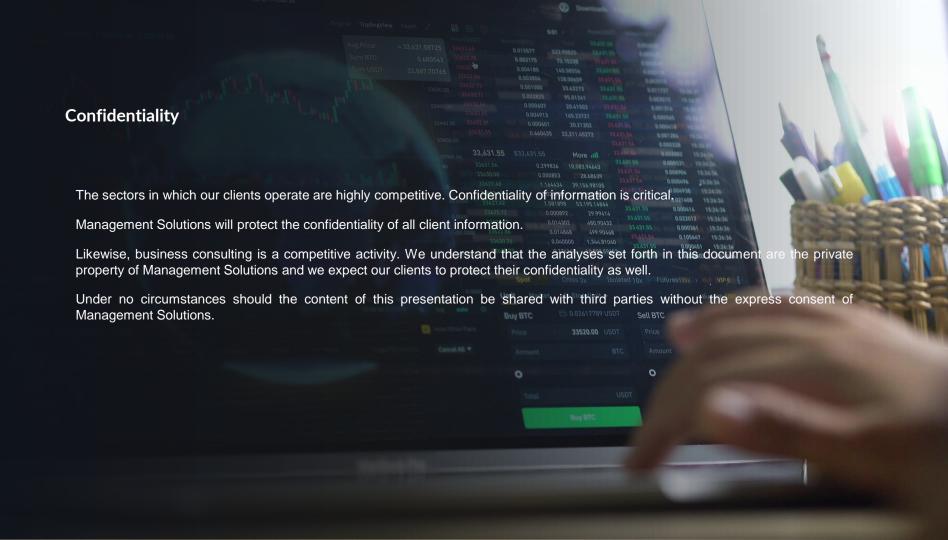


# **Open Banking**

Reflections on its impact and the opportunities it generates.

33520.00 USDT





# 1.1 Financial Industry Trends

Digitalization has created new ways of interacting with the customer, enabling new business models that compete directly with the traditional financial industry.



Digitalization has created **new ways of interacting with the customer**, enabling **new business models** that compete directly with the traditional financial industry:

- Fintechs focus on offering highly specialized financial services, offering valueadded services to consumers and reaching market segments inaccessible to traditional banks.
- The number of *neobanks*, entities that operate 100% digitally, acting as service platforms, is growing.
- Big Tech (Google, Apple, Facebook, Amazon, Microsoft) are creating their own financial ecosystem.
- Technology (APIs, blockchain, AI, robots, big data analytics, cloud computing...) is enabling a new way of banking.

As new markets and competitors have emerged, consumers increasingly **demand new products and services**, adding the component of **personalization**, where **data plays a fundamental role** in this process.

In the new competitive environment, the adoption of an Open Banking model is essential to be able to offer a customer experience that meets the demands of consumers and allows to face the threats of new competitors.

# 1.2 What is Open Banking

Open Banking is a philosophy that seeks to liberalize the processing of consumer banking data, so that it can be processed by third parties with the consent of the data subjects.

# **Objectives**

- Encourage banking innovation and the development of new products and services.
- Increase competition in the banking market, facilitating the participation of new players.
- Allow consumers to exercise control over their own financial data by being able to select with whom they share their data and for what purpose.

# Challenges

- Entities must decide the business model with which they will participate in the new competitive environment.
- The organization must adapt to the new competitive environment, incorporating new profiles (e.g. API Manager) and operational models (e.g. API Governance, Data Management).
- The infrastructure of the entities must be updated to comply with regulations and support operational growth, always guaranteeing security.

## **Key concepts**

- API: Interface to expose customers' banking data in a secure and standardized way.
- TPPs (Third Party providers): Third party
   that accesses through the API to the customer's financial data.
- Banking as a Service: Banking model that allows the consumer to consume various
   "a la carte" banking services developed by different providers.

# **Opportunities**

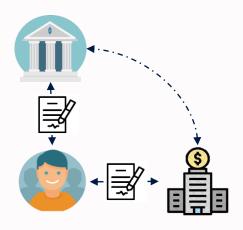
- Collaboration with new suppliers enables entities to offer new products and services with high added value.
- Entities can access extended information on their customers (and even non-customers), enhancing their CRM and data marketing.
- Possibility of outsourcing banking services by collaborating with specialized suppliers, with high efficiency

Banks lose their monopoly over customer data, and face competition from new entrants, but in return they can increase the value offering to their customers and increase the efficiency of their processes.



# 1.3 Key Concepts - The TPPs

TPPs (Third Party Providers) are those service providers that do not hold the customer's bank account but offer payment services.

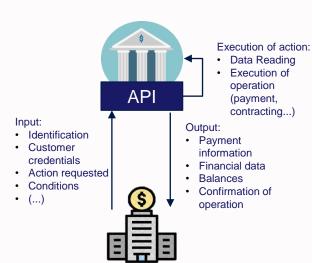


- ➤ TPPs access customer financial information held by their financial institution, with the customer's consent, in order to offer products and services.
- ➤ Depending on the regulation, the TPP may or may not need a contract with the financial institution to access the client's information, but will always need the client's consent.
- Many regulations prevent financial institutions from discriminating against different TPPs.
- Traditional financial institutions can, in turn, operate as TPPs with respect to other institutions, offering their products and services to clients of other institutions.

**Banking as a platform:** Financial institutions can seek alliances with different TPPs to offer their products and services from their own **banking services platform** (the concept is similar to how Apple sells third-party applications from its App Store).

# 1.4 Key concepts - APIs

An API is a communication protocol that, under the Open Banking model, is used by institutions to expose and access data. It is not a new development, but its use in the financial industry has increased substantially with the introduction of Open Banking.

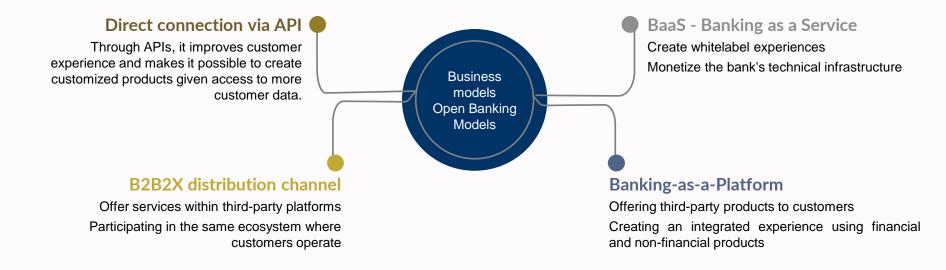


- ➤ API is an abbreviation for Application Programming Interfaces. It is a set of definitions and protocols that enable communication between two software applications.
- An API allows the definition of a set of inputs that, when received, generate a given output. The API allows the developer to control the actions that can be executed on the application or the information that is shared (output), as well as the conditions under which access is allowed.
- > The Open Banking model uses APIs to give third parties access to the financial institution's architecture.

**Screen Scrapping:** TPPs can also offer services through screen scraping: using the customer's online banking credentials to access their data. However, this poses a risk as neither the entity nor the customer has control over the TPP's access to the banking ecosystem.

# **Open Banking business models**

New business models and *partnerships* can be adopted by financial institutions, which improve the customer experience, broaden the product offering and expand the markets in which they operate.





# 2.1 Direct connection via API

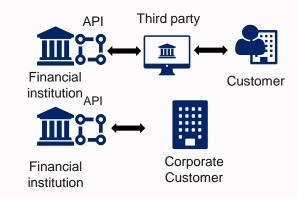


The development of public APIs to give third parties access to the financial institution's infrastructure allows customers to access the bank's services, either directly or through a third party.

- The development of a public API allows financial institutions to share customer data or perform actions on their accounts or products, with their consent,
- The API is a communication protocol that allows third parties to access the bank's infrastructure.
- Making public APIs available allows customers access through third parties, and large corporations direct integration.
- The API allows the financial institution to maintain control over the identity of the applicant and the information or actions they are allowed to execute.

### **Benefits**

- Access to new customers and offer of customized products and services.
- · Prevents third-party access through screen scraping
- · Cross-selling opportunities and partnerships with fintechs
- Offers a new integration channel for corporates more efficient than H2H channels



**Success** stories

Financial Information Aggregators (AISP)

**Fintonic** 

Payment Initiation Service Providers (PISP)

Trustly



# 2.2 B2B2X distribution channel



Allowing third parties to use the entity's internal IT structure to offer new products and services to its customers and expand its digital strategy.

- In the B2B2X distribution model, the financial institution integrates with a non-financial company, through APIs, to offer its products and services to the latter's customers.
- In the B2B2B2B model the end customer will be a company, in B2B2C a consumer, with the products and services offered in each model being different.
- The platform from which the services are offered belongs to the non-financial company, but the services are offered under the brand name of the financial institution.

# Financial Non-financial Customer company

### **Benefits**

- Access to new customers and offer of customized products and services.
- Brand strengthening and positioning.
- Strengthening of the relationship with non-financial partners.
- · Leveraging on integration to offer other services

# Success

B2B2B financing solutions

Finance & Go by Santander

# 2.3 Banking-as-a-Service (BaaS)

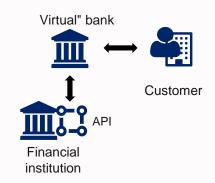


Allows third parties to use financial products and services to their customers without the need to be a bank, thus achieving benefits for the different participants.

- In a Banking as a Service model, a financial institution offers its financial services as a white label, offering them under the brand name of another institution, which acts as a "virtual" bank.
- The non-financial entity can thus offer financial services to its clients without the need to obtain a banking license, or a financial entity can offer a service product for which it does not have the necessary infrastructure or expertise.
- The integration between the bank's infrastructure and that of the entity is done via API.

# Benefits

- The financial institution makes its infrastructure profitable by obtaining a profit for providing financial services to third parties.
- · Taking advantage of economies of scale.
- Strengthening the relationship with the partner.
- · Access to customer segments outside the entity's usual target.



# Payment solutions Shipay Original Bank

Success

stories



# 2.4 Banking-as-a-Platform



Products and services from more than one entity and/or provider are offered on the same platform, improving the customer experience and expanding the product portfolio.

- The concept of Banking-as-a-Platform allows third parties to offer their products and services to the bank's customers from the financial institution's own platform.
- The platform can be expanded to also offer non-financial products and services (travel, subscriptions...) with special conditions for the bank's customers.
- The owner of the platform and the ecosystem in this model is the financial institution, which controls which third parties will offer their services on the platform and their conditions.

# User Platform entity Financial Sellers

### Benefits

- Allows customers to access a wide range of innovative products and services under advantageous conditions.
- Third parties participating in the platform can provide services with a high level of specialization in which the financial institution is not interested, covering additional customer needs.
- Additional collaboration opportunities with fintechs



Banking as a Platform

Starling Bank



# 2.5 Use cases (1/4)

With the advent of Openbanking, B2B banking entities propose new solutions that enhance their value proposition: Account Aggregation, Financial Manager, Online Accounting and BNPL services.

Use case	Real case	Description	Benefits
Account aggregation	BBVA allows the aggregation of accounts from other banks, facilitating	<ul> <li>Aggregation of the company's bank accounts into a single entity, simplifying</li> </ul>	Centralization of accounts
BBVA	the online accounting tasks of your companies.	financial monitoring	<ul> <li>✓ Safer environment</li> <li>✓ Increased customer financial information</li> </ul>
nancial Admin. Financial	<ul> <li>Strands makes it easy for SMEs to track their finances through financial analysis, dashboards and budgeting.</li> </ul>	Based on AISP, it evaluates finances, categorizes expenses and advises the company on budgeting, its financial health.	✓ Follow-up of financial status ✓ Customized insights
Strand Santander			✓ Increased planning capacity
n-line accounting	Bank of America integrates	Real-time, centralized, online accounting in a secure environment.	✓ Digital transaction register
Bank of America	<b>QuickBooks</b> services and allows companies to use tools for managing receipts and taxes, expense	Automate management functions financial PEM (payroll, management of	Updated view of the company's financial situation
	classification, etc.	flows).	✓ Keeping books up to date automatically
Initiation of card-not-present	Liberbank integrates Atmira's services for a cardless payment initiation solution	<ul> <li>Ability to implement instant payments and recurring payment automation</li> </ul>	✓ Cost reduction
Liboubon			<ul> <li>Implementation of cardless payments</li> </ul>
Liberban k			<ul> <li>Improved customer experience</li> </ul>



# 2.5 Use cases (2/4)

With the advent of Openbanking, B2B banking entities propose new solutions that enhance their value

Use case	Real case	Description	Benefits
Marketplace	<ul> <li>DBS has created the 99%SME Marketplace, an initiative to link</li> </ul>	<ul> <li>Marketplace integration through integration of third party services</li> </ul>	<ul> <li>Access to a wider range of products and services.</li> </ul>
DBS	its companies with an entrepreneurial community.	<ul> <li>Access to more sophisticated and specialized external products and services</li> </ul>	✓ Better contracting conditions (prices, reliability)
Onboarding automatic	<ul> <li>Pega is a Fintech that helps automate and simplify the entire customer journey by enabling automated customer onboarding.</li> </ul>	<ul> <li>Automation of the onboarding process for new clients, through the use of unstructured documents and information from their financial statements.</li> </ul>	✓ Simplification of administrative tasks
PEGA			<ul><li>✓ Saving time and effort Auto-</li><li>✓ fillable forms</li></ul>
OpenBanking as a Service	TrueLayer, Token, OpenWrks  are OpenBanking platforms that	provide support and tools to companies,	✓ Reduces barriers to entry
TrueLayer OpenWrks	are OpenBanking platforms that provide companies with instant payment services and access to data.		✓ Access to the OpenBanking environment
Offer customization	Revolut offers a digital     Appropriate tribund to the profile	<ul> <li>Personalization of the offer received by companies. Aggregation of external</li> </ul>	✓ High degree of offer customization
	experience tailored to the profile of each company, based on its	information sources generates unique	✓ Improved quality of service received Ne

## Revolut

- financial behavior.
- digital experiences, new product offers and recruitment incentives.
- lew
- contracting opportunities

# 2.5 Use cases (3/4)

With the advent of Openbanking, B2B banking entities propose new solutions that enhance their value proposition: Account Aggregation, Financial Manager, Online Accounting and BNPL services.

Use case	Real case	Description	Benefits	
oring/DebtAdvice	■ Somet offers un API para hing to ©edit quality and a evaluat follow-up of the to an until the debt is collected.	<ul> <li>Use of data to alter or replace credit ratings and advise the customer on their financial situation.</li> </ul>	✓ Increased acceptance of applicants	
4.1			✓ Greater control of credit risk	
Algoan			√ Faster project acceptance	
Digital Financing	• Financia&Go digital service for	<ul> <li>Digitization of customer financing flow and acceleration of financial allocation processes.</li> </ul>	✓ Increased revenues	
	SMEs of <b>Banco Santander</b> to grant financing for the amount of		Acceleration of processes Saving of	
Santande r	invoices issued and pending collection.		resources (targeted supply)	
verdraft loan	■ SafetyNet Credit offers credit	<ul> <li>Activation of automatic prearranged short-term loans from a financial institution.</li> </ul>	✓ Increased revenues	
SafetyNet Credit	when approaching the overdraft limit to avoid charging fees.		✓ Process acceleration	
			√ Transparency in payment processes	
Loans to non-	BBVA offers quick loans for non-	<ul> <li>Ability to offer loans to non-customers by obtaining aggregated information on their finances for the evaluation of the application.</li> </ul>	✓ Increase in sales revenue	
BBVA	customers by accessing banking information from other entities to find out the viability.		✓ Increase in customer portfolio	
DDVA			Acceleration of application evaluation	



# 2.5 Use cases (4/4)

With the advent of Openbanking, B2B banking entities propose new solutions that enhance their value proposition: Account Aggregation, Financial Manager, Online Accounting and BNPL services.

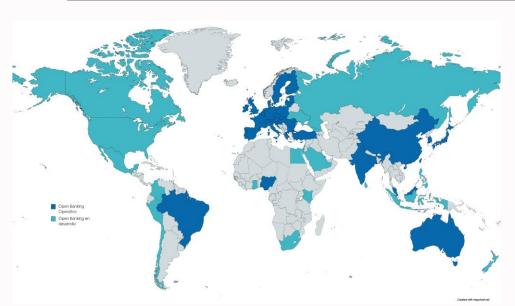
	Use case	Use case Real case		Description		Benefits	
13Sm	Akurateco	<ul> <li>Akurateco allows you to establish personalized commissions for each payment action according to the customer's movements and characteristics.</li> </ul>	•	Full customization of commissions charged to customers based on specific payment action triggers		Collection automation  Commission customization  Greater control and information on	
14	Fraud prevention Feedzai	<ul> <li>Feedzai works to ensure that financial transactions and individuals are safe and protected from financial crime.</li> </ul>		<ul> <li>Use of data available through open banking to control banking risks and avoid frauds</li> </ul>	<b>*</b>	Secure account opening Ongoing customer risk assessment Increased accuracy of fraud typologies	
15 ln	itiation of card-not-present narments Liberbank	Liberbank integrates Atmira's services for a cardless payment initiation solution	•	Ability to implement instant payments and recurring payment automation	~	Cost reduction Implementation of cardless payments Improved customer experience	



# 3. Experiences of Open Banking regulation

Several countries around the world have implemented an Open Banking model or are in the process of developing them.

# Open Banking regulation around the world



**Europe** has been the pioneer region in the implementation of an Open Banking regulatory model, with the implementation of PSD2 in 2020. The model is currently being expanded with regulatory proposals such as PSD3 and FIDA.

### In Ibero-America,

- Mexico, with the approval of the Fintech Law, was one of the pioneer countries in the approval of an Open Banking regulation, but its effective implementation is still pending regulatory development.
- Brazil has been the first country to effectively implement an Open Banking operational framework, while other countries in the region are developing their own standards.
- Chile approved its Fintec Law in 2023, which also includes an open banking model.



# 3.1 Open Banking Regulation - Europe - PSD2 (1/2)

The entry into force in 2018 of the PSD2 Directive (Payment Services Directive 2) levels the playing field for new entrants to the means of payment market by obliging them to publish information to third parties (Open Banking).

### **Target**

Contribute to the formation of an integrated and efficient European payments market, creating a single space for payment services that offers equal conditions and rights in the services offered, guaranteeing the security of payments and incorporating stricter security requirements. Derivative effects:

i) Increased market competition; and ii) Increased consumer protection.

### Scope and Deadlines PSD2 considers, in terms of information, data related to customer accounts and payment services. Official publication Deadline for of the new PSD2 Regulatory national Directive **Technical Standards** Fnd date of transposition of moratorium on the PSD2 directive safety requirements Dec Set Jan Jan 2015 2018 2019 2021 2-vear term

### Main PSD2 Concepts

### **TPPs** (Third Party Providers)

- Acting as:
  - PISP: Payment Initiation Services Provider
  - · AISP: Account Information Service Provider
- Need for authorization to operate as a PISP / AISP
- Need to obtain the client's consent to access his or her information.

### **Financial Institutions**

- Facilitating third party access to make account information and payment services available.
- Discrimination against third parties in the provision of services is prohibited.



# 3.1 Open Banking Regulation - Europe - PSD2 (2/2)

The PSD2 maxim is the obligation of banks to share customer information with third parties (TTPs), opening the possibility of new services, PSIP and AISP.

# **Ecosystem: Participants and Services**

Incorporation of new players in the market to take advantage of new service opportunities (PISP, AISP) associated with the exchange of customer information by banks.





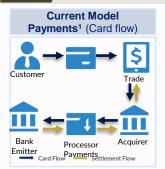
Enables new customer information aggregation services, including

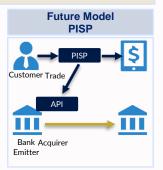


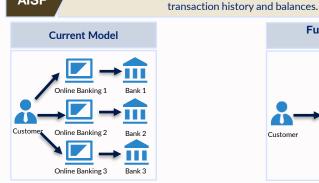
### Detail of two new services: PISP and AISP

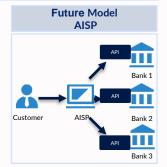
**AISP** 

PISP Enables new payment solutions. Third parties (TTP) can initiate online payments to a payee in the payer's bank account.











1. Simplified conceptualization of the means of payment process to exemplify the current situation and the future process of PISP

# 3.3 Open Banking Regulation - Europe - PSD3/PSR and FIDA

In June 2023, the European Commission presented two legislative proposals aimed at extending the framework of Open Banking in the European Union and strengthening its operation and competitiveness.

PSD3/PSR —————

The Third Payment Services Directive (PSD3) and the Payment Services Regulation (PSR) update PSD2 and the Open Banking model with regard to payment data (Open Payments).

### **Objectives**

- Strengthen consumer protection and confidence in payment services.
- Improve the competitiveness of Open Banking services.
- Improving implementation and enforcement in Member States
- Improve access to payment systems and bank accounts for unbanked PSPs.

### Main provisions on Open Banking

- A list of prohibited obstacles to access to public APIs is established, which the account management entities must be responsible for eliminating.
- Account management companies must develop a dashboard that allows their customers to view and manage their consents to the use of data by third parties.
- The need to maintain an emergency data access interface is eliminated, but business continuity measures are implemented.
- Non-bank PSPs' access to payment systems and bank accounts is strengthened.

### **FIDA**

The **Financial Information Data Access (FIDA) Regulation** establishes an Open Banking model that covers financial services beyond data (**Open Finance**).

### Data covered

- Loans, mortgages and accounts (except accounts payable)
- Investment products
- Pension rights in pension plans
- Insurance products, except life and health
- Solvency data

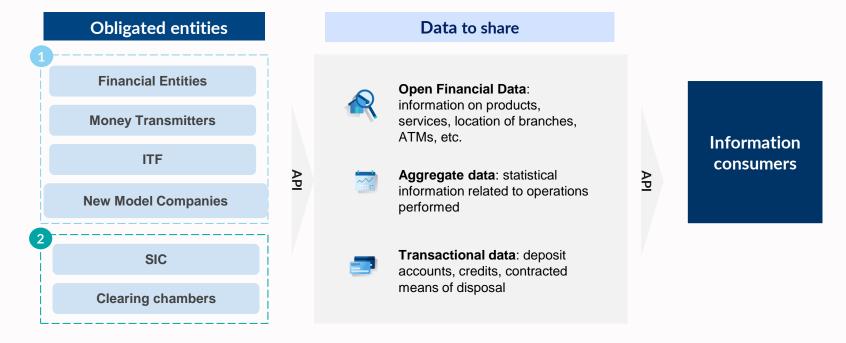
### Main provisions

- Financial institutions are obliged to make their data available to their customers, or to provide it to third parties at the customer's request.
- Third-party access to data may be subject to a fee (unlike under PSD2/3).
- Data exchange systems are created in which data owners and users participate together with consumer organizations.
- Entities will create a dashboard for users to manage permissions on financial data.
- The figure of Financial Information Service Providers is created.



# 3.4 Open Banking Regulation - LatAm - Fintech Law - Mexico (1/2)

The Law to Regulate Financial Technology Institutions (Fintech Law) regulates the financial services provided by financial technology institutions.







# 3.4 Open Banking Regulation - LatAm - Fintech Law - Mexico (2/2)

Article 76 of this law establishes the terms to be complied with for the exchange of data through the use of APIs for financial institutions.

### Requirement

Establishment of mechanisms and controls to ensure data security and integrity.

### Content

- Secure configuration of the technological components of your infrastructure (e.g. port locking, virus and malicious code detection, etc.).
- Identification and authentication mechanisms for personnel responsible for API management following the principle of Least Privilege.
- Encryption of the stored information and of the channels through which the Data is sent.
- Identification and authentication mechanisms
- Management processes for dealing with Information Security Incidents that arise in the operation of APIs, including reporting to the CNBV.
- Vulnerability and threat scanning testing program for API access and administration
- Penetration testing program
- Backup mechanisms and information recovery procedures
- Complete audit records
- 2. Infrastruct ure

1 Information

Security

Policy

- Read-only access to shared data
- Infrastructure segregated from that which supports any operation with security mechanisms that limit access from the APIs service to the latter, under the principle of least privilege.
- Procedures to ensure service availability



# 3.5 Open Banking Regulation - LatAm - Open Banking - Brazil

On 05/04/2020 the Conselho Monetário Nacional (CMN) and the Central Bank (CB) enacted the Joint Resolution for the regulation of Open Banking in Brazil.



# **Objectives**

- Open Banking aims to foster innovation, competition and efficiency in the financial system
  - Promoting financial inclusion
  - Guaranteeing transparency, security and data quality.
  - In accordance with the principles of reciprocity, non-discriminatory treatment and interoperability

### Content

- Scope (Data to be shared and services covered)
- Participants (mandatory and voluntary)
- Convention
- Data transfer process
- Governance and Reporting
- Implementation schedule (modified by Joint Resolution No. 2 of 11/27/2020)

# Challenges and opportunities

- Entry of new competitors will create a new competitive environment
- Financial institutions need to update their technical architecture (use of APIs)
- Collaboration with fintechs allows us to offer new products and services.
- Entities can access extended information about their customers (and even noncustomers), enhancing their CRM.



# 3.6 Open Banking Regulation - LatAm - Fintech Law - Fintec Law - Chile

On January 4, 2023, Chile's Law 21521 was published, which promotes competition and financial inclusion through innovation and technology in the provision of financial services, the Fintec Law, which in its Title III establishes the provisions of the Chilean open finance system.

# Participants in the system Institutions providing information. Institutions providing information-based services Institutions providing accounts Payment initiation service providers Information included in the system

- General terms and conditions of financial products and services.
- Customer identification and registration information
- Information on contracted conditions and transaction history.
- Communications between providers for financial portability purposes.
- Data required for the provision of payment initiation services.
- Others regulated by the Financial Market Commission

- Key points
   Public registries of Information Based Service Providers and Payment Initiation
- Information exchange through remote and automated access interfaces.
- Information providers may only request reimbursement of the direct incremental costs incurred to meet the increase in requests for information received to the extent that they exceed the threshold of volume of requests defined by the Commission.
- The CPM will define in development regulations the necessary standards and requirements for interface design, security, user consent and reimbursable costs and the operating threshold.
- The entities providing information shall guarantee non-discrimination and interoperability with the rest of the participating entities.



Service Providers are created.

The Commission may establish a phased timetable for the entry into force of the obligations specified for each type of participant in the system and for the different types of information,



# **3.7 Key aspects (1/3)**

Key aspects of Open Banking regulation in different geographies (Regulatory scope)



## **Mandatory**

Open Banking regulations may establish a **mandatory** or **optional** data exchange regime.

In a mandatory regime all entities participating in the system are obliged to make their clients' data available to third parties, while in an optional regime only those that wish to do so.

Examples of mandatory models are the EU, Brazil and Mexico.

Examples of optional models would be Singapore, Hong Kong or Japan.



## Data type

The type of data made public is not the same in all regulations, and four models can be distinguished:

- Open Payments (EU): only customer payment data is made available
- Open Banking (UK): Data on banking contracts are available.
- Open Finance (Brazil): Data on the financial industry as a whole is available.
- Open Data (Australia): Nonfinancial data is shared.



# Type of service

Not all Open Banking legislations contemplate the same types of services. A distinction can be made between those that provide for **readonly access to data** (e.g. Mexico) and those that also regulate **write** access (EU, Brazil).

Write-enabled APIs are typically used primarily to provide **payment initiation services** (PISP).

In some countries, the creation of **regulatory sandboxes** is contemplated in order to be able to offer innovative products and services.

# **3.7 Key aspects (2/3)**

Key aspects of Open Banking regulation in different geographies (Relationship with third parties)



### Contract with TPPs

The Open Banking regulation establishes the way in which the relationship between the custodian entities of customer data and third parties is articulated.

The regulation may establish that the relationship is articulated through a **bilateral contract** or that there is no contractual relationship between the entity and TPP, with the TPP having to justify only that it has **sufficient consent** from the client to access its data.

In mandatory OB models, **non-discrimination** conditions are usually required in any case.



### Consideration

Some regulations require access to open data to be **free of charge** (EU).

Other legislations (e.g. Japan) establish that the cost of access is **freely** fixed on a **bilateral basis**.

Brazil and Mexico have opted for the participation of the Supervisor in the setting of prices between entities and TPPs, requiring its approval prior to setting or modifying them, as well as the guarantee that the cost is not a barrier to entry or discrimination.



# Responsibility

Establishing accountability for the use of customer data is one of the main challenges accompanying the implementation of Open Banking regulation.

Some regulations do not directly state to which party the liability corresponds, or state that it will be determined in the **provisions of the connection contract.** 

The PSD2 (EU) Directive stipulates that liability is in principle borne by the third party, unless the third party can prove that it acted correctly.

# **3.7 Key aspects (3/3)**

**Key aspects of Open Banking regulation in different geographies (technical standards)** 



### **API Standard**

Open Banking legislations set certain **technical standards** with which participants in the system must comply.

Some regulations establish a **specific** tracking-specific **API standard**, so as to ensure interoperability of all system participants.

In other cases, such as PSD2, the regulatory standard does not set unique API requirements, but rather establishes **general criteria** that must be met regardless of the API selected.



### Consent

Most Open Banking regulations establish customer **consent** as a mandatory requirement for TPPs to access their data.

Subsequent use and exploitation of this data usually also requires the express consent of the customer.

The technical criteria set out in the API set out how the TPP ensures that consent is **valid and sufficient** for the requested access to customer data.



# Cybersecurity

Another of the aspects included in the different regulatory standards are the different **cybersecurity** measures that participants in the Open Banking model (both entities and TPPs) must comply with in order to avoid **incidents** that could negatively affect the customer.

These measures include, among others, **strong** customer **authentication** methods, operational **controls**, technical architecture standards and regular **cybersecurity reports** to the supervisor.



Management Solutions, 2024

All rights reserved. Cannot be reproduced, distributed, publicly disclosed or transformed, whether totally or partially, free of charge or at no cost, in any way or by any means, without the express written authorization of Management Solutions.

The information contained in this publication is merely to be used as a guideline, is provided for general information purposes and is not intended to be used in lieu of consulting with our professionals. Management Solutions is not liable for any use that third parties may make of this information. The use of this material is not permitted without the express authorization of Management Solutions.

For more information please visit www.managementsolutions.com

Or follow us at: in X f @ >