while keeping up with fast-changing client demand and complying with increasing regulatory requirements.

CUSTOMER IDENTITY HAS BECOME A STRATEGIC IMPERATIVE

Modern customer identity is driven by the top priorities of the business. FIs are at various stages in modernizing their solutions. These customer identity trends are noteworthy:

Customer identity modernization at the FI is often driven to deliver improved digital experiences. This business driver is hardly a new one. However, multiparty services tend to create challenges where legacy FI identity impedes seamless experiences. FI leaders recognize multiparty services as the new norm.

Customer identity modernization at the FI is often motivated to collapse every digitized service into a single identity and authentication experience. Customers can leverage a single identity to access FI digital banking, loans, wealth management, etc. The business can streamline its digital service delivery, reap run cost savings, simplify its cybersecurity footprint, and deprecate legacy identity silos.

Finally, FIs are driven to modernize their customer identity solutions to defend against cyberattacks. Business risk due to cyberattacks continues to grow. Criminal teams have become experts at leveraging breached customer data and delivering phishing campaigns, which dupe consumers into giving away their login or multifactor authentication (MFA) credentials.

Recent pandemic dynamics have accelerated market forces, resulting in an unprecedented cyber risk for FIs. Cybersecurity industry leadership has highlighted solutions, such as zero-trust architecture (ZTA), to help FIs strengthen their cyber defense posture. Modern customer identity solutions are key enablers for effective ZTA. Customer passwords are often the weak link criminal teams exploit in a successful attack. Passwords are no longer fit for purpose in the modern digital economy. Modern customer identity solutions can help FIs depreciate user passwords and move to phishing-resistant MFA.

REGULATORS ARE PUSHING FOR CUSTOMER OWNERSHIP OF DATA

Regulators worldwide strive to stimulate innovation and increase competition between FIs and fintech firms. More and more countries are issuing regulations that impose consumer control over their financial data, allowing consumers to give consent to TPPs to access that financial data. In some countries, such consumer rights are expanded to other sectors of the economy. Table B provides a brief global overview of existing and upcoming regulations for consumer data ownership for data sharing and data protection. (Regulation currently in force is marked.)

TABLE B: EXAMPLES OF EXISTING AND UPCOMING CONSUMER DATA OWNERSHIP REGULATIONS

COUNTRY/REGION	OPEN BANKING REGULATION	OPEN FINANCE REGULATION	OPEN ECONOMY REGULATION
European Union	**Revised Payment Services Directive (PSD2):** Regulates TPP access to the bank account[4]		Data Act: This proposal gives consumers and companies more control over their data; it specifies who can create value from data and under what conditions.[5] **GDPR**: General Data Protection Regulation[6]
United Kingdom	**PSD2 directive** (transposed into U.K. law), **Competition and Markets Authority (CMA) open banking remedies**	Future CMA remedies on open finance—consultation[7]	**GDPR** (U.K.)

4 "Revised Rules for Payment Services in the EU," EUR-Lex, December 2020, accessed May 5, 2022, https://eur-lex.europa.eu/legal-content/EN/LSU/?uri=CELEX:32015L2366.

5 "Data Act: Commission Proposes Measures for a Fair and Innovative Data Economy," European Commission, February 23, 2022, accessed May 12, 2022, https://ec.europa.eu/commission/presscorner/detail/en/ip_22_1113.

6 "General Data Protection Regulation (GDPR)," intersoft consulting, accessed May 5, 2022, https://gdpr-info.eu/.

7 "The Future Oversight of the CMA's Open Banking Remedies," Competition and Markets Authority, March 25, 2022, accessed May 5, 2022, https://www.gov.uk/government/consultations/future-oversight-of-the-cmas-open-banking-remedies/the-future-oversight-of-the-cmas-open-banking-remedies.

COUNTRY/REGION	OPEN BANKING REGULATION	OPEN FINANCE REGULATION	OPEN ECONOMY REGULATION
United States	Consumer Financial Protection Bureau (CFPB) rules according to section 1033 of the Dodd-Frank Act—advance notice[8]	CFPB rules could reach into open finance.	**California Consumer Privacy Act (CCPA)**: CCPA gives consumers more control over their personal information that businesses collect.[9] The California Privacy Rights (CPRA) includes additional privacy protections for consumers and will enter into force in 2023.[10]
Canada	Common rules and an accreditation framework for open banking participants[11]		Consumer Privacy Protection Act (CPPA)[12]

8 "Dodd-Frank Act Section 1033 – Consumer Access to Financial Records," CFPB, October 22, 2020, accessed May 5, 2022, https://www.consumerfinance.gov/rules-policy/notice-opportunities-comment/archive-closed/dodd-frank-act-section-1033-consumer-access-to-financial-records.

9 Rob Bonta, "California Consumer Privacy Act (CCPA)," State of California Department of Justice, accessed May 5, 2022, https://oag.ca.gov/privacy/ccpa.

10 "CCPA and CPRA," iapp, accessed May 18, 2022, https://iapp.org/resources/topics/ccpa-and-cpra/.

11 "Government Moves Forward With Open Banking and Names a Lead," Department of Finance Canada, March 22, 2022, accessed May 5, 2022, https://www.canada.ca/en/department-finance/news/2022/03/government-moves-forward-with-open-banking-and-names-a-lead.html,

12 Clément Hochedez, "Canada's New Data Privacy Law (CPPA): What You Need to Know," January 11, 2022, accessed May 5, 2022, https://blog.didomi.io/en-us/canada-data-privacy-law.

COUNTRY/REGION	OPEN BANKING REGULATION	OPEN FINANCE REGULATION	OPEN ECONOMY REGULATION
Australia	**Consumer Data Right (CDR):** Fully implemented for open banking[13]	**CDR** will apply to open finance.	**CDR:** Next phases will target the energy and telecom sectors.[14]
Hong Kong	**Open API Framework**[15]		
India	India Stack: A mix of market-driven and regulated approaches to open banking[16]		
Brazil	**Open banking regulation:** Regulates the scope of data and services of open banking[17]	**Open banking regulation:** Goes beyond open banking into open finance[18]	**Brazilian General Data Protection Law (LGPD)**[19]

13 "Open Banking," Australian Banking Association, 2022, accessed May 5, 2022, https://www.ausbanking.org.au/priorities/open-banking.

14 "What Is CDR?," Australian Government, accessed May 5, 2022, https://www.cdr.gov.au/what-is-cdr.

15 "Open API Framework for the Hong Kong Banking Sector," Hong Kong Monetary Authority, July 2018, accessed May 9, 2022, https://www.hkma.gov.hk/media/eng/doc/key-information/press-release/2018/20180718e5a2.pdf.

16 Yan Carrière-Swallow, Vikram Haksar, and Manasa Patnam, "India's Approach to Open Banking: Some Implications for Financial Inclusion," International Monetary Fund, 2021, accessed May 5, 2022, https://www.imf.org/-/media/Files/Publications/WP/2021/English/wpiea2021052-print-pdf.ashx.

17 "Regulation on Open Banking," Banco Central do Brasil, May 4, 2020, accessed May 5, 2022, https://www.bcb.gov.br/content/config/Documents/Open_Banking_BCB_Circular_4015_2020.pdf.

18 "Open Banking," Banco Central do Brasil, accessed May 5, 2022, https://www.bcb.gov.br/en/financialstability/open_banking.

19 "Brazilian General Data Protection Law (LGPD, English Translation)," iapp, October 2020, accessed May 18, 2022, https://iapp.org/resources/article/brazilian-data-protection-law-lgpd-english-translation/.

COUNTRY/REGION	OPEN BANKING REGULATION	OPEN FINANCE REGULATION	OPEN ECONOMY REGULATION
Mexico	**Fintech Law, Article 76:** All FIs are obligated to share information using APIs with authorized third parties.[20]	**Fintech Law, Article 76:** This applies to FIs, not only banks.	

Source: Aite-Novarica Group

OPEN BANKING AROUND THE WORLD

Open banking initiatives are showing up everywhere. Some are driven by regulation (e.g., the EU, the U.K.), and some are market-driven, e.g., the U.S. The scope of the initiatives is different: Some are restricted to specific banking services (EU), and others cross into sectors beyond finance (Australia). In Europe, the data access requirements are asymmetric, meaning that banks have to provide TPPs access to payment accounts, but banks do not have a right to access data TPPs hold (unless the latter are banks themselves). In some other jurisdictions, data sharing rights are reciprocal.

The next section provides a brief overview of open data sharing initiatives worldwide, from open banking to open economy.

European Union

The European regulatory agenda for the internal market focuses on competition and innovation in the payments market, strengthening the internal market and breaking up the perceived oligopolies of banks and card networks. The revised Payment Services Directive (PSD2) has enforced open banking via access to the bank account, leveling the playing field for TPP access to payment accounts held by banks for account information and payment initiation services, thereby enabling TPPs to compete with banks.

However, there has been limited central coordination for implementing PSD2, leading to a fragmented market, lack of common API standards, and varying quality of bank APIs. The European Payments Council has started work on a SEPA payment account access (SPAA) scheme to address these issues. The SPAA scheme should improve

[20] "The State of Open Banking in Latin America in 2022," Belvo, 2022, accessed May 5, 2022, https://go.belvo.com/en/whitepaper-open-banking-latin-america.

harmonization, interoperability, and reachability across Europe for access to payment accounts. PSD2 is a baseline requirement, but it extends into premium payment APIs, i.e., APIs for which banks can charge the TPP. The SPAA scheme also aims to facilitate the move in Europe toward open finance beyond payments and an open economy beyond finance.[21]

United Kingdom

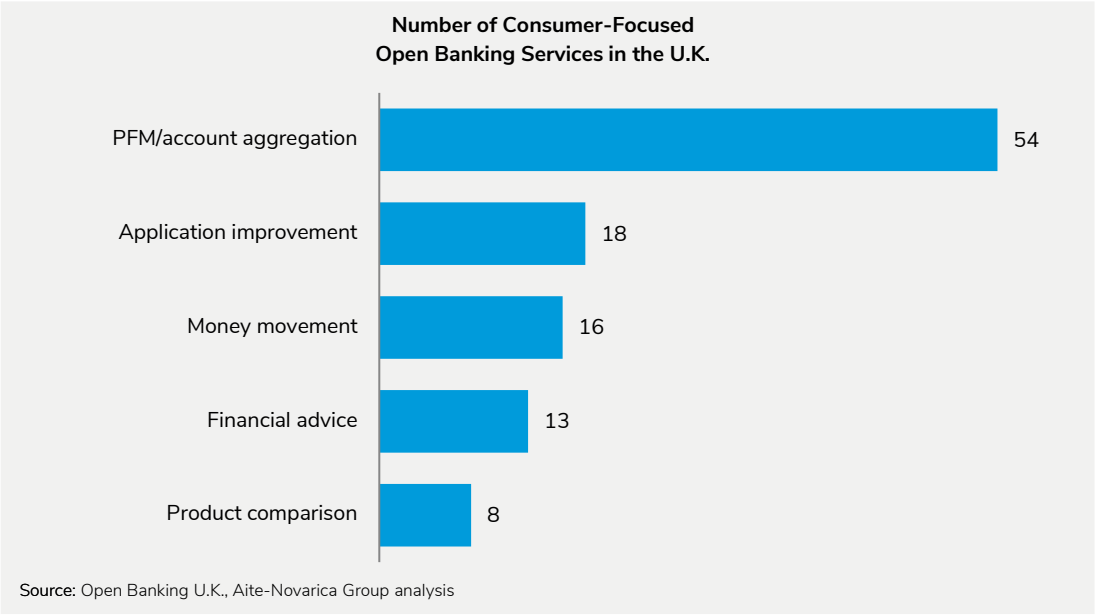
In the U.K., the central governance and management of the open banking implementation made the country the leading example of open banking. Until October 2021, adoption among consumers continued to grow. An estimated 7.5% to 8.5% of digitally enabled consumers are now active users of at least one open banking service.

In April 2022, there were 341 regulated providers of open banking services in the U.K., 92 of which were account providers (banks and other account holding FIs) and 249 of which were TPPs. Consumers and businesses could share their data with over 50 providers of financial apps to get greater control over their money. Figure 3 shows the number of open banking services available for consumers.[22]

[21] "SEPA Payment Account Access (SPAA) – Developing a New Scheme Through a Multi-Stakeholder Approach," European Payments Council, January 31, 2022, accessed May 11, 2022, https://www.europeanpaymentscouncil.eu/news-insights/insight/sepa-payment-account-access-spaa-developing-new-scheme-through-multi.

[22] See also: "Start Your Open Banking Journey," Open Banking U.K., April 2022, accessed May 18, 2022, https://www.openbanking.org.uk/app-store/.

FIGURE 3: U.K. OPEN BANKING SERVICES FOR CONSUMERS



Source: Open Banking U.K., Aite-Novarica Group analysis

- **PFM/account aggregation services** are most popular with app providers. These allow consumers to have a single view of all their bank accounts and get insights and recommendations into where they spend their money. Examples of PFM app providers are Cake and Moneyhub.
- **Application improvement services** focus on using account data to streamline the consumer experience—e.g., for mortgage and loan applications—by reducing the need for consumers to provide details of their financial history manually. Examples of app providers leveraging these services are Mojo (mortgages) and Koyo (personal loans).
- **Money movement services** facilitate payments—e.g., automatic sweeps of money into savings or investment accounts. For example, Moneybox is an app allowing consumers to save automatically.
- **Financial advice services** enable consumers to get financial advice based on their financial history and spending patterns. Consumers can also allow financial advisors and other third parties to access their financial data to provide timely and tailored recommendations to consumers to improve financial health. Examples of apps are Ducit.ai and Tully.

- **Product comparison services** allow consumers to share data with service providers to get better deals without having to use price comparison sites. For instance, Lumio secures savings accounts and investment products for consumers.

Consumers report that open banking services help them manage their finances and reduce fees. Services seeking to help consumers make better financial decisions seem to be doing exactly that. Significant portions of customers claim that these platforms help them keep to budgets, reduce unnecessary expenditure, shop more effectively, and minimize fees.[23]

United States

The U.S. is following a market-driven approach, engaging in self-regulation and standardization activities to address inefficiencies and market risks without a regulatory framework. The CFPB is developing rules according to section 1033 of the Dodd-Frank Act, which states that "a consumer financial services provider must make available to a consumer information in the control or possession of the provider." However, these rules are not expected to be published before 2023.

Despite the current lack of open banking legislation in the U.S., there is significant demand for and activity in open banking. A few examples follow:

- **Access to the account:** According to research by MX, 44% of respondents have connected different accounts into a single view. Among Gen Zers and millennials, this number is even higher—at 60% and 59%, respectively.[24]
- **Payments:** Open banking network Plaid has launched a "payment partner ecosystem," comprising around 50 U.S. and European companies. It aims to boost account-to-account (A2A) payment transactions. This should enable payment companies such as Checkout.com, Square, and Stripe to make A2A payments an option in their checkout flows and help streamline digital account onboarding, top-ups, and payouts.
- **Standards:** The Financial Data Exchange (FDX) is a nonprofit organization led by major U.S. and Canadian banks and other industry players. The FDX focuses on

[23] "The Open Banking Impact Report," Open Banking UK, October 2021, accessed December 13, 2021, https://www.openbanking.org.uk/insights/the-open-banking-impact-report-oct-2021/.

[24] "Consumer Trends in Digital and Mobile Banking," MX Technologies, March 2021, accessed May 23, 2022, https://www.mx.com/whitepapers/consumer-trends-digital-and-mobile-banking/.

moving the industry to the FDX API standard for secure access to user-permissioned financial data. The National Automated Clearing House Association is also developing an API standard.

While driven by market forces, it could be argued that the U.S. open banking ecosystem is already further developed than a regulated market, such as Europe (with the exception of the U.K.). On the other hand, respondents mentioned that one-off deals between FIs and fintech companies are common without a regulatory framework, making it difficult to scale and develop the ecosystem. Interviewees hoped that the regulatory requirements concerning data sharing would be clarified soon, pointing to the risk of customer credentials being shared without a proper framework.

Canada

Canada released a public consultation on open banking, with the second government review of the consultation still in progress. The Open Banking Implementation Plan is due to go live in January 2023. Its core objective is to realize consumers' right to data portability and move to secure, efficient consumer-permissioned data sharing, enabled by a system of open banking. The Retail Payments Activities Act has been introduced to encourage more fintech vendors to participate.

Canada is considering a hybrid framework for open banking, relying on regulation as an enabler for open banking/open finance. The scope of Canada's open banking system is in its initial phase. It should include data currently available to consumers and small businesses through their online banking applications. FIs should be allowed to exclude data enhanced by FIs to provide additional value to their consumers, such as internal credit risk assessments.[25]

Australia

Australia launched the CDR in July 2020 to give consumers and small businesses more control over their data, enabling them to share data with accredited TPPs. The CDR was introduced first in banking, allowing bank customers to permit TPPs to access savings, credit card, mortgage, personal loan, and joint bank account data. This will enable bank

[25] "Final Report—Advisory Committee on Open Banking," Government of Canada, April 2021, accessed November 15, 2021, https://www.canada.ca/en/department-finance/programs/consultations/2021/final-report-advisory-committee-open-banking.html.

customers to search for a better deal on banking products or to keep track of their banking in one place.

The CDR is designed to be an economywide initiative. It will roll out sector by sector. After banking, the energy sector will follow in October 2022, then telecommunications. Over time, Australia is set to become a true open economy.

Hong Kong

The Hong Kong Monetary Authority "has taken note of the mandatory approach adopted by some jurisdictions, such as the EU, the U.K., and Australia, but has decided that a collaborative and phased approach is appropriate for Hong Kong for the time being. The HKMA will monitor the progress of Open API implementation in Hong Kong and further consider the need for new regulatory measures if necessary."[26] Banks will be required to develop APIs to enable open banking, but they will be able to restrict access to those TPPs with which they choose to collaborate.

India

The Indian government launched an ambitious program in 2011 to overhaul its digital infrastructure through the development of the "India Stack." The stack includes four layers of infrastructure and standards:

- Digital identity "Aadhaar," the world's largest biometric identity system
- Standardized payments API—a universal payment interface to India's payment systems
- Digitalization of documentation and verification, leveraging Aadhaar for digital KYC activity, digital signing, and digital vaulting
- Consent layer for consumers to authorize data sharing

The main objectives of this initiative have been to promote financial inclusion through increased access to financial services, improve the delivery of public services and benefits, and increase competition in the Indian financial sector.

[26] "Open API Framework for the Hong Kong Banking Sector," accessed May 9, 2022.

The Indian approach has successfully increased the number of individuals with bank accounts among India's large previously unbanked population and significant growth of digital payments.

India's initiative is the leading example for other countries; it regulates open banking and provides the public infrastructures and standards. It has provided a platform for operationalizing user-authorized data portability and interoperability across the economy.

Brazil

Despite some expected delays in full implementation, Brazil continues to roll out open banking.[27] The integration of all means of payment to open banking will be staggered and is expected to be completed by September 30, 2022. The scope of the Brazilian open banking program contains the following components:

- **Data on products and services offered by participating institutions:** Location of branches, access channels for clients, products' characteristics, contractual terms and conditions, and financial costs
- **Information on customers' personal and transactional data:** Deposit accounts, credit operations, and other products and services
- **Payment services:** Initialization of payments, transfers of funds, and payments of products and services, among others

The program will go beyond open banking, as it will be possible to share information on other services, such as investments and insurance.

Mexico

Mexico was the first country to develop open banking regulations. In 2018, the Fintech Law was passed, which obliges around 2,300 financial entities to share their data.

Despite Mexico being considered the pioneering open banking country in the Latin American region, progress has been slow to materialize. Regulatory delays, concerns

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[27] "Open Banking," Central Bank of Brazil, accessed May 5, 2022, https://www.bcb.gov.br/estabilidadefinanceira/openbanking.
Wellton Máximo, "BC Adia Para Setembro de 2022 Funcionamento Completo do Open Banking," June 24, 2021, accessed May 5,, 2022, https://agenciabrasil.ebc.com.br/economia/noticia/2021-06/bc-adia-para-setembro-de-2022-funcionamento-completo-do-open-banking.

about security, and a lack of incentives for banks and consumers are mentioned as reasons that the program has not yet delivered on its promise. So far, access has been given only to nonconfidential financial data, such as information about banking products and services and ATM locations. The next phase of regulations is expected to address the sharing of customers' transactional data.

Other Markets

The above list contains the most prominent markets regarding open finance regulation, but regulators are also facilitating data sharing in other markets. Several countries, including India (see also above), Japan, Singapore, and South Korea, do not currently have formal or compulsory open banking regimes. Still, their policymakers are introducing a range of measures to promote and accelerate the take-up of data sharing frameworks in banking.[28]

[28] David Strachan, "Open Banking Around the World," Deloitte, 2022, accessed May 9, 2022, https://www2.deloitte.com/global/en/pages/financial-services/articles/open-banking-around-the-world.html.

THE EVOLUTION OF OPEN ECOSYSTEMS: FROM OPEN BANKING TO OPEN ECONOMY

Respondents interviewed for this study think that open banking applications are mostly based on multibank data aggregation thus far, e.g., PFM like Mint in the U.S. or Klarna in Europe. Historically, fintech firms performed data aggregation via screen scraping, bypassing the banks, but the market has moved on to the use of APIs. Plaid, for example, stated its goal to dedicate 75% of traffic to APIs by the end of 2021.[29] Banks and fintech firms are working together to deliver better experiences to their customers. In Europe, PSD2 enables licensed TPPs to initiate payments through open banking arrangements (open payments).

Open finance will not only extend data sharing beyond banking data (e.g., mortgages, investments, pensions), but it will also include financial services provided by banks and other FIs to banks and businesses alike.

The opportunities and threats for FIs are outlined in Figure 4.

FIGURE 4: OPPORTUNITIES AND THREATS FOR FIS

Opportunities	Threats
• **Trust:** Consumers still trust their banks the most to safeguard their financial assets. Banks are at a pole position to offer open finance services. • **Competitive advantage:** Open finance is a way to reprioritize customer outcomes through competition. FIs that are proactive and invest will win. • **Innovation:** Partner with fintech firms to develop solutions that customers love and reduce time to market. Open banking and open finance is still an emerging space, but FIs and fintech firms have already developed promising use cases.	• **Pressure on profitability:** Increasing competition from new players may put pressure on pricing and increase customer churn. • **Losing customer intimacy:** Banks may lose visibility and brand value when fintech firms and big tech companies own the interface. • **Security:** There is a greater risk of fraud, data breaches, and cyberattacks when FIs open up through APIs and interconnect with multiple third-party providers.

Source: Aite-Novarica Group interviews with 14 banks and fintech firms, March to May 2022

[29] Ginger Baker and Niko Karvounis, "Plaid's Strategy to Facilitate an API-based Ecosystem," Plaid, November 19, 2020, accessed May 17, 2022, https://plaid.com/blog/plaids-strategy-to-facilitate-an-api-based-ecosystem.

Research shows that consumers trust their FI the most to protect their financial assets.[30] This puts incumbent banks in a pole position regarding data sharing and open finance solutions. However, neobanks and other challengers are gaining ground, increasing competition, putting pressure on profitability, and increasing customer churn. As a result, banks are investing in their technology stacks to stay competitive. For instance, Aite-Novarica Group research shows that payments modernization is a high priority for retail banks to sustain the profitability of their payments businesses.[31]

Open finance will allow fintech firms, neobanks, and small and midsize banks to partner and compete with large banking groups:

- APIs enable neobanks and other small and midsize banks to integrate with finance partners more easily, allowing them to reduce time to market and offer investment products, insurances, and other services without developing it all in-house.
- Fintech companies have great products but often can't hold deposits or provide loans because they don't have banking licenses. They can integrate banking services delivered through Banking-as-a-Service (BaaS).[32] This model provides an additional revenue stream for banks, but it also disconnects the FI from the direct customer relationship, potentially losing opportunities for cross-selling.

From a security perspective, bank services are exposed to new threats through attacks on customer platforms and BaaS APIs. For FIs, APIs are a relatively new surface of attack for fraudsters and cyber criminals. Attackers have discovered that APIs offer significant opportunities to access and exfiltrate sensitive data, disrupt business operations, and manipulate critical data streams. Attacks include business logic abuse, unauthorized access, exploitation of vulnerabilities, and denial of service. Aite-Novarica Group research from mid-2020 revealed that API security knowledge was low even among security and digital transformation professionals at FIs. API security has received more attention recently.[33]

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[30] See, for example: "How Traditional Banks Can Make the Most of Consumer Trust," EY, November 24, 2021, accessed May 10, 2022, https://www.ey.com/en_gl/financial-services-emeia/how-traditional-banks-can-make-the-most-of-consumer-trust.

[31] See Aite-Novarica Group's report Payments Modernization in Retail Banking, December 2020.

[32] See Aite-Novarica Group's report Fintech Collaboration: Real Options for Community Banks, August 2021.

[33] See Aite-Novarica Group's report API Security: Best Practices for FIs and Fintech and Insurtech Companies, August 2020.

Attackers are exploiting APIs to capitalize on the low probability of detection. If more parties are involved in the transaction in an open ecosystem, the risks can multiply. So that means banks and enterprises require secure solutions to counter these threats in increasingly API-driven finance.[34]

BUSINESS MODELS

Banks have deployed different models to monetize the opportunities that open banking and finance offer (Figure 5).

FIGURE 5: OPEN BANKING/OPEN FINANCE BUSINESS MODELS

	Distribution	Marketplace	BaaS
Description	Expose bank assets through open APIs to third-party developers	Distribute or bundle external financial services via own app	Offer white-label banking services via APIs to fintech firms and corporations
Value	Create ecosystem of third-party apps connected to bank assets	Deliver best-in-class products with partners	Enable nonbanks to accelerate their digital strategy
Business model	Charge API calls or revenue share if a third party brings new clients	Revenue share from service providers; new customers	Subscription fees, transaction fees
Examples	• Wells Fargo API Gateway • BBVA API market	• N26 offering Wise payments • Starling Marketplace	• Goldman Sachs • Bancorp • Solarisbank

Source: Aite-Novarica Group

The open banking business models show how banking is changing fundamentally in the era of the API economy:

- **Distribution model**: Banks can focus on monetizing their data by exposing these data through open APIs. They can then partner with fintech companies to provide the technology and deliver the best user experience to the customer.

[34] See Aite-Novarica Group's report API Security: Best Practices for FIs and Fintech and Insurtech Companies, August 2020.

- **Marketplace model**: Banks can reconfigure their value chain and separate the production and delivery of financial services. APIs allow banks to connect to other financial service providers and offer best-of-breed products to their customers. If the FI believes it has core competence for certain products, it will choose to develop those in-house. Otherwise, the FI will source products from other providers.
- **BaaS model**: Banks and other FIs can provide complete banking processes, such as deposit accounts, loans, payments, or compliance-as-a-service, to nonbanks using an existing licensed FI's secure and regulated infrastructure. New entrants in financial services, such as fintech companies and neobanks, can go to market quickly by having access to BaaS. This allows the embedding of banking services into the business's customer proposition (embedded finance) while renting the required license from a third party. At a later stage, when the customer base has been built, neobanks can decide to acquire their own licenses.

Of course, banks can deploy more than one of these models. The distribution model is most common as banks develop an ecosystem of third-party apps enabled by open APIs. The distributor model is also becoming popular, particularly with neobanks that want to expand their product portfolio quickly by partnering with TPPs. Finally, specialized BaaS providers allow new entrants to launch financial services quickly. BaaS platforms are a significant opportunity for banks to monetize open banking, but only a few banks will have the digital infrastructure to develop and operate such a platform.

Banks that have made the transformation to an API-empowered infrastructure, such as neobanks, are better positioned to implement and monetize these models than banks that have not yet modernized their infrastructure.

OPEN BANKING USE CASES

Respondents to this research mention the following use cases for open banking:

Use cases for consumers:

- Multibank data aggregation and enrichment of customer data, used by PFM applications to provide consistent and comprehensive overviews of transactions and balances across a customer's bank accounts
- Competitive service discovery and price comparison services based on actual consumer spending

- Streamlined applications, e.g., for account opening, loans, and mortgages, by automating the application process using customer data
- Improved financial advice by giving FIs access to a customer's financial position
- Credit scoring and point-of-sale (POS) finance solutions using a customer's account history
- KYC solutions using bank-grade customer identity information

Use cases for small and midsize enterprise (SME) financing and liquidity management:

- Account aggregation across banks or geographies can provide consolidated views of a business's financial position and support cash-flow forecasting and data analytics, enabling SMEs to improve liquidity management.
- Access to SME account transactions can feed alternative scoring models that complement credit bureau information. This data will enable FIs to tailor credit products to SME needs regarding timing, pricing, and credit profile.
- SME financial data can be more easily integrated with accounting packages such as QuickBooks or Zero.

Corporate use cases:

- Multibank data aggregation is not as appealing to corporations as it is to retail clients, as multibank reporting is already available through SWIFT, etc. The uptake of open banking account information services is therefore considerably lower.
- One opportunity for banks is to become a TPP and offer white-label payment and information services to their corporate clients. For instance, Barclays offers Bank Pay as a payment option to e-commerce sellers, enabling consumers to pay directly from their bank accounts rather than using cards.

Respondents mentioned open payments as one of the most promising use cases for business users of open banking, particularly in Europe. In the U.K. for example, at the end of 2021 cumulatively, over 26.6 million open payments had been made—an increase of more than 500% in 12 months.[35] Merchants are ready to give incentives for

[35] "5 Million Users – Open Banking Growth Unpacked," Open Banking, 2021, accessed May 22, 2022, https://www.openbanking.org.uk/news/5-million-users-open-banking-growth-unpacked/.

their customers to use open payments rather than cards, as open payments are cheaper, faster, and more efficient. This use case is further described in the next section.

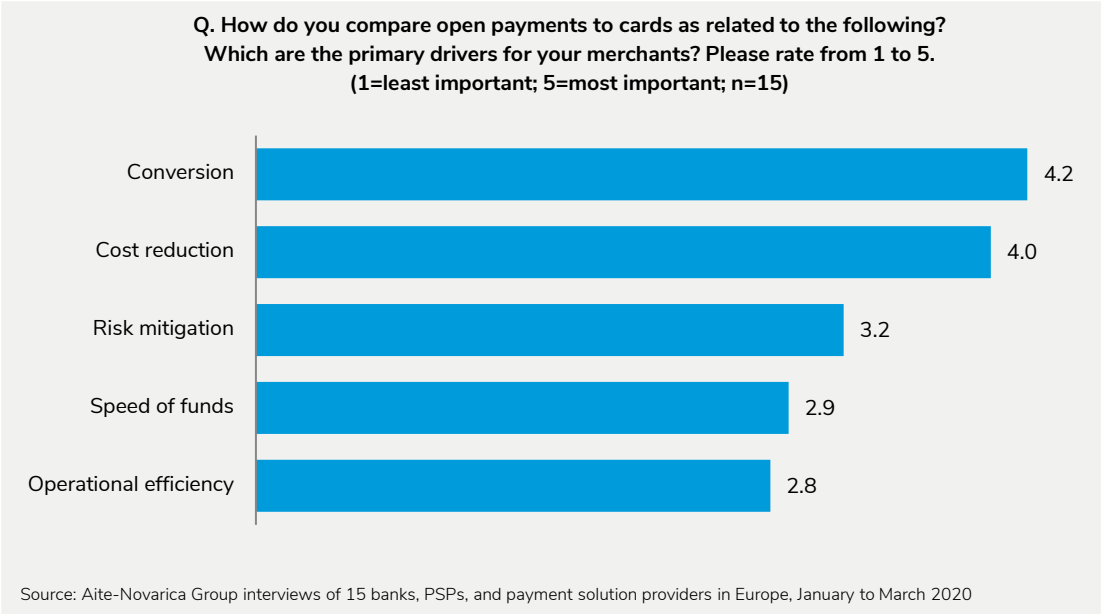
OPEN BANKING USE CASE: RETAIL PAYMENTS INNOVATION IN EUROPE

The digitalization of commerce continues to drive merchant demand for payment solutions that are fast, transparent, less risky, and cost efficient. With the arrival of open banking, new payment models are emerging to compete with card payments as the dominant online payment method. Open (banking) payments are A2A payments initiated by the payment service provider (PSP) directly from the customer's bank account (with the customer's consent) and credited to the merchant's account.

In North America, the profitability of the cards business and the lack of open banking regulation are inhibitors for open payments to get traction. However, in Europe, the PSD2 has opened the payment arena for PSPs to innovate and deliver new payment services for digital commerce. To facilitate the settlement of a commerce transaction between a business and its customer, the PSP can leverage payment initiation services (PIS) to offer open payments to end users as an alternative to card payments.

Online merchants have a growing interest in adding open payments to their checkout pages, as open payments can offer several advantages over cards. According to Aite-Novarica Group research, conversion and cost reduction are the primary drivers for merchants to adopt open payments as a payment method (Figure 6).

FIGURE 6: MERCHANT CRITERIA FOR OPEN PAYMENTS ADOPTION



Source: Aite-Novarica Group interviews of 15 banks, PSPs, and payment solution providers in Europe, January to March 2020

- **Conversion:** The user experience is critical for any payment method to drive conversion, and open payments are no exception. Consumers have a low tolerance for friction in the checkout process, and shopping cart abandonment is the main issue in e-commerce. Making a payment should be easy. For instance, having to type in payment details, such as card number or IBAN, is a dissatisfier for consumers and may lead them to abandon the transaction. Open payments can help mitigate this problem by allowing consumers to pay without typing in payment details. If merchants can control the customer journey end-to-end and avoid friction in the checkout process, open payments can certainly compete with cards on the user experience. At the same time, introducing open payments will require promotional activity to educate customers and make them comfortable with giving consent to access their accounts.
- **Cost reduction (lower external fees):** Reducing the cost of acceptance is important, particularly for large merchants. Card payments are priced at a fee that includes acquirer margin, interchange fee, and card scheme fees. Merchants have a long history of combating card processing fees, as they feel that these fees are overpriced due to the market power of the card networks. The most recent example is

Amazon's dispute with Visa about U.K. credit card fees.[36] Open payments will give online merchants an alternative to card payments that should attract lower pricing, as open payments incur no interchange fees or card scheme fees. The cost reduction can be a significant driver for merchants to favor open payments over cards. Open payments can be up to four times cheaper than card payments.[37]

OPEN PAYMENT USE CASES

Open payment use cases can help companies provide better payment experiences in e-commerce and other online environments to replace legacy payment methods, such as bank transfers and checks. Examples include the following:

- **High-fee environments, such as travel industry/airlines and luxury goods:** Open payments enable high-value purchases (no risk), eliminate chargebacks, and reduce cost.
- **Repeat businesses with high velocity and returning customers:** Such businesses can offer loyalty programs to convert consumers to open payments.
- **Gaming/gambling industry:** Clients are used to a wider choice of payment methods, as issuer risk policies limit the use of cards. One example of an open payment implementation in this industry is Trustly's Pay N Play solution. Using open payments, users can complete registration, wallet loading, and customer verification in one step.[38]
- **Companies with an online presence that only accept debit payments, such as bank transfers, debit card payments, and checks:** Using open payments will improve the reconciliation of receivables, as the payment reference is automatically included. An example is property/rental payments in countries such as the U.K.
- **Financial services, e.g., money transfers, credit card repayments:** One promising use case is POS finance, combining PIS with account information services (AIS) to

[36] Matt Scuffham, "Amazon May Drop Visa as Partner on U.S. Credit Card," Reuters, November 17, 2021, accessed December 13, 2021, https://www.reuters.com/world/uk/amazon-stop-accepting-visa-credit-cards-britain-2021-11-17/.

[37] See Aite-Novarica Group's report The Road to Open Payments, April 2020.

[38] "Appetite for Disruption," iGaming Business, accessed March 23, 2020, https://magazine.igamingbusiness.com/2019/03/19/appetite-for-disruption/content.html.

obtain a real-time credit score on a customer during a transaction and offer an instant loan to that customer.

OPPORTUNITIES FOR FIS

Open payments are a strategic opportunity for FIs and PSPs in Europe to offer innovative account-based payment services to their clients. FIs that go beyond compliance and integrate open payments into their payments strategies will create new customer value and compete for the increasing share of A2A payments in commerce and other industries. According to research by Tink, the mean spending by retail banks on open banking in 2020 was 84 million euros. Open payments were seen as the most important use case across all segments.[39]

Given the current fragmented infrastructure and lack of API standards in Europe, banks and PSPs should consider working with specialized aggregators to provide the backbone connectivity for PIS rather than build the connections with thousands of banks in-house. Banks and PSPs will then accelerate time to market and reduce investment for PIS deployments.

To complement their offering and deliver a comprehensive payment solution, providers can offer value-added services to their corporate and SME clients, including refund management, consolidated reporting, and reconciliation. These services should work in harmony across all payment methods globally.

OPEN FINANCE USE CASES

Open finance goes beyond open banking to combine data from all of a consumer's financial service providers, including mortgages, savings, pensions, and investments, to provide a single view of their overall financial position and advise them on how to manage those finances better. Respondents to this research mention the following use cases for open finance:

- **PFM solutions**: These solutions go beyond open banking, providing a 360-degree holistic view of a customer's financial position.

[39] "Following the Money," Tink, 2021, accessed December 10, 2021, https://tink.com/survey-reports/investments-use-cases.

- **Open pensions**: Increasingly, pension providers allow users to see their pension balances and other finances (bank accounts, credit cards) in one app. Pension providers are working to enable open pensions, which allow consumers to see and manage all of their pensions in one place.[40]
- **Embedded finance:** This is mentioned as one of the primary use cases for open finance. This use case is analyzed in more detail in the following section.

OPEN FINANCE USE CASE: APIS FACILITATE EMBEDDED FINANCE

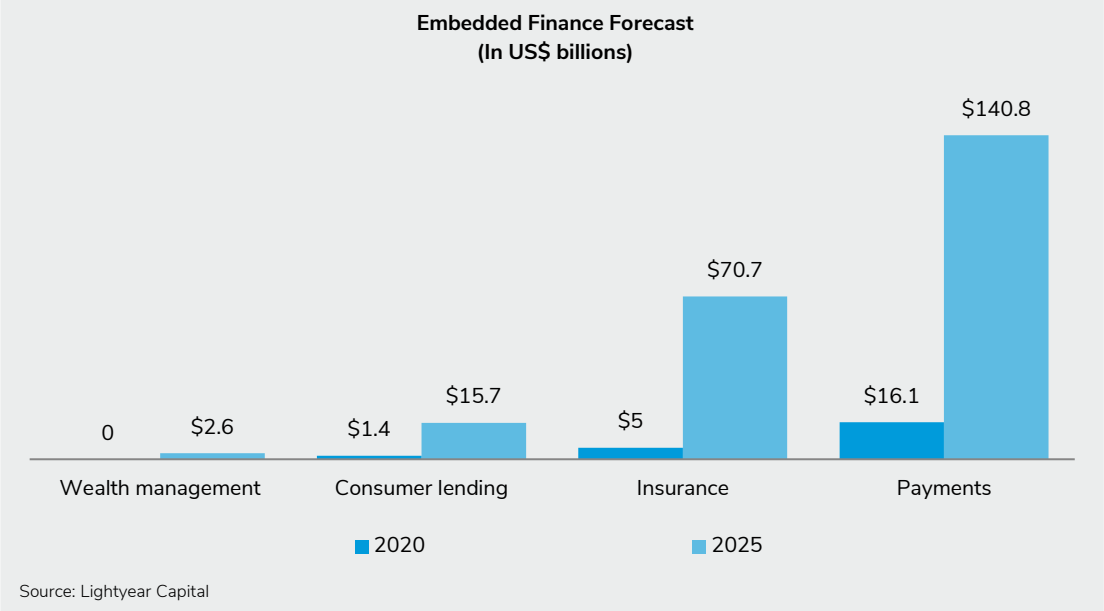
Businesses (e.g., fintech firms, enterprises) seek to embed financial services into their native customer experiences or white-label entire services. This way, companies do not have to hand over the customer relationship to a FI. Rather, they can maintain direct customer contact throughout the customer journey. The sales process becomes seamless for the customer since banking services are fully integrated. Customers do not have to switch to a bank channel or between different user interfaces.

Embedded finance has been around for years, but the digital transformation of financial services via APIs has accelerated its growth. Integrating banking services (delivered through BaaS) into enterprise systems used to be a complex undertaking requiring a bespoke implementation project, but APIs have made such integrations easier. API integrations often require no more than a few lines of code in the enterprise logic.

Embedded finance enables FIs to provide financial services (e.g., payments, insurance, consumer lending, wealth management) to fintech firms and other businesses. This use case is forecasted to grow from US$22 billion in 2020 to US$230 billion by 2025, with payments as the primary use case (Figure 7).

[40] See, for example, "Open Pensions and Open Finance: Building a Better Future for UK Savers," Innovate Finance, October 1, 2020, accessed January 10, 2022, https://www.innovatefinance.com/reports/open-pensions-and-open-finance-building-a-better-future-for-uk-savers/.

FIGURE 7: THE EMBEDDED FINANCE OPPORTUNITY



Source: Lightyear Capital

OPEN ECONOMY USE CASES

FIs interviewed for this study are unclear on open economy use cases and how to monetize them. One FI mentioned plans to invest in capital-intensive industries with partners, e.g., investment in sustainable energy or utility infrastructure. The joint venture then offers that infrastructure as a service to companies, reducing their capital needs. The FI would become the hub for all kinds of services and cross-selling financial products to its corporate clients.

The open economy might not be on the investment horizon today for most companies. Yet respondents do realize that data access and exploitation are already happening on a much larger scale than open banking/open finance, e.g., in social media, retail platforms, IoT, and Industry 4.0. Regulations such as the upcoming Data Act in Europe and the CDR in Australia will drive more development of the open economy.

Over time, the connection between FI and non-FI ecosystems in an open economy will create an “internet of finance” with unlimited possibilities for new value creation. A key underlying challenge is how to deliver the customer’s data securely and conveniently, which enables business in an "internet of finance” ecosystem. Identity and cybersecurity solutions are critical underlying components.

ENABLING THE OPEN ECOSYSTEM: SOLUTIONS FOR SECURE DATA ACCESS

Open ecosystems rearrange the value chain of financial systems from a monolithic approach to a multiparty ecosystem. In current markets, multiparty ecosystems present unique challenges and opportunities to FIs and third-party fintech firms.

SECURE DATA ACCESS: FIRST PRINCIPLES

Third-party access to financial data should conform to the following first principles:

- **Customers own rights to their data**: Open ecosystems operate on the basis that customers own the rights to their financial and nonfinancial data. FIs and fintech firms operate "on behalf of" customers requesting services.
- **Customer consent**: Customers must provide explicit consent for their data to be shared or accessed. As part of the consent process, the customer should be informed regarding the purpose (function) of the data access requested, as well as its duration and frequency.
- **Customer identity**: When providing consent, customer identity must be validated through strong customer authentication (SCA). Risk will vary across use cases, resulting in variances in how SCA is deployed for each use case. For example, payment initiation could require SCA for each transaction, and account balance reporting could require SCA only during setup/onboarding.
- **TPP identity**: TPPs must securely identify themselves to data providers (e.g., FIs) to prevent data access from malicious entities. For example, Europe's PSD2 requires TPPs to leverage a strong electronic identity certificate (eIDAS) to identify themselves.
- **Secure communication channel**: Traditional confidentiality requirements for customer data apply. Third-party access, whether via API or other mechanisms, should be enabled only over secure (encrypted) channels to protect customer data exchange from unauthorized disclosure.

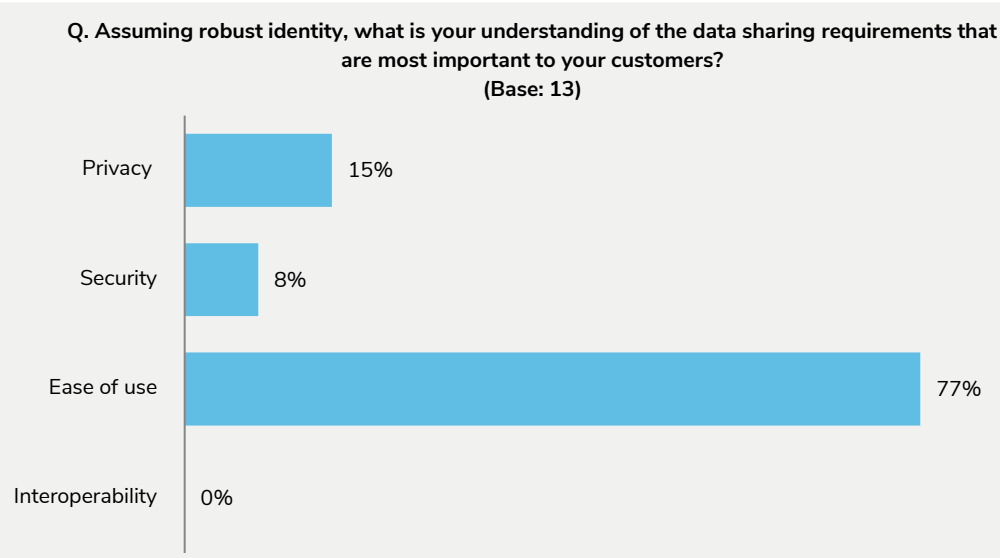
SECURE DATA ACCESS: CONSUMER PRIORITIES

Research participants were asked to stack rank consumer priorities related to securely accessing their data through a TPP. Consumers were assumed to use one set of identity credentials to authenticate themselves across the open economy ecosystem, avoiding multiple and disconnected authentication experiences generated by individual providers within the ecosystem. Consumer priorities for consideration follow:

1. **Privacy:** Trust that the provider will only use data for the purpose for which consent is given.
2. **Security:** Trust that data will be safe and will not be breached, misused, or disclosed to unauthorized parties.
3. **Ease of use:** Provide a frictionless experience for giving and withdrawing consent.
4. **Interoperability:** Provide the same experience for giving consent for data sharing across different providers.

The research highlighted ease of use as the top consumer priority, enabled by identity, often described with the intent of lowering customer abandonment rates (Figure 8).

FIGURE 8: CONSUMER REQUIREMENTS FOR DATA SHARING



Source: Aite-Novarica Group interviews with 14 banks and fintech firms, March to May 2022

Of the respondents who identified ease of use as the top consumer driver, deeper discussions revealed a belief that consumer recognition of the authentication workflow was a more practical description of what consumers want most. It is not that the authentication workflow must be seamless (invisible) to the consumer, but rather that consumers recognized a straightforward authentication workflow, which led them to complete the workflow. These results indicate the importance of reducing consumer abandonment for current open ecosystem market practitioners.

Research participants clearly understood identity and interoperability as important contributors to ease of use for customers.

Privacy and security were also assessed as important. Most participants express that these value aspects are table stakes, i.e., aspects consumers would assume to be present for a trusted open ecosystem. In the negative, a security or privacy breach would fundamentally undercut trust and might cause the consumer to discontinue service.

The research also highlighted regional and demographic influences material to consumer preferences for security and privacy.

Regional influences exist where consumers hold paramount value to security before engaging. In some countries in Europe, a tendency to distrust TPPs leads consumers to assess how well the FI delivers strong security aspects before using the service.

Many participants believed demographic preferences influenced privacy-related consumer priorities. Younger consumers with smaller financial assets tend to view privacy risk as lower, privacy solutions less important, and rarely question consent decisions. Older consumers with larger financial assets were more likely to assess privacy risks as higher and the need for privacy protections as more important (table stakes), with consent decisions bearing greater consideration.

SECURE DATA ACCESS: CUSTOMER IDENTITY AS A KEY ENABLER

A set of robust services to optimize consumer experiences must support secure data access and enable strong defenses against cyberattacks for multiparty open ecosystems to flourish. Customer identity is the foremost among these services, which functions at the heart of a robust open ecosystem.

Customer identity is driven by the top business priority to deliver rich digital experiences for multiparty services. When TPPs create compelling open business cases, which

require multiple FIs or data providers (DPs), these realities tend to expose limitations of legacy customer identity solutions deployed at the FIs and DPs. Any approach for which customers must authenticate multiple times against disparate identity solutions creates a poor customer experience—the opposite of the base promise of open ecosystems.

In the theme of identity-enabled cybersecurity, customer identity functions as the lynchpin for effective cyber defense solutions, such as zero trust, a fundamental security model supporting secure data access solutions. Secure data access solutions for TPPs have a natural tendency to expand the FI's attack surface, expose gaps in API security deployments, and create pressures for FI authorization services. Modern customer identity holds a unique position to enable secure data access in a manner that helps the FI defend customer data in the open model more vulnerable to attacks.

In the mindset of identity-enabled digital efficiency, customer identity helps the FI capitalize on running cost reduction opportunities in delivering secure data access solutions for TPPs.

Modern customer identity solutions exist in the market for FIs to leverage for open ecosystems and traditional digital channels. The next section of this report examines the perspectives of these solutions.

SECURE DATA ACCESS: CURRENT PERSPECTIVES OF CIAM SOLUTIONS

Customer identity and access management (CIAM) solutions are well-positioned to function as the customer identity engine critical to supporting multiparty open business cases. Some CIAM solutions can also help FIs, FSPs, and other DPs reduce cyber risk, including the elimination of user passwords.

FIs, FSPs, and other DPs involved in open ecosystems are in various stages of modernizing their identity solutions. For this report, interviewers asked FI and TPP leaders their views on CIAM solutions relative to their top open business goals.

Practical CIAM Views

Research findings regarding CIAM were reflective of practical norms in this maturing market. Several FI and TPP participants viewed CIAM as important to enabling open business but not a requirement for entry into these markets. As one TPP participant shared, "CIAM is an FI matter to solve."

Many FIs operate with multiple identity silos within their institution, often due to historical mergers and acquisitions. Lacking a robust CIAM solution, a common FI technique is to shield (hide) their siloed representations of customer identities, presenting only a single (consolidated) identity solution for TPPs accessing customer data. This approach addresses the "internal FI" identity problem well enough to allow TPPs to operate with the FI to deliver single-party open banking or open finance business cases, leaving the external "cross-FI" problem for downstream consideration. Participant responses support the practical conclusion that single-party open banking and open finance are good (early-phase) pursuits for business, with future multiparty business cases needing CIAM solutions.

Strategic CIAM Views

Research findings also highlights participants with a more strategic view of CIAM solutions for open ecosystems.

One participant states, "CIAM solutions are a must-have feature, central to open economy business success." This firm was already in partnership with a CIAM provider.

Another participant responds, "We are already in partnership with identity providers, and we are already FAPI (Financial-grade API) certified."

This group of participants views CIAM as a must-have key enabler for open ecosystems and holds the following characteristics in common:

- All are market evangelists for the consumer-centric democratization of digital services delivered by open ecosystems.
- All are technology providers with a business focus to enable TPPs. The one exception is a leader from an industry consortium.
- All are actively executing against single-party open business cases but with a strategic eye toward multiparty open business cases.
- All technology providers in this category are in some stage of incorporating CIAM capabilities. One leading provider has completed CIAM modernization through partnership. Another leading provider has made significant CIAM progress through development.

In addition, most participants held enough identity expertise in-house or through a strategic partner to understand strategic customer identity capability:

- Solving the underlying "cross-party identity challenge" necessary for supporting multiparty open business cases
- Taking regional aspects Into account, which could dictate or highly influence expectations for cross-party identity and CIAM solutions supporting open ecosystems
- Following standard protocols, such as OAuth, OpenIDConnect, and Financial-grade API (FAPI), necessary to share customer identity for cross-party open business cases

See the next section for a closer look at these strategic aspects.

SECURE DATA ACCESS: CROSS-PARTY CUSTOMER IDENTITY AS A KEY ENABLER

For the purpose of this report, cross-party customer identity (CPCI) is a trusted, digital representation of customer identity accepted as authoritative across multiple parties. Multiple parties choose to rely on this authoritative representation to support secure data access requests, driven either by mandate or to participate in higher-value services. CPCI solutions are typically driven by government or industry agencies. They tend to be deployed as tokenized solutions to provide privacy protections to sensitive customer-identifying data.

Major regional expressions and progress toward CPCI appear in Table C.

TABLE C: REGIONAL DEVELOPMENTS IN CPCI

REGION	CPCI DEVELOPMENTS
United States	With less regulatory definition, CPCI can be sometimes referred to as "cross-FI identity," as banks have dominated the holding of customer data historically, or a future "U.S. national digital identity." National efforts have proceeded steadily: • In 2017, NIST Digital Identity Guidelines (NIST SP 800-63-3) were published.[41] • In 2020, NIST updated the version (Digital Identity Guideline SP 800-63-4). It remains in draft mode with the comment period closed.[42] • In April 2021, the U.S. Department of Homeland Security Office of Strategy and Policy opened a public request for comment on Digital ID security standards and platforms. The goal is to enable federal agencies, such as the transit security administration, to accept these credentials for official purposes across the U.S.[43] These efforts and others may lead to a U.S. national digital identity for citizens. Alternatively, industry or commercial consortiums could provide CPCI solutions for specific sectors within the market. CIAM solutions supporting U.S.-based open business cases will need to support these CPCI solutions.

[41] "Digital Identity Guidelines," NIST, accessed May 11, 2022, https://pages.nist.gov/800-63-3/.

[42] "Pre-Draft Call for Comments: Digital Identity Guidelines," CSRC, June 2020, accessed May 11, 2022, https://csrc.nist.gov/publications/detail/sp/800-63/4/draft.

[43] "Digital Identity Trends – 5 Forces That Are Shaping 2022," Thales, December 29, 2021, accessed May 11, 2022, https://www.thalesgroup.com/en/markets/digital-identity-and-security/government/identity/digital-identity-services/trends.

REGION	CPCI DEVELOPMENTS
European Union	With a strong regulatory definition and multiple member states, CPCI can be called "cross-jurisdiction identity." Nation-state members hold sovereignty (jurisdiction) to define how citizens are digitally identified. Cross-jurisdiction conveys the meaning of a common digital representation that all member states find authoritative for use. Considerable progress has been made through EU regulation: • In 2016, the EU's Electronic Identification and Signature (eIDAS) regulation came into force. It required mandatory cross-border recognition of electronic ID by September 2018. This means existing and future national digital identity schemes must be interoperable in the EU. Member states are not forced to implement.[44] • By the end of 2020, 19 digital identity formats were interoperable in Europe across 15 countries: Germany, Belgium, Croatia, Denmark, Estonia, Italy, Spain, Latvia, Lithuania, Luxembourg, the Netherlands, Portugal, the Czech Republic, Slovakia, and the U.K.[45] • These efforts have also led to the creation of qualified trust providers authorized to provide key digital services.
United Kingdom	The U.K. decoupled from the EU identity framework as part of its Brexit in 2020. Still, it holds significant identity expertise and understands the criticality of identity. As such, the U.K. recently formalized national identity efforts.[46]
Decentralized digital ID architectures	Decentralized digital ID architectures have been explored using blockchain technologies since 2018. Noteworthy is blockchain testing for identity use cases in Estonia and the U.K.[47]

Source: Aite-Novarica Group

Multiparty open business case deployments will require CIAM solutions to support these CPCI solutions based on regional factors. History suggests regulation will lead the way in the EU and other nations. In the U.S., the path forward is less clear. History suggests deployed solutions will lead the regulations.

[44] "Digital Identity Trends – 5 Forces That Are Shaping 2022," accessed May 11, 2022.

[45] "Digital Identity Trends – 5 Forces That Are Shaping 2022," accessed May 11, 2022.

[46] Emma Woollacott, "UK Announces Initial Steps For National Digital Identities," Forbes, March 14, 2022, accessed May 11, 2022, https://www.forbes.com/sites/emmawoollacott/2022/03/14/uk-announces-initial-steps-for-national-digital-identities/?sh=4f5e025a22e6.

[47] "Digital Identity Trends – 5 Forces That Are Shaping 2022," accessed May 11, 2022.

CONCLUSION

FIs:

- **Invest in digital transformation**: Open banking and finance provide many opportunities for FIs to create new customer value, but they also lead to more competition with fintech firms and other new entrants in the open ecosystem. FIs need to invest in the modernization of their infrastructure to stay competitive and generate new revenue.
- **Provide open payment solutions in Europe**: FIs in Europe have a growing opportunity to provide open payments to merchants and other businesses. Business clients can benefit from open payments to improve conversion, accelerate receipt of funds, and reduce costs.
- **Consider BaaS as a new revenue generator:** Fintech companies have great products, but they usually can't hold deposits or provide loans because they don't have banking licenses. FIs can support fintech firms' needs by providing such services via BaaS to the business, allowing the fintech firms to provide financial services to the end users. FIs that consider this opportunity should evaluate if the additional revenue stream from BaaS compensates for the potential disintermediation from the direct end-user relationship and potential loss of cross-selling opportunities.
- **Invest in customer identity solutions**: FIs should invest in customer identity solutions as a strategic business capability, recognizing the shortfalls of customization projects which extend the lives of legacy solutions. Capability in the market has reached mature outcomes for delivering customer identity as decoupled platform functionality, well suited to deprecating FI identity silos and seizing FI opportunities for identity-enabled business.
- **Pursue integrated CIAM solutions:** FIs should pursue integrated CIAM solutions within their architectures for B2C orchestration; these are key to the open economy. This approach may require deep collaboration with the FIs' orchestration partners and the FI's teams representing identity, information security, information technology, and open business. FIs should seek CIAM solutions that operate from the cloud and at scale, solving concerns related to CPCI within multiparty open ecosystems. Regional factors will have a significant influence.

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CONTACT

Research and consulting services:
Aite-Novarica Group Sales
+1.617.338.6050
sales@aite-novarica.com

Press and conference inquiries:
Aite-Novarica Group PR
+1.617.398.5048
pr@aite-novarica.com

For all other inquiries, contact:
info@aite-novarica.com

Global headquarters:
280 Summer Street, 6th Floor
Boston, MA 02210
www.aite-novarica.com

AUTHOR INFORMATION

Ron van Wezel
+31.6.3629.6515
rvanwezel@aite-novarica.com

John Horn
+1.330.312.3302
jhorn@aite-novarica.com