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"Regulatory Trade-offs in Open Banking: Competition, Innovation, and Consumer Protection in the Fintech Ecosystem"

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A chi mi ha dato radici e ali.

A mio padre, che è con me ogni giorno.

All'amore che resta come eredità preziosa, e a mia madre e mia sorella,
che ogni giorno lo custodiscono con me.

E a chi ha camminato al nostro fianco nel dolore:
la vostra presenza ha fatto la differenza.

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Introduction

Emerging as one of the most revolutionary changes in the financial industry, Open Banking (OB) redefines consumer and business interaction with banking services. OB increases consumer empowerment, competition, and innovation by requiring the sharing of customer-consented financial data via standardised and safe Application Programming Interfaces (APIs). Nonetheless, even with its possible advantages, the application of OB results in difficult regulatory trade-offs that governments and legislators must carefully negotiate. For governments all around, maintaining the proper balance between encouraging innovation, supporting competition, and guaranteeing consumer protection still presents a basic difficulty. This thesis investigates these regulatory trade-offs by means of an analysis of the OB models embraced in the European Union (EU), the United Kingdom (UK), the United States, Brazil, and Canada, so identifying their effects on customer data protection, technological uptake, and market competition.

The thesis intends to offer a complete assessment of the regulatory policies influencing the development of OB by means of an experimental approach combining quantitative market data with qualitative insights from expert interviews.
OB is a component of a larger trend towards data-driven financial services that stretches data-sharing ideas outside of traditional banking into sectors including investment, insurance, and wealth management. Originally popular with the European Revised Payment Services Directive (PSD2) in 2018, OB has subsequently been embraced worldwide by governments using different regulatory regimes that reflect their own economic and policy interests. One of the main tenets of OB is the need for financial institutions to, upon demand, share consumer data with approved Third-Party Providers (TPPs). Reducing market obstacles for fintech businesses, improving customer choice, and encouraging financial innovation are the desired outcomes. This strategy does, however, also include a number of hazards, including customer privacy issues, data security flaws, and possible financial instability should improper control be neglected. Policymakers must delicately create rules encouraging market competitiveness without compromising financial stability. On one end of the spectrum, government-led (top-down) models—such as those seen in the EU and UK— impose mandated data-sharing duties with rigorous security and privacy criteria. Conversely, market-driven (bottom-up) models—like those used in the United States—let industry players determine their own

standards with least government participation. The efficiency of these strategies is still up for discussion since regulatory systems have to strike a balance between consumer protection and innovation motivators.

Three fundamental trade-offs that affect consumer outcomes and financial markets help to define the regulatory scene of OB. The first one is the harmony between market stability and competitiveness. By requiring existing financial institutions to provide third-party access to consumer data, OB rules are sometimes meant to level the playing field between conventional banks and fintech companies. Although this might improve market dynamism and cut consumer costs, it also begs questions about structural hazards. Operating under tight regulatory rules, banks contend that OB could undermine their competitive edge while helping less regulated fintechs and BigTech companies (such as Google, Apple, Amazon) using financial data to increase their dominance.

The second trade-off revolves on innovation against consumer protection. OB helps to create creative financial products such automated savings systems, artificial intelligence-driven investing platforms, and tailored loan solutions by allowing access to financial data. But the growing flow of sensitive financial data raises cybersecurity concerns and increases third party abuse possibilities. Consumers might not completely grasp the extent of data-sharing agreements, which would create risks like algorithmic biases in credit decision-making, fraud, and unauthorised transactions. Regulators must thus make sure that informed permission systems and consumer protection frameworks—including data portability rights—are strong and enforceable.

Standardisation against flexibility is the third trade-off. The degree of standardising needed for data-sharing systems is a fundamental question in OB regulation. Standardised APIs have been legislated by the EU and UK, therefore guaranteeing security and interoperability among financial institutions. By means of more flexible policies, governments such as the US and Canada have let financial companies create proprietary API standards, therefore fostering fragmentation and inconsistent user experiences. Regulators' task is to strike a compromise between industry-wide harmonisation that allows smooth data transfer and innovative flexibility.

This thesis uses a comparative experimental approach, concentrating on OB rules in five important countries, to examine these regulatory trade-offs. With robust consumer

protection safeguards but significant bank compliance costs, the EU Payment Services Directive (PSD2) system is among the most inflexible and uniform approaches. Driven by government, the OB project in the UK is a model that has resulted in fast fintech expansion and might be a guide for other economies. Following a market-driven approach, the United States sees industry-led, voluntary adoption of OB, therefore impeding interoperability. With an eye towards financial inclusion, Brazil's OB system seeks to increase banking access to underprivileged groups by means of data-sharing technologies Though its legislative framework is still under development, Canada has taken a careful approach, juggling privacy protections with competitiveness issues. To evaluate the effects and efficiency of various regulatory approaches, this thesis blends qualitative views from industry professionals with quantitative financial data analysis. Examined will be financial market signals such fintech adoption rates, customer switching behaviour, and competitive dynamics to ascertain whether OB rules really live up to their innovative and competitive promises.

This paper offers an empirical assessment of OB's economic and regulatory consequences, therefore supporting the continuous policy discussion on its direction. The results hope to guide legislators, financial authorities, and industry players on how to create ideal OB systems that support innovation without sacrificing financial stability or consumer protection by means of best practices from many jurisdictions.

The thesis is organised as follows. Chapter 1 evaluates OB's actual effects on consumer behaviour, market competitiveness, and innovation. Examining top-down rather than market-driven models, Chapter 2 investigates the OB regulatory structures in several countries. Chapter 3 offers the experimental results together with professional opinions. Chapter 4 presents policy suggestions and a best-practice regulatory approach for next OB developments. By means of this methodical approach, the thesis seeks to close the theory-practice gap and provide a complex view of the possibilities and hazards of OB control within the digital financial environment.

Chapter 1: Impact on Competition, Innovation, and Consumer Protection

1.1. The Role of Open Banking in Enhancing Market Competition

OB has become a powerful weapon for increasing market competitiveness in the financial services sector by questioning traditional banking monopolies, lowering entrance barriers for new businesses, and giving consumers more choice and control over their financial data. Under standardised APIs, OB essentially drives banks to trade customer-permissioned data with approved TPPs. Eliminating information asymmetries, fostering openness, and letting the development of customer-centric financial products and services helps this legislative innovation reduce the competitiveness restrictions on current banks.

Historically, particularly in nations where a small number of well-known financial firms have market power, strong entrance restrictions and limited consumer mobility have defined the banking sector. Consumers have long battled to move banks from difficulty in data transfer, lack of openness in pricing and service offers, and limited interoperability between institutions. OB addresses these issues and offers alternative financing possibilities, tailored financial management, and comparative buying by letting users migrate their financial data around service providers without any work. This simplicity of switching reduces customer lock-in and boosts market dynamism, hence encouraging incumbents to innovate or risk losing market share (Zetzsche, Buckley, Arner, & Barberis, 2020).

Third-party access and data portability are found by empirical studies from nations with developed OB systems as main drivers of increasing competitiveness. In response to a 2016 research on the lack of competitiveness in retail banking, the Competition and Markets Authority (CMA) for example developed OB rules in the UK. Following the OB Implementation Entity (OBIE) and mandated API standards for the nine main banks (CMA9) has spawned a boom in fintech firms offering account aggregation, alternative credit scoring, and automated savings services (CMA, 2017). Reflecting a growing divergence from traditional banking services, the Financial Conduct Authority (FCA) estimates as of early 2024 OB-enabled products are utilised by over 6.5 million UK consumers and enterprises.

OB also encourages the unbundling of banking services, so allowing specialist fintech companies to compete in particular verticals like payments, loans, or wealth management. This modularising of financial services helps by means of more targeted innovation and reduced reliance on full-service banks. Two payment initiation service providers, TrueLayer and Plaid, have lately been somewhat popular offering safe, low-cost alternatives for conventional payment methods; consequently, driving legacy banks to reduce fees and improve user experience (Babina et al., 2024). Moreover, applying transactional data and data-driven credit platforms like Tink and Yolt has produced alternative credit score models, therefore enhancing credit availability for poor people who could be barred from conventional credit ratings.

Still, OB competitive advantages define the institutional environment and legal framework; they are not inherent. In countries like the United States and Canada, where OB has been so far essentially voluntary and industry-led, the competitive impact has been more muted. Lack of common APIs and legal access rights reduces data portability and interoperability, so reducing consumer capacity to simply migrate providers. Moreover, usually incumbent banks have strong gatekeeping control over consumer data that they can use to refuse or postpone third-party access under the cover of security or compliance issues (Colangelo, 2024; CFPB, 2023). Market-driven models carry the risk of entrenchment of current power imbalance instead of disturbance without legal guarantees of equal access and data exchange.

Another important consideration is BigTech businesses entering the financial services industry, therefore increasing the likelihood of re-centralizing market control. While it allows smaller fintech firms into the market, OB enables technology behemoths like Google, Amazon, and Apple—who already have massive data repositories and great analytical capabilities—an entrance point. Through OB, these firms might offer incredibly tailored—and perhaps monopolistic—financial solutions by merging financial data with other behavioural data (Zuboff, 2019). Regulators must thus be alerted to foster fair competition, so preventing market concentration, by means of data-sharing reciprocity and antitrust protections.

OB has significant power to raise financial industry competitiveness generally by dissolving data monopolies, permitting consumer mobility, and boosting fintech

innovation. Still, its capacity to provide these outcomes depends on robust legal structures, enforced access rights, and tools to limit data-driven market domination. Policymakers have to be continuously observing change OB regulations and competitive dynamics to ensure that the benefits of more competition are shared fairly over the financial ecosystem.

1.2. Innovation in Financial Services: Fintechs vs. Traditional Banks

By changing the dynamics between traditional banks and financial technology businesses (fintechs), OB has sped financial service innovation. Together with consumer-permissionized access to financial data and unbundling of financial services, this has created a rich environment for agile, tech-driven companies to challenge the dominance of conventional banks. Underlining the strategic limits and relative strengths of fintechs against conventional banks, this section examines how OB transformed the landscape of innovation in the age of data-driven finance.

As expected, OB banking developments have helped fintech businesses. Real-time access to consumer banking data helps fintechs to provide standardised APIs, customised, user-centric financial products meeting once unmet demands by use. These cover tools for digital budgeting, robo-advisors, peer-to-peer lending markets, automated savings systems, alternative credit scoring systems. Fintechs identify their creative edge in each by lean organisational structures, technology-first thinking, and fast product iteration capability. Freed from out-of-date IT systems and regulatory slowness, fintech companies might quickly deploy artificial intelligence (AI), machine learning, and behavioural analytics to produce scalable and understandable digital experiences (Balyuk et al., 2022).

UK-based fintechs such Revolut, Monzo, and Starling Bank have provided real-time spending data, budget categorising, fee-free money exchange, and tailored financial advice via OB APIs. Particularly in digital native environments, these systems have quickly acquired customer confidence and market supremacy. Similarly, companies with American bases such as Plaid and Chime have questioned accepted banking practices by providing low-cost, digital-first banking products and perfect data aggregation. Profiting from OB rules and underdeveloped areas, Nubank has developed to be one of the biggest

digital banks in Brazil providing mobile banking services with lowest price and higher accessibility (OECD, 2023).

Conventional banks would thus find it difficult to keep the speed and user-centricity of fintech innovation. Many of the incumbents contend with organisational opposition to digital transformation and upgrade obsolete infrastructure. Unlike disruptive innovation, most established companies have rather incremental, compliance-driven rather than disruptive character. Furthermore, the hierarchical structure of big financial firms could limit fast decisions and technical creativity (Zetzsche et al., 2020). Notwithstanding these restrictions, conventional banks still have major competitive advantages like years of trust built, regulatory knowledge-how, capital reserves, and established client bases. Many banks have responded to fintech disruption by applying a "fintegration" approach, in which case they either buy or partner fintech companies to provide new capabilities into their current line of business.

Clearly shows this convergence as traditional banks assist fintechs allowing customer-facing innovation by offering regulatory infrastructure and licencing support, hence supporting Banking-as-a-Service (BaaS) models. For the Apple Card, Goldman Sachs, for instance, combines tech-based user experience design working with Apple with conventional banking standards using a hybrid method. Likewise, BBVA's Open Platform in the United States gives fintech partners APIs for payments, accounts, and identity verification, therefore enabling banks to engage in the API economy without losing their regulatory footing (Babina et al., 2024).

Notwithstanding increasing collaboration, conflicts between fintechs and banks continue arise particularly with relation to data access and competitive neutrality. Banks have been accused under cover of security concerns of either limiting or postponing outside access to client data, therefore breaching the fundamental ideas of OB. While the U.S. Consumer Financial Protection Bureau (CFPB) seeks to codify consumer rights under Section 1033 of the Dodd-Frank Act (CFPB, 2023), authorities in nations including the UK and EU have set tight timetables and criteria for data sharing in response. Apart from equal access to financial data, innovation in impoverished areas determines competitiveness as well.

Most importantly, depending on legal and economic climate, geography impacts the outcome of innovation. Strong legislative backing for OB—such as that of the UK and

Brazil—jurisdictions have seen more fast fintech growth and product innovation than those with either fragmented or voluntary systems like the United States and Canada. This implies that legal scaffolding is significantly essential in allowing inclusive and sustainable development in the financial technology ecosystem even if market forces could inspire innovation (Colangelo & Khandelwal, 2025).

Eventually, OB has positioned fintechs as flexible innovators and traditional banks as infrastructure facilitators and compliance custodians, therefore allowing a reconfiguration of innovation dynamics in financial services. While fintechs flourish in user experience and product agility, banks provide regulatory depth and stability. Cooperative ecosystems in which players live, compete, and co-create value will most surely define the path of financial innovation. Authorities find it difficult to create systems that guarantee fair data access, remain competitive, and prevent too great concentration of technological power in either developed or developing hands.

1.3. Consumer Protection and Data Privacy Concerns

OB presents a complex mix of consumer protection and data privacy issues even while it promises to transform the financial industry by means of more competitiveness and innovation. Third-party access to private financial data made possible by OB changes consumer data into a valuable commercial commodity prone to use, illegal access, and systematic exploitation if incorrectly secured. One of the most divisive features of OB rules and still a major difficulty for governments all around is trade-offs between openness, innovation, and privacy.

OB is based on consumer permission: financial data is provided only when a user specifically authorises a third-party access. Actually, public misunderstanding of the data-sharing process, complex terms and conditions, and erroneous user interfaces runs opposed to the concept of informed consent. Many customers are not aware of the whole spectrum of the information they are sharing, the associated parties, or the most likely long-term consequences. According to OECD (2023) surveys, many sign to data-sharing agreements without knowing how their data would be managed, maintained, or sold by fintech companies or data aggregators. From this information difference, buyers run the danger of being biassed, of illegal profiling and manipulation.

Two main issues are data security and the risk of leaks. The attack surface of cybercrime changes fast as financial data moves between companies and institutions via APIs. Notable data leaks and ransomware events have begged concerns about the fit of security solutions in financial systems. For instance, over claims of gathering and keeping bank login data without suitable notice, the U.S.-based data aggregator Plaid paid $58 million class action lawsuits in 2020 (FTC, 2021). While OB systems with PSD2 of the EU and OBIE of the UK need strong client authentication (SCA) and safe communication needs, enforcement differs and not all governments impose equal technological measures (European Commission, 2018; FCA, 2023).

Moreover, the development of outside suppliers complicates accountability should data be used or financial damage emerges from them. Conventional banks quite clearly have responsibility for criminal activity including fraud. Under OB systems with many middlemen, however, it becomes challenging to allocate culpability when anything goes wrong. Should a fintech app, for instance, use consumer data acquired through API access, then should the first bank, the intermediary aggregator, or the fintech itself answerable? The uncertainty on liability systems aggravates legal confusion and discouragement of consumer engagement in OB systems (Colangelo, 2024).

Jurisdictional regulations targeted at consumer protection travel different routes. Including consumer rights into the PSD2 framework and matching it with the General Data Protection Regulation (GDPR), which strictly controls data collecting, storage, and user consent, the EU has shown initiative. The GDPR supports data minimising ideals and provides consumers with rights like data access, rectification, erasure, and portability since financial data moves over several platforms in an OB ecosystem (European Commission, 2020). In an OB environment, tools thus are quite vital. Dependent only on sector-specific guidelines and state-level policies, the United States lacks a comprehensive federal privacy framework akin to that of the California Consumer Privacy Act (CCPA). This fragmentation of laws results in holes in consumer protection and permits financial service companies (CFPB, 2023) apply privacy standards inconsistently.

Algorithmic exclusion and discrimination represent still another growing issue. Fintech platforms carry the danger of unintentionally replicating or strengthening already existing

social and economic stereotypes since they depend more and more on automated decision-making techniques to evaluate creditworthiness or provide specialised financial services. AI-driven lending models, for example, educated on past data could prejudice against low-income individuals or minority groups depending on not properly developed and evaluated. Often referred to as data-driven inequality, this type of digital discrimination against OB egalitarian aims raises significant ethical and legal concerns (Borgogno & Colangelo, 2020; Zuboff, 2019).

Many countries are using a tiered regulatory strategy combining consumer education campaigns, legislative protections, and technical standards to handle these challenges. Launching consumer awareness efforts to inspire confidence in the system, the Central Bank of Brazil has mandated that all players in the Open Finance ecosystem adopt specific security protocols. The FCA has published thorough advice on consent management and consumer disclosures in the UK, therefore guaranteeing that companies give clear, freely available information on data usage and customer rights (FCA, 2023). Regulatory programs, however, must constantly change to meet growing technical innovation and complexity of data analytics technology.

While success hinges on strong consumer protection and data privacy protections, OB basically has transformational capacity. The promise of OB could give way to customer damage, mistrust, and damage of financial industry brand without clear regulation, good implementation, and meaningful public involvement. Policymakers have to take a comprehensive approach combining legal, technical, and behavioural remedies in order to create strong data governance systems conserving consumers and encouraging innovation by means of integration.

1.4. Trade-offs Between Regulatory Stringency and Market Growth

The trade-off between regulatory stringency and market expansion is among the most obvious challenges OB addresses in its deployment. Governments and authorities should weigh the possible negative effects of too strict restrictions on innovation, investment, and market expansion even if they want to create safe, fair, and consumer-centric OB environments. It is never easy to find the ideal regulatory balance. While too little might expose consumers to hazards and destroy confidence in the financial system, too much

could impede entrepreneurial development and discourage market involvement. Here we investigate the paths of development of OB markets under different degrees of national regulatory stringency.

Tight regulatory rules are well praised because of strong consumer safeguards, high security requirements, and tight compliance criteria. SCA, standardised APIs, and comprehensive liability rules—all of which underline a harmonic and safe data-sharing environment—are expected under the EU PSD2. Along with enforcing technical standards and API criteria among collaborating institutions, under present monitoring mechanisms with consequences for non-compliance the UK OBIE also enforces (CMA, 2017). Both consumers and fintechs have pushed acceptance of these systems since they have helped to generate legal certainty and enhanced customer confidence.

Still, too high compliance costs connected to certain regulations could disproportionately damage startups and small businesses. Meeting technological needs, offering cybersecurity resilience, and keeping current API frameworks all depend on their complexity and frequently need great human and financial resources dedication. Although smaller institutions run existential hazards because of their poor resources, Babina et al. (2024) claim that regulatory compliance under PSD2 in the EU has cost major banks tens of millions of euros. The high entrance costs could deter new competitors and focus market dominance around a small number of well-capitalized companies, therefore negating the goals of OB rules on competitiveness. Further limiting market participation, in many EU countries inconsistent implementation and different interpretations of PSD2 have resulted in regulatory ambiguity (OECD, 2023).

Though at the cost of interoperability, consumer protection, and long-term stability, countries with more flexible, market-driven regulatory models have seen faster development in some areas of fintech innovation. For instance, lack of common APIs has helped companies flourish and provide tailored solutions for different regions in the United States. But this adaptability has also resulted in inconsistent data-sharing rules, poor consumer portability, and growing reliance on practices like screen scraping. Therefore, customer trust in these companies is erratic and systematic faults still persist (Colangelo, 2024).

Drawing on Canadian background, one should apply some discretion. Canada uses a cautious, consultative approach with government and industry partners instead of a totally under control OB system. Although fintechs, consumers, and traditional banks' interests have been hampered by limited customer access to OB services and hindered adoption of interoperable APIs, this has allowed authorities build a more inclusive and risk-sensitive strategy that fits their interests. Still, the limited acceptance raises questions regarding Canada's fintech competitiveness and digital banking infrastructure, lagging behind global leaders.

Brazil's dual strategy is a perfect case study of how market expansion and financial inclusion should be supported by regulatory architecture. Using a planned and proportional approach, the BCB controlled OB participation for large corporations and gave smaller businesses latitude in their adoption times. Combining institutional capabilities with regulatory needs has enabled the BCB to inspire innovation and reduce compliance load. Its major focusses on Open Finance development (BCB, 2022; OECD, 2023b), consumer education, and standardising also draw investment and give financial services access among vulnerable groups.

Generally speaking, the trade-off between regulatory stringency and market growth is dynamic and context-specific rather than binary. Under-regulation can result in security breaches, data abuse, and customer damage; over-regulation can limit product range, slow down innovation, and concentrate markets. Degree of digital literacy, goals of financial inclusion, regulatory capability, and financial industry maturity define the suitable regulating policy. By a risk-based, proportional, iterative control strategy, one seeks guarantees of protections without restricting imagination.

The conflict between regulatory stringency and market expansion finally determines their nature in great part in OB policy debates. Jurisdictions more likely to fully realise OB are those who succeed in calibrating their regulatory frameworks to their home market reality, even while they are still flexible enough to change with technology. Instead of enforcing too conservative policies or unbridled deregulation, policymakers should support adaptive governance that helps to facilitate safe innovation and sustainable market development.

Chapter 2: Regulatory Frameworks for Open Banking

2.1. Key Regulatory Approaches: Government-Led vs. Market-Driven

Although every country employs an OB strategy to match particular policy goals and economic reality, a smart approach to grasp these strategies is to compare government-led (top-down) approaches with market-driven (bottom-up) alternatives. Under a government-led system, authorities establish explicit data-sharing criteria—usually enforced by standardised APIs and strict security protocols—to empower consumers, give equitable access for all fintechs, and extend financial inclusion. Laws such as PSD2 or Brazil's 2021 Central Bank open-banking program force banks to provide client data to permitted TPPs, so drastically lowering dependency on screen-scraping and so enhancing interoperability.

Strong customer authentication (SCA) and mandated data access via APIs in Europe's PSD2, for instance, not only guarantees user accounts but also level the playing field for new competitors. The UK went even further using its OBIE, which centralised API standards to govern a more coherent OB ecosystem than the generally scattered approach of the EU.

Conversely, market-driven solutions usually allow the industry itself to determine the benchmarks. Canada and, until very recently, the United States pioneered this approach: financial institutions and fintech consortia like the Financial Data Exchange (FDX) set voluntary API norms, but without legal effect. Usually the result is a patchwork of proprietary APIs adjacent to constant screen-scraping, which results in more fintech compliance problems, unequal interoperability, and residual security concerns.

Early in 2024, the CFPB interfered with necessary data-sharing rules, marking a significant turning point even though the United States has historically been considered a shining example of market-driven OB (CFPB, 2024; American Banker, 2024). This regulatory shift is notably influenced by the ongoing implementation of the Dodd-Frank Wall Street Reform and Consumer Protection Act, which established the CFPB to strengthen oversight of financial institutions and protect consumers in the aftermath of the 2008 financial crisis (Dodd-Frank Act, 2010). Since then, the United States has progressively adopted a government-led posture, mandating basic API standards and compliance deadlines, thereby reducing the gap with Europe's regulatory framework

under the Revised PSD2 (Financial Times, 2024). These steps aim to balance consumer protection and fair competition within the financial services sector, reflecting the broader goals of transparency, accountability, and consumer empowerment set forth by the Dodd-Frank Act (CFPB, 2024; Deloitte, 2024).

Brazil chooses a midway ground: the 2021 OB law requires big banks to participate and gives smaller institutions free will decision to adopt APIs. Specifically aimed to bring millions of unbanked Brazilians into the official financial system without stifling creativity, this hybrid approach is claimed to be free from constraints. Canada is still mostly in flux; lawmakers discuss data rights rules but have not yet established any national API mandate, therefore leaving OB developments to be decided upon by enterprises.

Every model has some compromises. Even if usually at the expense of ideal user experiences and ongoing security, market-driven approaches can unleash fast innovation. Government-led solutions ensure general interoperability and protection but may cause fintech dynamism to be reduced by compliance expenses. Creating an OB system that really helps companies and end users mostly depends on finding the ideal mix of fair competition, security, and creativity.

2.2. Open Banking Regulations in Selected Jurisdictions

The regulatory framework of OB reflects varied governmental goals, market systems, and technical advancements based on the country. While some areas have opted for a government-led regulation approach demanding data-sharing systems and interoperability, others have taken a market-driven posture allowing financial institutions and fintech companies to build their own data-sharing arrangements. The capacity of these regulating policies to strike a balance between consumer protection, innovation, and competitiveness will determine their efficacy. This part covers the regulatory policies of some important countries together with their strategies and evaluation of influence on the financial industry.

2.2.1. European Union: PSD2 and beyond

With an eye towards target market competitiveness, consumer empowerment, internal banking and payment sector innovation, the EU historic legislative framework (PSD2) acts as a vehicle modernising the financial sector. Approved formally in 2015 and fully implemented by 2018 across all EU countries, PSD2 signals a dramatic transformation in the operational dynamics of financial institutions. Central to PSD2 is the stated demand on present banks to adopt APIs to provide TPPs safe, consistent access to their payment account data. This fundamental legislative revision seeks to democratise data access, eradicate current financial monopolies, and increase competitive dynamics among current banks, fintech startups, and technology-driven firms (Gounari et al., 2024).

Among the most innovative parts under PSD2 is the Access to Account (XS2A) clause, which mandates banks supply licensed TPPs based on express user agreement their customer data infrastructure. XS2A provides a major revolution encouraging more market competitiveness and innovation by basically breaking the monopoly of incumbent banks over consumer financial data. Under XS2A, new market players include Account Information Service Providers (AISPs) and Payment Initiation Service Providers (PISPs.). PISPs replace traditional banking middlemen by use of direct payment transfers from customer accounts, therefore simplifying and accelerating the payment initiation procedure. To offer complete financial management solutions that increase consumers' power to correctly manage their money, AISPs aggregate financial data from several organisations (Colangelo & Khandelwal, 2024).

Actually, PSD2 has inspired major financial services industry technology innovation. From clever financial analytics and tailored consumer finance management tools to new payment solutions employing real-time data sharing by encouraging established banks to expose APIs to external suppliers, PSD2 touched off a tsunami of fintech-driven innovations from all around. Traditional banks have also been driven to spend more in improving their digital infrastructure, cybersecurity measures, and API competency in order to fulfil legal requirements and be competitive in a fast changing industry (Ozcan & Zachariadis, 2021).

Although PSD2 has progressive objectives, its application has suffered numerous major operational challenges most notably relating to API standardising and interoperability

throughout the European Economic Area (EEA). Although comprehensive, the rules let national competent authorities interpret them anyway they please, therefore producing different application and enforcement. As a result, member states have very different quality and reliability standards for APIs, which poses difficulties for banks and fintech companies trying to offer consistent, reliable services on a continental basis.

Technical issues include excessively high latency, unequal API performance, and frequent transactional mistakes that have become normal and complicate perfect integration, therefore harming consumer experiences. Apart from influencing operational efficiency, these differences in API quality have harmed consumer confidence and the larger impression of OB transactions security (Ozcan & Zachariadis, 2021).

By means of extensive Regulatory Technical Standards (RTS), the European Banking Authority (EBA) surmounted these challenges and thereby set strong requirements to ensure consumer privacy, data integrity, and transactional security. Among other things, these criteria describe SSL/TLS encryption use, multi-factor authentication methods, and SCA. Notwithstanding these efforts, however, uncertainty and diverse interpretations among national authorities have diminished the utility of RTS, so underscoring the critical need of additional regulatory clarity and harmonisation (Gounari et al., 2024).

The observed limitations of PSD2 have prompted further legislative initiatives — notably PSD3 and the Open Finance Framework, proposed by the European Commission since 2021. PSD3 wants to address current problems by expanding the scope of limited data sharing outside of basic payment accounts to cover other financial products including savings, investments, and insurance. This increased regulatory scope represents a change from OB towards a more complete open finance paradigm, therefore promoting a fully integrated financial ecosystem inside the EU. By protecting consumer rights even more, enhancing cybersecurity defences, and offering standard APIs, these next laws aim to tackle interoperability and integration issues between member states (European Commission, 2021).

Complementing the PSD3 project, the more general Digital Finance Strategy of the EU emphasises the requirement of strong cybersecurity and digital operational resilience inside the banking sector. Above all, the Digital Operational Resilience Act (DORA) and the Data Act seek to establish rigorous, uniform rules for operational resilience and

cybersecurity. By requiring full systems for digital risk management, incident reporting, and outside monitoring, DORA considerably strengthens the resilience of financial institutions against cyber threats and operational interruptions. Concurrent with this, the Data Act ensures rigorous compliance criteria for financial service providers (European Insurance and Occupational Pensions Authority, 2024) so empowering consumers with more control over their financial and personal data and so supports data sovereignty and privacy protections.

Fundamentally, PSD2 has begun a significant shift in the European financial services scene, building a foundation for additional legislative growth towards an integrated and inclusive digital financial ecosystem. Particularly with reference to cybersecurity, interoperability, and API standardising, the early challenges encountered have provided insightful information guiding later legislative actions. With more broad legislative initiatives of EU Digital Finance Strategy, PSD3 demonstrates the continuous commitment of the EU to regulatory innovation, consumer empowerment, and market competitiveness. These legislative actions together establish a benchmark for other nations contemplating similar legal changes by leading Europe at the forefront of global financial innovation. The ongoing transformation of Europe's legislative environment promises a strong framework that balances consumer protection, data sovereignty, competitive financial markets, and technology innovation, so mostly dictating the future course of digital banking.

2.2.2. United Kingdom: Open Banking Implementation

Originally motivated by regulatory studies of the competitive dynamics of the retail banking sector, OB acceptance in the UK heralds a new path for financial services. Following extensive research by the CMA in 2016, the UK banking industry found shockingly low degrees of competitiveness marked by overly strong dominance of a small number of major banks. Especially four banks were found to monopolise over 80% of active corporate current accounts and 70% of personal current accounts, thereby underlining a major market concentration that basically limited client options and impeded competition (Clarke & Macartney, 2025). Reacting to these findings, the CMA developed a series of measures aimed to eradicate this monopolistic zone. Among all

these projects, central among them was the mandate for large banks to apply common APIs, TPPs to safely access customer data with clear user permission.

The UK approach to OB is unique in its strict rules designed primarily to empower customers by increased financial transparency and support of competitiveness. Establishing the OBIE in 2017 assigned mostly with establishing effective APIs and supervising their application across the industry, this regulation purpose materialised (Leong & Gardner, 2024). Apart from creating technological standards, the OBIE was essential in encouraging industry cooperation, hence generating a consistent regulatory environment suited for innovation and consumer-centric financial services. Encouragement of technological innovations in many financial industries like account aggregation, payment initiation, and financial product comparisons considerably increased the technical capacity needed for smooth data sharing using this limited but flexible regulatory approach.

In the private leasing market, OB—a typically opaque and costly company—clearly finds use. By allowing letting reference firms fast access to banking data, use of OB has greatly enhanced accuracy and efficiency in tenant risk assessment, so simplifying operations here (Ciocănel et al., 2024). For brokers and landlords specifically, this discovery provides a consistent method to assess tenant affordability and creditworthiness dependent on real-time financial data. Still, this turn to data-driven judgements begs challenging ethical and privacy issues. Adoption of OB technology in tenant referencing frequently results in a coercive environment for tenants; yet, even if permission to data sharing is discretionary, given the pressing need to find housing becomes realistically required.

This dynamic raise major questions about genuine consumer autonomy and consent since it implies a conflicting conclusion of a technology supposed to empower consumers (Ciocănel et al., 2024). The deliberate adaptation of contemporary banks brings the narrative on the influence of OB even further into more intricate detail. Originally opposed to OB, later on conventional banks came to see they had to embrace this technological revolution—not by sheer resistance but rather by strategic adaptation and market-driven alliances. Using OB's technology breakthroughs, traditional banks are gradually combining or outright acquiring creative fintech companies in order to maintain

market dominance and neutral possible competitors (Clarke & Macartney, 2025). Notwithstanding legislative initiatives and notable technological developments, this adaptive behaviour of modern banks exposes a basic constraint of OB's competitive ambitions: the underlying market structure shown great resilience, so preserving the market power of the incumbents and so reducing the competitive intensity originally intended by regulators.

Moreover, the openness to OB among consumers is much influenced by the apparent advantage of demographic and data exchange. Particularly millennials and Generation Z, younger people love the openness, simplicity, and adaptability OB offers and demonstrate more transparency towards OB. Still, all groups have main concerns about data privacy, identity theft, and abuse of personal financial data (Deloitte, 2021). These problems underscore the need of honest data use and security disclosure as well as suitable data governance since they greatly lower customer acceptability. Therefore, banks have a great obligation to find a balance between innovation and rigorous data security rules so that consumers feel truly empowered instead of insecure.

Furthermore, actual research reveals that OB really has enormous potential to give consumers financial options for individuals who were formerly excluded due to negative financial history or bad credit records. OB provides fintechs and TPPs with considerable capacity to leverage financial data to create unique, tailored financial products and services, hence enhancing financial inclusion and customer satisfaction. Still restricting this potential, though, are infrastructure problems including different degrees of technological adoption across distinct consumer groups, digital literacy restrictions, and differing API standards (O'Leary et al., 2021).

The UK experience highlights especially creative new ideas on the sustainability of OB of the long-term financial innovation agenda. Effective digital governance mechanisms, broad API standardising, and solid security measures are foundation elements needed for OB to offer continual value throughout the financial sector. Moreover, openness and security always contradict especially with regard to sensitive financial data management, which needs for continuous consumer education and extensive monitoring (O'Leary et al., 2021).

All things considered, the UK acceptance of OB is an ambitious technical and regulatory undertaking with major consequences for the financial services sector. Clearly, it increased openness, fostered innovation, and brought needed efficiency across financial transactions; but, it also exposed long-standing structural issues and ethical complexities still unaddressed. Together, customer empowerment, market competition, and the ongoing impact of current banks highlight OB's ongoing difficulty meeting its original competitive and inclusive goal even with great success. Therefore, the experience of the UK offers a major case study showing the opportunities and natural limitations of regulatory-driven technical innovation in evolving modern financial markets.

2.2.3. United States: Market-Driven Innovation and Regulatory Fragmentation

Historically, the United States has negotiated the way towards OB mostly via a market-driven rather than a regulatory-driven approach. Unlike the EU and the UK, where exact management of OB is directly governed by strong government standards, including the PSD2 and the OB Standard, respectively, the United States has experienced a distributed evolution primarily defined by industry-led solutions. Rooted in the larger U.S. regulatory environment marked by fragmentation across many regulatory authorities including the CFPB, the Office of the Comptroller of the Currency (OCC), and several state-level agencies—this distributed approach reflects major data-sharing policy disparities resulting from this fractured regulatory environment have caused interoperability issues and increased security questions.

Aiming to empower consumers by granting them control over their financial data, Section 1033 of the Dodd-Frank Act is one key piece of control in this disconnected regulatory tapestry. Under CFPB oversight, this Act has become a basis for publicly planning OB activities inside the United States stressing consumer rights and open data regulations (OECD, 2023). Although rapid, fintech companies and financial institutions historically used data collecting methods such screen scraping, which begged major concerns about user privacy and data security (O'Leary et al., 2021). But a significant turning point came with the creation of APIs, or application programming interfaces. APIs have presented a safer, more orderly way of data interchange by providing TPPs access to financial data

securely and with express consumer consent, therefore considerably reducing historical security issues (Briones de Araluze & Cassinello Plaza, 2022).

Notwithstanding technological advancements, the U.S. method remains fundamentally distinct in its application in respect to foreign standards largely due to the noted regulatory fragmentation. For instance, the United States lacks a consistent API standard, so complicating efforts at interoperability and consistency across institutions and countries even while initiatives like the OBIE concentrate on establishing strict API standards (Laplante & Kshetri, 2021). Emphasising data privacy and cybersecurity as top concerns, American banks may object to the application of standardised API standards (Babina et al., 2024).

From client's perspective, the scenario becomes more complex. Just one in five American consumers believe OB useful based on a Deloitte research given significant privacy and data security concerns. Younger demographics, which point to targeted strategy measures maximising acceptance rates, including Millennials and Generation Z exhibit higher openness towards using OB services (Deloitte, 2023). Furthermore, client control over personal data is still a big cause of friction; less than a third of American consumers today feel in charge of their financial data, which underlines a crucial issue for banks and fintechs to handle early on.

Early in 2024, the reform initiative of the CFPB revealed a clear change in the US market-driven OB landscape. This adjustment was particularly aimed to justify and explain the present legislative framework meant to increase cybersecurity, consumer protection, and data privacy. The CFPB aimed to minimise some of the interoperability and fragmentation issues by enforcing basic compliance deadlines and API standards more closely fitting international best practices, so somewhat bringing the U.S. somewhat closer to a government-led model without totally straying from its market-driven ethos (Babina et al., 2024). Practically, the CFPB's reform for 2024 acknowledges the limits of the entirely market-driven strategy first adopted by the United States. It sought to create a more harmonious regulatory environment by imposing standards aiming to assure basic security and interoperability criteria. Still, the actual impact of these developments is yet uncertain since the American financial industry reacts differently about the usage of a completely controlled OB structure. While some banks view these developments as

necessary actions towards increased consumer confidence and operational stability, others see them as unduly restrictive, maybe stifling innovation and flexibility, which are vital elements of the very competitive and innovative U.S. fintech sector (O'Leary et al., 2021).

OB in the United States is probably going to stay hybridised, combining market-driven projects with required regulatory control, in order to strike innovation with customer safety. Driven in considerable part by both dynamic market competitiveness and regulatory fragmentation, this hybrid strategy catches the unique character of the American financial sector.

2.2.4. Brazil: Open Banking as a Catalyst for Financial Inclusion

Starting with the Brazilian Central Bank (Banco Central do Brasil, BCB), OB rules started to bring about substantial changes 2021, hitherto mostly distinguished by great concentration and limited access for most of the population. Unlike market-driven replacements found elsewhere, Brazil has selected a highly controlled structure whereby BCB management actively controls development and surveillance. Standardised APIs are required of financial institutions, thus facilitating controlled and safe data-sharing with permitted third-party providers and so clearing the route for higher financial inclusion and improved competitiveness dynamics. Particularly aiming to lower financial exclusion, increase innovation, and encourage competitiveness inside Brazil's highly centralised banking sector, Colangelo & Khandelwal, 2024

Given Brazil's history of hyperinflation and later banking consolidation, which has created a relatively oligopolistic market whereby five massive banks control over 80% of financial assets, OB is extremely relevant in Brazil. Included inside the more broad "Agenda BC#," OB projects are part of an ambitious plan aiming at democratising finance by improving inclusion, competitiveness, transparency, and education. OB enables fintech enterprises and other non-traditional financial institutions produce customised financial products more quickly by letting users own financial data, therefore directly addressing the needs of underbanked and unbanked populations. In a nation where many others have few credit options and over thirty percent of adults lack access to traditional financial services, these programs are extremely important (World Bank Findex). Apart

from payments and basic banking, Brazil's OB system includes Open Finance ideas like investments, insurance, and pension goods (OECD, 2023). This all-encompassing strategy helps to build a more inclusive financial environment, so allowing more economic participation by once underprivileged groups. Still, the Brazilian OB system suffers largely with regard to consumer confidence and knowledge despite its strong legislative structure and high aims. Many Brazilians still do not see the benefits of OB; substantial financial education inequalities compromise public acceptability (Central Bank of Brazil, 2022).

Dealing with these issues, Brazilian officials have given training programs first priority and raised security measures top importance to inspire customer confidence in the new system. Furthermore, supporting OB operations is the November 2020 launch of PIX, Brazil's quick payment system, which offers nearly free, instantaneous money transactions available via cellphones (Negreiros Vicente, 2020). PIX greatly lowers processing times and transaction costs compared to conventional bank transfers, therefore improving financial inclusion mostly in lower-income people. This combination of quick payments with OB accelerates the transition towards digital financial services, hence generating an atmosphere fit for fast fintech innovation and consumer-centric product creation. Professionals from big Brazilian retail banks claim that the move towards OB is forcing banks to change from a product-oriented approach to a client-centric one driven mostly by technical investments and strategic alliances with fintech startups (Gonçalves & Araujo, 2023). As banks are realising more and more, opening their APIs, boosting cooperation, adopting contemporary technologies including artificial intelligence and Big Data analytics would help them to offer customised services and improved user experience. This technology-inspired solutions not only solve financial inclusion but also help Brazilian financial institutions to be competitive on the changing digital environment. Potential corporate models resulting from OB deployment in Brazil also include predictive risk and credit analytics, personalised financial management, strong data protection services, sustainable consumption-linked financial products, and thorough financial markets providing varied banking and non-banking services (Gonçalves & Araujo, 2023). These creative concepts give customised financial solutions to historically underprivileged populations, so promoting financial inclusion and so changing the economic fabric of Brazilian society.

2.2.5. Canada: Regulatory Challenges in a Banking-Dominated Market

Clearly, Canada's OB approach has been more cautious than that of creative sectors as Brazil, the EU, and the UK. Unlike several nations where clear legal goals have actively pushed the broad acceptance of OB, Canada has primarily reliant on industry-led efforts with minimal direct government engagement. The banking sector of Canada helps to partially explain this cautious path since it is marked by the predominance of few prominent institutions that have historically opposed broad data-sharing obligations, fearing disturbance of established competitive advantages.

The relatively focused banking industry has aggravated the intricacy and concerns about consumer data protection, security threats, and interoperability standards—all of which define Canada's cautious attitude of regulatory approach towards OB. In response to these problems and in view of the rising public need for better financial data governance, the Canadian government established an Advisory Committee on OB in 2018 to investigate OB's likely advantages under defined criteria. Emphasising controlled market experimentation, safe infrastructure development, and updated regulatory frameworks, the Committee had suggested adopting consumer-directed finance by 2020. The group defined explicit legislative goals for consumer emancipation by means of safe, standardised APIs that would so replace less safe methods such screen scraping (Koeppl & Kronick, 2020).

The slow progress towards a structured OB framework has highlighted ongoing issues even if there are clear indicators of future benefits—such as more customer choice, less market entrance barriers, and more competition. One of main challenges is Canada's banking sector's regulatory fragmentation resulting from functional and spatial separation. Without a central governing organisation like the OBIE, Canadian financial institutions have adopted patchwork and often conflicting regulations, therefore restricting market development and producing differences in financial data availability all around the country (Zachariadis, 2020). Moreover, development still lags even if a staged rollout strategy—beginning with fundamental financial services that provide the least legal challenges—was proposed. Especially the absence of any government intervention has allowed large banks to retain great control over consumer data, hence maintaining

strong competitive hurdles against new fintech startups. The reliance of the Canadian model on voluntary participation instead of mandated compliance has resulted in a limited ecosystem where TPPs face major operational uncertainty including ambiguous liability frameworks and accreditation standards, so further limiting strong market experimentation (Koeppl & Kronick, 2020). Knowing these constraints, Canada is right now on a tipping point. Policymakers and interested parties are stepping up for cooperative talks designed to reconcile robust consumer protection with innovation more and more. Recent policy debates underscore the need of a comprehensive legal overhaul encompassing notably stated liability duties, accreditation procedures for TPPs, and the development of governance bodies capable to harmonise standards among countries. Although their financial institutions have mostly backed consumer-directed finance, they nevertheless urge for moderate, risk-sensitive ways to protect systemic stability and reduce cybersecurity threats, hence supporting a cautious view of the rate of OB adoption (Zachariadis, 2020).

Ultimately, the Canadian story highlights the challenges of developing OB models inside relatively concentrated and conventional financial systems. Canada's cautious approach has slowed down financial innovation and competitiveness development even if it has obviously avoided rapid systemic upheaval. Canada has to act quickly towards standardised data-sharing platforms that give consumer interests, security, and market fairness first priority if it wants to fully exploit the possibilities of OB via means of legislative and regulatory changes. Only by overcoming these legal challenges will Canada be able to fully participate in and benefit from the global momentum encouraging financial sector innovation.

2.3. Comparative Analysis of Regulatory Models

The global regulatory scenario for OB reveals a spectrum of models shaped by specific institutional structures, economic priorities, and legal traditions. Three key objectives characterise the path of OB's control essentially: enhancing consumer protection, increasing innovation, and so strengthening market competitiveness. Still, the pathways nations decide to follow in order to reach these objectives differ substantially. This variation crystallises around two main regulatory models: government-led (top-down)

and market-driven (bottom-up). Every model offers different trade-offs that influence OB's effectiveness in offering fair, safe, and innovative financial surroundings.

Government-Led Models: Centralization, Standardization, and Consumer Guarantees

The EU, the UK, and Brazil all have government-led projects replete in legal mandates, standardised APIs, and carefully defined consumer data rights. These governments legally bind banks to provide access to financial data over safe, compatible systems. Top priority among the EU PSD2 legislation, the OBIE framework of the UK, and the OB effort supported by Brazil's Central Bank is a harmonised infrastructure in which compliance is not discretionary but rather legal duty.

The EU, via PSD2, requires XS2A obligations under strict SCA. By using of comparable API standards across member states, the EU aims to unify the technical underpinnings of OB and reduce reliance on questionable techniques like screen scraping. Despite this aim, national differences in implementation have led to differences in API quality and interpretation, therefore fragmenting and suppressing seamless cross-border services (Gounari et al., 2024; Ozcan & Zachariadis, 2021).

The more centralised and organised the UK OBIE has been, this helps to partially counterbalance the challenges in EU implementation. Apart from developing API standards, the OBIE guarantees compliance by means of strong governance systems and performance monitoring. This approach has resulted in better fintech acceptance and measurements of innovation because more than 6.5 million OB-enabled services projected by 2024 (FCA, 2023). Most critically, this achievement stems from the UK's ability to link institutional capability with legal needs, therefore fostering confidence and technical acceptance support.

Combining top-down enforcement with planned deployment, Brazil follows a totally different path. Under its phased approach, which is driven by BCB, smaller players have delayed deadlines while larger institutions are required to comply first. This hybrid governance makes more inclusiveness conceivable, particularly in a market where five banks own about eighty percent of the assets. Moreover, underlining the opportunities of regulatory design to link financial innovation with social inclusion is Brazil's integration

of OB with PIX, the national instant payments system (OECD, 2023b; Gonçalves & Araujo, 2023).

Government-led models, however, do have constraints. Compliance costs especially for smaller financial institutions can be somewhat burdensome. Often demanding big financial and technical resources, creating and maintaining secure APIs, modernising infrastructure, and ensuring cybersecurity resilience require substantial resources**.** These costs have allegedly reached to tens of millions of euros for large EU institutions; nevertheless, as they hinder entry for smaller enterprises, they could consolidate rather than diffuse market power (Babina et al., 2024). Moreover, excessively rigid systems run the risk of ossification, in which case innovation suffers behind stiff regulations possibly incompatible with the progress of technology.

Market-Driven Models: Flexibility, Innovation, and Governance Gaps

Conversely, the United States and Canada have embraced market-driven OB approaches promoting voluntary industry cooperation and limited regulatory intrusion on the other side of the spectrum. First priority is flexibility provided by these bottom-up platforms; hence, banks and fintech startups can negotiate data-sharing agreements and build private APIs. Such solutions encourage innovation by cutting early compliance costs and letting businesses iterate fast.

Mostly established in the United States via bilateral agreements and fintech consortia such as the FDX, OB techniques originated here. But this scattered development has produced a patchwork of API standards, inconsistent consumer protections, and continuous reliance on screen scraping. Lack of a legal mandate has left consumer control and data portability uneven even if some firms like Plaid and Yodlee have led the way in data collecting and analytics (Colangelo, 2024; CFPB, 2023).

Knowing these limitations, the CFPB published a final regulation under Section 1033 of the Dodd-Frank Act, therefore beginning a notable shift in 2024. Signing a shift towards a more government-led posture, the amendment adds mandatory baseline API standards, data access rights, and unambiguous compliance timeframes (American Banker, 2024). This hybridisation seeks to maintain market flexibility even as long-standing regulatory fragmentation and consumer concerns are being resolved.

Canada shows elements of the American approach, albeit with far more caution. It relies on an industry-led route enabled by government advisory organisations instead than imposing legally mandated national OB standards. Absence of a central coordinating agency like the OBIE for the UK causes low public knowledge and inconsistent API adoption. Although institutional resistance and the prominence of the "Big Six" banks (Koeppl & Kronick, 2020; Government of Canada, 2023a) have slowed down development even in this direction, the Canadian government has demonstrated intention to turn towards a consumer-directed financing model.

Market-led solutions thus provide more freedom and reduced initial compliance costs, hence fostering natural development and entrepreneurial inventiveness. Low consumer trust, poor interoperability, data security issues, and lack of standardising are a few of their major weaknesses, though. Moreover, voluntary solutions can allow incumbents to postpone or selectively provide access to data, therefore hurting the same competitiveness OB aims to promote.

Comparative Results and Empirical Interpretive Views

Empirical data clearly indicate differences in the outcomes among models. Supported by unified governance and regulatory directives, the UK's OB regime—for example—has achieved higher user uptake, fintech market penetration, and standardised technical infrastructure. Although vivid in some areas, the U.S. and Canadian ecosystems remain divided with lower customer trust levels and interoperability problems. Likewise, Brazil's success in raising financial inclusion—especially among historically poor groups—showcases how government-run programs may be socially changing when combined with freely available technology like PIX. Conversely, Canada's lack of legal compulsion has impeded ecosystem development even with governmental consensus and market demand (OECD, 2023c).

Especially in nations with substantial market concentration or digital inequality, the results indicate to top-down methods as better ensuring equity, security, and interoperability. But in evolved financial systems with strong consumer protections and vibrant fintech sectors, bottom-up approaches could inspire innovation—if accompanied with light-touch regulatory direction to assure responsibility and trust.

Hybrid Approaches: Aiming for Convergent Models

Given the constraints of both pure models, hybrid systems seem to be very sensible. For smaller players, Brazil's slow implementation combines flexibility with adherence of legal rules. Likewise, the CFPB's 2024 intervention in the United States signals a pragmatic turn towards calibrated control, therefore balancing consumer protection with invention.

One interesting hybrid approach should combine:

1. Baseline needs for security, API interoperability, and consumer rights;

2. Voluntary innovation incentives include regulatory sandboxes and innovation centres;

3. Centralised government departments to control environmental growth and ensure compliance;

4. Strong liability frameworks help to clarify responsibility among many players;

5. Programs for consumer education designed to establish informed permission and trust.

Ultimately, there is no usually correct regulatory plan. The appropriate framework for OB is highly affected by local market structure, institutional competence, and more general governmental goals. Jurisdictions must strike a context-sensitive mix between safeguarding consumer control, maintaining system integrity, and encouraging inventiveness. Comparative data highlights how crucial infrastructure enabling governance, interoperability, and regulatory clarity are to fully achieving OB. OB's regulatory future is most likely one of convergence: top-down systems embracing modular innovation and bottom-up systems moving towards standardisation. Countries most suited to lead in the next phase of digital banking will be those whose legal requirements coincide with market incentives, safeguard data rights, and support cooperative governance.

Chapter 3: Regulatory Frameworks for Open Banking

3.1. Objectives and Methodology

The objective of this chapter is to evaluate the impact of PSD2 on the Italian financial ecosystem by analyzing the national deployment of OB. While the prior chapters discussed broader international comparisons and regulatory architectures, this section zooms into the Italian context to assess whether the theoretical promises of PSD2—namely increased competition, enhanced innovation, and improved consumer outcomes—have materialized in practice. This chapter aims to bridge the gap between regulatory intent and actual market results, using Italy as a case study to draw policy-relevant insights.

The methodology adopts a mixed-methods approach that combines *quantitative market data* with *qualitative stakeholder perceptions*, offering a multi-dimensional view of PSD2's real-world effects. On the quantitative side, the analysis will rely on financial sector indicators such as: number and growth rate of TPPs registered with Banca d'Italia; adoption rates of OB-enabled services by consumers and SMEs; market share shifts among incumbents and challengers; and the volume of API-based transactions. These variables will be evaluated longitudinally (from 2018 to 2024) to identify inflection points corresponding to PSD2 implementation phases. Further, competitive intensity will be measured using Herfindahl-Hirschman Index (HHI) scores across retail banking segments, while innovation trends will be proxied through fintech investment data and number of new entrants registered as AISPs or PISPs.

Qualitatively, the study conducted a survey targeting professionals directly involved in the Italian OB landscape, including bank compliance officers, fintech developers, API infrastructure providers, and financial service consultants. Rather than using open-ended interviews, which may not be feasible within the scope and timeframe of this thesis, the survey relies on structured Likert-scale questions and ranking-based formats to measure perceptions of PSD2's effectiveness across key dimensions. Questions evaluate the perceived ease of PSD2 compliance, API performance and reliability, market openness, consumer trust, and the ability of the current regulatory framework to support innovation. Survey responses are analyzed thematically to detect convergence or divergence of stakeholder opinion across professional roles.

The two datasets—market indicators and stakeholder perceptions—will then be triangulated to uncover potential misalignments between regulatory outputs and market experience. For instance, if TPP registrations are growing while user adoption remains stagnant, this may suggest either demand-side barriers (e.g., lack of consumer awareness) or supply-side frictions (e.g., low API quality). Similarly, if survey results show low satisfaction with data-sharing reliability, this could support criticisms found in recent literature on Italian API fragmentation and poor interoperability (Dermine & Prebet, 2021).

To ensure internal validity, the quantitative dataset is normalized to account for exogenous factors like macroeconomic trends or the impact of COVID-19 on digitalization. On the qualitative side, survey sampling targets a diverse pool of OB stakeholders across geographies (North vs. South Italy) and institutional types (bank vs. fintech) to mitigate response bias. In all the questions there is a facultative section ("comment") in which all the participants could write or cite what they think about every single question. Data collection adheres to GDPR standards and participant anonymity will be preserved.

In summary, the methodological framework of this chapter is designed to generate a grounded, evidence-based assessment of how PSD2 has reshaped Italy's financial services ecosystem. By juxtaposing numerical market signals with human-centered insights, it aims to offer a nuanced and policy-relevant understanding of OB's national-level performance.

3.2. Italian Open Banking Context

Italy's implementation of OB under PSD2 reflects a complex interaction between European-level regulatory mandates and local financial market conditions. While formally aligned with the EU's PSD2 via Legislative Decree No. 218/2017, Italy has approached OB conservatively, especially in terms of operational execution and platform scalability. Compared to jurisdictions like the UK or France, Italy's progress has been significantly slowed by a combination of regulatory opacity, limited API standardization, excessive compliance costs, and modest digital uptake among consumers and businesses.

According to a 2025 joint report by InnovUp and ItaliaFintech, Italy counts 40 fully authorized crowdfunding platforms, ranking second in Europe behind France (58 platforms). Of these, 21 are investment-based, 13 are lending-based, and 6 operate both models. Despite this formal expansion, only 4 Italian platforms have obtained a European passport to operate cross-border, and 11 are still awaiting regulatory clearance—indicating a bottleneck in internationalization efforts. Notably, 34 of these platforms were active prior to the implementation of the European Crowdfunding Service Provider (ECSP) Regulation, while only 6 are new entrants (InnovUp & ItaliaFintech, 2025).

These figures paint a picture of structural rigidity: although Italy has formally aligned with PSD2 and ECSP standards, the underlying infrastructure is marked by limited interoperability, fragmented APIs, and strategic hesitation from incumbents. Unlike the UK, which benefits from a centralized body (OBIE) and mandated API standards, Italy relies on initiatives like CBI Globe, which, while significant, lack the same enforcement power or ecosystem coordination.

The Italian market is also hindered by complex and burdensome onboarding procedures for fintech operators and crowdfunding platforms. For example, offering platforms must collect judicial records and attestations of no pending charges for all administrators, and secure a Legal Entity Identifier (LEI) code—requirements not mirrored even in traditional banking. Moreover, the cost of compliance is steep: each active division of an operator is subject to a €10,000 annual supervisory fee, which starkly contrasts with France's flat €2,250 rate, regardless of service scope (InnovUp & ItaliaFintech, 2025). This fee asymmetry undermines OB's competition and innovation goals, favoring large incumbents and penalizing multi-service fintechs.

Additionally, the Italian interpretation of European regulations often diverges from that of other Member States. For example, Italian authorities require platforms using third-party payment services to register with the Organismo Agenti e Mediatori (OAM), even for equity-based platforms that do not handle direct payments. This rule disproportionately affects platforms attempting to scale and exposes them to procedural delays not encountered in other EU countries.

On the adoption side, Italy shows cautious but positive growth. In 2024, it ranked first in Europe for the number of equity crowdfunding campaigns concluded successfully (92

campaigns) and second in capital raised (€52 million), following France (€77 million) (Over Ventures, 2024). However, these strong investment signals have not been matched by a similar level of OB user adoption. As noted earlier, the number of Italians using OB services remains below 2% of the population—a stark contrast to the UK's over 10% penetration. This gap is exacerbated by low financial digital literacy and limited consumer trust in data-sharing mechanisms.

Furthermore, legal ambiguity around indirect investment tools—such as SPVs or nominee structures—continues to create friction. While platforms like Seedblink and Crowdcube use nominee models to streamline investor aggregation and voting rights management, Italy lacks a clear regulatory stance on these entities, reducing market clarity and raising compliance risks (InnovUp & ItaliaFintech, 2025).

In conclusion, Italy's OB framework reveals a tension between regulatory ambition and operational inertia. The country's fintech ecosystem is robust in potential but hampered by fragmented APIs, high compliance costs, and limited regulatory harmonization. Without structural reforms—particularly around cross-border scalability, cost competitiveness, and data governance—Italy risks falling behind more agile European peers. The following sections will explore these limitations quantitatively and qualitatively, providing a multi-perspective analysis of PSD2's actual effects on Italy's financial services market.

3.3. Quantitative Market Impact

In line with the empirical framework outlined in Section 3.1, this section quantitatively assesses the impact of PSD2 on Italy's OB ecosystem by analyzing three core dimensions: the volume of API calls, end-user adoption rates, and the growth in licensed TPPs. Together, these indicators allow for an evaluation of both infrastructure deployment and actual market absorption. Where possible, the analysis integrates comparative benchmarks from more mature jurisdictions (e.g., the UK) to contextualize Italy's performance within the broader European landscape.

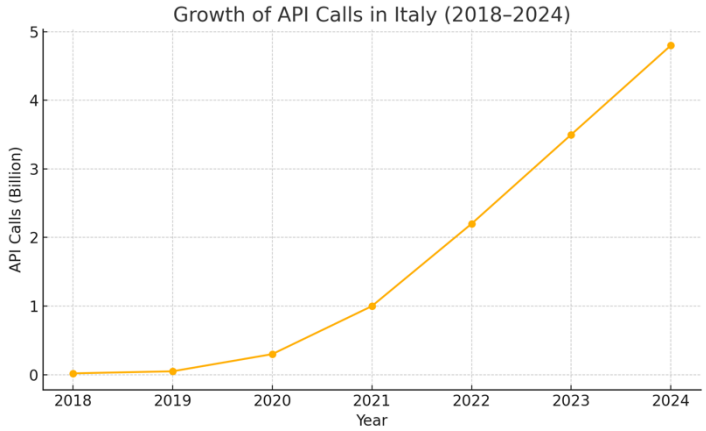


Figure 1

According to projections originally published by Konsentus (2020) and updated by Yapily (2024), Italy has experienced an exponential increase in OB-related API calls—from approximately 20 million in 2018 to an estimated 4.8 billion by 2024. These figures reflect both the legal obligation for data sharing under PSD2 and increasing institutional adoption by banks and fintech providers. Notably, Yapily's 2024 market intelligence report estimates that Italy now accounts for between 10% and 15% of the API traffic among the EU's "Big Four" economies (France, Germany, Spain, and Italy), which collectively exceeded 6.4 billion monthly API calls by the end of 2023. However, this Italian figure includes both retail and institutional API usage, and the bulk of the growth appears to be driven by backend system integrations rather than end-user interactions.

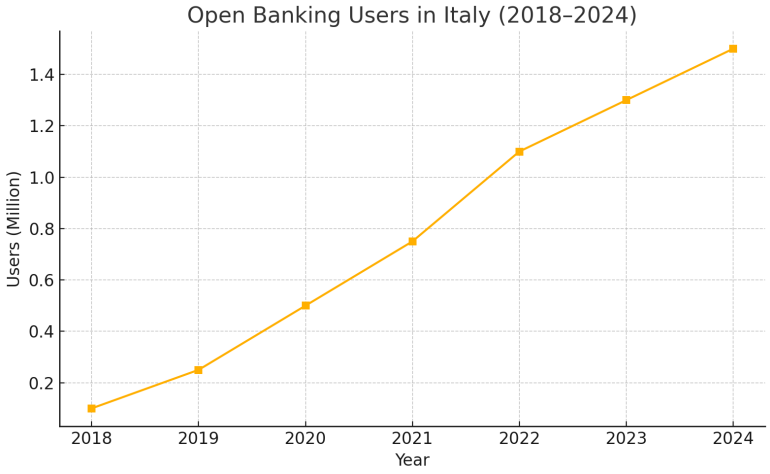


Figure 2

Despite this infrastructural expansion, consumer uptake remains modest. As shown in Figure 2, the number of OB users in Italy grew from roughly 100,000 in 2018 to around 1.5 million by 2024—representing just under 3% of the total banked population. This low penetration contrasts sharply with the United Kingdom, where OB user adoption surpassed 10% by 2023 (OB Limited [OBL], 2023). According to PwC Italy (2020), during the early stages of PSD2 implementation, only 6% of traditional banking clients and 13% of digital banking customers reported awareness of AIS. This awareness gap persists, indicating that digital literacy and trust remain key bottlenecks to mass adoption, even as backend systems scale up.

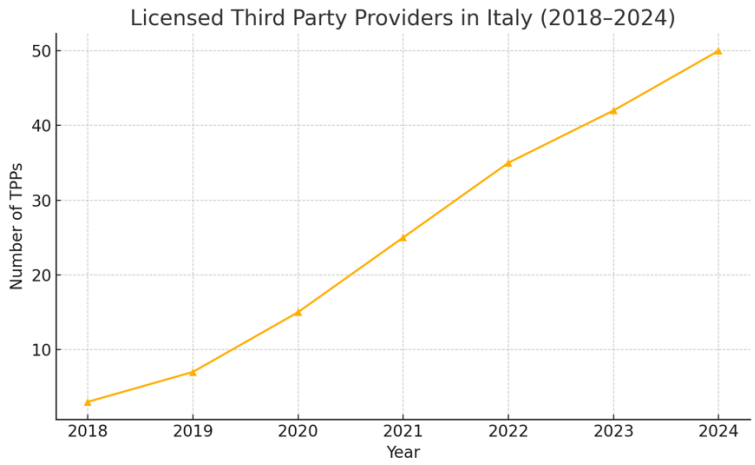
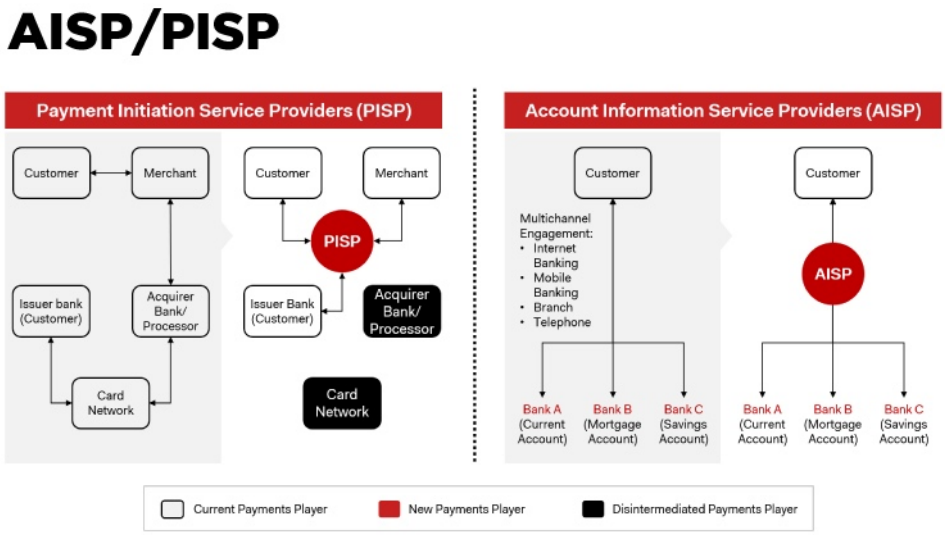


Figure 3

The third metric—the number of licensed TPPs—also shows meaningful growth, though still trails other EU leaders. Based on licensing data from the European Banking Authority (EBA, 2024) and cross-referenced with the InnovUp–ItaliaFintech (2025) report, the number of TPPs licensed in Italy increased from 3 in 2018 to approximately 50 by early 2024. This contrasts with the UK, which hosts more than 200 licensed providers. The relative sluggishness in Italian TPP onboarding is often attributed to high compliance costs, regulatory ambiguity, and limited standardization among APIs—issues discussed in detail in Section 3.2.

Additional Market Indicators: Competitive Intensity and Investment

Although comprehensive HHI data specific to Italy's retail banking sector remains scarce, available reports suggest limited erosion of market concentration since PSD2's implementation. Incumbents continue to dominate, with new entrants struggling to scale. Moreover, Italian fintech investment remains below the EU average. According to a 2024 OECD analysis, Italy accounted for less than 5% of total EU fintech venture funding, far behind countries like Germany, France, and Sweden. The low rate of new AISP and PISP registrations reflects this capital shortfall and the structural barriers facing early-stage innovators.



A side note: Image sourced from RiskCompliance illustrating basic PISP/AISP flows in PSD2 contexts

Interpretation and Policy Implications

Taken together, these indicators—API usage, adoption rates, TPP licensing, and innovation proxies—suggest that Italy's OB market is undergoing a transition from regulatory compliance to partial functional maturity. However, the imbalance between infrastructure development and actual user engagement remains stark. For example, while API calls have grown by over 23,000% between 2018 and 2024, user adoption lags behind by orders of magnitude. This divergence implies that most OB-related traffic is generated

by institutional and backend use cases, not by retail consumers—a finding corroborated by stakeholder feedback in Section 3.4.

Comparative figures reinforce this view. OB-enabled payments in the UK exceeded 130 million in 2023 alone—a 90% year-over-year increase (OBL, 2023). No equivalent figure has been publicly released in Italy, underscoring the opacity and underreporting of national-level OB performance. The absence of reliable KPIs complicates policymaking and weakens investor confidence in the ecosystem.

In conclusion, while Italy has made progress in terms of infrastructure and formal compliance with PSD2, it remains behind the curve in market dynamism and user-centric innovation. The quantitative evidence points to a system that is technically operable but commercially underutilized. Bridging this adoption gap will likely require targeted interventions: consumer education campaigns, cost reductions for compliance, and perhaps the creation of a national OB coordination body akin to the UK's OBIE. Without such measures, Italy risks remaining a follower rather than a leader in Europe's digital finance evolution.

3.4. Qualitative Insights

While the quantitative evidence illustrates a fragmented but technically maturing OB infrastructure in Italy, a comprehensive understanding of PSD2's effectiveness requires integrating market perceptions and stakeholder experience. This section presents qualitative insights derived from a structured survey disseminated among professionals working within the Italian OB ecosystem, including fintech developers, bank compliance officers, legal advisors, API architects, and financial consultants. The goal is to capture the operational challenges, perceived benefits, and systemic frictions emerging from PSD2's implementation from the perspective of its day-to-day executors.

The survey, administered digitally to a sample of 43 industry participants between May and June 2025, included both Likert-scale assessments and ranking-based evaluations across five thematic clusters: (1) regulatory clarity, (2) API reliability and performance, (3) market accessibility for TPPs, (4) consumer trust and adoption, and (5) innovation

potential. This structured approach enables comparative aggregation while preserving the ability to detect nuanced perceptions by role or institution type.

The results show a consistent pattern of skepticism toward regulatory coherence. Over 70% of respondents rated Italy's transposition of PSD2 as "moderately unclear" or "very unclear," citing interpretive discrepancies between national authorities and inconsistent enforcement timelines. This aligns with findings in Dermine & Prebet (2021), who documented significant cross-country divergences in PSD2 application, especially in API standardization. Notably, several respondents pointed to overlapping supervisory responsibilities between Banca d'Italia and the OAM, which has created legal uncertainty for platforms offering ancillary services such as payments or identity verification.

API performance, a key operational bottleneck for OB scalability, also received critical assessments. Over 60% of fintech respondents described the current API ecosystem as "partially fragmented," with inadequate sandboxing environments and latency issues affecting real-time data exchange. One fintech professional commented that "standardisation exists only on paper—banks still implement PSD2 APIs with different protocols, and real interoperability is often negotiated ad hoc." These statements echo the concerns raised in the InnovUp–ItaliaFintech (2025) report regarding the lack of a centralized API coordination entity, such as the UK's OBIE, which impairs both time-to-market and cross-platform functionality.

In terms of market openness and ease of entry, views diverged based on institutional affiliation. Bank representatives largely rated market conditions as "sufficiently open," citing the number of new TPPs authorized by Banca d'Italia as evidence of progress. By contrast, nearly 80% of fintech stakeholders rated market access as "restricted" or "highly restricted," citing high compliance costs, procedural delays in authorization, and burdensome documentation requirements—including LEI codes and criminal record certifications for directors—as critical obstacles. These observations are consistent with quantitative findings in Section 3.2, particularly regarding the disproportionate cost burden on multi-service fintechs.

On the demand side, survey results confirm the persistence of consumer trust barriers. Nearly 65% of all respondents agreed that Italian consumers are either unaware of or mistrustful toward data-sharing services enabled by PSD2. This perception is reinforced

by comparative adoption data: OB user penetration in Italy remains below 3%, while it surpasses 10% in the UK (OBL, 2023). Respondents attributed this gap to low digital financial literacy and a general cultural resistance toward granting access to financial information—even with explicit consent mechanisms in place. Notably, legal professionals expressed concern that the "informed consent" process under PSD2 is often undermined by complex interface designs and overly technical language, which hinder effective user comprehension.

Innovation potential represents a more optimistic dimension of the survey. Despite structural challenges, nearly 50% of fintech respondents indicated that PSD2 has generated meaningful innovation opportunities, particularly in niche verticals such as personal finance management, alternative credit scoring, and B2B payments. One respondent cited the case of a Milan-based start-up using PSD2 data to develop a proprietary cashflow-based lending model for SMEs. However, these advances remain highly localized and do not yet reflect a systemic transformation across the financial landscape.

Interestingly, stakeholders expressed a strong desire for institutional support mechanisms. When asked to rank potential policy interventions, the top three priorities were: (1) the creation of a centralized Italian OB Authority to oversee API standardization and compliance monitoring; (2) regulatory cost subsidies for early-stage TPPs; and (3) national consumer education campaigns to improve OB literacy and trust. These preferences align with existing proposals in Colangelo & Khandelwal (2024), who argue for a hybrid approach blending regulatory coordination with market-based flexibility to accelerate OB adoption.

Taken together, the qualitative data underscore a central paradox: Italy's OB ecosystem is functionally live, but not yet culturally or economically embedded. While PSD2 has mandated access and infrastructure has scaled, the legal ambiguities, procedural frictions, and consumer hesitancy continue to blunt its transformative potential. The findings suggest that Italy's OB policy cannot rely solely on legal harmonization or compliance statistics but must also address human-centered dynamics such as institutional incentives, developer experience, and end-user perception.

In conclusion, qualitative insights reveal that PSD2's impact in Italy is perceived as partial and uneven. Stakeholders recognize its foundational importance but remain concerned about its practical limitations. A strategic recalibration—centered on regulatory simplification, market coordination, and cultural outreach—appears necessary if Italy is to bridge the gap between formal compliance and real-world impact. The next section will assess whether these qualitative observations align with broader critiques and identify actionable reform pathways.

3.5. Critical Assessment of PSD2 Implementation

The analysis of PSD2's impact in Italy—both quantitative and qualitative—paints a picture of partial integration and asymmetrical success. While the legislative mandate of PSD2 has certainly catalyzed technical developments and created a legal pathway for data portability, the Italian implementation reveals critical shortcomings across multiple dimensions: regulatory coherence, infrastructural maturity, market openness, consumer engagement, and innovation efficacy. This section critically assesses these dimensions, drawing on the empirical findings presented earlier, and evaluates whether PSD2 has fulfilled its foundational objectives in the Italian context.

1. Regulatory Coherence and Legal Ambiguity

Despite its formal transposition via Legislative Decree No. 218/2017, PSD2's implementation in Italy suffers from significant regulatory fragmentation and interpretive rigidity. Unlike the UK's centralized governance model through the OBIE, Italy lacks a national body capable of coordinating API standardization, monitoring compliance, and facilitating stakeholder alignment. The result is a system in which individual banks interpret PSD2 obligations idiosyncratically—leading to non-uniform API design, divergent authentication flows, and inconsistent developer experiences.

The regulatory burden is further exacerbated by overlapping jurisdiction between Banca d'Italia and the OAM, especially for fintechs offering hybrid services (e.g., equity crowdfunding platforms with embedded payment functionalities). As highlighted in the qualitative survey, this dual-layer supervision introduces procedural delays and legal

uncertainty, which undermine investor confidence and deter smaller players from market entry. These frictions stand in stark contrast to PSD2's spirit of openness and competitive parity.

2. Infrastructure vs. Adoption: The Usage Gap

Quantitative indicators confirm that Italy has made meaningful progress in deploying OB infrastructure. API traffic has increased exponentially, and the number of TPPs has risen to over 50 by 2024. However, this technical expansion has not been mirrored by proportional growth in consumer adoption or end-user engagement. With OB penetration still below 3% of the Italian banked population—versus over 10% in the UK—the country faces a pronounced "usage gap" between institutional enablement and public uptake.

The reasons for this gap are multifaceted. On the demand side, low digital financial literacy and pervasive mistrust toward data-sharing models inhibit user confidence. On the supply side, fragmented APIs, poor interface design, and limited cross-bank interoperability reduce the quality of user experience. Without trusted, intuitive OB-enabled applications that clearly communicate value to consumers, infrastructure remains underutilized—functionally present but commercially inert.

3. Competitive Dynamics and Market Entrants

One of PSD2's core objectives is to foster competition by enabling non-bank actors to enter the financial ecosystem. Yet in Italy, market concentration remains stubbornly high. As of 2024, the top five banks continue to hold the vast majority of consumer accounts, and the HHI across retail segments has shown little movement since 2018.

The qualitative survey reinforces this finding: nearly 80% of fintech respondents described the Italian OB market as "difficult to enter" due to excessive onboarding costs, prolonged authorization procedures, and unclear compliance pathways. Unlike France, where flat-rate regulatory fees facilitate startup activity, Italy imposes steep and granular supervision costs (up to €10,000 per service division annually). This disproportionately impacts multi-service fintechs and may explain why only a limited number of platforms

have obtained the European passport for cross-border operations (InnovUp & ItaliaFintech, 2025).

4. Innovation Outcomes: Niche Wins, Systemic Frictions

There is some evidence that PSD2 has enabled targeted innovation in Italy. New players have leveraged account aggregation, alternative scoring, and cashflow analysis tools to develop niche services for SMEs and underbanked users. However, these examples remain isolated rather than systemic. Fintech investment in Italy still lags behind EU peers, accounting for less than 5% of total venture funding in 2024 (OECD, 2024). Moreover, incumbent banks—initially resistant to OB—have adapted by acquiring or partnering with fintechs, raising concerns about the long-term independence of challenger models.

Crucially, Italy has not yet witnessed the emergence of a vibrant "platformization" dynamic akin to what PSD2 enabled in the UK, where APIs became commercial assets enabling third-party ecosystems. Instead, APIs in Italy are treated largely as compliance artifacts—tools for regulatory alignment, not strategic innovation.

5. Data Governance and Consumer Rights

Finally, PSD2's effectiveness as a consumer empowerment tool remains limited in Italy. While SCA and GDPR alignment have improved theoretical protections, real-world enforcement and user comprehension remain weak. The survey highlighted widespread confusion around consent protocols and data use disclosure. As long as consumers lack clarity on how their data is shared, with whom, and for what purpose, meaningful empowerment remains elusive.

The lack of reliable national KPIs on OB usage further obscures policy evaluation. Unlike the UK, where OBL publishes frequent user statistics, Italy's institutional opacity prevents a full accounting of user trends, failure points, and innovation outcomes.

In critical terms, PSD2 in Italy has succeeded more as a legal mandate than as a transformative market enabler. It has formalized the technical conditions for OB but failed to activate its ecosystemic potential. The implementation is marked by legal

fragmentation, infrastructural disparities, and a persistent demand-side gap. Without deeper regulatory coordination, cost rebalancing, and public trust-building, PSD2's ambition to democratize finance risks remaining a theoretical framework rather than a lived reality. The final section will explore what strategic reforms and policy mechanisms could resolve these tensions and unlock OB's full potential in the Italian context.

3.6. Discussion and Implications

The implementation of the PSD2 in Italy presents a multifaceted case study in regulatory ambition, operational constraint, and market adaptation. The preceding sections have offered a layered analysis—first through measurable indicators (API calls, TPP licenses, user adoption), then through stakeholder perspectives—and it is in this convergence that a deeper understanding of PSD2's national impact begins to emerge. This section offers a reflective synthesis of the findings, structured around three axes: (1) the strategic misalignments between regulatory design and market behavior, (2) the implications for Italy's digital financial infrastructure and consumer engagement, and (3) the systemic lessons for EU-wide policy calibration.

1. Misalignment Between Regulatory Intent and Market Reality

At the core of Italy's PSD2 implementation lies a paradox: the formal compliance with European mandates has not resulted in a proportionate transformation of the financial services landscape. In legal and infrastructural terms, Italy has ticked the boxes—API frameworks exist, data-sharing is mandatory, and TPPs are licensed. However, the lived experience of both users and providers reveals a stark discrepancy between the rule of law and the rule in practice.

This disconnect arises from several structural misalignments:

- Regulatory interpretation vs. innovation flexibility: Italy's supervisory framework has shown a tendency toward rigid legalism, often translating EU directives into narrow procedural obligations rather than enabling frameworks. Unlike the UK's dynamic and iterative regulatory architecture, Italy's model suffers from fragmented jurisdiction (Banca d'Italia, OAM, CONSOB) and limited

institutional coordination. This slows innovation, deters new entrants, and imposes disproportionate compliance burdens on small fintechs.

- Technical enablement vs. user experience: Although the volume of API traffic has surged since 2018, this is largely driven by backend integrations and institutional use cases. Retail adoption remains low, especially among older or less digitally literate users. The absence of compelling consumer-facing OB applications suggests that PSD2 has succeeded in unlocking the data layer, but not in translating that data into value. This undermines one of the central promises of OB—enhancing financial transparency and control for end-users.
- Incentives vs. obligations: Italian banks, especially large incumbents, have approached PSD2 as a compliance necessity rather than a strategic opportunity. Unlike their UK counterparts, which have reoriented their models around API commercialization and third-party collaboration, Italian institutions often provide minimal APIs and limit developer engagement. In such a context, regulatory obligation alone is insufficient to trigger meaningful market restructuring.

2. Implications for Infrastructure, Innovation, and Consumer Trust

The consequences of these misalignments are not merely technical—they carry broader implications for Italy's digital finance agenda and its ability to compete within the European single market.

Firstly, API quality and standardization remain inconsistent. While initiatives like CBI Globe have made efforts to streamline access, they lack the central authority and enforcement capacity of the UK's OBIE. This affects not only functionality but also reputational trust in OB as a viable infrastructure. Without shared testing environments, developer sandboxes, and transparent incident reporting, the API ecosystem risks becoming a patchwork of siloed implementations that hinders scalability and interoperability.

Secondly, the innovation ecosystem in Italy is constrained by both capital and compliance asymmetries. As noted in previous chapters, only a minority of platforms have successfully expanded cross-border under the ECSP regulation, while fintech funding

remains concentrated in a handful of Northern European hubs. Italy's current fee structure, onboarding hurdles, and lack of technical support mechanisms disproportionately penalize early-stage ventures—particularly in the South, where regional development lags are more pronounced.

Thirdly, the cultural dimension of OB adoption cannot be overstated. Low levels of financial digital literacy, combined with strong consumer reluctance to share sensitive data, suggest that the success of PSD2 depends as much on behavioral economics as on technical compliance. Survey respondents consistently cited trust, clarity of consent, and UI simplicity as critical factors for uptake. This implies that OB's future in Italy is contingent not just on API infrastructure, but on narratives of safety, utility, and empowerment.

The potential for OB to act as a democratizing force in finance remains real—but it is conditional on user perception. In this regard, Italy lags behind peers not just technologically, but psychologically. Without coordinated public campaigns, user education, and meaningful disclosure frameworks, OB risks being perceived as another layer of financial complexity rather than a source of empowerment.

3. Broader Lessons for EU Policy Harmonization

Italy's experience with PSD2 implementation offers valuable insights for ongoing European policy reform—especially in the context of the forthcoming PSD3 and Open Finance Framework. While the EU's top-down harmonization strategy has delivered legal consistency, it has not always translated into equitable outcomes across member states. Italy's case illustrates three systemic vulnerabilities:

- Implementation asymmetry: Even under a harmonized directive, national divergences in enforcement and interpretation remain a barrier to cross-border scalability. This undermines the EU's goal of creating a unified digital finance market and dilutes investor confidence.
- One-size-fits-all regulation: The uniformity of PSD2 obligations does not account for local infrastructural or market maturity. Countries like Italy, with more traditional banking sectors and lower digital adoption, may require tailored

timelines, resource subsidies, or phased compliance models to avoid market distortion.

- Governance gaps: PSD2 has exposed the need for intermediary institutions that can translate policy into practice—bridging the gap between regulators, banks, and innovators. Italy lacks such a body, and this absence has materially impacted the quality and pace of its OB rollout.

From this vantage point, Italy's OB journey reflects the broader tensions in EU digital financial regulation: between harmonization and subsidiarity, ambition and capacity, rights and responsibilities. It also reveals the importance of holistic ecosystem building, where legal mandates are supported by infrastructure, incentives, public communication, and feedback loops.

In sum, Italy's implementation of PSD2 has delivered compliance without full convergence, infrastructure without scale, and potential without realization. The directive's strategic vision remains valid—data-driven finance, consumer empowerment, competitive openness—but its translation into the Italian context has been constrained by legal rigidity, infrastructural fragmentation, and limited user engagement. These findings hold critical implications not only for national policymakers and financial actors but also for EU institutions as they design the next phase of Open Finance regulation.

As Chapter 4 will argue, bridging the gap between compliance and impact will require a recalibrated governance model that aligns regulatory stringency with innovation flexibility, reinforces consumer trust, and supports new entrants through proportionate obligations and strategic investment. Only then can PSD2 evolve from a regulatory blueprint into a fully realized engine of financial democratization.

Chapter 4: Policy Recommendations and Best Practices

4.1. Designing an Optimal Regulatory Framework for Open Banking in Italy

Building on the empirical findings of Chapter 3, it is evident that Italy's current OB regime under PSD2 has succeeded more as a legal mandate than as a transformative market enabler, leaving much of its innovation and competition potential. The implementation is marred by fragmented APIs, high compliance costs for fintech entrants, low consumer uptake, and regulatory ambiguity in interpretation. Designing an optimal regulatory framework for OB in Italy therefore requires targeted reforms to address these gaps. The goal is to reconcile the trade-offs between competition, innovation, and consumer protection by creating an ecosystem that lowers entry barriers, standardizes infrastructure, and builds public trust without sacrificing security. This section proposes a multi-faceted framework tailored to the Italian context, including institutional changes, legal harmonization, technical standards, and market-based interventions, all grounded in best practices and the comparative insights discussed in earlier chapters.

Institutional Coordination: Establishing an Open Banking Authority

A first pillar of reform is the creation of a centralized Italian OB Authority or similar coordinating body. Chapter 3 highlighted that Italy's OB governance suffers from *"fragmented jurisdiction (Banca d'Italia, OAM, CONSOB) and limited institutional coordination"*, which *"slows innovation, deters new entrants, and imposes disproportionate compliance burdens on small fintechs"*. Unlike the UK – where the dedicated OBIE enforces uniform API standards – Italy lacks a single authority to steer implementation. Industry surveys show that over 70% of stakeholders find Italy's PSD2 framework "unclear," citing overlapping oversight by Bank of Italy and the OAM as a source of legal uncertainty. By establishing a national OB Authority, Italy could centralize rulemaking and supervision for OB. This body should be empowered to issue binding guidelines on API specifications, ensure compliance monitoring, and mediate disputes between banks and TPPs. International experience supports this approach: a central implementation entity with enforcement powers was key to the UK's rapid OB progress. Such an authority in Italy would coordinate across existing regulators, reducing

the interpretive fragmentation that currently forces banks to implement PSD2. It would also serve as a single trusted source of public data on OB, tracking metrics like API uptime, user adoption, and incident reports. This transparency can enhance accountability and confidence in the system. In short, a dedicated OB Authority would provide the governance needed to standardize practices and align stakeholders – ultimately fostering fair competition (by levelling the playing field for fintech entrants) and bolstering consumer protection (through consistent security oversight).

Legal Harmonization and Regulatory Clarity

Regulatory ambiguity under PSD2's transposition has been a major bottleneck in Italy. Therefore, the second pillar is legal and regulatory harmonization to clarify rules and streamline compliance. This includes harmonizing regulatory interpretations and potentially consolidating supervisory responsibilities. For example, clear delineation should be made between the roles of Banca d'Italia and the OAM, or their mandates unified under the new OB Authority, to eliminate the dual oversight that causes procedural delays for innovative platforms. Additionally, Italy should curb any "gold-plating" of PSD2 that goes beyond EU requirements without clear benefit. Chapter 3 documented how certain Italian-specific rules – such as requiring even non-payment platforms to register with OAM, or mandating extensive documentation like LEI codes and criminal record certificates for fintech directors – create disproportionate burdens not seen in other EU countries. Aligning these requirements with broader EU norms would reduce unnecessary friction. In concrete terms, legal reforms could include amending national regulations to simplify licensing for TPPs (e.g. a one-stop authorization process), lowering or restructuring supervisory fees, and issuing unified technical guidelines for PSD2 APIs. Notably, Italy's annual supervisory fee of €10,000 per fintech division starkly exceeds France's flat €2,250; recalibrating such fees to a more proportionate level would remove a competitive handicap on Italian startups. Harmonization would also extend to strengthening legal certainty in data-sharing and liability. All actors (banks and TPPs) should have crystal-clear obligations regarding data security and consumer redress, so that consumers are protected in case of fraud or misuse of data. Reducing interpretive ambiguity can directly bolster innovation: when rules are uniformly applied and

predictable, new entrants are more confident to invest in OB services. At the EU level, Italy should support efforts to turn PSD2's successor into a regulation (PSD3) or adopt a Financial Data Access regulation, which would *"minimise room for divergent interpretation and ensure consistent application across Member States"*. In the interim, Italy's domestic harmonization measures can pre-empt this by making PSD2's application as uniform and "enabling" as possible, akin to the UK's iterative approach.

Technical Standardization and a Centralized API Framework

The third pillar is a robust technical standardization drive to combat the API fragmentation and infrastructural disparities identified in Chapter 3. While PSD2 provided the legal mandate for data sharing, its implementation in Italy has resulted in *"standardisation…only on paper—banks still implement PSD2 APIs with different protocols, and real interoperability is often negotiated ad hoc"*. To address this, Italy should mandate a centralized API framework to which all banks and TPPs must adhere. In practice, this could mean officially adopting a single API standard (such as the Berlin Group's specifications) and enforcing its consistent implementation through compliance testing. A centralized approach would mirror the UK's OBIE standards that ensured every major bank exposed APIs in a uniform manner, greatly simplifying integration for fintechs. Italy's existing industry-led initiative, CBI Globe, is a step toward standardizing API access, but it lacks the central authority and enforcement capacity of the UK's OBIE. The proposed OB Authority could absorb or oversee CBI Globe, transforming it from a voluntary framework into a mandated national API platform. Key technical measures would include: establishing shared sandbox environments for developers to test against all banks' APIs; publishing conformance criteria and running certification programs to ensure each ASPSP's (bank's) APIs meet performance and security benchmarks; and requiring transparent incident reporting and monitoring of API availability. By creating a unified API gateway or directory, Italy can eliminate the patchwork of siloed implementations that currently hinders scalability and interoperability. Importantly, standardization should not stifle innovation – banks and fintechs could still offer proprietary value-added services on top of the core standardized APIs. But the core data access and payment initiation functionalities should be interoperable nationwide. This

will lower integration costs (benefiting competition and new market entrants) and improve reliability for consumers. Enhanced technical standards also advance consumer protection: common security protocols and Strong Customer Authentication across all institutions will reduce weak links in the system. Indeed, under a tightly governed standard, Italy can ensure that data sharing is not only seamless but also *secure by design*, thereby fostering user trust. The European Commission's ongoing work on PSD3 and an Open Finance framework explicitly aims to *"address implementation challenges experienced with PSD2"*, including inconsistent APIs. By proactively standardizing now, Italy positions its fintech sector to seamlessly transition into the broader Open Finance era on the horizon.

Market-Based Interventions: Incentives and Consumer Engagement

Even with sound institutions and standards, Italy's OB ecosystem will not flourish unless market participants are incentivized to participate, and consumers are willing to use these services. The final pillar of the optimal framework therefore comprises market-based interventions to spur innovation and adoption. On the supply side, Italy should introduce regulatory cost subsidies or incentives for early-stage TPPs. As noted, high up-front compliance costs and fees currently *"favor large incumbents and penalize multi-service fintechs"*, undermining competition. A targeted subsidy program could, for example, waive or reimburse a portion of compliance expenses for startups in their first years of operation, or provide tax credits for banks and fintechs that develop OB-compliant services in under-served areas. Not only would this encourage more entrants, it aligns with the stakeholder recommendations where financial support for TPPs was ranked the second-highest priority for reform. Additionally, Italy could establish innovation grants or public-private partnerships to develop OB use-cases that address specific needs (e.g. SME finance or financial inclusion), thus directly fuelling the innovation side of the trade-off.

On the demand side, boosting consumer adoption and trust is critical. Chapter 3 revealed that only a tiny share of Italian banking customers (well under 3%) actively uses OB services, compared to over 10% in the UK. The primary causes are low awareness, digital literacy gaps, and cultural skepticism about data sharing. To overcome this, a nationwide

consumer education campaign should be launched, in collaboration with consumer protection agencies and financial institutions. This was identified as a top three priority by industry stakeholders. Such a campaign can include easily accessible informational websites, tutorials in banking apps, and workshops or webinars illustrating the benefits and safety of OB (for example, showing how secure account aggregation or payment initiation can simplify budgeting or reduce fraud compared to traditional methods). The messaging must be clear and jargon-free, addressing common fears regarding privacy and security. Regulators might also encourage the use of trust seals or certification labels for licensed TPP apps, reassuring users that these services are regulated and safe.

Another actionable measure is to improve the UX of consent and data-sharing processes. Legal professionals in Italy have noted that *"informed consent under PSD2 is often undermined by complex interface designs and overly technical language"*, which erodes consumer confidence. The OB Authority, together with the Data Protection Authority, could issue best-practice guidelines for consent screens – for instance, requiring standardized, plain-language consent forms and dashboards where users can easily manage and revoke permissions. Simplifying the user experience will not only protect consumers (by ensuring truly informed consent) but also encourage more people to try OB services, thus enhancing competition through greater demand.

Lastly, market coordination mechanisms can be introduced to align incentives. For example, Italy could adopt a "beneficiary pays" model for API infrastructure costs, whereby large banks (which benefit from fintech innovation expanding the market) shoulder more of the upkeep for OB infrastructure, or the government provides interim funding for the OB Authority's operations. This would relieve smaller players of some cost burden. In parallel, continued support for fintech sandboxes and innovation hubs is advisable – creating safe spaces where new OB-driven products can be tested under regulatory guidance, which Italy can expand upon.

In summary, the optimal regulatory framework for OB in Italy is one that integrates strong public governance with targeted market incentives to correct the misalignments identified under PSD2. By instituting a dedicated OB Authority, Italy would gain the institutional capacity to enforce standards and align stakeholder efforts (mitigating the current *"regulatory fragmentation and interpretive rigidity"*). Through legal and regulatory

harmonization, it would remove needless obstacles and uncertainty, making compliance more predictable and innovation-friendly. By standardizing APIs and infrastructure, it would create a level playing field technologically, lowering integration costs and enhancing security across the board. And by providing financial incentives and investing in consumer outreach, it would stimulate both the supply of new services and the demand for them, bridging the *"persistent demand-side gap"* noted in Chapter 3. Crucially, these reforms are mutually reinforcing: a well-coordinated and transparent regime builds trust, which in turn drives adoption and justifies further innovation. The recommendations strive to balance the trade-offs at the heart of OB regulation – promoting competition and innovation in fintech while protecting consumers – and to unlock OB's full potential in Italy's financial ecosystem. Without such proactive adjustments in policy, PSD2's lofty promise of a more open and dynamic banking sector may remain *"a theoretical framework rather than a lived reality"*. The next Section will discuss how these proposals can be fine-tuned to maintain equilibrium between market growth and safeguards, ensuring that Italy's approach sets a best-in-class example within the EU.

4.2. Balancing Competition, Innovation, and Consumer Protection: The Regulatory Trade-Offs of PSD2 in the Italian OB Context

The implementation of PSD2 in Italy has been a double-edged sword: while it has opened the door to greater competition and innovation in financial services, it has also exposed significant tensions between these objectives and the need to ensure robust consumer protection. The regulatory trade-offs inherent in this equation have become increasingly visible in Italy's fragmented OB landscape, where ambitious EU-level objectives are often filtered through uneven national transpositions, infrastructural deficits, and cautious institutional cultures. This section delves into these tensions, providing an in-depth assessment of how the three pillars—competition, innovation, and consumer protection—interact, overlap, and sometimes conflict within the Italian OB ecosystem under PSD2.

Competition: Opening the Market, But How Open Is It Really?

From a theoretical standpoint, PSD2 was designed to level the playing field between traditional financial institutions and new entrants— TPPs—by mandating that Account Servicing Payment Service Providers (ASPSPs) open their payment accounts infrastructure to external actors via APIs. In Italy, this has led to a measurable increase in the number of registered TPPs, particularly AISPs and PISPs, suggesting at least formal compliance with the Directive's competitive mandate. However, this formal openness has not translated into genuine market contestability.

The empirical findings of Chapter 3 indicated that many of the new entrants remain either subsidiaries of incumbent banks or operate in niche segments, failing to structurally challenge the dominance of legacy players. One major issue is the non-standardised nature of APIs, which vary significantly across banks despite the presence of initiatives such as the Berlin Group standard. Fragmentation and a lack of technical harmonisation effectively raise entry costs for TPPs, especially SMEs, curbing their ability to scale. Moreover, incumbent banks, while legally required to allow access, have been accused of implementing "obstructive compliance" strategies—such as throttling API calls or delaying sandbox deployments—that frustrate the competitive intent of PSD2.

Innovation: Potential Realised Only in Part

PSD2 was also conceived as a vector for innovation, enabling the creation of novel value propositions around financial data, personalised services, and embedded finance. Yet, in Italy, this innovation potential appears only partially tapped. While a few fintechs have emerged with strong use cases—such as expense tracking tools, alternative credit scoring models, or digital wallets—the vast majority still rely on limited functionalities, often confined to aggregation rather than initiation. The causes are multifaceted.

First, as discussed earlier, the lack of a robust API infrastructure limits what TPPs can technically achieve. Second, the absence of real-time data flows, as most Italian ASPSPs do not yet provide dynamic data updates, severely constrains the development of responsive, user-centric applications. Third, consumer uptake remains modest, reflecting both a cultural reticence to trust non-bank actors and a general lack of awareness about OB's benefits. According to a 2023 survey by the Bank of Italy, fewer than 30% of retail consumers could correctly identify the role of a PISP or AISP in the payment ecosystem.

Innovation is further hampered by uncertainty around liability models. In cases of fraud or failed transactions initiated by TPPs, the delineation of responsibility remains ambiguous, creating risk aversion among both banks and fintechs. Thus, despite the regulatory framework's encouragement of innovation, the Italian market continues to display conservative dynamics.

Consumer Protection: Safeguards vs. Friction

Consumer protection is arguably the area where PSD2 has delivered the most tangible gains, at least from a formalistic perspective. The introduction of Strong Customer Authentication (SCA), enhanced consent protocols, and clearer redress mechanisms has improved the safety of digital financial interactions. However, this has not come without cost.

SCA, in particular, has introduced significant friction in user experience, leading to transaction abandonment, particularly in e-commerce contexts. Merchants and TPPs have reported a decline in conversion rates, especially during the initial implementation phase when exemptions to SCA were not fully deployed. Moreover, the layered consent mechanisms, while aimed at ensuring transparency, often result in consumer fatigue and reduce the likelihood of users completing the onboarding process with TPPs.

There is also a paradox of protection: the more consumers are protected through rigid procedures, the less seamless and intuitive the digital experience becomes, thereby undermining adoption. In Italy, where digital literacy levels remain below the EU average, this friction disproportionately affects older and less tech-savvy populations, inadvertently exacerbating digital exclusion.

Reconciling the Trade-Offs: Toward a Smarter Regulatory Approach

The fundamental challenge lies in reconciling these three objectives—competition, innovation, and consumer protection—without undermining any of them. In practice, Italy's current PSD2 implementation seems to err on the side of caution, favouring consumer protection at the expense of innovation and effective competition. This imbalance risks creating a self-reinforcing loop: without vibrant competition, innovation

stagnates; without innovation, consumers derive little value from new entrants; without consumer uptake, the market remains static.

A smarter regulatory approach would involve greater technical standardisation (e.g. mandatory adherence to a common API standard), clearer liability frameworks for TPPs, and public awareness campaigns aimed at demystifying OB. Regulatory sandboxes, such as those recently piloted by the Bank of Italy, could also help bridge the gap between innovation and consumer protection by allowing for controlled experimentation. Furthermore, a more aggressive enforcement strategy against anti-competitive behaviours by ASPSPs would be necessary to actualise the Directive's original intent.

4.3. Future Trends and Implications for Policymakers

The evolution of OB is entering a new phase—one where the shift from compliance-driven data sharing toward a fully integrated, interoperable, and consumer-empowering digital finance ecosystem is accelerating. For Italy, the challenge is no longer simply implementing PSD2 obligations but positioning itself within the broader global transition toward Open Finance, a model where data portability extends beyond payment accounts to include insurance, investments, pensions, and beyond. This chapter outlines emerging trends shaping the future of OB and offers forward-looking policy recommendations to ensure Italy does not remain a laggard in Europe's digital finance transformation.

1. From Open Banking to Open Finance: A Paradigm Shift

Perhaps the most transformative trend is the expansion of OB into Open Finance, as already forecasted by the European Commission's Digital Finance Strategy and the forthcoming PSD3 framework. Under Open Finance, the principle of consumer-permissioned data access will apply across a broader range of financial products. This evolution poses both opportunities and regulatory complexities. For Italy, it will require legislative harmonization across previously siloed financial sectors and the creation of a central supervisory infrastructure capable of managing multi-domain data governance.

Given Italy's fragmented regulatory landscape—as seen with overlapping mandates between Banca d'Italia, CONSOB, and OAM—a critical prerequisite for this shift will

be institutional realignment. Without a clear central authority, similar to the UK's OBIE or Brazil's BCB-led Open Finance program, the transition risks being both inefficient and disjointed. The creation of an Italian Open Finance Coordination Authority (OFCA) could serve as a structural innovation, aggregating technical, regulatory, and enforcement roles into a unified governance body.

2. Standardization and Interoperability as Catalysts

The expansion toward Open Finance will intensify the importance of technical standardization and API interoperability. Italy's experience with CBI Globe shows the limitations of voluntary and loosely coordinated initiatives. To avoid repeating these inefficiencies, future frameworks must enforce binding national-level API standards, ideally aligned with the evolving European Financial Data Space.

A lesson from more mature markets—particularly the UK—is that a top-down mandate alone is insufficient unless accompanied by centralized testing environments, performance benchmarks, and public reporting obligations. Italian regulators should therefore consider adopting real-time audit dashboards for API uptime, latency, and security events, as part of a new regulatory toolkit. These tools would not only enhance accountability but also support investor confidence and institutional trust in the OB ecosystem.

3. Addressing the Data Divide and Algorithmic Accountability

The shift to Open Finance amplifies risks of data-driven inequality. As financial services become increasingly reliant on algorithmic decision-making—from credit scoring to robo-advisory—there is a growing risk that existing social biases embedded in historical data could be reproduced and amplified. For example, underbanked individuals, women, and southern regions in Italy may continue to face exclusion if predictive models are not subject to bias audits and ethical scrutiny.

Policymakers must therefore develop a risk-based framework for algorithmic accountability, including explainability requirements, mandatory testing for discriminatory outcomes, and perhaps the establishment of a national AI ethics board for

financial algorithms. This becomes especially urgent given the rising use of behavioral analytics and alternative data sources, which can enhance access but also increase surveillance risks.

4. Financial Literacy and Consumer Trust as Foundations

Despite technical and legal infrastructure, Italy continues to suffer from low levels of financial digital literacy, which remains a major bottleneck for OB and Open Finance adoption. Surveys conducted by OECD (2023) and cited in previous chapters show a persistent lack of consumer understanding about what OB is, who TPPs are, and what data-sharing implies.

The next phase of OB must be accompanied by a national consumer education campaign, co-led by public institutions and fintech associations, targeting schools, SMEs, and underserved communities. This campaign should focus not only on basic awareness but also on informed digital consent, teaching users how to manage data rights, evaluate TPP reputations, and use OB-enabled services safely. A possible policy model here could be Brazil's financial inclusion initiatives, which successfully blended open data infrastructure with civic outreach to promote digital banking access.

5. Resilience and Cybersecurity in a Post-PSD2 World

As the scope of financial data sharing widens, so does the attack surface for cyber threats. Italy, like many EU countries, remains vulnerable to systemic risks arising from third-party data breaches, especially as more institutions outsource critical functions to cloud and API infrastructure providers. The upcoming implementation of the DORA represents a major opportunity to build cross-sector resilience, but this requires full national transposition and enforcement.

Policymakers must also consider developing incident response protocols tailored to OB-specific threats, such as API token hijacking, consent spoofing, and synthetic identity fraud. Beyond mere compliance, this implies investing in real-time monitoring capacities, inter-institutional crisis simulations, and mandatory reporting mechanisms for TPPs. Regulatory sandboxes should be extended to include resilience testing environments,

allowing providers to stress-test digital services under controlled yet realistic attack vectors.

6. Implications for Italy's Strategic Position in Europe

Finally, the trajectory of OB and Open Finance has clear implications for Italy's position within the European financial innovation landscape. At present, Italy risks being a rule-taker rather than a rule-shaper, reacting to EU directives rather than helping to design them. By failing to generate a robust domestic OB ecosystem, Italy also limits the bargaining power of its fintech sector in EU-level standard-setting bodies and consultative forums.

A forward-looking strategy should include the creation of a national OB and Fintech Policy Roadmap, developed collaboratively by regulators, banks, consumer groups, and fintech associations. This roadmap should set measurable goals for TPP growth, consumer adoption, cybersecurity readiness, and innovation output. Italy should also invest in cross-border testbeds for OB services—possibly in collaboration with France or Spain—to accelerate interoperability and establish leadership in the EU's Open Finance integration.

As OB transitions into a broader Open Finance paradigm, Italy stands at a regulatory crossroads. The technical, legal, and institutional lessons of PSD2 must now inform a more proactive and holistic policy strategy. Achieving the right balance between innovation, competition, and consumer protection will depend not only on legislative reforms but also on cultural change, market coordination, and public trust. For Italy to fully harness the transformative potential of data-driven finance, it must move from regulatory compliance toward strategic leadership—guided by clarity, inclusion, and resilience at every level of the OB ecosystem.

Concluding Remarks

The development and implementation of OB represent one of the most ambitious phenomenon in the evolution of digital finance. At the heart of this transformation lies a complex balancing act between competition and stability, innovation and regulation, openness and protection. This thesis has critically examined the regulatory trade-offs inherent in OB, with a specific focus on the implementation of the PSD2 in Italy, contextualised within a broader international framework.

Through a multi-method approach combining comparative regulatory analysis, quantitative market indicators, and qualitative stakeholder insights, this research has shed light on both the promises and the limitations of OB in practice. While the European legislative framework has been instrumental in mandating access and catalyzing technical progress, its practical implementation has encountered persistent frictions. Chief among these are fragmented APIs, high compliance costs for new entrants, ambiguous liability frameworks, and a digital culture still marked by low financial literacy and limited consumer trust.

The empirical findings about the Italian scenario reveal a striking asymmetry: formal compliance with PSD2 has not yet translated into meaningful adoption or transformative innovation. Italy's OB ecosystem remains structurally constrained, with incumbents maintaining considerable market power and fintechs facing disproportionate entry barriers. Although the volume of API traffic has grown exponentially, end-user adoption and consumer engagement remain markedly low. This divergence suggests that the mere existence of infrastructure is not sufficient to generate competitive or innovative outcomes—what is required is a system-level recalibration that aligns legal obligations, technological capacity, and user-centric design.

From a policy standpoint, the Italian case offers critical lessons. First, robust legal mandates alone do not ensure successful implementation; enforcement, standardization, and coordinated governance are equally essential. Second, regulatory frameworks must evolve from static compliance checklists to dynamic, iterative governance models—capable of addressing emerging challenges such as algorithmic bias, cybersecurity risks, and data asymmetries. Third, without meaningful consumer empowerment—grounded in education, transparency, and trust—the full benefits of OB will remain unrealized.

At the same time, this thesis highlights the substantial potential of OB if implemented thoughtfully. The experiences of jurisdictions such as the UK and Brazil demonstrate that when regulators combine clear technical standards, strong institutional coordination, and targeted support for innovation, OB can drive financial inclusion, foster healthy competition, and spark a wave of data-driven services tailored to diverse user needs. Italy's path forward must draw from these successes while addressing its unique market and regulatory conditions.

Looking ahead, the transition toward Open Finance will further magnify the need for coherent, forward-looking regulation. Policymakers must prepare for this expansion by anticipating new forms of risk and recalibrating existing protections, all while preserving space for experimentation and growth. Strategic convergence between national reforms and EU-wide initiatives, such as PSD3 and the Digital Finance Strategy, will be critical in ensuring Italy's competitiveness and inclusivity in the digital financial era.

This thesis contributes to the growing body of literature on regulatory innovation in financial services by providing a focused, empirically grounded analysis of PSD2's impact in Italy. It underscores the importance of regulatory design not only as a constraint or enabler but as a strategic instrument—capable of shaping market structure, guiding innovation, and securing the rights of consumers in an increasingly complex data economy. As the boundaries between technology, finance, and regulation continue to blur, the need for thoughtful, adaptive, and inclusive governance becomes not only desirable but imperative.

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Appendix: Survey questions

Thematic Cluster 1: Regulatory Clarity

- *How would you rate the clarity of PSD2 implementation in Italy?*
  (Very clear – Somewhat clear – Neutral – Somewhat unclear – Very unclear)
- *Do you believe that supervisory roles (e.g., Banca d'Italia, OAM) are clearly defined and coordinated?*
  (Yes/No + Optional comment)

Thematic Cluster 2: API Reliability and Performance

- *How would you evaluate the performance of PSD2-compliant APIs in Italy in terms of latency and uptime?*
  (Excellent – Good – Fair – Poor – Very poor)
- *To what extent do you consider API fragmentation an obstacle in the Italian OB ecosystem?*
  (Not at all – Slightly – Moderately – Significantly – Extremely)

Thematic Cluster 3: Market Accessibility for TPPs

- *How difficult is the onboarding process for a new TPP in Italy?*
  (Very easy – Easy – Neutral – Difficult – Very difficult)
- *Please rank the following barriers to market entry in Italy:*
  (Compliance costs, Regulatory ambiguity, API inconsistency, Consumer demand, Authorization delays)

Thematic Cluster 4: Consumer Trust and Adoption

- *In your opinion, what level of trust do Italian consumers have in OB services?*
  (High – Moderate – Low – Very low)
- *Which of the following do you consider the main cause of low consumer adoption?*
  (Lack of awareness – Privacy concerns – Poor UX – Limited value proposition – Regulatory confusion)

Thematic Cluster 5: Innovation and Ecosystem Development

- *Has PSD2 enabled meaningful innovation in your area of work?*
  (Yes – No – Not yet, but expected)
- *Which OB-related innovations are currently most impactful in Italy?*
  (Account aggregation – Alternative credit scoring – B2B payments – Others: specify)
- *What institutional reforms would most improve Italy's OB ecosystem?*
  (Rank: National OB coordination body – Fee reduction – API sandbox – Consumer education campaign – Harmonized interpretation across regulators)