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Open banking in Europe: The impact of the Revised Payments Services Directive on Solarisbank and Insha

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31 October 2021

Online at <https://mpra.ub.uni-muenchen.de/110763/>
MPRA Paper No. 110763, posted 05 Dec 2022 14:46 UTC

Open Banking from EU's Payment Services Directive to Practice: The Cases of Solarisbank and Insha

Abstract

Rapid developments and the adoption of financial technologies (Fintech) lead to radical changes in the delivery of financial services, including enabling fast payment systems. The recent Covid-19 pandemic catalyzed these processes, while Open Banking supports their further advancement. The concept of Open Banking is gaining global recognition for integrating innovative financial service providers into the sustainable financial ecosystem. This paper discusses Open Banking, including its core building blocks, prospects, and challenges. Given the European Union's pioneering role in adopting Open Banking regulations, the paper also reviews the revised Payment Services Directive (PSD2) and its role in advancing the European fast payment systems. Furthermore, the paper analyzes the practical implications of the PSD2 in Germany by reviewing the examples of the banking-as-a-service platform and the Islamic digital bank, Solarisbank and Insha, respectively. Finally, the paper sheds light on the benefits of Open Banking for ecosystem stakeholders, including fast payment system providers, and what they can derive from the introduction of Open Banking regulations.

Keywords: Open Banking, PSD2, Fintechs, Payment Services, Insha, Solarisbank,
JEL codes: G19; E49 O35, P16, Q01

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1. Introduction

The global payment outlook has experienced significant disturbances and changes in the last decade. The proliferation of technology in financial services, including payment systems, is powered by such newcomers as mobile applications, internet banking, and financial technology firms (Fintechs). The current payment systems have already become faster, cheaper, and more convenient. Furthermore, the outbreak of Covid-19 catalyzed new ways of transacting payments. According to McKinsey & Company, the pandemic and following lockdowns have led to disruption in retail spending. The revenues of payment system providers contracted by a staggering 22 percent during the first six months of 2020¹. At the same time, the growth of online businesses and restrictions in cash payments facilitated the rapid development of digital financial technologies, including innovations in fast payment and remittance services. According to Forbes², Amazon's annual revenue grew by 38 percent in 2020, acknowledging the growing demand for mobile payments and digital money transfers. Such demand dictates faster and more affordable payment systems, leading to the rapid advancement of fast payments. According to the Bank of International Settlements (BIS)³, fast payments are defined by the two main characteristics: instant or almost instant transmission of the funds and continuous, uninterrupted delivery of such services. Other elements may include utilizing such features as QR codes and new services such as request-to-pay⁴.

Similarly, traditional payment service providers – banks – are being disrupted by the Fintechs. Despite being an active market player, since the financial crisis of 2008, the real growth of Fintechs has accelerated since 2017⁵. The outbreak of Covid-19 galvanized the second wave of Fintech development⁶. Matthew Blake, Head of Financial and Monetary Systems for the World Economic Forum, stated that the resilience of Fintechs to the pandemic and their adaptability to the new reality could further prove their capability to disrupt the incumbent financial system⁷. According to Deloitte⁸, the revenue of the global Fintechs has reached EUR 92 billion in 2018, and the number is predicted to grow to EUR 188 billion by 2024. The Basel Committee on Banking Supervision (BCBS), as mentioned in Thakor⁹, defines payments, clearing, and settlement services as the most significant segments of Fintech start-ups. Mobile wallets, digital currencies, and peer-to-peer transfers create a new customer experience and disrupt the traditional delivery of payments and remittances. Such simplified and practical application of the payment systems is crucial to reducing poverty, boosting economic growth, and achieving the UN's Sustainable Development Goals¹⁰. However, while Fintechs have generally succeeded in spreading innovation and delivering financial services, they are still in a nascent phase and have failed to create a new financial ecosystem and infrastructure¹¹. Moreover, customers still demonstrate a slow transition away from incumbents.

The concept of Open Banking aims to further advance Fintechs by creating a financial ecosystem that benefits both customers and financial service providers. Open Banking is defined as the concept that *“enables personal customers and small businesses to share their data securely with*

other banks and with third parties, allowing them to compare products based on their requirements and to manage their accounts without having to use their bank”¹².

This paper discusses the theoretical aspects of the concept of Open Banking and its practical application in Europe. To define the importance of Open Banking as a new ecosystem for advancement of Fintechs offering fast payments, this paper analyzes examples of key stakeholders of Open Banking ecosystem, including the regulator, platform owner, and third-party provider (TPP). In doing so, this paper employs the case study methodology by reviewing the revised payment services directive (PSD2) regulation as well as two German financial ecosystem stakeholders - the Solarisbank and Insha, as the beneficiaries of the PSD2. The case studies presented in the paper used as an argument that the introduction of Open Banking regulation benefits development of the fast payments.

This paper is comprised of six sections. Section 2 defines the concept of Open Banking, including open APIs, a description of Open Banking, its building blocks, benefits, and challenges. The EU directive to facilitate the adoption of the Open Banking (PSD2) is described in section 3. The illustrative example of the banking platform is presented in Section 4 through the case of Solarisbank. Section 5 introduces the case of Insha as an example of an Islamic financial institution delivering fast payments and remittance services enabled through the Open Banking regulations. The final section concludes the paper.

2. Concept of Open Banking

A discussion of the concept of Open Banking requires an understanding of the notion of - Application Programming Interfaces (APIs). *“APIs enable communication between software applications where one application calls upon the functionality of another application”¹³.* Modularity and interoperability are the critical defining features of the API system. Zachariadis & Ozcan¹⁴ describe API as an interface that uses standardized data protocols to interoperate the software systems. Interoperability between modular blocks of the interface allows different users to plug in without specific knowledge of the API-provider’s system. In addition, APIs enable fast and inexpensive ways to transmit and exchange data between different platforms, promoting innovation and technological progress. Most digital ecosystems are developed using open API platforms.

Opening APIs and introducing new payment regulations brought the banking industry to the verge of disruption and provided new opportunities for financial institutions to create platform ecosystems. Traditionally, the banking industry is a heavily regulated sector with relatively slow innovation in value creation. However, the Fourth Industrial Revolution became a catalyst for drastic changes in value creation within many sectors, including financial services. For example, open APIs are commonly used by the payment service providers, such as Visa, MasterCard, PayPal, Fidor, and Insha.

It is expected that the introduction of Open Banking will lead to more innovation and, possibly, disruption within the financial services sector. The concept of Open Banking is defined as the process by which *“banks share their products (i.e., services, functionality, and data) and how*

they enable their customers to share their data and account functionality with third-party applications in a secure and resilient fashion”¹⁵.

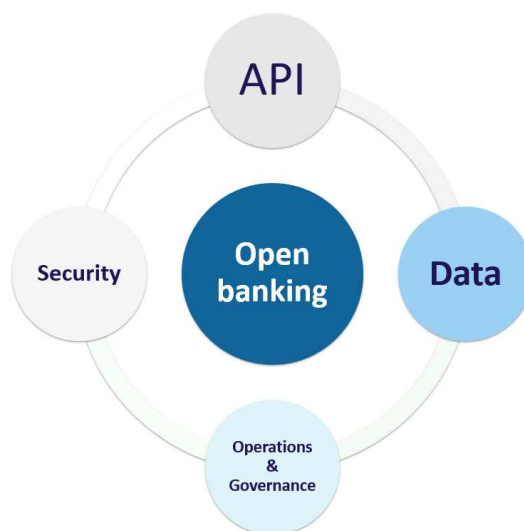


Figure 1: Building blocks of Open Banking system

Source: Adapted from (Premchand & Choudhry¹⁶)

According to Premchand & Choudhry¹⁶, Open Banking is based on the following building blocks:

1. *API* is at the core of the Open Banking system. The banks design, develop, and maintain APIs and their software and open them to the TPPs or join other organizations' existing platforms.
2. *Data* is the primary resource of the Open Banking platform. The customers own their financial data, mainly payment account information, and share it with TPPs within the platform.
3. *Security* is an integral part of any financial system, including Open Banking. Security measures should ensure proper data authentication, safe access to and appropriate usage of available information. In addition, the platform owner provides its users with an assurance to maintain specific standards of privacy and possible consumption of obtained data.
4. The banking platforms are often described as an ecosystem where the banks coexist with their partners within a new sharing platform, information, and clients. Hence, *the ecosystem's operation and governance* are among the main tasks of any Open Banking provider.

The benefits of adopting Open Banking include enabling new opportunities for customers and providing new value creation channels for financial services institutions, including payment providers. Furthermore, Open Banking offers additional benefits:

First, Open Banking allows new sustainable customer-oriented ecosystems where Fintechs and incumbents can cooperate. Moreover, Open Banking enables direct payment services without intermediaries to assure faster, safer, and more affordable transactions. The active engagement of Fintechs allows customers to conduct multiple transactions simultaneously and at a lower cost.

Second, the aggregation of all information in a single screen allows customers to monitor and manage their bank accounts, payables and receivables, and credit cards issued by different banks and financial institutions. This feature of the Open Banking platform allows customers to play a proactive role in managing their data and resources. Moreover, the Open Banking platform offers users an opportunity to view the list of all possible products and services administered by different providers. As a result, customers can choose the most suitable product or service. Furthermore, customers can easily switch between platforms to enhance their experience and choose the best value proposition, which, in turn, should increase the industry's competitiveness and promote further innovation and better services.

Third, Open Banking allows financial institutions and TPPs easier access to consumer data, reducing transaction costs and time. Moreover, information shared with TPPs enables the development and promotion of new innovative services for customers.

Fourth, Open Banking allows for the swift development and implementation of innovative products due to the active participation of TPPs. On the other hand, banks can share their products on other platforms to expand their customer base. Standardized distribution models allow the simultaneous distribution of different products across multiple platforms.

Risk mitigation is another benefit of Open Banking when distribution and security standardization create a safe and stable banking ecosystem. Some risks can be shared by banks and TPPs.

Given these benefits and new opportunities for value creation and increasing competition we can expect more incumbent banks to adopt new business models relying on Open Banking. However, entering and accepting an open platform ecosystem can be a critical challenge to banking practitioners.

2.1. Open Banking challenges and potential solutions

Challenge 1: Bank-customer relationship.

New business models require new types of relationships between banks and their customers. The accessibility of financial products and services, and the easy switch between platforms, offer a new kind of challenge to the incumbent banks who might struggle to attract and retain customers. Effective development and distribution of financial products and services through the banking platform can help address this challenge. To maximize enhance the customer experience, banks are required to build a clear understanding of their needs. TPPs can support banks in conducting customer analysis and to provide additional services.

The openness of the banking platform to third parties raises concerns over the platform's image and reputation, which in turn might affect customers' choices. In most cases, banks must

guarantee the quality of external services provided on their platform, similar to Apple's guarantee of the quality of content available through its iTunes platform¹⁷. In addition, customer loyalty might also depend on how the banks deal with security within the platform.

Finally, non-banking platforms that offer banking services can lure banks' customers. For example, Facebook started delivering fast payment services among the US-based users of its Messenger app; and, Amazon introduced micro-lending to the SMEs on its website. Therefore, banks must alter their strategies in the face of emerging competition.

Challenge 2: Customer familiarization and education.

While Open Banking is new to the incumbent financial institutions, it is also new for customers. Therefore, customers need to learn the benefits of open platforms and new opportunities to enhance their experience. Moreover, customers need to be educated on how the new system operates and how it uses customer data to better control their information.

Challenge 3: Managing the platform.

Open Banking platforms assume the participation of multiple stakeholders; thus, banks should manage all participants as the platform owners. The banks need to decide which TPPs will complement their services and provide the best customer experience. At the same time, banks should be able to maintain healthy competition within the platform.

The issue of branding can be a challenge within the platforms with multiple participants. In addition, technological challenges associated with creating and maintaining new software and APIs can exacerbate operational issues. The traditional organizational structures of incumbent banks might require considerable restructuring to accommodate new roles and functions if such challenges are to be mitigated.

Challenge 4: Security.

The issue of security has always been crucial in the banking industry. With an active exchange of sensitive data among different stakeholders, Open Banking raises security issues to the next level. The TPPs' access to customers' financial data increases the chances of fraud and misuse, including such illegal activities as blackmailing or identity theft. Clarification of data ownership and responsibility for transaction security are among the new security-related challenges of Open Banking. The European Open Banking regulation introduced the Strong Customer Authentication (SCA) process to tackle these issues, described below. The main goal of the SCA is the reduction in online payments fraud.

Research conducted by Forbes demonstrates that cyber-security and data privacy are among the main concerns of customers about Open Banking¹⁸. The data-management questions, navigation within the system, and utilization of obtained data require special attention from the banks and regulators. Privacy concerns and illicit use of customer data are at the forefront of discussion about many open APIs, including non-banking platforms like Facebook. Improved digital versions of KYC (Know Your Customer) procedures and active employment of AI (Artificial

Intelligence) can be effective tools in fighting and predicting digital frauds. In addition, active sharing of security-related information and intelligence collaboration may help in providing stronger cyber-security.

Despite these challenges of Open Banking, the opening of banks' APIs is in progress. The modern market environment requires the creation of new customer-oriented financial ecosystems. According to the recent Deloitte's report, the European banks could not reach the levels of financial returns experienced before the 2008 global financial crisis¹⁹. While the rapid expansion of Fintechs can be part of the problem, their advancement can also assist with better value creation and broadening of the customer base. Meanwhile, customers and small businesses are slowly altering their attitudes towards banking services and changing their preferences in favor of enhanced financial services offered by Fintechs²⁰. Moreover, the concentration of Fintechs on convenience, cost, and speed of delivering financial services can improve incumbents' performance if formers are effectively integrated into the latter's environment. Thus, Open Banking can be an efficient way of integrating new entrants through creating a financial ecosystem.

Open Banking initiatives can be either market- or regulatory-driven. USA, Japan, and India offer examples of market-driven initiatives where the banks open their APIs to the TPPs without regulatory pressure. In these countries, policymakers have introduced certain policies to encourage Open Banking and sharing of consumers' data²¹. However, such policies are typically non-binding and represent recommendations for banks to open their APIs voluntarily. In the US, for example, the major banks have contractual agreements with TPPs to create an open APIs environment. However, such arrangements can be costly and inefficient for TPPs.

The regulatory-driven approach is adopted in the EU and Australia, Hong Kong, and the UK. The UK and EU are believed to be pioneers in the adoption of Open Banking regulations. Thus, the next chapter examines the main milestones and points of Open Banking regulation in the EU.

3. From SEPA to PSD2

The EU is one of the pioneering jurisdictions in the regulatory-driven adoption of fast payments or "instant payments." To regulate and support the advancement of payment solutions in the EU, the European Commission launched several pieces of legislation. However, the most celebrated initiative is "to harmonize the European payment system," known as SEPA – Single Euro Payment Area²². The initiative was launched in 1999 with the introduction of the single currency in 11 EU member countries. Currently, 36 countries and territories have joined the SEPA scheme and are conducting 146 billion electronic payment transactions per year²³.

The introduction of a single currency was a significant step towards creating more accessible and cost-effective instant payment systems. Other important milestones of the SEPA scheme include adopting a regulation on cross-border payments in 2001 and developing the SEPA Credit Transfer (SCT) and SEPA Direct Debit (SDD) schemes in 2002. These latter schemes provide instant payment funds in less than 10 seconds, with services available 24 hours a day and seven days a week²⁴.

According to Polasik *et al.*²⁵, the regulation of the EU payment area started in 2000 with the introduction of the Electronic Money Directive (repealed by the Electronic Money Directive II in 2009). In 2007, the European Parliament and the Council of the EU adopted the Payment Services Directive (PSD), which had the main goal of introducing electronic payment standards and regulations. In June 2015, following the increasing popularity of fast payments, the European Payments Council (EPC) introduced the SEPA Instant Credit Transfer Scheme (SCT Inst scheme). Currently, Europe is discussing the possibility of enforcing all payments providers to adopt the SCT Inst scheme²⁶.

Furthermore, the European Central Bank (ECB) launched the TARGET (Trans-European Automated Real-time Gross Settlement Express Transfer System), followed by TARGET2, Instant Payment Settlement (TIPS) service to provide instant payments. TIPS and the advancement of digital payment systems allow instant money transfers across the continent²⁷. Finally, the revised Payment Service Directive (PSD2) was adopted by EU member-states in 2018²⁸.

The PSD2 is regarded as being among the best practices of regulatory-driven initiatives to foster and accelerate the adoption of the Open Banking ecosystem²⁹. PSD2 introduced several innovations into the regulation of payment systems. However, the main feature of the new directive is the inclusion of TPPs in the law, defining their rights and obligations³⁰.

PSD2 defined the following two main types of TPPs:

1. Payment Initiation Service Providers (PISP). To facilitate enhanced online services, PSD2 allows any PISP to offer payment initiation service. According to the new payment directive, if the customer gives a PISP permission to conduct the payment, banks must allow access to their APIs free of charge and immediately provide the information to initiate the payment³¹. In addition, such initiation of the payment does not require any contractual relationship between PISP and the bank. At the same time, the PISP has no rights to save such data for later usage, requesting only the data for the corresponding payment. Moreover, the categories of PISPs are defined by the legislation and have to obtain certain authorization³².
2. Account Information Service Providers (AISP). PSD2 allows for the aggregation of customer data from multiple accounts in different banks or other financial entities in a single screen. Thus, with the customer's consent, AISPs are granted access to the accounts in various financial institutions. However, AISPs cannot store such information per General Data Protection Regulation (GDPR) guidelines³³.

McKinsey & Company³⁴ grouped PSD2 into three pillars:

- Pillar 1 defines transparency in banking reporting, customers' rights, and pricing. The directive's scope includes all transactions with at least one party located within the European Economic Area.
- Pillar 2 outlines the security requirements, including Strong Customer Authentication (SCA). The new procedure requires using two authentication factors for bank operations,

payments and access to accounts online or via the apps, and a stricter definition of the authentication factor.

- Pillar 3 concerns the technological standards which allow TPP access to the customer accounts.

Accordingly, PSD2 promotes competition and facilitates effortless entry of new financial market players. Furthermore, such regulations aim to facilitate more efficient payment systems, promote innovation in the financial services sector, and improve the customer experience.

However, access to the customer's account information allows TPPs to use such data for their own purposes, such as personalized marketing³⁵. For example, access to customer data can facilitate the concentration of individual data by the big tech companies³⁶. Such data, coupled with the information gathered through social media, may allow big tech companies to have a complete picture of each customer and become a powerful tool for public manipulation.

Thus, while enhancing customer experience through the facilitation of fast payments, the implementation of PSD2 raises additional questions of security and data protection. To prevent insecure payment transactions, a bank has a right to deny access to a customer account in case of suspicion of unauthorized access or fraud. The customer should be immediately informed of such denial, and details should be reported to the competent authority³⁷.

The personal data security and privacy issues are protected by the SCA for payment initiation as well as account information services, as mentioned in the second PSD2 pillar. The SCA assumes personalized security credentials based on the customer's knowledge (something exclusively known by the customer), possession (something owned by the customer), and inherence (something the customer is). To enable new authentication processes, the latest 3D Secure 2.1 standard industry protocol was put into action. This protocol provides a user-friendly payment process on mobile devices and complements digital wallets³⁸.

To further enhance the payment system, the EU Commission plans to implement the ISO20022 standard across the EU countries by the end of 2022. Moreover, the SWIFT Global Payments Innovation application for the international payments and adoption of the European TARGET2 system by non-EU countries may advance the interoperability between clearing systems and improve fast payments and remittances³⁹.

As can be seen from the above discussion, introduction of Open Banking regulation in EU facilitates development of fast payment system. To illustrate this contention, the paper now turns to an analysis of two examples of the implementation of Open Banking regulation in Germany.

3. The Case of Solarisbank – European banking platform

Solarisbank AG is a Germany-based banking-as-a-service (BaaS) platform. It launched operations in Berlin in 2016 as a technology company with a full banking license issued by the German Federal Financial Supervisory Authority (BaFin). Its services include digital bank

accounts and payment cards, identification, lending services, and various services provided by integrated TPP.

The modular structure of Solarisbank allows TPPs to be onboarded on the specific module depending on their functionality. As of June 2020, more than 70 companies were onboarded on the Solaris platform. These companies offered such services as digital banking, trading platform, used car marketplace, and cryptocurrency trading platforms.

The revenue model of Solarisbank is based on fees for pay-to-use APIs, interchange fees on card transactions, and loans interests revenue sharing. Solarisbank employs over 400 employees from 60 countries and generated EURO 15.5 million in revenues in 2019⁴⁰. By the end of 2020, the number of Solarisbank's end customers exceeded 750 thousand.

Solarisbank grows while attracting more TPPs to its platform. Such growth has resulted in a fast-scaling of Solarisbank's end-customers base. As a result, Solarisbank became the first German bank to transfer its core banking systems, databases, and digital products to Amazon Web Services (AWS)⁴¹. Migration to the cloud allows for:

- accommodation of the growing customer bases;
- enhanced security and reliability due to AWS guarantee of smooth introduction and operation of innovative products at a scale;
- further expansion of Solarisbank to other European countries, such as France, Italy, and Spain⁴².

The diverse range of Solarisbank's APIs allows the TPPs to create tailored banking experiences for customers. For example, the Solarisbank platform supports various fast payment methods, such as Single Euro Payment Area (SEPA) Credit Transfers and SEPA Direct Debits. Furthermore, Solarisbank introduced a new digital Know Your Customer (KYC) method called BankIdent, which was developed under PSD2 SCA requirements to provide effortless onboarding of customers.

Kontist, Penta, Tomorrow, and Insha are a few examples of digital banks that offer their services through Solarisbank's platform. The digital banks build their payment services using Solarisbank's account infrastructure. Hence the platform's payment APIs handle PSD2 compliant payments for platform users. Single settlement account integrates all funds of the users from multiple payment and service providers. Open APIs allow forwarding a single account to multiple players and vice versa, multiple transactions to a single payee. Payments are wired via SEPA Credit transfers, as mentioned earlier. Moreover, an API-based pooling account allows for the easy management of customer's funds.

4. The Case of Insha – European Shariah-compliant digital provider of financial services

Insha – the first European Sharia-compliant digital bank– was founded in Germany in 2018 and launched its operations in 2019⁴³.

Initially, Insha was positioned as an Islamic financial services provider, meaning that its operations are compliant with Shariah principles. This allowed Insha to attract the segment of previously unbanked customers, which proves that Open Banking allows for broader financial inclusion of customers who had been overlooked by the incumbents.

Generally, the application of Shariah in banking is based on the following key principles:

- The prohibition of charging or paying interest on loans. The loan should be based either on a profit-and-loss sharing partnership/joint venture or a leasing agreement.
- The prohibition of investing in certain activities involving alcohol, pork, gambling, pornography.
- The prohibition of excessive uncertainty⁴⁴.

Moreover, Insha does not charge the fees for opening and maintaining regular accounts. The company invests only in moral and ethical businesses. Insha's banking application allows easy donations to the organizations of customers' choice. Built-in AI automatically sorts all expenses made using the Insha application into different categories and permits customers to monitor the structure of their expenses. The most popular service provided by Insha is money transfer. Currently, Insha allows its customers to transfer money to and from 28 countries using SEPA Credit Transfers and SEPA Direct Debits.

Currently, Insha operates under the license of Solarisbank. Open Banking regulation allowed Insha to "plugin" into Solarisbank's platform and provide Sharia-complaint products. Insha's financial resources are distinct from Solarisbank as defined in their contractual agreement. Solarisbank can share its customers' banking data with Insha, while Insha broadens the pool of offered services to the clients of Solarisbank. The Open Banking regulation granted Insha easy access to the market without bearing heavy regulatory and technology expenses associated with obtaining a full banking license and launching digital financial services.

As discussed earlier and facilitated by Solarisbank, the Open Banking procedures allow Insha to open a new customer's account in 8 minutes. In addition, Insha's European expansion plans are based on principles of open APIs. For example, if and when expanding to the UK, Insha will be able to "plugin" its APIs to a licensed UK bank's open platform to offer its services. Open Banking also allows Insha to offer services of other TPP in its platform. For example, Insha is planning to provide its customers with gold trade facilities developed by AlBaraka Turk Participation Bank. Currently, Insha's services are offered to retail customers. However, the company plans to expand its services to offer business banking solutions developed by Insha Ventures – Insha's parent company. The Open Banking ecosystem also allows Insha to offer account aggregation services where customers can combine their multiple financial accounts in a single platform. This service enhances customer experience and helps customers to manage their finances more efficiently.

The case study illustrates the benefits of the BaaS platform for emerging Fintechs, such as Insha. The market entrance of Insha was relatively fast and inexpensive, firstly, due to the possibility to operate under the license of Solarisbank. Other benefits include easier onboarding of customers, issuing debit and credit cards, faster remittances, and aggregation of financial services on a single screen. Furthermore, the possibility of delivering Shariah complaints or ethical financial services allowed Insha to increase the financial inclusion of certain EU-based customers. Furthermore, the

case study demonstrated that the PSD2 played an essential role in promoting favorable conditions for introducing fast payments. Finally, as shown by the example of Solarisbank, the Open Banking regulation enabled the operation of BaaS platforms that support the development of fast payment services for a broader part of the population through the simplified procedure of onboarding TPPs (such as Insha).

5. Conclusion

The rapid development of technologies and the ongoing shift in consumer preferences catalyzed disruptive innovations in the financial services industry. The payment system plays a central role in the functioning of financial and economic systems. The outbreak of Covid-19 fostered growth in online business transactions and demand for digital financial technologies, which require fast and affordable payment systems. Led by the Fintechs, fast payment services are becoming an important area of interest for the financial ecosystem stakeholders.

As described in this paper, the EU demonstrates strong support for advancing fast payment systems by adopting corresponding regulations. The introduction of the SCT Inst scheme and TIPS facilitated instant money transfer systems across the EU. Moreover, the adoption of PSD2 regulation promoted Open Banking and allowed BaaS platforms to offer more accessible and affordable fast payment services. Subsequently, various Fintechs were enabled to offer fast payment services to their customers. One such Fintech, described in this paper, is Insha which provides payments and other financial services by plugging into Solarisbank's ecosystem. Insha offers an excellent example of a Fintech that leverages Open Banking regulations, allowing it to effortlessly onboard into the BaaS platform and avoid cumbersome licensing procedures.

Implementing fast payment systems can be a complex exercise involving all financial ecosystem stakeholders⁴⁵. However, further advancement of the fast payment systems will also depend on how quickly merchants decide to adopt it. Furthermore, the accessibility of new technologies, the internet, and telecommunication infrastructure will also contribute to fast payment systems. At the same time, as demonstrated in this paper, while EU authorities are actively promoting instant payment regulations, their adoption is voluntary in the member states. Moreover, most large banks are not interested in joining the SCT scheme or implementing PSD2 requirements. Therefore, it is no surprise that such regulations are favored by the TPPs, but not incumbents whose buy-in is crucial to the broader adoption of the fast payment systems. Furthermore, customers are playing an essential role in the advancement of payment systems. Customers' characteristics, habits, and payment preferences can further evolve and help customize fast payment services. Going forward, the regulators may consider the standardization of APIs to improve access of TPPs to the banking platforms, significantly enhancing customer experience and facilitating the development of new financial products.

The outbreak of Covid-19 has shown that digital payments are likely to dominate the payment systems into the future with a broader segment of customers is being pushed away from cash towards digital payment transactions⁴⁶. While cash will not entirely disappear, cashless transactions will continue to gain in popularity. Moreover, extant studies show that customers

who accept digital transactions are reluctant to revert to cash payments. The increasing popularity of QR-code payments and the online presence of retailers and financial service providers are expected to further expand the scope for digital payments, including fast payments. Nevertheless, further development and adoption of fast payment systems may be facilitated through the following :

- The promotion and introduction of Open Banking regulation and principles can catalyze and support the introduction of and broaden the application of fast payments.
- The expansion of fast payments depends on the availability of advanced payment platforms. Thus, retailers and financial service providers would require substantial investments in new technologies and payment infrastructure.
- Furthermore, policymakers may introduce the incentives to promote the adoption of the Open Banking by incumbents.
- Regulators and incumbents should work together to standardize APIs to promote Open Banking and fast payments.
- Finally, the advancement of fast payments and the successful application of Open Banking require more profound emphasis on customers. Such emphasis includes appropriate awareness programs to educate customers as well as additional research about customer behavior and preferences.

Academia should play an essential role in developing the new financial ecosystem of Open Banking, including fast payment systems. Hence, more research should be pursued in the areas of adopting new regulations and understanding the challenges of transitioning to the new value creation methods. Further areas for future research may include studying customer acceptance of the new ways of delivering financial services and managing their private data. Another potential area for future research may explore standardization of regulations and payment settlement platforms to facilitate the proliferation of fast payment systems.

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Futher readings

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