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The Evolving Interdependencies between Banks and Fintechs within Open Banking Platforms

Completed Research Paper

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Abstract

The enactment of the revised Payment Services Directive (PSD2) by the European Union, has pushed banks to develop digital open banking platforms to enhance market competition and promote innovation in the banking industry. PSD2 mandates banks to offer APIs to provide access to banking data to external third-party providers (TPPs). This mandate might disrupt the role of banks since external complementors such as fintechs have the legal right to access and leverage banking data to offer innovative banking services. As such, the emergence of regulated open banking platforms engenders complex interdependent relationships between banks and fintechs. Drawing on a case of an open banking platform by Nordea Bank, we aim to examine these interdependencies with emphasis on the engagement between banks and external complementors in a regulated platform context. We conclude with insights into the lack of access control by platform owners and new conditions of platform openness.

Keywords: Open banking, PSD2, Compliance, Digital Platforms

Introduction

Digital platforms are beacons of digital transformation nowadays. From modularizing the architecture of traditional digital infrastructures into enabling novel forms of distributed innovation and bringing together generative actors (Staub et al., 2022; de Reuver et al, 2018), digital platforms have become a symbol of modern organizational forms in the digital age (Gawer, 2022). Platformization has become a trend in modern organizations as firms seek organizational arrangements focused on developing digital platforms where diverse actors use digital resources for the mutual co-creation of value. Digital platforms are therefore pervasive in several industries including automotive, banking, and entertainment (Staub et al. 2022; de Reuver et al., 2018; Constantinides et al., 2018).

Within the banking sector, the enactment of novel regulations such as the Payment Service Directive (PSD2) by the European Union (EU) and the CMA Order by the UK compelled banks to develop digital platforms to provide access to customer banking data by licensed third-party providers (TPPs) (Farrow, 2020). These platforms are referred to as open banking platforms which are digital platforms that use boundary resources in the form of open Application Program Interfaces (open APIs) to facilitate accessibility to customer payment accounts including account information, account transaction history, and payment initiation (Farrow, 2020). The enactment of PSD2 can be seen as a “regulate to innovate” opportunity where the aim is to encourage collaborative competition and innovation in the banking industry by allowing fintechs and

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financial startups to leverage data and provide customer-centered innovative financial solutions (Ozcan & Zachariadis, 2021; Cortet et al., 2016). One of the core principles of open banking is that customers both own and control their banking data (He et al., 2023). This means that customers have the right to benefit from their data through getting customized solutions and services from complementors as well as have a say in how and with whom to share their data. Bank customers for instance are offered the opportunity to interact not only with banks when performing financial transactions such as applying for a loan, but also with TPPs (e.g., fintechs like LendingClub and Klarna) who can provide as well as execute a variety of banking services through service applications enabled by APIs in open banking platforms. The traditional 'bank as a gatekeeper' role with exclusive access and control over customer data may therefore be in a state of transformation given that banks are mandated by law to provide access to customer banking data by external complementors (He et al., 2023; Ozcan & Zachariadis, 2021; Brodsky & Oaks, 2018).

While open banking regulations aim at encouraging innovation and bringing new non-bank entrants to move the stagnant innovation atmosphere in the banking industry (Gozman et al., 2018; Brodsky & Oaks, 2017), Ozcan & Zachariadis (2021) argue that difficulties in gaining access to focal customer data (e.g., mortgage data), opening up to all kinds of new entrants (e.g., banks open up to fintechs with no direct competition with them), and attracting customers by these entrants may introduce new competition dynamics that might be focused on shifting monopolistic power from incumbent banks to cross-sector large platforms (e.g., large fintechs or tech companies like Apple and Amazon. For instance, Ozcan & Zachariadis (2021), discuss how the datafication of payments by non-bank third parties is already seen as an emerging threat for incumbent banks. In the same vein, He et al. (2023) argue that even though banks still control rich data transactions, opening to potential fintech challengers is viewed as more of a threat than an opportunity since banks will have to reconsider their service offerings and banking products.

The potential emergence of such novel conditions of competition can be characterized by the transition of incumbent banks from a traditional value chain model into a platform design, and newly born entrants seeking to disrupt an industry (Grover & Lyytinen, 2022). In a highly-regulated, data sensitive context, banks as platform owners might face a wicked problem of maintaining compliance through continuous technical development (API offerings) as they seek to create, and perhaps co-create value with others, while fintechs pursue to exploit regulations as well as service innovation to compete, or engage, with incumbent banks in offering diversified banking services. In this context, we observe several characteristics that distinguish open banking platforms from classic commercial platforms such as Apple's iOS and Google's Android including regulatory drivers and legal liabilities shaping platform transactions, regulated open access to data, empowered customers to own and control their data, and the emergence of novel forms and conditions of competition and value co-creation. As such, the premise in this paper is that open banking platforms represent a novel form of a regulated platform environment engendering a complex relationship among banks, customers, regulators and complementors. We therefore aim to investigate and explore this relationship by understanding the interdependencies between banks and fintechs in the context of open banking platforms. It is no surprise that there is a lack of knowledge on these platforms given their recent development, but generally, this is an opportunity to contribute into the extant digital platform literature within Information Systems (IS) by investigating the relationship between platform owners and complementors where more research is needed (Staub et al., 2022). Gleiss et al. (2023) also recently argued that there are only a few contributions on digital platform regulation in IS which makes the study of open banking platforms essential to develop knowledge contributions on digital platforms in a regulated context. To address these issues, we seek to answer the following question: How owners of digital banking platforms engage with external complementors in a regulated context? Our research is based on an empirical investigation of the open banking platform offered by Nordea Bank, the largest financial services group in the Nordics. This includes both conducting qualitative interviews and collecting secondary data about Nordea's platform and actions taken towards PSD2 compliance.

The paper is organized as follows: the next section offers a theoretical foundation of boundary resources and digital platforms. This is followed by a discussion which conceptualizes open banking and the interdependencies between banks and fintechs in open digital platforms. Then, an outline of the empirical process is presented including the methods used and the empirical setting. The empirical findings are then described. Afterwards, a conceptualization of the interdependencies between banks and fintechs is developed and presented in the discussion section. The paper is finally concluded by summarizing key issues and suggesting implications for research and practice in the conclusions section.

Related Literature and Conceptual Basis

Boundary Resources and Digital Platforms

Boundary resources in the form of APIs (Applications Programming Interfaces) are a set of source code-based specifications and rules that allow communication across different software interfaces using an agreed-upon protocol which provides a set of input and output operations (Ünsal, 2020). Generally, in digital platforms, platform owners decide on who can access the platform via boundary resources (openness to access) and what resources to access (openness to resources) (Broekhuizen et al., 2021; Karhu et al., 2018). The platform owner is responsible for protecting users' personal data and TPPs are not supposed to have access to such data. An open banking platform is one type of digital platforms. In these platforms, the owner opens up to TPPs and grant them access via API resources to stimulate generative third-party development by external complementors. Still, there is a major difference when it comes to openness to access to both data and resources compared with other platforms. In open banking platforms, the bank as a platform owner is required by law to open up sources of customer banking data to licensed TPPs or access to accounts commonly known as XS2A (Gozman et al., 2018; Brodsky & Oaks, 2017). The limited access control platform owners and the openness to access data may have implications to existing understandings of openness in current digital platform literature, in the sense of how complementors access platforms and their resources, within a regulated digital platform context. For instance, since banks are required to comply with PSD2, TPPs face less, even no, barriers to access platform resources as they are entitled to get “*open and non-discriminatory*” access to customer data (Cortet et al., 2016). This creates competitive pressure on banks which are subject to strict regulatory requirements in terms of protecting data privacy and security, attracting TPPs, and creating new sources of value such as monetizing open APIs.

Open Banking, Banks and Fintechs

Despite their domination of global finance, banks are often seen as slow innovators, and financial innovation is mostly attributed to non-bank entities such as tech giants, fintechs, and mobile network operators (Cortet et al., 2016). The enactment of the revised Payment Services Directive 2 (PSD2) by EU regulators aimed at addressing the limited action by banks to leverage innovative technologies and promote competition and innovation by non-bank third-party providers (TPPs) (He et al., 2023; Ozcan & Zachariadis, 2021; Cortet et al., 2016). PSD2 is an EU directive that is primarily enacted to create a new banking marketplace enabled by digital technologies for enhancing competition and driving customer-centered innovation (He et al., 2023; Ozcan & Zachariadis, 2021; Farrow, 2020; Cortet et al., 2016). The directive mandates banks to provide and facilitate access to customers banking data to licensed TPPs or complementors, including banks, fintech organizations, and tech companies. APIs are software tools used to enable such data accessibility through digital platforms, called open banking platforms which are developed and offered by banks, where complementors develop innovative applications offering diversified banking services. These regulatory and technological drivers alongside changing customer expectations have given rise to a new banking model or phenomenon often referred to as open banking (Ozcan & Zachariadis, 2021; Farrow, 2020; Gozman et al., 2018; Cortet et al., 2016).

The literature on open banking is still scarce and much of the available literature is published by practitioners (Gozman et al., 2018). Brodsky & Oaks (2017) defined open banking as a collaborative model in which banking data is 'shared' through APIs between two or more unaffiliated parties to deliver enhanced capabilities to the market. APIs are critical components in open banking. There are two main roles for an API (de Souza et al. 2004): the first is the “Contract” role, which is played between the platform owner and TPPs. When such a contract is published, a trust relationship is established between both the API producer and the consumer. The platform owner is responsible to describe the API functionality and pledge that it works as advertised. Therefore, TPPs depend on the owner of the platform to keep their commitment so that they can continue to develop digital services in the form of applications. The second is the “Organizational Boundary” role, in which an API has access to a set of services of the platform, which means that the API has been created to represent the external boundary of one or more components of the platform. Through such a boundary, the platform owner decides what can be known to TPPs, and what can be done with it. The API consumer has still to find the most appropriate ways to interact with the platform (Ghazawneh, 2012). For banks, the development of APIs to provide open access to data and allow data transactions with external non-bank complementors is viewed as a threat rather than an opportunity (He

et al, 2023; Ozcan & Zachariadis, 2021). In principle, banks view themselves as gatekeepers with a regulated responsibility to protect customer data, which is why this data is not - has not been - usually commercialized and resulted in monopolistic power by banks (He et al., 2023; Ozcan & Zachariadis, 2021).

The emergence of regulatory-driven open banking and the rapid entry of fintech complementors such as Klarna, iZettle, Trustly and many others may prove critical for navigating new competitive and monopolistic conditions in the banking industry. For a long time, banks enjoyed monopolistic privileges in offering a broad product portfolio in retail, private, commercial, investment, and transaction banking (Cortet et al., 2016). Fintechs in contrast seem focused on designing and improving parts of the value chain - which can open up due to PSD2 compliance – better, cheaper, and faster (Ozcan & Zachariadis, 2021; Cortet et al., 2016). While banks still control a wealth of banking transactions (He et al., 2023), fintechs aim at leveraging innovative technologies like APIs, cloud technologies, AI, and data analytics to address problems of convenience, functionality, and user experience in existing and traditional banking services (Cortet et al., 2016). Gozman et al. (2018) discussed that the competition criteria prevalent among incumbent banks is shifting since they are being challenged by new innovative technologies and business models of emerging fintechs which forces them to rethink the competitiveness of every product offering on the value chain. For instance, Ozcan & Zachariadis (2021) argued that fintechs are in a position to gain a significant competitive advantage when they use their expertise in areas like AI and machine learning in the analysis of banking data and predicting what products and services to offer customers. By and large, open banking may speed up innovation in the banking industry but at the same time complementors such as fintechs need to consider their ability to attract and retain customers while also account for resource constraints as well as resistance from banks especially in areas of competition. Banks might see the benefit of collaborating with external fintech complementors, but they might also be hesitant to provide access to core banking data or deliberately act slowly in complying with the rules.

The Interdependencies through Openness in Digital Platforms

The idea behind platform openness has been conceptualized as a driving force for innovation and motivation for complementors to use the platform where the platform owner can co-create value and share revenue (Broekhuizen et al., 2021; Constantinides et al., 2018; Karhu et al., 2018; Boudreau, 2010). An open platform can benefit from the skills of external complementors who can leverage platform resources and eventually extend the functionality of the platform by creating digital services in the form of applications. It is well established in the literature that leveraging platform potential requires complementary innovations in which platform owners open up their platforms and to some extent relinquish their control to encourage the supply of innovations (Gawer & Cusumano, 2015; Boudreau, 2010). This is about orchestration of external skills with internal platform resources. The engagement of developers in digital platforms has created a shift that inverts the firm and moves the locus of innovation outside the boundaries of the firm Parker et al. (2016).

Platform openness refers to easing the restrictions on the use, development and commercialization of platform technologies (Karhu et al., 2018). Broekhuizen et al. (2021) defines platform openness as granting access and authority to suppliers, customers, complementary service providers, and the inclusion of product categories and channels. There are two classic platform owners who approach openness differently. Google's Android is regarded as an open platform while Apple's iOS takes a stricter approach and is often regarded as a closed platform (Karhu et al., 2018). The dichotomous nature of openness is well characterized in the tradeoff in these two platforms where the former has a higher application development rate and lower revenues while the latter has a lower rate of development due to strict vetting of developers and a strict review process but higher prices and margins (Parker et al., 2016). Karhu et al. (2018) argued that a platform that is too open and has loosely governed shared resources can result in that the open digital platform is vulnerable to strategic exploitation. They further explained that platform openness may risk that platform resources are exploited in such a way that competitors copy apps or platform core resources. This is a recurring concern which has now become classic in the literature that openness exposes platforms to imitation (Constantinides et al., 2018; Karhu et al., 2018; Gawer & Cusumano, 2015).

In general, the platform's priorities are to protect its own interests and ensure a level of competitiveness among value co-creators through incentive and punitive structures. Optimizing openness or balancing openness and control in platforms has often been highlighted in platform governance literature with

emphasis on mitigating their tradeoffs (Karhu et al., 2018; Yoo et al., 2012). But Tiwana (2013) argued that control mechanisms should be aimed at coordination than mitigation which is an argument that implies the need for orchestrating value-creating activities by platform owner, complementors, customers, and service providers to sustain platform innovation (Karhu et al., 2018; Parker et al., 2016). The coordination process is however a complex process as owners face a challenging task in configuring openness in such a way that the 'right' set of suppliers and complementary service providers are matched to the 'right' set of customers using the 'right' selection of product categories and channels (Broekhuizen et al., 2021; Parker et al., 2016). We argue that this complexity can be more challenging in the context of open banking because it adds another layer of complex interdependencies that require distinct coordination and control mechanisms in the layered, modular architecture.

Case and Method

Research Context

On December 25th, 2007, the European Parliament adopted the first Payment Services Directive (PSD) which is an EU Directive aimed at regulating both payment services as well as payment providers in the European Union and the European Economic Area. The directive was legislated by all member states on November 1st, 2009. The main aim from the PSD directive was to: (1) increase the competition and participation in the European payment industry from several actors, and (2) to harmonize rights and protections for both payment providers and financial users. In 2015, the European Commission, revised the Payment Services Directive (PSD), and on October 8th, 2015, the European Parliament adopted the new proposal. The new proposal was entitled Payment Services Directive 2 which is commonly known as PSD2 and aimed to: (1) protect European online customers, (2) promote the use and development of online and mobile payments technologies, and (3) make payment services across Europe more safe and secure. Once the directive was officially passed in 2015, all member states in Europe were given two years to integrate the Payments Service Directive 2 (PSD2) into their national laws and regulations. Two years later, on November 16th, 2017, PSD2 was supplemented with a new technical standard for online customer authentication and secure and open-based communication standard. PSD2 came into force on January 13th, 2018. Thereafter, many European banks began implementing the directive and adopting new changes. On the one hand, these changes were faced with several technical challenges. On the other, they opened several strategic and innovative opportunities and created a new collaboration environment with several actors and fintech providers. The EU set a deadline on March 14th, 2019 for all banks and other financial organizations to offer their APIs to external third-party providers (TPPs) and fintech organizations. The development and introduction of APIs by banks were aimed at two main services: first, the Payment Initiation Service Provider (PISP) which is authorized to initiate payments into or out of a user's account. Second, the Account Information Service Provider (AISP) which is authorized to retrieve account data provided by banks and financial institutions. In addition, all European banks and financial organizations were given until September 14th, 2019 to fully comply with the Regulatory Technical Standard (RTS) of PSD2. This regulation concerns customer authentication and secure communication that enhance online consumer protection, promote innovation and improve the security of payment services. This was followed by a deadline extension until December 13th, 2020 to implement the Strong Customer Authentication (SCA) for PSD2 which is a regulatory requirement that reduces fraud in online payments and transactions.

Case Selection

The selected case is Nordea Bank, the largest financial services group in the Nordics. Nordea has 11 million customers; approximately 10 million personal customers and 590000 corporate customers including the Nordic Top 500. The bank has about 600 branch office locations across the Nordics. It is considered the most diversified bank in the Nordics with a Nordic centric portfolio (96%): Sweden (31%), Denmark (26%), Finland (21%), Norway (18%), Baltics (3%), and Russia (1%). It is selected as our case since it is considered among the first movers into open banking and was one of the very few banks in Europe to take an early proactive approach to PSD2 compliance. After the launch of their open banking platform in the Fall of 2016 more than 4,000 TPPs signed up to use Nordea's APIs. The bank also partnered with major players across various industries to bring fintech and open banking services to customers such as Finnair, Klarna, Tink, RaskRask, Wärtsilä, Majjblomman, to name a few. In addition, Nordea took open banking beyond PSD2 by providing services such as embedded finance, investment banking, charity and sustainability.

Research Method and Data Collection

Considering that the subject of open banking has not been investigated sufficiently so far, our aim from the beginning was to collect rich data (Patton, 2015) from multiple sources that can help us in developing a solid empirical foundation from which we can draw out novel and interesting knowledge contributions. The empirical data used in the current study comes from multiple data sources including both primary (Schultze & Avital, 2011) and secondary data sources (Romano et al., 2003). The primary data sources consist of a total of six exploratory qualitative interviews (Schultze & Avital, 2011) of which five interviews were conducted with participants from Nordea Bank and an additional interview with a participant from a fintech organization called Tink. The interviews were carried out either via zoom or in face-to-face meetings. The interviewees were carefully selected, using snowball sampling, to represent the diverse groups involved in open banking. These include participants representing the management responsible for open banking, technical participants involved in developing APIs, and also third parties such as fintechs and startups. The secondary data sources include press releases and announcements from Nordea, participation in conferences, workshops and special events held by Nordea in Sweden, Denmark and Finland, and documents and online articles that covered Nordea's open banking initiative. The use of multiple data sources was useful to develop valid and generalizable constructs as well as improve the data quality (Creswell, 2007; Patton, 2015; Soy, 1996). The data collection took place between April 2017 to March 2023 over separate periods of times. A full summary of the collected data is shown below in Table 1.

Data Sources	Description
Interviews	<ol style="list-style-type: none"> 1. Agnija, Community Manager of Open Banking, Nordea (55 min, zoom) 2. Bartosz, API developer, Nordea (50 min, zoom) 3. Gunnar, Open Banking Manager, Nordea (55 min, zoom) 4. Viktor, Product Owner at Open Banking, Nordea (60 min, face-to-face) 5. Jarkko, VP, Head of Open Banking Development (60 min, face-to-face) 6. Jan, Research Director and Open Banking Expert, Tink (60 min, zoom)
Press releases and news items	<ul style="list-style-type: none"> • All press releases from Nordea's online press release library collected between April 2017 – March 2022. A total of 28 press releases were selected for further analysis. • News and announcements published by Nordea at the Open Banking Developer Portal.
Conferences, workshops and special events	<ul style="list-style-type: none"> • Nordic APIs 2017 Platform Summit (Stockholm, 10th October, 2017). • Nordea Dev to Dev Event (Helsinki, 11 okt. 2017). • Open Banking Breakfast with Nordea (Copenhagen, 5 March, 2018). • API Security for Open Banking and FinTech (Copenhagen, 22 Mar 2018).
Documents	<ul style="list-style-type: none"> • All publicly available case documents such as Developer documentation and agreements, Compliance and Premium products documentations, and statistics resources.
Online articles	<ul style="list-style-type: none"> • More than 200 articles from multiple online sources including: • Technology-focused magazines and journals such as reatid.se, breakit.se and di.se • Fintech focused news websites such as fintechbaltic.com and fintechfutures.com. • General magazines, newspapers and journals such as Forbes, Cision and Computer Weekly.

Table 1. Primary and secondary data sources

Data triangulation and analysis

The data from both primary and secondary sources were triangulated to support the interpretation and extraction of meaning as well as increase the quality and validity of data inferences during the analysis of empirical data (Renz et al., 2018; Venkatesh et al., 2013; Flick, 2004). As such, primary interview data were instrumental in our understanding of secondary data as they were used to obtain deeper understanding of the studied phenomenon and richer insights about key events in the secondary data set. Triangulation was not only limited to triangulating the multiple sources of data, but also analyst or investigator triangulation (Renz et al., 2018; Flick, 2004). Both authors engaged in frequent discussions to discuss the data and reflect on the findings, especially those found in key data segments. This helped in expanding the meaning, hence enhancing the interpretation process, as well as check for subjective views.

The analysis started with the secondary data set by applying a method for analyzing secondary web-based qualitative data proposed by Romano et al. (2003). This method consists of three steps: elicitation, reduction, and visualization. Elicitation focuses on eliciting relevant data that can be included in our study. We used certain keywords to support our data search through online sources such as Nordea, open banking, platform, PSD2, fintech, and a combination of these keywords. The search was limited to any relevant sources in the period between April 2017 and March 2022. Four sources of secondary data were identified, which are outlined in Table 1. above, including press releases and news items, special events such as conferences and workshops, documents, and online articles from major tech blogs. In view of the large, collected material, and to perform data reduction in the second step of analysis, we started to select relevant data segments for our study. The selection was based on an intensive review of all collected data types based on initial coding categories (Charmaz, 2006) such as compliance, openness, data accessibility, PSD2, and APIs. These categories were developed from our literature review and were also used to develop an interview protocol. We stored all selected data in a Qualitative Data Analysis (QDA) software based on the period (day/month) it appeared online. In doing so, we were able to trace the historical process of events and actions taken by Nordea and establish a general timeline. In the final step, we visualized our findings in a model showing interdependent relationships between banks and fintechs which is presented in Figure 1. below. These findings were based on the analysis of secondary data sources as described here, and also the analysis of interview data. Content analysis (Renz et al., 2018) characterizes our analysis of primary data sources in terms of transcribing interviews, frequent reading of the transcripts, immersion with the data to make sense of it, making notes and developing initial coding categories. The initial coding categories identified from the literature were used to guide the analysis and the immersion of the data that is, interpreting and extracting meaning from selected data segments and then associating them with the pre-defined coding categories. However, important categories also emerged directly from the data such as orchestration and integration which were later combined with all other categories to develop a generic coding scheme. This scheme was employed as a basis for developing the main theoretical themes and constructs used in presenting our findings and the construction of our model.

Empirical Findings

The Compliance Initiative

Nordea has been a proactive bank towards compliance and PSD2. Before the enactment of PSD2, Nordea had been discussing the idea of being a “*transaction bank*” as described by Gunnar, the Head of Open Banking, which is a commercial strategy focused on payments, and the bank sought help from a large IT company on this new strategy. The bank was advised to build its own open API platform. PSD2 came a bit later and in order to meet the legal requirements of the new EU directive, Nordea initiated their open banking platform project in the Autumn of 2016. So, basically, PSD2 has given Nordea a push towards realizing their early ideas of using open APIs in banking. Agnija, a Community Manager of Open Banking, explained that the first initiative aimed at PSD2 was marketed in the bank as a “*compliance initiative*” to get funding and management support for the new project. Equipped with millions of Euros for their PSD2 compliance efforts, Nordea started by purchasing an API Management Platform and directly developing PSD2 APIs. Gunnar explained that the main focus of the open banking team was on compliance, he said:

Just before Christmas, I had to tell the project team, from now on, next year you are only doing compliance, because we already from January 2018.

For Nordea, changing course towards open banking was decided and the first PSD2 APIs were developed to enable access to account information and initiate payments by customers. This was described by Agnija as “*the new normal*” in the banking industry. She reflected on the traditional role of APIs in banking:

APIs as a technology already existed in the banking industry. So, they already had APIs but they were only for internal use. So, we never considered that we could expose the data using APIs with someone external and specially with someone with whom we do not have ages of already known collaboration and agreements. So, it was more like changing the mindset and trying to understand that now it is the new normal that, well, everyone can demand the data from the bank.

On this “*new normal*”, Bartosz, an Open API Developer, explained the difference between the traditional use of APIs in banking and current use of open APIs in the context of open banking, he said:

When you expose your API externally you need to be already aware of what you are doing, and you cannot provide, or make any changes, that will be breaking for the external users because sometimes you don't have direct impact on how people use the APIs. Sometimes they do something that you don't think of so you need to be generic and focus on the changes you provide that will not end up like a problem for the consumers. Internally, it is not always the case, you know either you are responsible for both sides of the integration or at least you have some direct contact to the person who consumes the API. Here, everything is more volatile.

The change of mindset expressed by both Agnija and Bartosz was echoed by Gunnar as well. On October 10th, 2017, at the Nordics APIs Platform Summit in Stockholm, Gunnar shared his excitement about open APIs and the potential new possibilities that come with open banking, he stated:

I am really fascinated by API developers... You changed something big that was ongoing during the years. We are sort of a supertanker when it comes to changing course, you know, it takes a while. But, you made us change course and we did it extremely rapidly.

Indeed, many at Nordea could see the potential opportunities of using APIs to facilitate collaboration with TPPs. But at the same time the fact remains that the bank is mandated to facilitate access to banking data to TPPs because of PSD2 requirements. Bartosz stressed the following:

It is not always so smooth! Remember that if we did something that TPPs did not like or think it is not what the regulation was about, like, our take on the regulation, is it the right way? They actually can put a note on us to the FSA, because we obey the FSA [referring to the Finnish Financial Supervisory Authority].

Therefore, compliance mandated by PSD2 can be seen as a two-edged sword. On the one hand, complying with PSD2 is a requirement by law, and banks are therefore obliged to facilitate access to banking data by licensed TPPs or face fines. On the other, PSD2 compliance can impact the role of banks as well as the development of new products and services through partnerships with external non-bank entities like fintechs. On this, Jan, a research director at a large platform provider for open banking that works with more than 4000 banks in Europe including Nordea, explained how open banking platforms are currently used by banks to offer all sorts of services via APIs. He reflected on the open banking platform at Nordea:

The one platform that they are developing is to externalize banking services in the form of APIs so they can co-create services together with the ecosystem, in order to embed finance within existing processes. And that is what we typically refer to as banking-as-a-service...

How banks leverage the potential of open banking while complying with PSD2 is a question centered around the role of banks in open banking platforms. The next section focuses on the potential new role of banks as orchestrators of relationships and value co-creating activities.

The Bank as an Orchestrator

For Nordea, the potential opportunities associated with PSD2 compliance seem to indicate a changing role for the bank, or at least a new role to play. Agnija explained that banking “*is becoming a utility service*” and “*the bank is more going behind the scenes*”. She stressed on the idea that banks are “*orchestrators of the infrastructure*” which seem to reflect a vision for a behind-the-scenes role of the bank. She elaborated:

...where we are aiming, and understand our future, that we will be more orchestrators, and maybe system providers for other partners like maybe shopping malls or whoever will actually be selling the service or offering the product to you...

She also stressed on new relationships with TPPs who will be offering different kinds of financial products and services. She explained:

...it is important to mention the relationships between you as a fintech and the customer which happens to be also our customer. We are not like stepping, let's say, we are not interacting, we just need to see that the customer is giving consent to you but we are not in charge of what kind of service you are offering, and what kind of roles, and what kind of terms and conditions.

Further, this sentiment by Agnija was discussed by Jan in his view of open banking or banking-as-a-service (Baas), as stated above, and the move towards embedding financial services as part of the customer experience. This is an important insight by Jan as he describes the design of financial services to be invisible as they are embedded in third party applications via APIs and offered to the customers directly without any interruption by the bank or the service provider. He explained:

...what we are moving towards with BaaS is increasingly where a financial service can be let's say embedded or even nearly invisible to the customer that are looking to benefit from the process or service... You can go on to a bank developer portal and see all the different services that they are taking to market in the form of APIs that developers can purchase or get access to at a premium, and can integrate within their applications in order to embed finance.

For instance, TPPs with access to banking data via APIs offer payment services to online shoppers. These shoppers can use these services to make purchases either by executing payments through direct access to their bank account or using different payment options like “buy now, pay later”. This seamless experience represents embedded finance where the role of the bank goes unnoticed. Bartosz reflected on this by offering technical view on the behind-the-scenes role of the bank in offering such services, he said:

We are not in direct communication with the customers themselves. This is purely between TPPs and the customers. But we need to get confirmation during the authentication, for the end user [the bank customer] that he is confirming he is authenticating for the TPP for example.

He stressed on the compliance roots for open banking as discussed in the compliance initiative above. But he explained that open banking was also seen as a new way to connect with customers and orchestrate partnerships with TPPs. He said:

... open banking for Nordea was about regulation like we needed to do it by the PSD2 law introduced by the EU, maybe there will be PSD3 soon I don't know. They might change a little bit. But now when we already did what we needed ... We think of open banking as a new way to reach to our customers through TPPs. It is not exactly competition, it is just extending the outreach.

The changing mindset about the role of the bank and accessibility to banking data were important factors to seek partnerships with TPPs as well as large bank customers and offer them all necessary tools to develop and offer successful services. Gunnar, however, who was an early enthusiast about open banking, but is now a little bit skeptical about the motivations of TPPs and fintechs as will be discussed in the next section, believes that developing and offering APIs for PSD2 compliance were drivers for the digital transformation of the bank and using APIs in novel ways for orchestrating relationships with several partners, he said:

The big change with all of this is that banks have been forced to move to the next generation of technology. Without this not many banks would go for APIs. You know the APIs banks used internally that is only between one-to-one applications but this powerful 1-many, you know, APIs that we are building in open banking that is very expensive technology and it is expensive to maintain and without PSD2 we would never have built it and maintained it. Now, it has become compliance. We have invested a lot of money in it and suddenly banks are 20 years more modern, much more competitive than before.

In this respect, Jan stressed on the importance of managing technology in the context of open banking and the role of banks to provide technological infrastructures that simplify processes with APIs as follows:

It won't come as a surprise that financial institutions' core competence is managing money, but also managing technology in a very secure way. Right. And right now, they are faced with a very complex IT landscape where the effort of banking-as-a-service means radically simplifying the information conduits within those systems in order to be able to identify specific pieces of information or functionalities and making that available via an API.

Gunnar further elaborated on this by reflecting on the role of the bank and their open banking platform strategy by first explaining openness and then managing the relationships with API providers and TPPs:

...[openness is] that the customer is owning its data and with APIs we can give customers even more access to its own data. That is the openness for me. That we open up our systems so our customers can use our data that the customer owns in a broader way in its own systems or through TPPs or whatever. That is for me open banking. It does not have to involve fintech or TPPs. It is all about customers.

...we have a platform strategy where we know that we have built a really good technical platform. We could become the App Store of financial services. And of course, that is in our long term plan, but for that we need to find API providers that are external that can provide products that our customers want to buy and we can be the orchestrators, we can take a cut on each transaction.

In this respect, Nordea planned once the APIs developed for PSD2 compliance are set in place to start beta testing. The open banking team started a webpage where TPPs and fintech companies were invited to sign-up and become beta testers of the newly developed APIs. It was one way to reach out to TPPs and external

API developers who are interested to engage in the open banking initiative. The team expected about 50 signups and they planned to select 15-20 core beta testers. Surprisingly, within the first 72 hours, they received 300 signups. Seeking quick clarification, while the open banking team was visiting Stockholm Fintech Hub, Viktor, Product Owner of Open Banking at Nordea stated:

The way Nordea talks to fintechs is out of our strategy to develop an ecosystem of high network effects and strong enough to be maintained over years.

This kind of positive reception was also observed during the interview with Agnija who basically said everyone is welcome to use Nordea's APIs including other banks whom she said are seen as partners rather than competitors and stressed that the bank believes this is the "new normal". The initial reaction from TPPs and the large number of signups seem to indicate that the initiative to comply with PSD2 has attracted an early interest as well as new expectations from Nordea's open banking. This was clear when the signup page was closed with a total of 700 external parties including TPPs, startups, fintech companies, banks, financial consultants, ERP vendors, and others. The interest by all these parties encouraged Nordea to take immediate action to address the expectations from their open banking initiative. This included starting an open banking blog and a newsletter that is sent to all 700 entities that signed up for the platform, planning tours to Fintech Hubs to meet fintech companies and other developers, and introducing a developer portal which is the gateway to Nordea's open banking platform. Eventually, the bank decided to not limit the number of beta testers and allow all those who signed up to become beta testers. Gunnar explained:

I actually wanted to exclude the banks at the beginning. But the project team convinced me that it's either open or not. There is nothing in between. So, we let everybody in.

In addition, Viktor, summed up the interaction with TPPs and the attitude at the bank towards working with them, he said:

Everybody at the Open Banking team worked much harder. It was something we do on top of our planned work. It was so fun to sort of answer the response from third-parties who signed up. It continues like that, we still get a lot of enthusiastic responses.

Open value co-creation

Initially, Nordea's proactive approach was based on the fact that PSD2 and Open Banking might bring losses. But the bank believed that there might also be opportunities to overcome these losses by creating new value sources through collaboration with external parties including TPPs as well as other corporate customers. In its effort to leverage opportunities and create new sources of value, Nordea decided to rename their PSD2 Platform into *Marketplace for Solutions*. The bank aimed at becoming a major marketplace for fintech services across the Nordics. This was clarified by Jarkko as follows:

We are ahead of the curve here in the Nordics... We have taken a technical lead on the geographical area and we would like to keep that... We have a sort of Spotify strategy when it comes to Open APIs... We are willing to invest and take some losses now just to get to this position.

Jarkko further discussed his view on such strategy at Nordea and the kinds of services the bank can develop and offer in collaboration with partners through this marketplace that go beyond PSD2 compliance requirements. He explained:

There are partners that consume APIs, there are partners that build apps on APIs, and there are partners who build APIs for others to build apps on, and there is connectivity to other API networks on this marketplace as well.

Nordea also enabled different third-party developers to connect to each other at the Marketplace and provide services using Nordea's APIs and custom APIs that are developed by TPPs. Following the release of their Marketplace, Nordea started promoting itself as a technology company that is providing financial services to TPPs and customers, mainly corporate bank customers i.e. large businesses. This was clear in the statement by Gunnar about the main intention behind their platform and marketplace:

Here the sky's the limit, why should we talk about banking at all. Because that's the thing with APIs, they will remove banking from the financial services, they will make financial services become a component in more comprehensive services... This will enable us to integrate with other service providers that are non-financial and create the services for the customers end-to-end, which we think is exactly where banks need to roll... and the reason why banks must redefine themselves as technology companies.

What started as a compliance initiative to meet compliance needs by PSD2 has become an active project towards finding new opportunities for the co-creation of financial services with partners and TPPs. As an orchestrator of these opportunities, besides offering compliance APIs, the bank also developed and offered

commercial premium APIs to extend their collaboration with service providers, especially large corporate bank customers, other than licensed TPPs as mandated by PSD2. Agnija explained:

...we started with compliance APIs. But right now we have multiple, as we call it, commercial APIs, beyond compliance. I lost count perhaps up to 10 something. And then we have multiple partner APIs which are designed especially for some kind of partnerships like with Finnair.

Jan elaborated on this partnership with Finnair:

...in 2016 Nordea collaborated with Finnair, an airline company in order to allow Finnair to provide consumer loans at the point of checkout if the user did not have available funds in their balance to purchase an airline ticket ... So, the ability for Finnair to process that loan, or request that loan, and process that loan with Nordea is radically simplified because the information required to get the loan is already available and does not need to be duplicated or requested again.

With the development of so-called commercial APIs or premium APIs, Nordea wanted to leverage the potential from APIs as the bank saw an opportunity to offer more services to corporate customers and create new potential sources of value in the context of open banking. Bartosz discussed how Nordea realized that they can do more with APIs than mere compliance with PSD2, he elaborated:

We also expose premium APIs, but they are not for TPPs. For TPPs there are only PSD2-regulated APIs. Since we have the products, like open banking, we found the possibility for some customers, especially large corporate sector, which have their own IT departments, they might want to actually consume the APIs through their IT systems... There is more we can do. There might be things that are not in PSD2 regulated APIs, that we actually offer in the premium, because we have actually more way to showcase what we have in our system. We have direct agreement with them, they can have direct requests to us...

The same sentiment was echoed by Gunnar but with a stronger sense on the commercial value of giving data access to data. Gunnar, as stated before, is a skeptic. He questioned the commercial benefits from partnering with third parties or giving data access to TPPs. He explained:

...the commercial part is more that Nordea delivers its products. I mean you don't need third parties really. We can deliver products through our corporate customers. So, of course we could do it in collaboration with TPPs but I mean then you too that need to earn on one transaction, why bother with having a middle man. Most of the commercial initiatives are between Nordea and large corporate customers. And then PSD2 is about TPPs so which is then a different angle.

What Gunnar means is that working with TPPs is not so commercial for the bank because most of the services TPPs are offering to Nordea customers are focused on payment where there is only a marginal value when two cooperate - the bank and TPPs - to be realized. He further explained:

...it can't be within payment services, because there is no way it can be so profitable that two can earn on it. It has to be a really profitable product like financing or fund management and that stuff... You cannot be two to earn on one transaction, there is so little margin on each deal within the payment business.

Jan added another dimension to the potential for value co-creation with open banking which in some way both stresses on Gunnar's skepticism but at the same time highlights the potential of data accessibility in open banking in generating value for TPPs and customers, he explained:

PSD2 is an incentive model to create high quality APIs. So going beyond PSD2, what I expect, what we are trying to drive, is to create a scheme where there is a fair distribution of value where banks can make it easier to access information through the creation of APIs in return for a premium or commercial fee. And that's where we believe the future will be. However, there are certain types of data access that will be the last types of information that banks will provide access to in a convenient way. Think about your mortgage information, just think about how low interest rates are right now and how much you and most people can save on their mortgage if they decide to refinance the mortgage or move it to a new mortgage provider. ... All of these customers are currently idle and paying their monthly interest rates and they are a huge cash cow for banks. Banks provide access to this type of information are setting themselves up for attrition... So the only way to make sure that customers, businesses, consumers, can actually benefit... is by ensuring that third parties have the unconditional right with their consent to access information.

Despite Gunnar's skepticism about open banking, especially data accessibility to TPPs, and the competitive concerns by the bank, Nordea has to provide compliance APIs to meet PSD2 requirements. Meanwhile, which can be something that addresses Gunnar's interest in co-creating commercial value, the bank develops commercial or premium APIs to create and facilitate partnerships with its own customers, mainly large corporate customers, like the example with Finnair above. Jan gave an insight into what one can see in Nordea's open banking developer portal:

You can go on to a bank developer portal and see all the different services that they are taking to market in the form of APIs that developers can purchase or get access to at a premium, and can integrate within their applications in order to embed finance. For instance, this could be to automatically request a loan, or to see how much credit there is available on a specific financial account, or get a verification on one's identity...

At the time of writing this paper, the Nordea Open Banking Developer Portal or API Market shows 13 different types of APIs including 9 premium APIs aimed at corporate customers such as Mass Payment, Payment Refund, Nordea Analytics, Retail Finance, Instant Reporting, Loan Broker, and other APIs aimed at PSD2 compliance such as Business Accounts Information, Business Payments Initiation, Personal Accounts Information, and Personal Payments Initiation. The premium APIs work using the same concept as with compliance APIs, but the difference is that premium APIs provide different channels to perform various accounting activities such as account statement and payment execution which were traditionally done through bank portals and also manual transactions. Premium APIs are offered by the bank which orchestrates new channels and relationships that allow corporate customers to directly connect and integrate their own systems with the bank systems. In this way, corporate customers can directly access banking data on behalf of themselves, echoing data access via compliance APIs, without the need to use any external bank tools. This, as Bartosz described, “*can actually lower the cost and speed up the work for some companies. It is a gain.*” The Instant Reporting API, for instance, is a premium API offered by Nordea to corporate customers which allows them to directly and instantly get real-time updates of account balances, cash movements, and transactions history from all their Nordea payment accounts.

Discussion

Conceptualizing the interdependencies between banks and fintechs

Open banking has largely been an industry concept developed by practitioners of the financial world (Gozman et al., 2018). While the concept itself might be recent, open banking practices, primarily accessing customers’ data on behalf of others or the right to access data, which is the essence of open banking, have existed for about two decades. Within information systems, there isn’t any clear definition of the concept yet and most relevant definitions of open banking are developed by industry practitioners and consultants that emphasize on technological aspects of open banking especially APIs (Farrow, 2020; Gozman et al., 2018; Brodsky & Oaks, 2017). The scarce literature currently available in IS on open banking also seems to confuse the concept, especially the use of APIs, with their use in classic digital platforms such as Apple’s iOS and Google’s Android. The common wisdom in platform literature is that APIs, as boundary resources (Ghazawneh & Henfridsson, 2013), help to open up platforms by enabling third party complementors to develop applications which facilitate innovation through value co-creation (Broekhuizen et al., 2021; Gozman et al., 2018; Constantinides et al., 2018; Karhu et al., 2018; Boudreau, 2010). Our analysis of the data suggests that APIs, in the context of regulated open banking platforms, are used for regulatory and competitive purposes, enabling new conditions for platform openness and driving the emergence of novel dynamics between banks as platform owners and external complementors. There are many insights in our data which indicate that banks recognize their compliance responsibilities and their strategic pursuit to create new sources of value or establish corporate partnerships in their quest for PSD2 compliance.

There are two types of APIs in open banking platforms: compliance APIs and commercial or premium APIs. The former type is aimed at regulatory requirements and banks must provide them to comply with PSD2 - they are even called PSD2 APIs. The role of these compliance APIs is basically to provide and facilitate access to banking data by licensed TPPs, and they are not necessarily used to develop products and services in the open banking platform owned by a bank, as commonly known in digital platforms. These compliance APIs can be seen as mere information channels through which TPPs can access banking data on behalf of the bank customers to perform financial operations such as payment transactions. The bank does not interfere in this information exchange and its only role is basically to verify that a TPP has a valid license from local regulatory authorities. Also, the bank has no right to deny access to any TPP or interfere in why the TPP is trying to access the data. Basically, the bank has no control, even no say, over who enters the platform because any licensed TPP has the legal right to do so (He et al., 2023; Ozcan & Zachariadis, 2021). In this way, the bank has primarily a coordinator role in the process of granting access to banking data via compliance APIs. So, there is neither control over who accesses the platform nor what one can do, and as such openness to access and openness to authority (Broekhuizen et al., 2021, Karhu et al., 2018; Tiwana, 2015) may be outside the scope of bank control as platform owner. This lack of control by the platform owner, evidenced in our data by the fact that banks *must* provide access to complementors, distinguishes the conception of openness in regulated digital platforms from openness in commercial non-regulated platforms as such those owned by Apple and Google.

The other type of APIs is mainly aimed at bank corporate customers or large businesses. Premium APIs may offer a new way to think about openness in digital platforms in the sense that these APIs go beyond allowing TPPs to use platform resources or simply accessing data, but also directly integrate the bank systems with the client systems. Openness in this context is about reaching out to the customers by facilitating their accessibility to their own banking data. It is not a question of openness to access or openness to resources as usually discussed in platform literature (Broekhuizen et al., 2021; Karhu et al., 2018), but it is about direct integration of resources that allows for broader data accessibility which in turn facilitates the application of a wider range of financial transactions. An example of this that was discussed during data collection is of an airline company that initiated a collaboration with the bank to allow passengers to buy airline tickets at point of sales without referring to the bank. So, a passenger who wants to buy a ticket can apply for a loan directly through the airline app since all information about the customer that is needed to grant a loan are both accessible and available through system integration between the bank and the airline company. This integration is possible through premium APIs such as the Loan Broker API offered by Nordea where both the bank and the service provider can benefit and co-create value together. This kind of integration represents a novel dynamic in the relationship between banks and complementors as well as shows the evolving role of banks and how they seek to offer new products to generate new sources of profit (He et al., 2023; Ozcan & Zachariadis, 2021).

In this context, the role of the bank seems to be “fading into the background”. That is not to say that the bank is not entirely involved in the delivery of financial services, but rather its role is more likely to be invisible. The seamless interaction between customers and TPPs in offering and using financial services almost occurs without any noticeable involvement by the bank, other than verifying TPPs and issuing access tokens to them while using APIs to access banking data, as discussed in the airline example above. The airline company as a verified and licensed TPP or a non-bank entity has access to banking data via either compliance or premium APIs which facilitates payment service offerings without using any bank tools. Since the bank is not directly involved, its role is characterized as an orchestrator of service exchange and use through providing a technological infrastructure and offering APIs that enable reliable data accessibility and system integration, which allow TPPs to offer seamless financial services and experiences for the customers (Ozcan & Zachariadis, 2021; Cortet et al., 2016). This kind of payment service offerings has been described in our data as embedded finance or invisible banking which is enabled by orchestrating several ‘behind-the-scenes’ activities by the bank at each layer of the open banking platform without being directly visible to the customer. Earlier studies on digital platforms such as Smedlund & Faghankhani (2015) suggested that orchestration is a secondary role by platform owners to control proprietary platform resources. Also, orchestration has been used to describe mechanisms involved in governing technological infrastructures and configuring multiple ecosystems (Cordella & Paletti, 2019). The bank as an orchestrator, however, is a primary role in ‘governing’ open banking platforms since as a platform owner it is required to provide resources (e.g., APIs), guarantee access to TPPs, and also coordinate interactions with complementors via the platform. But at the same, being an orchestrator also signals that banks experience decreasing control and less monopoly over product and services offerings. Recent literature (He et al., 2023; Ozcan & Zachariadis, 2021; Cortet et al., 2016) already suggests that banks are faced with new challenges in terms of their role as gatekeepers of customer banking data, the competitiveness of their products, and regulatory liabilities which might explain the evolution of the role of the bank from a ‘controller, with exclusive monopolistic powers,’ into a coordinator or orchestrator with no say over who accesses platform resources and data. In Figure 1 below, we present a model which conceptualizes this evolving role of the bank as an orchestrator and shows interdependent relationships between banks and other TPPs at multiple layers of the open banking platform.

Our analysis of the data suggests that an open banking platform comprises of three key layers including compliance, data, and value layers. These layers represent areas where orchestration activities by the bank are performed to enable the development, exchange and use of financial services. At each layer, the bank orchestrates certain activities which are also mediated by different dimensions of openness as shown in the model below. All interactions between banks and TPPs are carried out through these layers and mediated by three main dimensions of openness including openness to access \triangle , openness to data \square , and openness to resources \bigcirc . The model comprises of two main building blocks, the left block with key actors including the bank, the open banking platform, and all external complementors, and on the right block the three main layers and the governance mechanisms employed by banks to orchestrate bank-complementor interactions are presented.

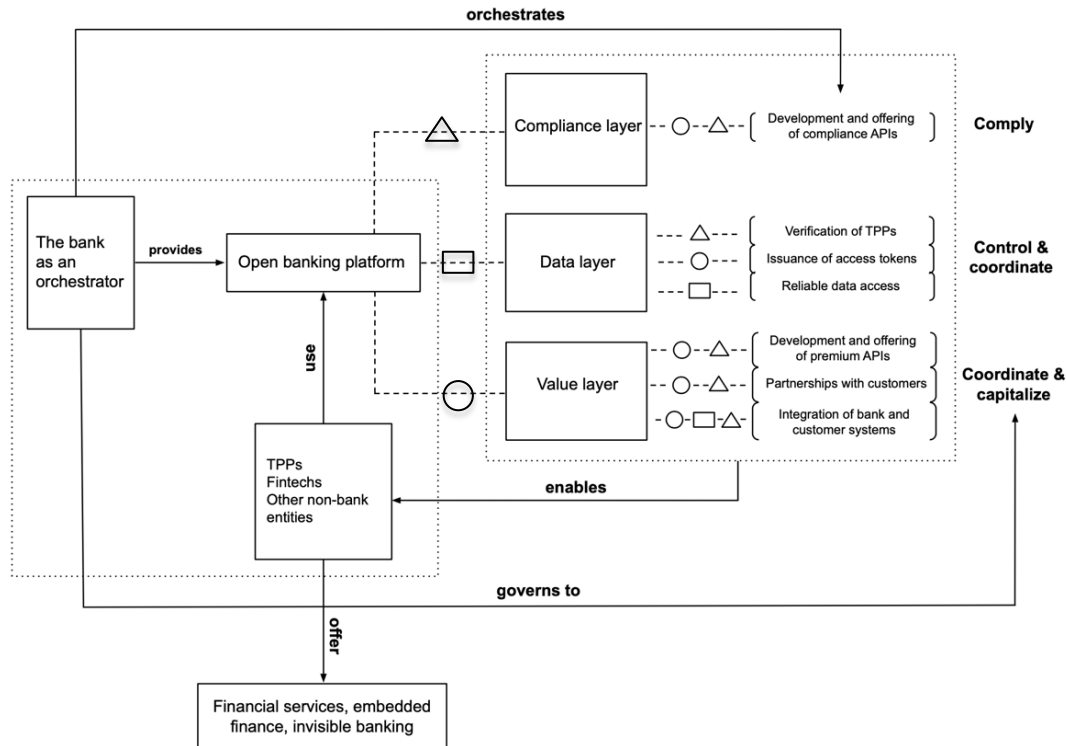


Figure 1. The Evolving Interdependencies between Banks and Fintechs within Open Banking Platforms

The Compliance Layer

At this layer the bank orchestrates the development and offering of compliance APIs that are aimed at complying with the requirements of PSD2. Two dimensions of openness exist at this layer including openness to access and openness to resources since the availability of compliance APIs both enable, and provide a gateway for, TPPs and other external complementors to get access to the platform and its resources. The comply governance mechanism is performed by the bank at this layer assuring the development and offering of boundary resources (Ghazawneh & Henfridsson, 2013) in the form of compliance APIs in accordance with the PSD2 directive. This is arguably a unique governance mechanism in open banking platforms due to strong compliance requirements, which in the context of commercial platforms such as Apple and Google may not be as relevant.

The Data Layer

At this layer, the bank orchestrates a number of layer-specific activities that are aimed at providing reliable access to banking data. As an orchestrator, the bank has a responsibility to verify TPPs and the validity of their licenses by executing several authentication methods. The verification of TPPs enables openness to access, while issuing access tokens to verified TPPs provides them with openness to resources. These tokens are used to authenticate and authorize TPPs that are acting on behalf of the customers to ultimately provide them with reliable access to customers' banking data, that is represented by openness to data. Verifying TPPs and issuing access tokens to them are two activities orchestrated by the bank at the data layer which are characterized by the control and coordinate governance mechanisms. It is important to note that control at this layer is done digitally by the bank to meet compliance requirements of guaranteeing secure and reliable access to data, rather than control to limit openness to access and openness to authority (Broekhuizen et al., 2021, Karhu et al., 2018; Tiwana, 2015).

The Value Layer

At this layer, the bank orchestrates the development of premium APIs. These APIs are commercial and aimed at enhancing TPPs' offerings such as seamless customer experience, e-commerce functionalities and higher levels of security to enable value co-creation. Both openness to access and openness to resources are associated with these orchestration activities as customers are able to get access to the platform and its resources. Premium or commercial APIs allow banks to integrate bank systems with partner customers to facilitate broader accessibility to their own data, besides accessibility to the platform and its resources. At the value layer, the bank can capitalize by monetizing premium APIs i.e., customers pay a fee for using premium APIs. This can be seen in the example of Finnair which has an agreement with the bank to offer a myriad of payment services including loans to purchase passenger tickets at point of sale. So, the governance mechanisms characterizing these orchestration activities, coordinate and capitalize, reflect creating new partnerships via premium APIs as well as creating new sources of value by monetizing them.

Conclusions

The current study attempts to explore a largely unexamined phenomenon of open banking platforms in IS literature. Based on a rich empirical data set, comprising six qualitative interviews, and a large set of secondary data, the study makes several knowledge contributions that help in understanding the phenomenon of platformization of banks.

The main contribution of the paper is conceptualizing interdependent relationships between banks as platform owners and fintechs as external third-party complementors. These interdependencies are characterized by new conditions for access control, openness, and competition. It is shown that the role of the bank is transforming into an orchestrator responsible for coordinating, rather than controlling, interactions with external complementors. The lack of access control by platform owners in a regulated open banking platform context is a major characteristic defining the relationship between banks and fintechs. This characteristic is also related to openness of regulated digital platforms. In this context, openness is distinguished from traditional notions of openness in commercial platforms in the sense that platform owners have no control over who can access the platform or its resources and what can be done in the platform. Compliance requirements create new conditions where external complementors are entitled to get open access to the platform via compliance APIs and use platform resources to offer either complementary or competitive innovative financial services. The paper contributes further insights into these conditions by discussing competition dynamics between banks and fintechs. The lack of access control by platform owners and the broad scope of openness in digital banking platforms decrease the monopolistic power by banks since external complementors have more opportunities to leverage banking data to offer innovative financial services.

Generally, the paper contributes to extant digital platform literature by focusing on a new form of regulated platform environment and re-examining core platform concepts in understanding platform owner-complementors relationships. We believe that more research is needed to understand the design of regulated digital platforms and the regulatory conditions affecting third-party generative development and their implications for both platform owners and complementors.

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