

Open banking: Definition and description

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Abstract:

Open banking is diffusing rapidly in some economies. This article provides a definition of and some requirements for open banking and looks at some of its key enablers and inhibitors.

Keywords: online banking | finance | open systems | economics

Article:

Open banking (OB) is a term that describes a special kind of financial ecosystem. The ecosystem is governed by a set of security profiles, application interfaces, and guidelines for customer experiences and operations. The OB ecosystem provides more choices and information to consumers and allow easier interaction with and movement of money between financial institutions and any other entity choosing to participate in the financial ecosystem. OB also makes it easier for new entries into the financial business sector through the OB ecosystem.

One estimate suggested that, as of early 2021, up to 87% of countries offered OB in some form.¹ Some economies such as Singapore, India, Malaysia, the United Kingdom, the European Union, Australia, New Zealand, Hong Kong, Japan, and Brazil have made significant progress toward OB. In this work, we provide a definition of and some requirements for OB and look at some of its key enablers and inhibitors.

Basic Functions Provided by Financial Institutions

Financial institutions engage in lending, deposit taking, and other authorized financial activities. There are nine types of financial institutions:² central banks, retail banks, commercial banks, credit unions, savings and loan institutions, investment banks and companies, brokerage firms, insurance companies, and mortgage companies. Central banks (e.g., the U.S. Federal Reserve Bank) only interact directly with other financial institutions. The rest of these financial institutions interact with individuals, companies, and each other in different ways, for example, banks as financial intermediaries by accepting customer deposits or by borrowing in the money markets. Banks then use those deposits and borrowed funds to make loans or to purchase securities. Banking entities also make loans to businesses, individuals, governments, and other

entities. Going forward when referring to a “banking entity,” we generally mean any financial institution that conducts business with individuals, such as a retail bank, credit union, or mortgage company. Figure 1 illustrates some monetary flows between banking entities, their customers, and other entities in the financial system.

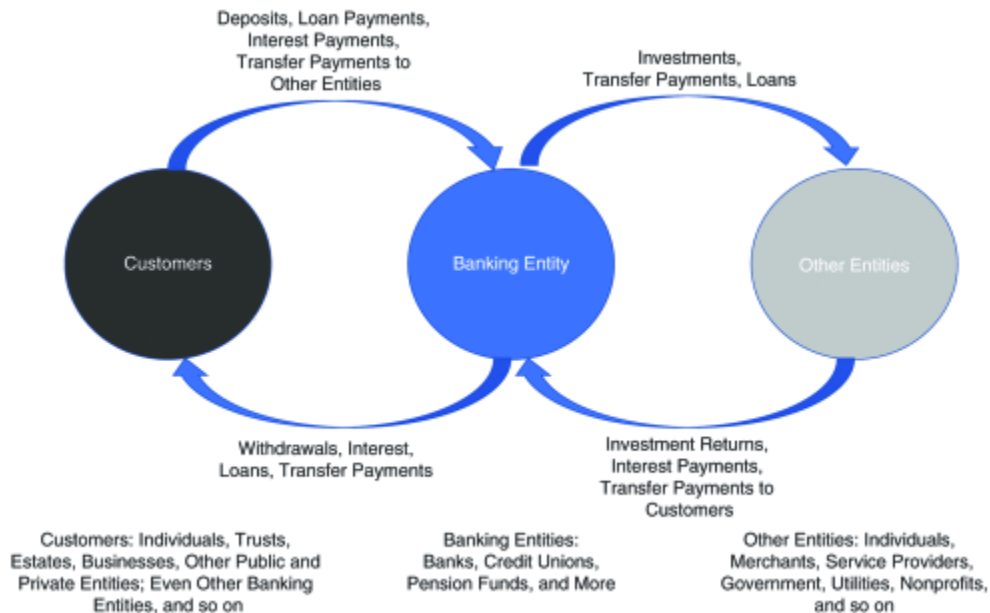


Figure 1. Some typical interactions between banking entities, their customers, and other entities.

Customers include individuals, trusts, estates, businesses (small and large), other public and private entities and investors, and even other banking entities. Other entities that use banks include individuals, merchants, service providers, government, utilities, nonprofits, other banking entities, and so on, in other words—consumers, investors, government, and businesses.

Financial sector institutions also serve as financial intermediaries by facilitating payments to and from their customers to the businesses and other entities with which they interact via check payments and debit and credit transfers. Some banking entities provide other services to their customers such financial planning and notary services.

Using Multiple Financial Institutions

Any customer can interact with more than one financial institution. For example, a person may use a local bank for everyday transactions, a credit union to hold the home mortgage, a car financing firm to finance a car, and one or more other banks for credit cards.

But moving funds between these financial institutions is not always easy and certainly not transparent. For example, making a payment to an auto loan through a credit transfer from the local bank requires several customer actions. Or making a mortgage payment from an advance on a credit card requires certain authorizations.

Customers must accept all or most of a package of services offered by each financial institution. Customers usually do not “mix and match” services offered by different banking entities easily,

if at all. For example, it would be unusual to have a checking account with one bank, a money market account with another, a savings account with another, and debit card with yet another bank. And moving funds between these different accounts would require several steps and authorizations.

Open Banking Defined

OB describes a special kind of financial ecosystem. The ecosystem provides third-party financial service providers open access to consumer banking, transaction, and other financial data from banks and nonbank financial institutions through the use of application programming interfaces (APIs). It is governed by a set of security profiles, application interfaces, and guidelines for customer experiences and operations. Ecosystem-enabled banking means that there are not predefined direct relationships or “supply chains” of financial products and services. Rather, the flow of debits and credits between these products and services are executed at the discretion of the customer (see Figure 2).

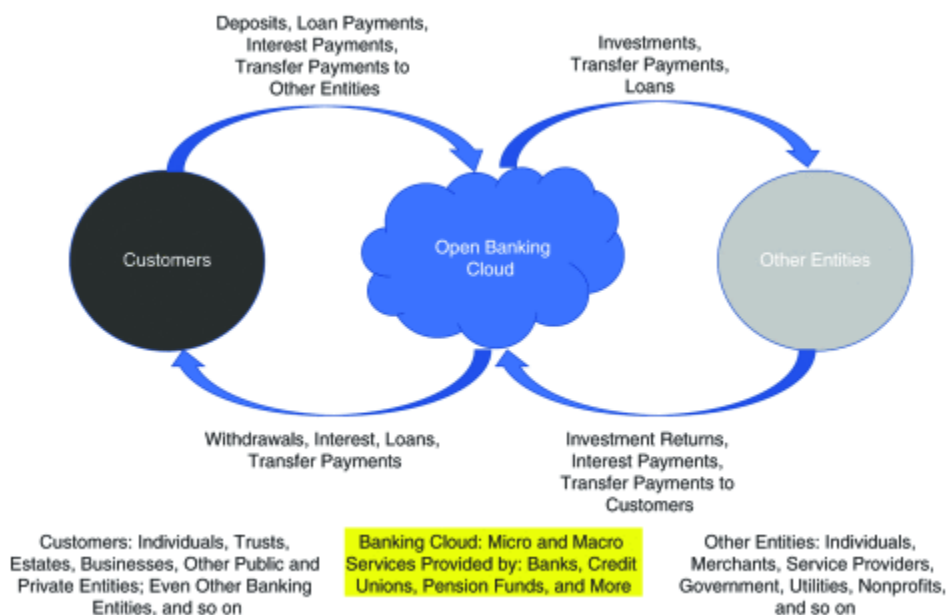


Figure 2. An OB model.

OB can be thought of as “finance as a service,” a form of software as a service (SaaS). In Figure 2, the banking cloud is a collection of banking entities, configured as a cloud and delivering micro and macro financial services via SaaS using conforming APIs. Financial microservices include deposits, withdrawals, payments, debits, credits, and more; macro services include loan origination and payoff, mortgage origination, and the like.

Within the Open Banking Cloud in Figure 2, there are clouds that represent one or more financial institutions that participate in the OB ecosystem (see Figure 3).



Figure 3. An OB ecosystem.

OB is consistent with a cashless economy with digital payments but requires banks to let down their walls and share information with third parties. This democratization of data forces banking entities to make proprietary data available to anyone with the owner's permission to access it.

In OB, banking entities interact with each other via API at the customer's direction and can offer best of breed services on an a la carte basis. With a larger available set of services, customers can personalize from more suitable and cost-effective products. For example, a customer could choose one banking entity's savings account service, another banking entity's checking account service, another's credit card, another's auto loan, and another's mortgage product, and funds could be moved seamlessly through all of these services. Dashboard tools could be used to perform various transactions, aggregate information for analysis and optimization, set activity alarms, and so on.

Aggregated accounts enable new insights and enhanced speed, convenience, and simplicity of transactions. OB also makes it easier for smaller players to enter into the financial services industry, which can increase competition and reduce anticompetitive activities.

Requirements to OB

OB requires legislation, API-standard cooperation by financial entities and consumers, and a high level of cybersecurity and trust. The Open Banking Implementation Entity was established in 2016 to help deliver open banking in the United Kingdom. Under the auspicious of its competition and markets authority, an OB standard was developed. Version 3, released in 2018,³ defines the following four core components of OB:

- API specifications
- security profiles

- customer experience guidelines
- operational guidelines.

Each of these is described in the following paragraphs.

API specifications are one of five types:

1. *Read/write API specifications*: These describe a collection of RESTful API, which uses HTTP requests to access and use data to enable third-party providers perform various functions.
2. *Open data API specifications*: These allow API providers to develop API endpoints, which can be accessed by API users to build applications for banking customers.
3. *Directory specifications*: These provide information regarding how the OB directory works, and the roles and functions of various participants.
4. *Dynamic client registration specifications*: These define the APIs for third-party providers to submit software statement assertions to account servicing payment service providers.
5. *MI reporting specifications*: These describe management information reporting of account servicing payment service providers to OB.

Security profiles cover both redirect (requiring the customer’s interactions with the third party and the API provider to take place on the same device and platform) and decoupled (allowing the customer to authorize a consent request on different devices and platforms, or at a different time) flows. These are based on the Open ID Foundation’s financial-grade API (describing security provisions for the server and client that are appropriate for financial-grade APIs) and client-initiated backchannel-authentication profiles (supporting decoupled interactions).

Customer experience guidelines describe the processes customers follow in an OB-enabled app or web service so that they use the services only if they feel “informed, secure and in control.” The goal is to balance regulatory requirements and customer insights.

Operational guidelines aim to support account servicing payment service providers’ request for an exemption from providing a contingency mechanism. A checklist can demonstrate that account servicing payment service providers have delivered a dedicated interface that have the attributes and functionality to drive competition and innovation.

Differences from Conventional E-Banking and Peer-To-Peer Financial Platforms

OB differs from both conventional e-banking and peer-to-peer (P2P) financial platforms. The differences in terms of some key dimensions are presented in Table 1.

Ordinary electronic banking (e-banking) is already well established. None of the micro or macro services provided by banks require a physical structure or proximity and all can be conducted online. Many banking entities serve their customers entirely through online services without the need of physical branch offices. These e-banks provide capabilities for electronic deposit, withdrawal of funds, remote scanning of physical checks for deposit, electronic transfers, auto

deposits, auto debits, account analysis, transaction alerts, reminders, and more. Many conventional banks also offer an electronic interface and their other third-party e-banking solutions that provide a “wrapper façade” for a mobile banking layer between the user and their bank.

Table 1. Comparing OB, conventional e-banking, and P2P financial platforms.

	Open banking	Conventional e-banking	P2P financial problems
Regulatory and policy aspects	Only a few jurisdictions have developed OB regulations. Unfriendly regulatory environment has been a concern in most economies. ⁴	In addition to well established e-banking services offered by existing banks, some economies such as Hong Kong, Korea, Malaysia, Singapore, Taiwan and the Philippines have issued bespoke digital banking license to operate online-only banks. ⁵	The regulatory environment is complex and varies significantly across countries.
Effect on mainstream banking systems	There is the opportunity to work together with fintechs to launch innovative products and adopt ways to enhance customer experience and loyalty. With streamlined processes and new products, new customers can be gained.	Lower overhead costs than brick-and-mortar operations	P2P loans typically offer investors a higher rate of return (albeit riskier) compared to bank deposits. Such a competition forces banks to fund their activities using more costly non-deposit funding sources. ⁶
Benefits to consumers	Access to products that their current banks can't offer ⁷	Convenience (24/7 account access), control over finances with the ability to self-serve ⁸	High-risk borrowers not served by traditional banks could get access to loans. Consumers, however, often pay higher interest rates than loans from the traditional banking sector. ⁹
Privacy/security aspects	Privacy and security issues are of concern among large proportions of lenders and consumers. ⁴	Many are implementing strong security and privacy measures including biometric login options involving fingerprint, voiceprint and facial recognition. ⁸	Cybercriminals were reported to use compromised identities from massive data breaches to get loans from P2P platforms. ¹⁰

But these e-banking activities all occur within the closed system of banking entities subscribed to by a customer and are predefined and not transparent. Further, proprietary information kept by each banking entity curtails mixing and matching and optimization of services, consolidation of information, and customization of services.

P2P financial platforms such as Venmo, PayPal, and Google Pay offer digital wallets with money held by the platform host and allow for transfer to and from linked debit card, credit card, or bank account depending on the service. But beyond the electronic wallet feature, P2P financial platforms offer few of the other services offered by traditional banks, and therefore fall far short of the capabilities of OB. Thus, e-banking services and P2P financial networks can benefit by entering the OB ecosystem.

Enablers and Inhibitors of OB

Many factors have facilitated the implementation of OB and the development of an OB ecosystem. First, regulatory initiatives have been undertaken across many economies to stimulate competition. For instance, Europe's revised Payment Services Directive (PSD2) and the U.K.'s OB regulation require financial institutions to share consumer financial data with nonbanks with the account holders the permission. Other jurisdictions such as Australia, Brazil, and the United Arab Emirates are also introducing OB regulations.

Next, the COVID-19 pandemic has accelerated the adoption of OB, as banks are facing pressures to meet an increasing demand for online and mobile solutions. OB is rapidly emerging as a means to meet consumers' demands for accessibility, speed, and convenience in payments. Technology companies are also working with banks to develop solutions to simplify transactions and provide greater transparency.¹¹

Finally, in some countries, the government-led development of digital infrastructures has facilitated the development of the OB ecosystem. In India, for instance, the digital infrastructure known as the India Stack, which includes an interoperable payments system known as the unified payment interface (UPI) and a universal digital ID system Aadhaar, has played a key role in the development of OB.¹² A key goal of the India Stack is to create a unified software platform for stakeholders such as government agencies, businesses, startups, and developers. The UPI was launched in 2016, which allows consumers to access bank accounts from registered apps such as mobile wallets to make transactions to any bank. As of early 2021, the UPI accounted for about 30% of retail transactions.¹³ Likewise, the Aadhaar identification system consists of a 12-digit unique identity card launched by the government in 2010 enables biometric checks to verify the identity of individuals and digitally authenticate them for a variety of services. As of 2019, there were 1.25 billion users registered for Aadhaar. Financial institutions can also conduct electronic know-your-customer (eKYC) of customers using the Aadhaar system, which reduces their costs of verifying the identity of customers. Various APIs are available to facilitate OB. For instance, Aadhaar holders can use the online electronic signature service eSign to digitally sign a document. Likewise, the Ministry of Electronics and Information Technology has provided digital locker facility for documents, known as DigiLocker¹³.

A major barrier to OB in many economies is the insufficient regulatory framework. In 2018, Japan amended its Banking Act to promote OB. Nonetheless, there is the lack clarity of regulation on data portability. The implementation of OB components is voluntary among Japanese companies.¹⁴ Likewise, a lack of OB regulation specifying various compliance requirements has created uncertainty among financial institutions in the United States.¹

Many consumers have been hesitant to adopt OB due to privacy and security concerns. This is mainly because financial transactional and personal data are more sensitive compared to other forms of information. For instance, a survey conducted by De Nederlandsche Bank found that only 25% of Dutch consumers shared their payment data in 2020 in order to get access to new services. Most of the consumers had shared data only with their existing banks. Consumers had more confidence in the bank that had their main payment account compared to other parties. The survey found that consumers are not likely to provide their data to new player entering into the payment market in the future.¹⁵

While OB is gaining traction in several countries, some countries such as the United States have not pursued it. Yet there are many of the pieces already in place, including pervasive e-banking services, that could lead to ready adoption. However, in the United States, more work needs to be done on implementation, security, privacy and trust concerns, and more experiences from other countries needs to be gained. Still, it's likely that OB is going to be more common everywhere very soon.

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