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**FACULTY OF  
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# Open finance – a retail perspective

Creating and capturing value while balancing the dilemma of data protection

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July 2023

Thesis for the degree of Master of Science in Industrial Engineering and Management  
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# Acknowledgements

This thesis marks the conclusion of my five years of studies at Lund University, pursuing a master's degree in Industrial Engineering and Management.

I would like to extend my sincere thanks and appreciation to my thesis advisors Bertil Nilsson at the Division of Production Management and to my advisor at the Company. I would also like to extend my thanks to the individuals from the Team who took their time to discuss my thesis with me and for their invaluable feedback. Lastly, I would like to thank the interviewees for devoting their time and effort to be part of my research.

This thesis, as well as my five years of studies, would not have been possible without the support and encouragement of my friends. To them, I would like to express my heartfelt gratitude and appreciation.

Finally, I would like to thank my family for their enduring support during my academic journey – going back to even before my studies at Lund. In particular, I earnestly thank my older brother for his support during the last seven months.



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Philips Pham  
*Malmö, July 2023*

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# Abstract

The banking and financial services industry is experiencing a significant transformation driven by factors such as regulatory changes, customer demands, and the growing focus on data. This evolution has given rise to the concept of open finance, an extension of open banking that encompasses various financial sectors. Open finance aims to promote data sharing and access across the industry, with the goal of empowering consumers, fostering competition, and creating new opportunities for businesses. However, navigating this changing landscape poses challenges and requires strategic considerations, particularly for retail companies. This thesis explores the key trends and drivers shaping the evolution of open finance, its impact on market structures and industry dynamics, and how retail companies can strategically position themselves to create value within an open finance ecosystem. Additionally, it identifies the risks and challenges that retail companies may face and provides insights on managing these risks effectively. Lastly, the project delves into the tension between the benefits of data sharing and the need to build consumer trust in data handling practices. By addressing these research questions, this study aims to contribute to a comprehensive understanding of open finance and its implications for retail companies and consumer trust in the evolving financial ecosystem.

Answering the research questions, the drivers of open finance were identified to be regulation, data, technology, and business. The market dynamic can be best described as highly competitive, revolving around business ecosystems. In this new business dynamic, retail companies should position themselves as orchestrators of ecosystems, taking on the role of in-house distributor. Numerous risks and challenges were identified, as well as appropriate measures to take and how it affects the rationale behind their ecosystem role. Lastly, the research highlights the importance of transparency, honesty, and educational efforts from businesses. However, this needs to be combined with strong data protection measures to foster consumer trust and ensure the successful implementation of open finance initiatives.

**Keywords:** Open finance, value capture, value creation, data protection, retail company

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# Abbreviations

API	–	Application Programing Interface
EC	–	European Commission
EU	–	European Union
EGEU	–	Expert Group on open finance to the European Commission
FCA	–	Financial Conduct Authority
FS	–	Financial Services
GDPR	–	General Data Protection Regulation
IS	–	Interview Subject
PSD2	–	Payment Services Directive 2.0
TPP	–	Third Party Provider

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# Chapter 1: Background

## 1.1 Background

The banking and financial services industry are undergoing unprecedented change brought about by a multitude of factors - including, but not limited to, greater focus on data, changes in regulation, and new customer demands (FDATA, 2019; Omarini, 2022; Fedeli et al., 2022). Traditionally, the banking industry has been closed due to heavy regulations imposed on banking institutions and services. This type of closed banking offers a front-to-end business model, wherein the financial institution originates and distributes the products (Nordea, 2022a). Consequently, in such a system, the customer data is solely owned and controlled by the financial institution (Chan et al., 2022). This creates a power imbalance in the competitive dynamics between incumbent financial service providers and consumers on the one hand, and incumbent financial service providers and new providers on the other hand (Larsson, 2018). Under these circumstances, it is primarily consumers and new providers that are disadvantaged. Switching to competing products or services often presents a significant challenge for consumers due to the difficulty in transferring their financial information between providers. For emerging service providers, offering the most advantageous products and services is likewise complicated, as they are not able to access prospective customers' financial information and thus cannot assess their complete profile (Chan et al., 2020). The existing competitive landscape in the banking industry is further entrenched by these conditions, leading to continued market dominance by incumbent financial services providers (Arner et al., 2019).

The introduction of the revised Payments Services Directive [PSD2] in the EU in 2015 - which went into full effect in 2018 - ushered in a new era of banking within the EU, which many practitioners have come to dub *open banking* (Gozman et al, 2018). Investopedia defines open banking as the practice of providing third-party financial service providers [TPP] open access to consumer banking, transaction, and other financial data from banks and non-bank financial institutions through the use of application programming interfaces [APIs] (Investopedia, 2022). In contrast to the closed system, open banking promotes *openness* of data. The goal of PSD2 - and by extension open banking - is to create conditions that facilitate greater consumer control of data to balance the competitive dynamic in the banking industry (Chan et al., 2022). By allowing incumbent providers to share consumers financial information with other providers, consumers can more easily open new accounts, access and compare product offers or easily aggregate transaction history from existing or past providers - thus strengthening their bargaining power to negotiate better terms for existing or new products and services and reduce switching costs (Chan et al., 2022; Deloitte, 2019; Wired, 2018). Open banking has indeed allowed for new financial products and services, and greater access and flexibility in payments for consumers (McKinsey, 2021; ThePaypers, 2022b). For example, open banking has enabled instantaneous credit-risk assessment as credit providers now have access to instant graft of financial data from the banks (Tan, 2022). This in turn has allowed for a ubiquitous roll-out of "Buy Now, Pay Later"-schemes [BNPL] offered by many companies such as Klarna (Tan, 2022).

Moreover, the move to open banking allows BNPL-firms to refine their credit-scoring techniques to better identify and segment customers (Tan, 2022).

The idea of data openness is taking on increasing importance as the concentration of power in data is increasing, especially against the backdrop of the COVID-19 pandemic (Arner et al., 2021). The next step of data openness is open finance, where open banking and PSD2 can be seen as the antecedents to open finance (Fedeli et al., 2022). In Europe, the European Commission [EC] has made open finance a clear priority (Fedeli et al., 2022). The EC defines open finance as “the sharing, access and reuse of personal and non-personal data for the purposes of providing a wide range of financial services” (The European Commission, 2022). Similar to open banking, open finance will be all about sharing financial customer data (Nordea, 2022a). While open banking only applies to payments, open finance will expand the scope to various financial sectors such as insurance, investments, and mortgages - covering the entire financial footprint of the consumer (Nordea, 2022a; Tink, 2022). Open finance is thus a much broader concept. Like open banking, open finance will give individuals a higher degree of control over their data - a term described as the “democratization” of data (Fedeli et al., 2022; Tink, 2022). The result will be a radical restructuring of the financial services industry, where consumers will gain easier access to their financial data and learn more about their finances - leading to further increased access to financial services, greater user convenience, and improved product options (Awrey & Macey, 2022; Tink, 2022; McKinsey, 2022). The free flow of financial data will level the information playing field, fostering greater competition between incumbent financial institutions and a new breed of fintech disruptors (Awrey & Macey, 2022). Unlike open banking, however, open finance is as of 2023 not covered by any financial regulation. Moreover, few studies have been made on open finance. Existing studies on open finance in the literature are mostly practitioner white papers rather than academic papers (Ozili, 2022).

## 1.2 Problem description

With the backdrop of open banking, the next step of the evolution - open finance - has been an emerging topic in recent years. Open finance is anticipated to have far reaching implications, affecting businesses, consumers, and industries as a whole. Open finance brings with it both opportunities and challenges as it extends data sharing across various financial sectors. The impact of open finance is not limited to traditional financial institutions, as non-financial businesses must also adapt to this paradigm shift. With no clear regulation in place as of 2023, it is crucial for businesses to understand the implications of open finance to effectively navigate this changing landscape. As businesses grapple with the complexities of open finance, a comprehensive understanding of its development, enablers, business opportunities, risks and challenges will prove instrumental in successfully adapting to this emerging financial ecosystem. Moreover, one must not forget who the ultimate beneficiary is in this paradigm shift: consumers. Therefore, the consumers' perspective on data sharing and data privacy is equally important to understand the delicate balance between unlocking the potential of open finance and ensuring trust in data handling practices.

## 1.3 Purpose

The purpose of this thesis is to investigate the emerging concept of open finance and understand the implications that it might have on the financial services and retail industry but also more specifically on retail businesses that offer financial products and services. In particular, how retail businesses will be affected and the strategic considerations that businesses must take into account in this evolving landscape in order to seize this shift as an opportunity to capture and create value. This could involve diversifying into new financial services or enhancing existing ones, adapting to consumer preferences, and leveraging their capabilities and resources in these new market dynamics.

Moreover, in the face of risks and challenges that come with open finance, the thesis will investigate effective risk management actions. This includes navigating regulatory complexities, managing data security concerns, and adapting to new competitive landscapes. Finally, an essential aspect of open finance is consumer trust, particularly in data handling practices.

Thus, the thesis aims to provide insights on how retail businesses offering financial services can build and maintain this trust. It will examine practices and strategies that can ensure consumers feel safe in sharing their data and are confident in the businesses' ability to protect their interests in the era of open finance.

## 1.4 Research questions

The research questions [RQ] are the following:

RQ 1a: What are the key trends and drivers shaping the evolution of open finance?

RQ 1b: How might open finance impact the market structures and industry dynamics of financial services?

RQ 2: How can retail companies effectively position themselves strategically to create an ecosystem using open finance to create and capture value

RQ 3: What are the risks and challenges that retail companies could face in the changing landscape of open finance and how should they manage these?

RQ 4: How should retail companies navigate the tension between the potential benefits of data sharing and collection in open finance and the need to build consumer trust in their data handling practices?

## 1.5 Delimitations

Open banking and finance can be said to be a global phenomenon. Nevertheless, the fact that there is a wide variety of jurisdictions of which the finance industry is subject to, there are of

course regional barriers and enablers of open banking and finance. The focus of this problem will be delimited to the European Economic Area.

Although there are many stakeholders to open finance, the focus of the project will primarily address that of large retail companies as providers of financial services and products. The legislator's perspective will be discussed in the context of the regulatory framework of open finance. Other than that, the legislator's as well as the technology providers' perspective will mostly be unaddressed. Legislation and technology will, however, be touched upon wherever relevant, mostly in context of the large enterprises' perspective. Even though customers are at the center of open finance, their perspective will also mostly be unexplored.

With regards to industry, this study will focus on the financial services and retail industry. Focusing on these industries is crucial in this study, as open finance has the potential to profoundly reshape these, bringing new opportunities and challenges for large retail companies.

## 1.6 Target audience

The intended target audience of this thesis are primarily students, scholars, business managers or similar professionals. For non-academic professionals, this thesis may provide the practical insights necessary for businesses seeking to leverage the opportunities and overcome the challenges presented by open finance. For students and scholars, this thesis might prove useful for their studies – either as a valuable starting point to deepen their understanding of this complex and rapidly changing field or as a springboard for exploring new avenues of research related to the evolving landscape of open finance. For all alike, this paper will be an insightful read.

## 1.7 Outline of the paper

Chapter 1: Introduces the overall topic and research

Chapter 2: Details the methodology of the research

Chapter 3: Gives a contextual overview of the retail industry, financial services industry as well as introducing the topic of open banking and open finance

Chapter 4: A literature review that explains in depth the topic of data in the context of open finance. In particular, topics like data privacy and protection, data standardization, data collections etc. are discussed.

Chapter 5: A review of the literature pertaining to the topic of value, ecosystems, and the business and market dynamic of open finance.



Chapter 6: Presents the collected data from the interviews.

Chapter 7: Uses the literature review from chapter 3, 4, and 5 together with the interview material from chapter 6 to discuss and analyze the research questions.

Chapter 8: Details the conclusions from the research, contributions to science and recommendations for future research.

For those short on time, Chapter 8 is highly recommended. Business professionals may find chapters 5, 6, and 7 particularly relevant. Academics intending to deepen their research on this topic should focus on chapters 2, 7, and 8, while those interested in a literature review on the subject will benefit from chapters 3, 4, and 5. That being said, everyone is encouraged to read the entire thesis, time permitting, for a comprehensive understanding of the subject matter.

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# Chapter 2: Methodology

This chapter provides an in-depth examination of the research methodology utilized throughout the project. It specifically delves into the overarching research strategy, data collection methods, and data analysis. The discussion includes the measures taken to ensure the trustworthiness of the research findings.

## 2.1 Research approach

### 2.1.1 Exploratory, descriptive, analytical, and predictive approaches

According to Höst et al. (2006), there are four overarching objectives with research studies; the studies can be either descriptive, exploratory, explanatory or problem solving.

Exploratory research is a type of research conducted where the primary objective is to gain a general understanding of a topic or phenomenon (Höst et al., 2006). It is often used to gather preliminary information that can be used to develop more specific research questions and hypotheses; the goal is to explore the topic in depth, rather than to test specific hypotheses or theories (Collis and Hussey, 2014). Exploratory research typically involves a wide range of data collection methods, such as literature reviews and interviews (Saunders et al., 2019).

Descriptive research is a type of research that sets out to describe and interpret how a particular group or phenomena works (Höst et al., 2006; Cohen et al., 2007). It is often used to generate hypotheses for future research and to provide a baseline understanding of a topic before more rigorous research is conducted (Saunders et al., 2019)

Explanatory research, which can be seen as a continuation of descriptive research, aims to identify the cause-and-effect relationships between variables to explain how a particular phenomenon works or carried into effect (Höst et al., 2006; Collis and Hussey, 2009).

Problem solving studies, commonly conducted by technological institutes, is a type of research with the aim of finding a solution to a particular problem that has been identified (Höst, 2006).

An exploratory approach was deemed most suitable for this research. Since open finance is an emerging field and not well researched, it presents an excellent opportunity for in-depth exploration and investigation.

### 2.1.2 Inductive, deductive, and abductive approaches

There are three main approaches to scientific research: inductive, deductive, and abductive (Saunders et al., 2019). With an inductive approach, the observations and data are used to generate or build a theory (often in the form of a conceptual framework) or hypothesis. This approach involves collecting data and making observations, and then using that information to

develop a general principle or theory that explains the observations (Saunders et al., 2019). Topics in which research is new, is hotly debated, and where little or no literature exist, lends itself more appropriately to an inductive approach wherein new data can be generated and analysis made as to what theoretical frameworks the new data might suggest (Saunders et al., 2019)

A deductive approach, which is in contrast to the inductive, starts with a general principle, hypothesis, or theory and uses it to make specific predictions about what should be observed in the natural world. These predictions are then tested through experimentation or observation, and the theory is either supported or rejected based on the results (Saunders et al., 2019). A deductive approach is most suitable for topics in which there is a wealth of literature to define a theory or hypothesis from (Saunders et al., 2019)

In layman terms, the inductive approach can be said to go from the specifics to generalization (Collis and Hussey, 2014). On the contrary, the deductive approach can be said to go from generalization to the specifics (Collis and Hussey, 2014). It's worth noting that, depending on the research question and the available data, sometimes a combination of both inductive and deductive approaches can be the most suitable way to go, which leads to the third and final approach: abductive. With an abductive approach, data is collected to explore a phenomenon, identify themes and explain patterns, to generate a new or modify existing theory which is subsequently tested through the collection of additional data (Saunders et al., 2019). Thus, an abductive approach is most suitable for research where there is a wealth of data in one context but not in the context in which the research is conducted, allowing for existing theory to be modified (Saunders et al., 2019).

An abductive approach was deemed most appropriate for this study. With an abductive approach, data will be collected to explore the phenomenon of open finance and its evolution. Moreover, it also allows for themes and patterns to be identified with regards to the research question of this thesis, e.g. understand the pattern in how companies can create value using open finance, identify themes in customer sentiment regarding data sharing etc. Additionally, if one can classify the plethora of industry-authored white-papers as “theory”, it could then be argued the abductive approach will allow for the modification of this existing “theory”.

## 2.2 Data collection

### 2.2.1 Literature review

A literature review is a comprehensive, critical examination of the existing body of research on a particular topic (Collis and Hussey, 2014). The purpose of a literature review is to identify, critically evaluate, and synthesize existing knowledge on a subject in order to guide the research and demonstrate that relevant literature has been located and analyzed (Collis and Hussey, 2014). A well executed literature review is imperative to expanding existing

knowledge (Höst et al., 2006). Moreover, it helps researchers to better identify areas for future research and ensure that their own research is novel and relevant. (Höst et al., 2006).

Literature studies typically include a thorough search and evaluation of peer reviewed studies, articles, and papers (Höst et al., 2006). Since open finance is an emerging field and thus not well researched, other types of literature, e.g. analyst reports, consulting reports, white papers, etc., were used as complementary sources for the literature review. Due to the aforementioned fact that open finance is not well researched, literature concerning other related topics within open finance were also used for the literature review in order to offset the current lack of literature on open finance while further providing a more holistic yet deeper understanding of it. For instance, since open finance is intrinsically related to open banking, literature on open banking was used for the literature review. Literature on embedded finance and open data were similarly used in a complementary manner.

The literature has been collected from various resources such as *LUBsearch*, *Uppsök*, and *Google Scholar*, mainly academic literature. Google Search engine was also used to find relevant literature, from academic as well as non-academic sources. The search terms used were: *Open finance*, *Embedded finance*, *Open banking*, *Open insurance*, *Business ecosystems*, “*ecosystems*” AND “*open finance*”.

## 2.2.2 Interviews

Interviews are one of the most important sources of information for case studies (Yin, 2014). Interviews have several advantages as a data collection method. They allow for more in-depth exploration of a particular topic than other methods, such as surveys or questionnaires, and they also allow for follow-up questions to clarify or expand on a participant's answers (Cohen et al., 2007). Additionally, interviews can provide a rich and nuanced understanding of a subject that is not possible with other data collection methods. Interviews are most suitable when the researcher needs to gain insights into things such as people's opinions, feelings, emotions and experiences (Denscombe, 2010; Yin, 2014).

Interviews can either be structured - with a predetermined set of questions - or unstructured - where the interviewer is to introduce a topic or theme to the interviewee(s) and have them “speak their mind” freely and develop their ideas (Denscombe, 2010; Yin, 2014). There's also the combinatory approach in which the interview is semi-structured with open-ended questions that allow for more flexible and spontaneous conversation (Denscombe, 2010). For such interviews, there's still a list of issues to be addressed but the emphasis is on allowing the interviewee to elaborate on points of interest (Denscombe, 2010). Generally, semi-structured and unstructured interviews have their aim as “discovery” whereas a structured one has the aim of “checking” (Denscombe, 2010).

The interviews conducted as part of this study were initially unstructured before becoming more semi-structured in nature. There's careful thought and consideration behind the rationale for this. First, is the fact that one of the purposes of this study is to *explore* the potential evolution of open finance, which is more towards the “discovery” side. Thus, both unstructured and

semi-structured interviews lend themselves well to that purpose. In the initial stages of the research, unstructured interviews were carried out to examine the concept of open finance and to obtain a holistic and comprehensive perspective on the topic. As the research advanced and the thesis' focus became more defined, semi-structured interviews were employed to gather more focused and pertinent information in relation to the research questions. This funnel-like approach to utilizing unstructured and semi-structured interviews allowed for a progressive refinement of insights, where initial broad explorations of open finance were gradually honed into more focused and context-specific discussions, effectively guiding the research towards a clearer and more comprehensive understanding of the subject matter. Additionally, the combined approach of unstructured and semi-structured interviews allowed the interviewees to share their thoughts and experience freely while allowing the interviewer to be flexible as the interview unfolded and ask specific and relevant follow up questions. Second, since open finance is an emerging phenomenon, it was deemed appropriate to complement the existing literature with *privileged information*, i.e. information that cannot be obtained from someone else (Denscombe, 2010). This is particularly crucial when studying a subject such as open finance, since contemporary academic literature of the topic is limited and the subject matter expertise is scattered amongst different people. Table 2.1 provides a summary of the individuals who were interviewed. The personal information of the individuals has been anonymized.

**Table 2.1: Overview of the interview subjects.**

<b>Interview Subject</b>	<b>Company affiliation (at the time of interview)</b>	<b>Background</b>	<b>Years of Experience</b>	<b>Purpose of Interview</b>
IS1	Bank	Banking/IT	20+	Information gathering
IS2	Consulting firm	Banking/Consulting	20+	Information gathering
IS3	Insurance company	Insurance	10+	Information gathering
IS4	University	Academia/Payments	20+	Information gathering
IS5	University	Academia/Digital Platforms	10+	Information gathering
IS6	Bank	Banking	20+	Information gathering
IS7	Retail company	Cyber Engineering	10+	Information gathering/General discussion
IS8	Retail company	Customer Experience/Market Intelligence	20+	Information gathering/General discussion
IS9	Retail company	Banking/Financial services	10+	General discussion
IS10	Retail company	Law	10+	General discussion
IS11	Retail company	Data Analytics	10+	General discussion

## 2.3 Qualitative and quantitative data

The data that is collected can either be *qualitative* or *quantitative* (Höst et al., 2009).

Quantitative data is numerical data that can be measured and quantified, such as a person's height or weight (Höst et al., 2009) and is analyzed through the use of diagrams and statistics (Saunders et al., 2019). Quantitative research tends to be associated with large-scale studies and analysis of specific variables (Denscombe, 2010). Moreover, in quantitative research, the analysis is conducted *after* the data is collected (Denscombe, 2010).

Qualitative data consist of word or descriptions, i.e. non-numerical data, and is able to convey details and nuances (Höst et al., 2006; Saunders et al., 2019). Qualitative data requires analytical methods that are based on sorting and categorizing (Höst et al., 2006). Qualitative research tends to be associated with small-scale studies with a holistic approach (Denscombe, 2010). In contrast to quantitative research, the analysis of data is conducted during the data collection in qualitative research (Denscombe, 2010).

For complex problems, especially those involving humans and their actions, a combination of quantitative and qualitative research methods is in many cases the preferred approach (Höst et al., 2006).

This research will primarily collect and analyze qualitative data. Quantitative data will be collected from secondary sources.

## 2.4 Data analysis

The grounded theory approach will be used to analyze the qualitative data collected from interviews and literature. According to Denscombe (2010), it is an approach dedicated to generating theories and is primarily associated with the analysis of interview transcripts, but it can also be applied to other various forms of qualitative data. It is an approach that emphasizes the importance of empirical fieldwork and the need to link any explanations very closely to what happens in practical situations in “the real world” (Denscombe, 2010). Grounded theory approach stresses that theories should be generated by a systemic analysis of data. The ultimate goal of the grounded theory analysis is to derive concepts and theories that capture the meaning contained within the data. The grounded theory approach is most suitable for qualitative data (Denscombe, 2010); it is thus highly suited for the type of research done as part of this thesis.

While grounded theory is often described as inductive (Denscombe, 2010), it was nevertheless deemed an appropriate method of data analysis for this particular research. The iterative process of data collection, analysis, and theory development inherent in grounded theory fits well with the abductive approach utilized in this study. The abductive approach is, as previously

mentioned, a combination of inductive and deductive approaches. Thus, the grounded theory approach would provide the inductive element of the abductive approach employed by this research. As the inductive tool, grounded theory concentrates on deriving novel insights and interpretations from the data collected whereas the deductive facet of the abductive approach is employed to examine or adapt existing theories within the unique context of open finance from the perspective of large retail companies. By leveraging grounded theory in such a way, the aim was to thoroughly explore the subject of open finance and gain a more profound comprehension of this emerging phenomenon, incorporating both the discovery of new insights and the adaptation of existing knowledge to better understand the complex landscape of this emerging field.

The data analysis in the grounded theory approach can be described as an iterative process. That is, rather than the analysis being a one-off event taking place at a single point in time, the analysis tends to be an evolving process in which the data collection and data analysis phases occur concurrently (Denscombe, 2010). Before the data can be analyzed, however, it has to be prepared (Denscombe, 2010). This could be in the form of transcribing the interviews, for instance. Once the data has been properly prepared, there are four major stages to analyzing the data, which are: *Explore the data*, *Code the data*, *Categorize the codes*, and lastly, *Move towards key concepts* (Denscombe, 2010).

The first step, explore the data, means that the researcher should thoroughly familiarize themselves with the data (Denscombe, 2010). This involves becoming familiar with the data and fully immersing oneself in the intricate details of what was said, what was done, what was observed and what is portrayed through the data (Denscombe, 2010). Denscombe (2010) recommends that the researcher initially goes through the data superficially before doing numerous re-reads of the data to cross-reference the material with field notes to enable a better understanding of the data in context and identify themes in the data.

The second step is to code the data, which essentially means that tags or labels are attached to the raw data, thus coding it (Denscombe, 2010). The code should be succinct and systematically link bits of the data to an idea that relates to the analysis. There are three steps to this: First, is to unitize the data - that is, deciding on the units that will be used for coding the data. Second, is to decide on the kind of data that will be coded. Finally, the researcher should decide on an initial choice of codes, based on content derived from the data itself (respondent categories) or on their own personal or professional intuition about what will be useful for analysis (Denscombe, 2010). As the analysis progresses, any initial codes that may not have been ideal will be adjusted and refined, resulting in a more accurate and effective coding system for the data.

The third step is to categorize the code - that is, identify ways in which the codes can be grouped into categories. The categories act as an umbrella term under which a number of individual codes can be placed. Within this, there are three procedures:

- First, is to reduce the number of codes and categories. At the beginning there are likely to be a large number of codes and categories - too many to be useful for any meaningful



analysis. Part of the analysis, then, is to identify where there is sufficient congruence between them to allow some to be merged, and others to be brought together within a broader category (Denscombe, 2010).

- Second, is to develop a hierarchy of codes and categories. Interpreting the data requires distinguishing between higher-level and lower-level codes. Higher-level codes encompass broader concepts, whereas lower-level codes focus on more specific details. The idea is then to create hierarchical structures of codes by incorporating lower-level codes under the umbrella of broader, higher-level codes. This organization allows for a more coherent analysis of the data (Denscombe, 2010).
- Third, and finally, is to check the emerging codes, categories, and concepts with the data. This is the iterative part of grounded theory (Denscombe, 2010).

This leads us to the last step which is to move towards key concepts. In principle, the goal of grounded theory analysis is to utilize higher-level codes and categories to identify key concepts. The development of these concepts is the main purpose of the analysis because they provide new understanding of the data and constitute the foundations for any theory or general conclusions to emerge from the research (Denscombe, 2010).

## 2.5 Credibility

According to Denscombe (2010), research needs to demonstrate that the findings are based on practices that are acknowledged to be the bases of good research in order for it to achieve credibility. The bases for judging the credibility are: validity, reliability, generalizability, and objectivity.

### 2.5.1 Reliability

Reliability is the accuracy and precision of the measurement and the extent to which a study produces similar results when repeated multiple times under similar conditions (Collis and Hussey, 2014). According to Denscombe (2010), this translates to the question “Would the research instrument produce the same results on different occasions (all other things being equal)?”

A potential issue that this research could face pertaining to reliability could be inconsistent responses from interviewees. This means that depending on who the interviewee was and how the questions are phrased, one might get different responses. In order to mitigate this, a standardized questionnaire with open ended questions was developed for the semi-structured interviews. For the unstructured interviews, general topics of discussion were prepared and written down before the interviews were conducted. Nonetheless, semi-structured and unstructured interviews (with strong emphasis on the latter) often rely heavily on the interviewer's skills and techniques, which may be difficult to replicate by other researchers. Furthermore, the unstructured interviews relied heavily on follow-up questions which are dependent on the interviewees answer and the context of the discussion. This can make it

difficult for other researchers to replicate the study and verify the findings. Another potential issue could be the process in which data was collected from existing literature. In order to ensure replicability, the databases as well as the search words were recorded. Additionally, every paper that was read, even if it did not end up being used, was carefully recorded.

### 2.5.2 Validity

Validity in research refers to the degree to which a study accurately measures what it is intended to measure and the extent to which the results reflect the phenomena under study (Collis and Hussey, 2014). In this case, the basic question to ask to ensure validity is “Are the data the right kind for investigating the topic and have they been measured correctly?” (Denscombe, 2010)

To ensure validity in this research, a multi-method approach has been employed, combining semi-structured interviews, unstructured interviews, and an extensive review of existing literature. However, potential threats to validity include the absence of direct customer input in the interview process, which may lead to an incomplete understanding of customer perspectives. Instead, secondary data sources such as surveys have been incorporated to fill gaps in customer insights, and efforts have been made to maintain validity during data analysis and interpretation by continually revisiting the research questions

### 2.5.3 Generalizability

In research, generalizability is the extent to which the research findings can be applied to other cases or to other settings (Collis and Hussey, 2014). More specifically, it concerns the ability of research findings to explain, or occur in, similar phenomena at a general or universal level rather than being something that is unique to the particular case(s) used for the research (Denscombe, 2010).

This research is mainly focused on the perspective of large retail companies and their respective customers, thus the findings need to be able to be generalized insofar to adequately capture that. At the same time, this inherently limits the extent to which the findings need to be generalized, potentially limiting the relevance of the conclusions to not be universally applicable to e.g. smaller businesses. Notwithstanding, in order to ensure that the findings of this study are generalizable, data was collected from various sources with a large enough sample size to ensure that a holistic and exhaustive analysis could be conducted. The people interviewed were either business professionals or academicians. People regarded as “customers” were not part of the interview, though secondary sources were leveraged to fill this gap. Nevertheless, the absence of direct customer interviews may result in a less diverse representation of customer perspectives which could impact the generalizability of the findings to the broader customer base.

## 2.5.4 Objectivity

Lastly, is the issue of objectivity, which refers to the absence of bias in the research (Denscombe, 2010). Objectivity in research is denoted by impartial and neutral methods that are free from the researcher's personal influence and bias, as well as by fair and even-handed processes of data collection and analysis (Denscombe, 2010). This means that the research is conducted without the researcher's opinions or values influencing the outcome.

One factor that could potentially degrade the objectivity of this research was that different consulting white-papers and reports were used as sources of information for the literature review. These reports and papers vary wildly in quality, especially from an academic perspective, and are more often than not a marketing tool to promote the company's own services and brand. To ensure objectivity, much of the literature was cross-checked against each other to ensure consistency and accuracy of the information presented. Additionally, these consulting white-papers and reports were supplemented with peer-reviewed academic articles and interviews with academicians to provide a more balanced and well-rounded understanding of the research topic. Another factor that could impact the objectivity of the research was that many of the interviewees were working at different companies, with different vested interests in open finance. This means that the information gathered from the interviewees may be biased. Similar to the case of ensuring objectivity in the literature, the information from the interviews were cross-checked with both literature and other interviewees to ensure consistency and accuracy of the information. Moreover, the diverse background of the interviewees ensures that different perspectives are represented, thus enriching the analysis and helping to mitigate potential biases that could arise from relying solely on a single or narrow set of viewpoints.

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# Chapter 3: Setting the context

This chapter offers a comprehensive review of the current situation surrounding both the retail industry and financial services. Additionally, it explores the existing state of open banking, its ties to open finance, and presents a foundational explanation of the concept of open finance

## 3.1 Retail and home furnishing industry

### 3.1.1 Overview of the Consumer and Retail Industry

The retail and consumer industry is highly dynamic in which competition is intensifying and shifting, and consumers are changing their approach to purchase decisions (McKinsey, 2013). The retail industry serves as a significant economic contributor in the EU, consisting of nearly five million businesses, which accounts for approximately 20 percent of all registered firms in the EU (McKinsey, 2022). Together, these companies fulfill around one-third of the total household consumption demand in the EU, producing an annual revenue that nears 7 trillion Euro (McKinsey, 2022b). In particular, the home furniture market in Europe is estimated to generate approximately 210 billion Euro in revenue in 2023 (Statista, 2023). The European home furniture market is anticipated to witness strong growth. The rise in disposable income, increasing construction activity in the region, and growing urbanization are some of the major factors attributing to the growth of the market (Mordor Intelligence, 2023). The compounded annual growth of the furniture industry is expected to be between 3-6 percent between 2022 and 2027 (Statista, 2023; Technavio, 2023; Mordor Intelligence, 2023).

According to Mordor Intelligence (2023) the home furniture market is segmented by material (wood, metal, plastic, and other furniture), by type (kitchen furniture, living-room, and dining-room furniture, bedroom furniture, and other furniture) by distribution channel (supermarkets & hypermarkets, specialty stores, online, and others) and by country (Germany, United Kingdom, France, Spain, Rest of Europe). Moreover, the market is fragmented and competitive with the presence of players such as IKEA, XXXLutz, Jysk, John Louis Home and even Amazon. The European furniture manufacturers have a good reputation worldwide due to their creative capacity for new designs and responsiveness to new demands which makes the market highly competitive and the players constantly innovate in terms of product designs (Mordor Intelligence, 2023).

### 3.1.2 Key Trends in the Consumer and Retail Industry

#### **Deeper personalization**

One key trend of the retail industry is the move towards personalizing products and services, and of course, personalized marketing (McKinsey, 2023; McKinsey, 2020b; BCG, 2019). Personalization in the retail industry refers to the practice of creating personal interactions and experiences for customers, tailored to their specific needs and preferences. It's about making customers feel unique and valued by providing them with products, services, and experiences

that cater to their individual tastes and requirements (McKinsey, 2020b; Microsoft, 2022a). Personalization is being powered by sophisticated algorithms and predictions through data. For instance, 35 percent of what consumers purchase on Amazon come from product recommendations based on such algorithms (McKinsey, 2013). Indeed, customers are expecting more personalized and engagement interactions with retail companies (Forbes, 2022). As the landscape of consumer behavior and expectations continues to shift, it's crucial for retailers to adapt and understand these changes. Implementing personalization strategies across various channels to enhance the appropriateness of promotions and optimize customer experiences has transitioned from being merely a competitive edge. It has now become an essential factor for survival in the retail industry (Microsoft, 2022). The trend of personalization is also related to two other trends in the retail industry: Omnichannel experience and leveraging data.

### **Omnichannel**

Online enterprises and traditional brick-and-mortar retailers are evolving into multi-channel entities to compete for customers and a larger slice of the market (White Case, 2023). As such, omnichannel has lately become a focus area for many retail companies (BCG, 2023; McKinsey, 2021e). Omnichannel can be described as a strategy that aims to provide a seamless customer experience across all channels or touchpoints, whether the customer is shopping online from a desktop or mobile device, by telephone, or in a bricks-and-mortar store. In essence, it's about providing a unified customer experience and journey across multiple channels, ensuring consistency in messaging, design, and overall customer service (BCG, 2023; McKinsey, 2021e). Omnichannel is gaining significance for two main reasons. The first is that the customer demands it. According to research by McKinsey (2021) customers are increasingly considering the full customer experience when making purchasing decisions. This trend is particularly noticeable in sectors that are highly diversified or where customer guidance significantly impacts sales – like the furniture and do-it-yourself industries (McKinsey, 2021e). Customers often use multiple channels during their shopping journey. For example, they might research a product online, view it in a physical store, and then make the purchase via a mobile app. As part of this, retailers are working closely with fintech companies and open-banking payment providers to make it easier for customers to pay and are starting to provide customers with contactless payments (White Case, 2023). The second reason is that technology allowed for a more integrative journey (McKinsey, 2021e). With the proliferation of digital technologies, retailers now have the tools to provide a truly integrated shopping experience. From tracking customer interactions across all channels, to mobile apps that provide in-store navigation and personalized recommendations, technology is enabling the omnichannel revolution (BCG, 2023; McKinsey, 2021e; Deloitte, 2022). For retail companies, this evolving landscape presents both challenges and opportunities. They need to adapt their business models and invest in technology to deliver the seamless, personalized omnichannel experiences that customers now expect (McKinsey, 2021e). Furthermore, they must also harness the power of data analytics to understand customer behavior across channels and use this insight to drive the omnichannel strategy (BCG, 2023). Retailers that can effectively integrate their channels and leverage customer data will be better positioned to meet changing consumer expectations, drive customer loyalty, and achieve competitive advantage in the market (BCG, 2023).

## **Data analytics**

The deeper personalization and omnichannel experience is intertwined with another prevailing trend in the retail industry – the importance of data and use of data analytics. In today's highly competitive and financially demanding retail landscape, retailers face the challenge of managing diverse formats, shifting consumer preferences, and vast amounts of data (BCG, 2020). To thrive in this environment, retailers must leverage advanced data and analytics capabilities to revolutionize their merchandising strategies and operations (BCG, 2020). The trend of using increased data and data analytics in the retail industry has thus gained significant momentum in recent years (BCG, 2020; McKinsey, 2018a). Customers are indeed seeking convenience and ease from retailers, including personalized offers, and faster and integrated shopping experiences; they expect retailers to cater to their specific needs, provide tailored recommendations and streamline the purchasing process (BCG, 2020). As an illustration, Home Depot has leveraged its extensive customer data and implemented agile data-science and AI systems to drive personalization on their website (BCG, 2022b). Home Depot has effectively monetized its data by establishing an advertising platform that connects vendors with the appropriate customers at the optimal moment, ensuring targeted and relevant engagements (BCG, 2022b). Data analytics enables retailers to engage in targeted marketing efforts, tailoring assortments to meet specific customer preferences, and implementing effective pricing and promotion strategies (McKinsey, 2022c). Gathering and analyzing data to understand the needs, preferences, and attitudes of growing consumer segments, such as Hispanics, baby boomers, and millennials, will be especially important, as will understanding individual consumers and customizing offers on an individual basis. By harnessing the power of data and analytics, retailers can unlock a competitive edge by gaining a comprehensive understanding of consumer behavior, developing effective marketing strategies, fostering long-term customer loyalty relationships, and making data-driven decisions that drive success in the market (BCG, 2020; Chuan et al., 2022). However, the flipside of this is that consumers are now more intentional and mindful about the data they share and the parties they share it with. As a result, the way companies handle consumer data and prioritize privacy can serve as a distinguishing factor and even provide a competitive business advantage in the future. (McKinsey, 2022c; Deloitte, 2022).

## **Digitalization**

All of the aforementioned trends are tied together with this one trend – namely, digitalization. Digitalization is an omnipresent trend that underpins the advancements in personalization, omnichannel experiences, and data analytics within the retail industry (Shnorr, 2020). According to Mostaghel et al. (2022), digitalization can be defined as “the use of digital technologies to innovate a business model and provide new revenue streams and value-producing opportunities in industrial ecosystems.” While digitalization has a long history in retailing, the significance of the transformation is becoming increasingly visible as of late (Hagberg et al., 2016). The digitalization trend has significantly accelerated during the Covid-19 pandemic (Mostaghel et al., 2022).

Retailers are leveraging digital tools and platforms to transform their operations, enhance customer experiences, and drive business growth (McKinsey, 2022d; Bain, 2022a).

Digitalization enables retailers to create seamless and frictionless shopping experiences across various touchpoints. Online platforms, mobile applications, and e-commerce websites allow customers to browse, purchase, and interact with retailers at their convenience (Shnorr, 2020; McKinsey, 2022d). The integration of digitalization with personalization, omnichannel experiences, and data analytics creates a powerful synergy that enables retailers to thrive in a digitally-driven marketplace and stay ahead of the competition (Shnorr, 2020). Moreover, digitalization empowers retailers to gather and analyze vast amounts of data, providing valuable insights into customer preferences, behaviors, and trends. Advanced analytics tools and techniques enable retailers to make data-driven decisions, optimize merchandising strategies, and deliver personalized offers and recommendations (McKinsey, 2022d; Bain, 2022a).

### 3.1.3 Future outlook

#### **Changing business models**

With the backdrop of the observed trends in conjunction with the highly competitive retail landscape, retailers will have to explore new sources of revenue and adopt innovative business models to stay relevant and competitive (McKinsey, 2023; BCG, 2022b). One key area of focus is the need to rethink assortments and product offerings. Retailers must provide unique value propositions that differentiate them from competitors (BCG, 2022b). This includes offering deep product expertise to assist customers in making informed purchasing decisions and providing ongoing product education that extends beyond the moment of purchase (BCG, 2022b; McKinsey, 2023). Additionally, retailers should facilitate convenient and flexible engagement with customers through digitalization and personalization (McKinsey, 2023; BCG, 2022b). In order to meet evolving customer needs, retailers must shift their focus towards providing holistic solutions. This entails going beyond the surface-level considerations of when, where, and how customers want to shop and delving deeper into understanding the why and what of their shopping behaviors (BCG, 2022b).

To sustain long-term growth and profitability, retail executives must anticipate the future and explore non-product sales revenue streams. By expanding beyond traditional products and services, retailers can discover, test, and expand future sources of revenue (McKinsey, 2023; Bain, 2023). This may involve leveraging exclusive brands, developing private labels, or forming partnerships to deliver additional value and enhance the customer experience. (McKinsey, 2023). Furthermore, retailers have the opportunity to tap into the service business realm. By offering services that extend beyond traditional retailing, such as healthcare, finance, travel, or entertainment, retailers can build ecosystems that cater to a broader range of consumer needs (McKinsey, 2023; BCG, 2022b; Bain, 2023). This expansion into new service categories presents significant growth opportunities and allows retailers to remain relevant in the face of disruption and changing consumer expectations (McKinsey, 2023; Bain, 2023).

In order to thrive in the evolving retail landscape, retailers must seek new sources of revenue and embrace innovative business models (McKinsey, 2023; BCG, 2022b). By rethinking assortments, focusing on customer-centric services, and expanding beyond traditional retailing, retailers can adapt to changing consumer demands, differentiate themselves from competitors, and secure a sustainable future in the industry (McKinsey, 2023).



### **Retail companies for financial services**

A particularly promising avenue that retail companies can explore is the realm of financial services. In the face of increasingly competitive environments, the venture into financial services has been a response to retailers looking for growth opportunities beyond their core markets. An increasing number of retailers are extending their portfolio to offer a broader variety of financial services, often in partnership with financial technology companies (Fintechs) to facilitate this transformation (NRF, 2021). These retailers aim to solidify customer loyalty and foster a deeper relationship, based on a better understanding of the customer by the retailer and a higher level of engagement from the customer with the retailer through the financial services offering (Alexander and Colgate, 2000; NRF, 2021). The COVID-19 pandemic has highlighted that customers have shown greater need for flexible financial solutions (Hensen and Kötting, 2021). The integration of digital applications and products into everyday life has greatly altered the landscape of consumer needs and expectations, especially in the context of financial services (Hensen and Kötting, 2021; Ozili, 2021).

All this is being bolstered by the continuing evolution of embedded finance. Embedded finance can be described as the act of offering financial products through the platform of a non-finance company, organization or institution (McKinsey, 2022a; Strands, n.d.; Hensen and Kötting, 2021). Through technology, financial platforms are embedded within non-financial services. Embedded finance enables opportunities for innovation within multiple touchpoints of the customer journey, leading to enhanced user experiences (Strands, n.d). Embedded finance is anticipated to arise in any context where a significant number of end users – be they consumers or businesses – regularly interact with the operator of a digital platform. As such, retailers in particular are well positioned to offer financial services solutions (McKinsey, 2022a; Alexander and Colgate, 2000). In the partnership between retailers, financial services providers, and other technology providers, retailers provide access to an expanded customer set, along with its traditional capabilities in product and distribution (NRF, 2021; McKinsey, 2021e). In previous years, to make a substantial purchase, consumers may have had to go to a physical bank branch to apply for credit. Now, with embedded finance, they can make a purchase and get credit in one place: the point of service (Forbes, 2021). For instance, a consumer loan or a BNPL service can be embedded directly into the payment procedure of an e-commerce app, presenting the service to the customer precisely when it's needed (Hensen and Kötting, 2021). Open banking and open finance are the enabling foundation for embedded finance (Strands, n.d.; Hensen and Kötting, 2021). Wordline (2022) goes further to claim that embedded finance is just open finance from the consumers point of view.

## **3.2 Financial services sector**

This overview gives a brief introduction of the financial services industry, as of early 2023. This will provide a contextual background for exploring the concept of open banking, and later open finance.

The financial services industry refers to a broad range of businesses and institutions that provide financial products, services, and advice to individuals, businesses, and governments (Asmundson, 2011). At its heart, the financial sector intermediates; it ensures efficient allocation of financial resources by facilitating the transfer of financial resources to undertake productive investments in an economy (Asmundson, 2011). In essence, financial services are the services that allow consumers and businesses to acquire financial goods. Key components of the sector include banking, mortgages, credit cards, payment services, tax preparation and planning, accounting, and investing. These are detailed further below:

- **Banking:** The primary function of banking is to safeguard depositors' assets and make loans to individuals and businesses. Banks also provide other various services such as issuing credit cards and facilitating transactions (Forbes, 2022b)
- **Mortgages:** Mortgage lenders, typically a bank, offer loans to individuals and businesses for the purpose of purchasing real estate. Mortgages are secured by the property being purchased, and the borrower makes periodic payments, including interest, until the loan is fully repaid. (Consumer Finance Protection Bureau, 2022a)
- **Insurance:** Insurance is a contract, represented by a policy, in which a policyholder (the one who takes out the insurance) receives financial protection or reimbursement against losses from an insurance company. The insurance company pools clients' risks to make payments more affordable for the insured. There are many types of insurance policies, such as life, health, property, and liability coverage (Consumer Finance Protection Bureau, 2022b)
- **Payment Services:** Payment service providers facilitate the transfer of funds between individuals, businesses, and institutions. They enable various types of transactions, such as electronic funds transfers, credit card processing, and mobile payments, making it convenient for users to make purchases, pay bills, and send or receive money (Kevin, 2022)
- **Financial Planning:** Financial planning is the process of organizing one's financial affairs in the most optimal way to meet economic goals (Forbes, 2022). This process typically involves evaluating an individual's current financial status and expectations for the future, setting financial short-term and long-term goals, and creating a balanced plan to meet those goals (Forbes, 2022a). This process encompasses various facets of personal finance, such as investment, debt repayment, savings accumulation, retirement planning, and even purchasing insurance.
- **Investment Services/Management:** Investment services facilitate the buying and selling of securities or assets (Investopedia, 2021). Investment management on the other hand refers to the handling of financial assets and other investments for clients – not only buying and selling securities (Investopedia, 2021). It includes strategizing for short-term or long-term acquisition and disposition of portfolio assets.
- **Tax and accounting:** Accounting and tax services help individuals and businesses to manage and ensure that all financial records and statements are in line with regulations and accounting principles (Investopedia, 2021). Additionally, these services assist clients with tax preparation and filing, offer thorough analyses of tax efficiencies or inefficiencies, and make recommendations to decrease future tax liabilities (Investopedia, 2021).

## 3.3 Open banking

### 3.3.1 How it relates to open finance and open data

Open banking, open finance, and open data economies represent interconnected concepts within the financial services industry, each aiming to empower consumers and promote innovation by democratizing access to information (Fedeli et al., 2022; Tink, 2022b; Forrester, 2021; Arner et al., 2021, p. 10). These concepts share a common core around the principle of accessing data by leveraging technology to create a more inclusive, transparent, and competitive financial ecosystem that better serves the diverse needs of individuals, businesses and institutions (Arner et al., 2021; Kevin, 2023; OECD, 2023; McKinsey, 2021f; Chan et al., 2022).

Open banking, as the initial stage of this paradigm shift, refers to the practice wherein financial institutions, primarily banks, to share customer data with licensed TPPs through standardized APIs (Investopedia, 2022; Vezzoso, 2022). The European Union's Revised Payment Services Directive (more on that later) serves as a prime example of open banking regulation (Chan et al., 2022). Open banking has sparked a wave of fintech innovation and competition in the financial services sector which has enabled TPPs to develop new products and services through the access of payment data (Chan et al., 2022; Deloitte, 2019). Examples of products and services that open banking has given rise to are account aggregation, payment initiation, and personalized financial management tools which ultimately offer consumers more choice and control over their financial lives (Chan et al., 2022; McKinsey, 2021d; ThePayPers, 2022c). Open banking, as the name implies, in large part only concerns banks, which inherently limits the scope of open banking (Insurely, 2022; Vezzoso, 2022).

Building upon the foundation laid by open banking, open finance can be described as the next stage in the evolution of Open Banking-type of data sharing arrangements (OECD, 2023). Expanding upon existing frameworks, open finance will expand data access and sharing to encompass data from other sectors beyond payment/transaction, such as insurance, investments, and mortgages - covering the entire financial footprint of the consumer (OECD, 2023; Nordea, 2022a; Tink, 2022b). Ultimately, it aims to extend the benefits of data sharing and collaboration to a wider array of financial service providers and consumers, potentially improving access within financial services and could substantively change the nature of competition (FCA, 2019). Open finance is thus a broader concept in terms of data access and its effects than open banking (OECD, 2023).

The open data economy signifies the culmination of the open banking and open finance progression (ThePaypers, 2023). Just as with open banking and open finance, open data is not defined by the sharing of data and services, but rather by the access to it (Tink, 2022a). It refers to the harnessing of data from various sources - both public and private, such as healthcare, retail, and government - to create value, drive innovation, and enable new business models (Tink, 2022a; European Commission, 2022; Forrester, 2022; Nordea, 2022a). This also fosters a

proliferation of partnerships that promote collaboration and data sharing among diverse industry sectors, not limited to finance (Tink, 2022a).

These concepts collectively shape the future of the financial services industry, where data-driven innovation and collaboration become the cornerstone of a more inclusive, efficient, and customer-focused ecosystem (McKinsey, 2022). As these concepts unfold in practice, they will undoubtedly come with changes to technology, legislation, and competitive forces (McKinsey, 2022). It is thus important to understand how open finance stands in relation to both open banking and open data economy, in order to understand the opportunities within the potential of data access to deliver value (Nordea, 2022a). In figure 3.1, an illustration of how the different concepts of open banking, open finance and open data economies relate to each other is presented.

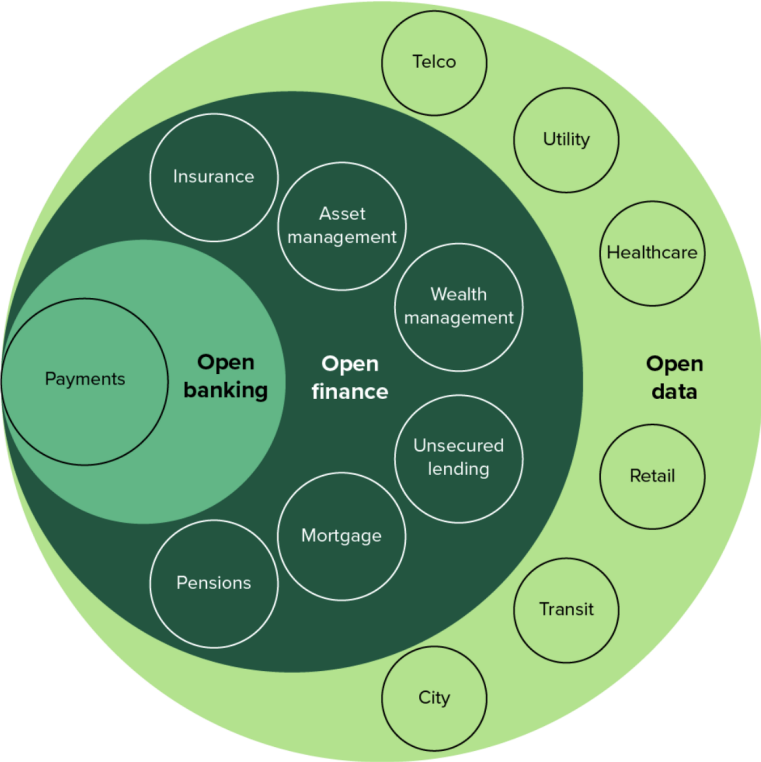


Figure 3.1: How open banking, open finance, and open data are intertwined (Forrester, 2021).

### 3.3.2 Regulatory context of open banking

The concept of open banking in the EU can trace its roots back to 2015 when the EC introduced the revised Payment Service Directive (PSD2) which followed up on the original Payment Service Directive [PSD1] from 2007 (Ozcan and Zachariadis, 2017). PSD1 provided the legal foundation for an EU single market for payments, to establish safer and more innovative payment services across the EU and the idea was to increase competition and offer more choice for consumers (European Commission, 2018). PSD1 was then further revised in 2015 to include new payment services such as payment initiation services [PIS] and account information

services [AIS], which were previously unregulated (European Commission, 2018). AIS providers offer services that allow users to consolidate and access their account information from multiple banks or financial institutions in a single interface (European Commission, 2018). In practice, these services enable users to view their account balances, transaction histories, and other account-related information from different sources in a convenient and user-friendly manner (European Commission, 2018). In the context of PSD2, PIS providers facilitate the initiation of payments on behalf of users directly from their bank accounts. PIS providers act as intermediaries between the user and their bank, initiating the payment process and transmitting payment details to the user's bank for execution (European Commission, 2018). In addition, the revision also addressed inconsistencies and enhanced consumer protection: The original PSD1 contained certain exemptions and rules that were applied differently by Member States, leading to regulatory arbitrage, legal uncertainty, and competitive distortions (European Commission, 2018).

This revised directive, known as PSD2, came into effect in 2018 and this update was particularly important as it accommodated the emergence of new players, such as FinTech startups, and a new wave of innovative payment products and services as well as improving security within the European payment services market (Ozcan and Zachariadis, 2017; European Commission, 2018). In particular, PSD2 aims to: (1) make it easier and safer to use online payment services, (2) better protect payment services users against fraud, abuse, and payment problems, (3) promote innovative payment services, and (4) strengthen the rights of payment services users (European Commission, 2022). One of the key innovations of PSD2 is the requirement for banks to provide access to their customers' payment accounts to licensed TPPs through APIs, given the customer's consent (DNB, 2021; World Economic Forum, 2018). With this, PSD2 introduced provisions designed to boost competition and innovation by enabling third-party providers to offer new services using banks' data and infrastructure (European Commission, 2018; Gozman et al., 2018). This contributed to a transformation in the financial services sector, enabling open banking in the EU. A key distinction to make between open banking and PSD2 is that the latter is a specific European regulation that has played a significant role in promoting the concept of open banking within the European Union.

### 3.3.3 APIs

APIs are the technical realization of open banking (Awrey and Macey, 2022). APIs enable incumbent banks, brokerage firms, insurance companies, and TPPs to request and share customer information with other financial institutions (Awrey and Macey, 2022). These APIs make up the technological backbone of the financial services infrastructure designed to enhance data access, sharing, portability, and interoperability (Awrey and Macey, 2022). At its most basic level, an API represents a structured data sharing agreement between two or more network participants, involving a set of common data standards, messaging formats, rules, and procedures that enable their information systems to communicate with one another (Ozcan and Zachariadis, 2017). Essentially, an API serves as a communication channel that facilitates interaction and information exchange between computer applications over a network using a standardized language that all involved parties can comprehend (Awrey and Macey, 2022). There are three types of APIs (Awrey and Macey, 2022; McKinsey, 2017c):

- Closed - designed enhance internal information sharing within large, complex financial institutions
- Partner - These are implemented when a select number of strategic partners aim to capitalize on improved data sharing to enhance data analytics, provide complementary services, or create new products.
- Open - based on publicly accessible data standards. It allows any software developer or third-party provider to adhere to the relevant protocols and access customer information or services maintained by network participants

### 3.3.4 Open banking today

Open banking, through PSD2 in Europe, has indeed allowed for new financial products and services, and greater access and flexibility in payments for consumers (McKinsey, 2021d; ThePayPers, 2022c). In fact, open banking's biggest impact so far has been to get traditional banks to invest more in updating and simplifying their infrastructure to share data via APIs and comply with new regulations (Morgan Stanley, 2021). The APIs offered by banks now cover a broader variety of common banking functionalities, with account information (for various account types), payment initiation (for various payment instruments) and payment management (for various user-initiated actions around the payment) being the most common (Nordea, 2022b). These are followed by customer information APIs (enabling the controlled sharing of selected data attributes), which have increased considerably (Nordea, 2022b). However, since PSD2 does not mandata an API standard, a current problem has been the lack of API and dataset consistency across the EU (PwC, 2022). Many different API standards, different security approaches, and level of services among market participants represent a hurdle only partially overcome TPPs (PwC, 2022).

According to OECD (2020), open banking and other data sharing frameworks has contributed to the emergence of various active use-cases in a variety of areas within the financial services space. These use-cases are predominantly observed within the payment space, encompassing payment account information services, payment initiation services, and aggregation services facilitated by new intermediaries (OECD, 2020). Additional services stemming from innovative business models built on open banking include credit scoring applications, debt management tools, wealth management solutions, alternative payment services, product comparisons, third-party account verification and balance checks, as well as offerings like cloud-based account management for small businesses (OECD, 2020). Yet, despite all of this, open banking use-cases are still somewhat limited, according to Morgan Stanley (2021). Specifically, the open banking-enabled propositions which are highly valuable for consumers but still of limited availability are (Open Banking, 2019):

- Tools which help consumers compare current account options
- Third party overdrafts: an unbundled alternative to traditional overdrafts
- High balance sweeping / optimizing cash flow for personal and business current accounts
- Support for consumers managing balance transfers on credit cards
- Recommendations on better deals on household bills
- Saving money when making international payments

Many stakeholders view the scope of PSD2 as too narrow as it only concerns payments and is primarily directed towards banks (Open Banking, 2019; Vezzoso, 2022; Insurely, 2022). Consumers need products more closely tailored to their needs (Open Banking, 2019). Despite the progress made so far in the realm of open banking, it is still in an early stage. The limited scope of PSD2 has constrained the growth of open banking (AltFi, 2022). In order for open banking to fully realize its potential value, it must continually develop, evolve, and expand to ultimately transition to the broader concept of open finance (Open Banking, 2019).

## 3.4 Open finance

### 3.4.1 Why open finance

The incumbent banks have strong incentives not to share private customer information with their competitors (Awrey and Macey, 2022). In theory, the private information in possession by the banks can be used to offer better financial products and services to consumers and businesses alike (Awrey and Macey, 2022). However, in practice, this has historically led to a closed system where incumbent banks, brokers, asset managers, insurance companies, and other financial institutions each maintain significant control over the personal information shared by their customers, as well as the valuable payment and transactional data generated throughout the course of their customer relationships (Awrey and Macey, 2022). The customer's personal and transactional data have in a sense been locked away within legal, technological, and economic vaults - hidden from the public eye - to which only the incumbent financial institutions enjoy access (Awrey and Macey 2022).

In the last couple of years, the trend of developing financial services through open data access has advanced, with open banking being seen as the starting point of this evolution, even though it only concerns banks (Insurely, 2022). Currently, there is an increasing demand from various market participants to extend beyond the regulatory boundaries of PSD2 and adopt open finance (ThePayPers, 2022c). Open finance is thus the natural next step, poised to revolutionize the potential of what open data access can do by applying the open banking approach to a much wider range of financial services (Insurely, 2022; ThePayPers, 2022c). The development of open finance will continue to build upon what has been already achieved so far with open banking (TISA, 2022).

This shift towards open finance is expected to empower consumers and businesses by providing them with greater control over their financial data, enabling them to make more informed choices and benefit from a wider range of tailored products and services (Nordea, 2022; Insurely, 2022). The promise of open finance stems from its potential to dramatically reduce the legal and technological barriers that have traditionally made it difficult for customers to access their information, prevented them from easily sharing it with third parties, and consequently discouraged them from switching between products and services provided by various financial institutions (Awrey and Macey, 2022). By lowering these barriers, open finance

aims to equalize the informational landscape, fostering increased competition not only among established financial institutions but also between these incumbents and a new generation of fintech disruptors (Awrey and Macey, 2022). In turn, this enhanced transparency and access to information will drive innovation within the financial services industry, as both incumbents and fintech disruptors seek to leverage the power of data to develop new and improved solutions that cater to the evolving needs of their customers (Nordea, 2022a; Nordea, 2022b). Use cases for open finance are detailed further below at the end of the literature review.

Open finance has the potential to foster financial inclusion by breaking down barriers for underbanked and unbanked populations, who can now access a broader array of financial products and services tailored to their specific needs (European Commission, 2022). Financial inclusion is becoming an increasingly important topic in financial services. According to Finance Watch (2020), financial exclusion can be defined as “/.../ a process whereby people encounter difficulties accessing and/or using financial services and products in the mainstream market that fit needs and enable them to lead a normal life in the society to which they belong.” Most commonly, it has disproportionately affected migrants, elderly, international students, and expats, among others (Finance Watch, 2020). As it stands, approximately 13 million individuals in the EU are deprived of formal access to these services (WSBI-ESBG, 2022). Financial exclusion could for instance manifest itself in the form of not having a bank account, not being able to purchase insurance, difficulties in acquiring credit (Finance Watch, 2022). The backdrop of the pandemic has further accelerated the exclusion and inequality of access to financial services. Open finance has thus been seen as an opportunity to address the issues of financial inclusion (European Commission, 2022). The numerous alternative sources of financial data will provide companies with a broader perspective on individuals' actual financial activities and requirements, thereby strengthening their ability to develop relevant and tailored services (Nordea, 2022). In this context, open finance serves as a catalyst for a more inclusive and equitable financial ecosystem that promotes the overall well-being and financial stability of individuals and businesses alike (European Commission, 2022).

Open finance creates an opportunity to build truly innovative financial services, as it offers the possibility to create completely new business models that leverage previously unexplored sources of data, in order to unlock potential business value and maintain their relevance in the industry (Nordea, 2022a; Nordea, 2022b). Open finance has the potential to transform the way financial markets work for consumers and businesses. However, the nature of these benefits will vary in different sectors, and depend on the extent to which open finance develops across those sectors (Nordea, 2022a). What's more, It is reasonable to expect that the initial stages of open finance will mirror the trajectory of open banking, characterized by gradual growth in adoption - which may fall short of the most optimistic projections (TISA, 2022). With that said, if designed and implemented effectively, open finance will be a vital catalyst for increased competition and innovation within the financial services sector, ultimately enhancing consumer choice and promoting greater financial literacy (Deloitte, 2022).



### 3.4.2 From open banking to open finance

The implementation of PSD2 has helped to steer the European market towards Open Banking. There is now a growing demand from a range of market participants to go beyond the regulatory scope of PSD2's and embrace open finance (ThePayPers, 2022c). Currently however, there are no specific financial regulations concerning open finance (Tink, 2022a). As a result, access to financial information beyond the scope of PSD2 remains subject to the broader provisions of the General Data Protection Regulation [GDPR] (Tink, 2022a). Nevertheless, open finance is expected to be a sector specific legal framework in the future, similar to open banking under PSD2 (Nordea, 2022a; Vezoso, 2022).

In the European Commission's Communication *Digital Finance Strategy for the EU*, the Commission acknowledged that consumers and businesses are more and more accessing financial services digitally, innovative market participants are deploying new technologies, and existing business models are changing (European Commission, 2020). At a conference in February 2022, Commissioner McGuinness declared that open finance is "about making better and more conscious use of data" with the "potential to spark new, innovative products that are personalized to the individual consumer", stressing that "consumers will keep control over their data and how it is shared" (McGuinness, 2022). In the EU, open finance has emerged as a key component of the broader policy goal to establish a unified European data space, which aims to facilitate the flow and extensive utilization of data while maintaining strict privacy, security, safety, and ethical standards (Vessozo, 2022). Although supervisory authorities in the EU are generally supportive of open finance, they still emphasize possible risks related to data protection, cybersecurity, financial exclusion, poor consumer outcome and data misuse (Vessozo, 2022). Indeed, the EC is planning to create a framework for data-sharing between companies in the financial sector, seeking to promote the exchange of data (ThePayPers, 2022c). In 2020, the EC published its *Digital Finance Strategy* which outlined the goal of an open finance framework in place by 2024, in line with the EU's Digital Strategy, Data Act, and Digital Services Act (European Commission, 2020). The EC has announced that they will present an open finance regulatory framework during 2023 (Nordea, 2022a).

The European data strategy, which open finance will have to be aligned with, aims to make the EU a "leader in a data-driven society" (European Commission, 2020). The vision is to create a single market for data that will allow it to flow freely within the EU and across sectors for the benefit of businesses, researchers and public administrations (European Commission, 2020). In alignment with the EC's overarching data strategy, open finance will have to be built upon the Data Act, which itself was proposed in early 2022 by the EC (Vessozo, 2022). The proposal is very broad in scope, aiming to improve data sharing across the EU, including by strengthening data-sharing mechanisms (eg, setting out rules on the reuse of public data) and by reinforcing trust in data sharing intermediaries (Vessozo, 2022). In particular, the Data Act encompasses general regulations for business-to-business (B2B) data sharing across all economic sectors, including the sharing of financial data between businesses. Though, the Data Act does not introduce any new data access rights in the financial sector, but hints at the possibility that a subsequent legislative initiative will do so (ThePayPers, 2022a). The Data Act envisages basic rules for all sectors as regards the rights to use data through a horizontal approach and leaves

room for vertical legislation to set more detailed rules for the achievement of sector-specific regulatory objectives (ThePayPers, 2022a). As a result, it is directly applicable within a future open finance framework that establishes new data access rights (Vessozo, 2022).

To further understand the future of open finance, it can be helpful to look at the current lessons from open banking, as the new open finance framework will build upon the experience from open banking (Vessozo, 2022). The overall experience of PSD2 has been positive but has also shown that consumers often encounter problems, especially in terms of harms arising from the conflicts of interest at the heart of the business models of many of the new services offered, the lack of adequate solutions empowering them, and insufficient consumer and data protection (Vessozo, 2022). In a PSD2 report commissioned by the Verbraucherzentrale, the Federation of German Consumer Organisations [VZBZ], it was identified that more actions from the consumer viewpoint were needed, specifically with regards to (VZBZ, 2021):

1. addressing the inherent conflicts of interest present in PSD2-based business models and beyond;
2. establishing clear guidelines outlining which data should be accessed for providing the customer-requested services, and using appropriate technology to implement these guidelines (e.g., filtering techniques that limit data access via PSD2 interfaces);
3. fostering increased cooperation between data protection and financial authorities in the dual enforcement of PSD2/GDPR, as data protection violations may continue to go unnoticed or unaddressed, potentially due to the novelty of open banking mechanisms;
4. simplifying and refining consent/assent management to allow for more detailed and genuinely informed consent, as well as unbundling services (e.g., offering a basic multi-banking app version without additional recommendations based on extensive data processing).

In May 2022, the EC launched a public consultation initiative on PSD2. The insights from the consultation will form the first step of the EC review of PSD2, which may ultimately result in revisions, leading to the creation of new legislation [PSD3], or heavily revised updates and additions to PSD2 [PSD2 2.0] (AltFi, 2022). Additionally, a study on the application and impact of PSD2 was published in early 2023 by the European Commission (2023). The study investigates whether PSD2 has accomplished the goals outlined by the European Commission and suggests potential modifications to enhance the directive. The suggestions are categorized under three main pillars, which are:

- **Pillar I - Recommendations on PSD2 scope and exclusions:** With key points being: (1) Fragmentation of the Single Market and regulatory arbitrage due to inconsistencies in PSD2 application and supervision across the EU, and (2) competition could be distorted due to Big Techs' strong market position and different approaches to banning surcharges, suggesting closer cooperation between EU antitrust authorities and optimization of information exchange.
- **Pillar II - Recommendations on Open Banking:** With key points being: (1) More standardization and interoperability by defining uniform standards for other payment-related mechanisms (e.g., QR codes, interfaces), (2) three-stage model for payment services, subdivided into the transfer and custody of funds, the transfer and

custody of data, and the management of payment platforms, and finally (3) reducing barriers to account information services by requiring strong customer authentication only once per account.

- **Pillar III - Recommendations on data protection and customer protection:** with key points being: (1) Enhancing coordination between the European Banking Authority (EBA) and data protection authorities to reduce legal uncertainty in the intersection of supervisory law and data protection law and (2) Implement measures for improved customer protection, including support for vulnerable individuals, streamlined cross-border dispute resolution, and optimized information requirements for payment service providers.

These suggestions act as an indication of what can be expected from a potential revision of PSD2 under a potential PSD3 (Paytechlaw, 2023). If such a revision were to be implemented, it would not come into full effect before 2026 at the earliest (Paytechlaw, 2023). The insights gained from the practical experience of open banking implementation under PSD2 highlight important aspects of the relationships between consumers, data holders, and third parties, which the new open finance framework will have to devote particular attention to (Vessozo, 2022). The importance of the review and potential revision of PSD2 is also corroborated by ThePayPers (2022a), stating that the lesson will be taken into account when the EC eventually designs the open finance framework.

In May 2022, a targeted consultation on an open finance framework was launched by the EC, concurrently with the consultation for PSD2 (European Commission, 2022). The targeted consultation gathered input from stakeholders that had in-depth knowledge and/or (working) experience in the field of payments, such as PSPs, national- and EU authorities and –regulators, payment experts etc (European Commission, 2022). The consultation will inform the Commission on the views on open finance, taking into consideration, among others, developments in the payment market, payment user needs and the need for possible amendments (European Commission, 2022). As of now, it is still not known if the open finance framework will be in the form of an updated version of PSD2 (PSD3) or the creation of new legislation or what the open finance framework will entail (AltFi, 2022). According to Vessozo (2022), the open finance framework is likely to enable access to new types of customer-permissioned financial data under certain conditions, thereby enhancing business-to-business data sharing. Moreover, the rules under the open finance framework would have to be designed to complement both the PSD2 regulations concerning payment account data for retail and business customers and the provisions of Regulation 2016/679/EU (GDPR) related to personal data held by any financial service provider (ThePayPers, 2022a).

In addition to regulatory efforts, various industry-driven initiatives are progressing as well. One prominent example is the SEPA Payment Account Access [SPAA], which aims to promote open finance throughout Europe by encouraging account maintaining banks - also known as Account Servicing Payment Service Providers [ASPSPs] to synchronize their service development and technology efforts with other TPPs (ThePayPers, 2022c). In 2021, the Euro Retail Payments Board [ERPB] devised a framework for using APIs to share key data not originally specified by

PSD2, such as non-personal, bank-owned information and customer transaction data, while improving access to customer transaction initiation services (ThePayPers, 2022c).

### 3.4.3 The changing landscape of financial services

In recent years, the financial services sector has been marked by greater focus on data, regulatory shifts, and evolving consumer preferences, among others (FDATA, 2019; Fedeli et al., 2022).

Non-traditional competitors have come to challenge incumbent institutions in the financial services sector, wooing clients with a better client experience at a lower cost. These new competitors are a mix of fintech startups and “techfin” companies (technology companies that have entered the financial arena) (IBM, 2023). Fintech, which refers to the use of technology to improve and innovate financial services, have had a major impact on the way that financial services are delivered and consumed and have opened up new opportunities for consumers and businesses alike (Forbes, 2023). Fintechs are already present in almost all major business domains previously served by traditional financial institutions, e.g. insurance, lending, payments (Varga, 2017). Open finance is expected to result in a proliferation of fintech firms, as the data-sharing that open finance enables provides insights that fintechs can leverage to develop tailored solutions and meet consumer needs (Plaid, n.d.). The emergence of fintech actors in the financial landscape are already affecting the under- or completely unserved, and are creating convenient and easy-to-use solutions in areas formerly without such services (Varga, 2017). The movement towards the concept of open finance and the rise of fintechs have had a major impact on the way that financial services are delivered and consumed and have opened up new opportunities for consumers and businesses alike, and will continue to do so in the future (Forbes, 2023).

Amongst these non-traditional competitors are also retail companies, who have sought to enter the market for financial services using their brand strength and an increasingly diverse range of consumer propositions to facilitate their entry (Worthington, 2008). Notable examples of such retail companies include Amazon, Apple, Walmart, and AliBaba. Amazon, for instance, has introduced Amazon Pay, a digital wallet which enables users to pay for goods from vendors other than Amazon. Moreover, Amazon also offers loans to small and medium sized businesses (Future Branches, 2018). Similar efforts have been undertaken by Apple (Computer World, 2023), including Apple Pay and their own BNPL scheme. Ultimately, these retail companies seek to build financial services products to support their core strategic goal: expanded merchant participation and activity, reach out to a larger number of customers, increased cart and checkout size and reduced friction on both the buy and sell side (Forbes, 2021). By adding financial services to their traditional retail offering, these companies become full-fledged platforms, offering customers a seamless experience (Bultin, 2023). According to the consulting company McKinsey, financial services consumers are increasingly demanding more integrated, multiproduct, customer experiences. (McKinsey, 2021d). Integrated financial offerings are the key to meet this type of demand. What’s more, consumers are demanding this type of integrated offering from typically non-traditional financial institutions (FDATA, 2019).

Easier access to data has become a hot topic in all industries, none more so than financial services (McKinsey, 2017c). Technological, regulatory, and competitive forces are moving markets toward easier and safer financial data sharing, exemplified by EU's PSD2 (McKinsey, 2021c). Data is becoming key assets in the financial landscape. From a commercial standpoint, data can serve as a catalyst for new products and business models (McKinsey, 2017c). Companies now have a greater capacity to develop products and services that generate data, while consumers consistently produce data about themselves. This wealth of data enables firms to gain deep knowledge about customers, from which they can construct data-driven strategies that create value for their customers (Fedeli et al., 2022). Safely and securely accessing financial data, with user consent, allows for the creation of genuinely customer-centric, customized, and adaptable financial services (The PayPers, 2022).

As data continues to be analyzed and monetized, it has raised concerns and driven legislative and regulatory activity (McKinsey, 2021b). The changes in the financial services landscape is partly being driven by regulators keen to accelerate the competition and digital disruption that is reshaping the financial services industry and also to further increase transparency and reduce information asymmetries (Gozman et al., 2018). In the EU for instance, regulatory trends such as PSD2 are promoting the development of banking APIs and universal access of data (McKinsey, 2021g)

Technological trends have changed the financial services landscape towards the direction of open finance (TISA, 2022). Technology has created a great opportunity to innovate new financial services and products. Thus, it has become ever more important for organizations in the financial services industry to invest into their technological capabilities. One key technology in this changing landscape has been APIs (Oliver Wyman, 2018). These APIs are “opening up” systems (to the outside world), which has been essential for value co-creation in open banking (Gozman et al., 2018). Today, technological innovations have become deeply embedded and integral to the transformation of the financial services industry and business model design (Gozman et al., 2018)

#### 3.4.4 The technology of open finance

Current technology trends are expected to transform the financial services industry and are moving the industry towards the direction of open finance (Insurely, 2023; TISA, 2022). Financial services firms are increasingly using technology at a much greater extent and scale (TISA, 2022). These technology trends are quickly changing our relationship with information. In particular, it has enabled the commoditization of our personal information. With that, the dynamics of the market competition has fundamentally changed by allowing for new sophisticated ways of exploiting consumers (Awrey and Macey, 2022). Despite the rapid advancements in technology, the current legacy infrastructure of banks have made the rollout of open banking a complex and drawn-out process. This has in turn led to a lack of interoperability, which has been a fundamental impediment to open banking adoption (Finance Magnates, 2023). Interoperability refers to the ability of various systems to seamlessly work together (Finance Magnates, 2023). In the realm of open banking, interoperability implies that different banks and financial institutions can share data amongst each other through a unified standard

(Finance Magnates, 2023). Going forward into open finance, it will continue to be a challenge for banks and other players alike to access data amongst each other, especially historical data from legacy systems (TISA, 2022). Still, technology will play a critical role in enabling the move from open banking to open finance (Insurely, 2023).

### **APIs in open finance**

Similar to open banking, one of the key enabling and supporting technologies of open finance will be APIs (European Commission, 2022). Developing an API for data-sharing necessitates a range of considerations or attributes linked to the API's actual implementation (BIS, 2022). The crucial aspects or characteristics to consider include (BIS, 2022):

- **API Accessibility:** This pertains to the openness of the API. The models to choose from include public, private, or partner models. This aspect necessitates defining and establishing an onboarding process.
- **API Functionality:** This defines the granularity, categories, functionalities, and scope of the service. It calls for a discussion and definition of read-only and transactional APIs.
- **API Usage:** This assesses and quantifies the bandwidth, resilience, concurrency, scalability, and infrastructure sizing before the implementation of data-sharing solutions.
- **Open APIs:** These are interfaces that offer a means of accessing data based on a public standard, also known as external or public APIs. Central banks or financial authorities must define open standards i.e., API standards, a message format, and security policies based on these standards.
- **Alternative APIs:** Financial institutions don't possess data on unbanked citizens. Therefore, a financially inclusive approach should contemplate incorporating complementary or alternative data sources like social networks, sensors, internet of things (IoT), and mobile technologies, among others. This approach could help mitigate the challenges associated with including unbanked citizens.

### **API standardization**

In particular, many sources highlight the importance of standardizing API standards across the industry to facilitate open finance (European commission, 2022; PwC, 2022; TISA, 2022; Finance Magnates, 2023). In the development of open banking, it was observed that there was a lack of API consistency at both national and EU level (PwC, 2022). At present, diverse API standards are employed by various banks and financial institutions. This presents significant obstacles for third-party providers who must adjust to each unique API (Finance Magnates, 2023). This significant fragmentation within the industry has led to substantial coordination issues and thus inconsistencies in data exchange (Awrey and Macey, 2022; Finance Magnates, 2023). This is also corroborated by the Financial Conduct Authority [FCA] of the UK (FCA, 2019). Specifically, the FCA recognized that API development has been challenging and has taken time, which in turn has led to varying reliability-levels of the APIs (FCA, 2019). The varying API standards and level of services among open banking participants represents a hurdle, which if not addressed will carry over to hamper open finance (PwC, 2022). The introduction of a single API standard with implementation guidelines and operational rules could, according to PwC, solve the fragmentation seen in open banking standards and ensure consistency in the new paradigm of open finance (PwC, 2022). Standardization of API will play

an active, pivotal role in ensuring an efficient and effective open finance landscape (PwC, 2022). In response to the EU's open finance initiative, PwC maintains that both the European Commission and market participants share the responsibility of standardization (PwC, 2022). Such a standardization would require additional investments into APIs by the market (PwC, 2022). A joint report by TISA and EY reiterates the importance of introducing a common standard for API (TISA, 2021). A common API standard would allow for more efficient peer-to-peer data exchange (TISA, 2021). As such, TISA-EY concluded that the governing bodies of open finance should be endowed with the responsibility of maintaining and developing the APIs used in open finance, technical, consent, user experience and security standards (TISA, 2021). The most common international and industry-accepted standards include: OpenAPI, W3C, OASIS, IETF, and Open Container Initiative (BIS, 2022).

Payments Europe however, calls for the development and implementation of “outcome-based” APIs which should be jointly developed by market participants and governments (Payments Europe, 2022). This way, the development of the technology and tools for open finance can be streamlined, benefiting both API developers and end-users (Payments Europe, 2022). In their open finance report, the expert group to the EC envisions a more careful approach to standardization. While recognizing the importance and necessity of it, they also recognize that overly standardization requirements may pose a technical and cost hindrance for market participants. The expert group of the EC instead emphasizes that API-requirements should be flexible and that different levels and approaches to standardization may be appropriate for different aspects of open finance (EC, 2022). Nevertheless, to remain competitive in an open finance ecosystem, most established firms will have to substantially upgrade their technology and data infrastructure (Deloitte, 2022).

### **Digital identification in open finance**

Beyond open-data enablement such as APIs, countries would need to develop supportive digital infrastructure and frameworks to safeguard consumers, such as digital IDs (McKinsey, 2021c). Remote and secure identification and authentication of users is the main requirement for parties in an open finance ecosystem to interact, according to BIS (2022). The necessity of strong authentication was stipulated in PSD2 under the introduction of Strong Customer Authentication [SCA] (Signicat, 2021). Digital ID with broad population coverage is a critical feature of financial infrastructure needed to enable the potential value that open finance can bring (McKinsey, 2021c). As such, one of the decisive factors for the success of open finance is digital identity. To fully grasp the idea of digital identity and its relevance to financial services, it's crucial to revert to basic principles. Identity encompasses various attributes relating to an individual, such as name, date, and place of birth as documented on birth certificates, thus forming our “legal identity”. With time, we also acquire government-issued identifications like passports or driver's licenses, which serve as photo IDs. Additionally, proof of address often issued by trusted institutions like banks forms part of our identity. These identification forms largely determine our access to financial services. In this context, traditionally paper-based identities can be digitized, significantly important considering existing gaps. Consequently, digital identities (or enhanced digitized forms of identity) can potentially reduce the friction in accessing financial services

(Open Banking, 2021). A contemporary example of digital identity would be the Swedish BankID which has become ubiquitous in Sweden (McKinsEY, 2020a).

High-assurance digital IDs therefore enable user data control, online interaction security, and privacy protections, while simplifying online account management (McKinsey, 2021c). Without these IDs, open data systems could lead to increased complexity for consumers, making it difficult to securely and efficiently manage their digital footprint (McKinsey, 2021c).

Simultaneously, digital IDs can bolster customer authentication, offering a defense against cyber-attacks targeting APIs and reducing risks of fraud and financial crimes which would otherwise be possible in the absence of identity verification checks (McKinsey, 2021c; Open Banking UK, 2021). For parties to interact within an open finance ecosystem, remote and secure identification and authentication of users is a key requirement (BIS, 2020). Service providers subject to financial laws and regulations must comply with Know Your Customer rules (Shuftipro, 2022). Consequently, strong identity verification procedures must be integrated into open finance platforms to guarantee not only customer security but also system compliance (Shuftipro, 2022). Leveraging APIs and sophisticated technology, open finance can transform into the optimal solution for financial operations – but this hinges on the implementation of rigorous digital identity verification processes (Shuftipro, 2022). For this to happen, governments must remain committed to constructing a reliable digital identity framework and encourage its comprehensive application throughout the economy. They should also leverage existing expertise in customer data sharing, such as those cultivated by open banking, to maintain uniform standards and authentication methods. Furthermore, it's essential to establish a sturdy trust framework and liability model, alongside a dedicated supervisory body (Open Banking, 2021).



# Chapter 4: Data in the context of financial services

This chapter unfolds the multi-faceted topic of data, concerning data itself, mechanisms of data collection, data analytics, data accessing between organizations as well as consumer data protection. Lastly, the chapter concludes with the implication that data protection in open finance will have for organizations.

## Personal data

Personal data is defined by the OECD (2013) as “any information relating to an identified or identifiable individual (data subject).” Data that is not linked to an identified or identifiable person is classified as “non-personal” data (OECD, 2020). Nonetheless, advancements in data analytics have made it increasingly possible to associate apparently non-personal data with a specific or identifiable individual, thereby obscuring the distinction between non-personal and personal data (OECD, 2020). The European Union’s General Data Protection Regulation [GDPR] defines tries to take this into account by defining personal data as “any information that relates to an identified or identifiable living individual” and stresses that “different pieces of information, which collected together can lead to the identification of a particular person, also constitute personal data.” (OECD, 2020). The EU legislation emphasizes that personal data, even if de-identified or encrypted but capable of re-identifying an individual, still qualifies as personal data and is subject to the law’s jurisdiction (OECD, 2020).

Implemented in May 2018, the GDPR seeks to empower EU citizens by offering them greater authority over their personal data, including its access, processing, and utilization. It is underpinned by seven fundamental principles regarding personal data: legality, fairness and transparency; limitation of purpose; minimization of data; accuracy; limitation of storage; integrity and confidentiality (security); and accountability (OECD, 2020). The Regulation codifies the following fundamental data subject rights:

- The right of access.
- The right to rectification.
- The right to erasure or right to be forgotten.
- The right to restriction of processing.
- The right to data portability.
- The right to object.
- The right not to be subject to a decision based solely on automated processing, including profiling, when this bears legal effects or significantly affects him or her.

The most important building block of the GDPR is that data subjects should have control of their own personal data (OECD, 2021).

## Data driven digitalization of financial services

In financial services, there are primarily three crucial aspects of customer data: the type of data, the approach to data collection, and the use of data. These elements carry significant implications for the appropriateness of data usage in financial services, as well as the competitive edge that can be gained through data (World Economic Forum, 2018).

- The type of data:** refers to the various categories or classifications of data that can be collected, stored, and used by organizations (World Economic Forum, 2018). Figure 4.1, shows various types of customer data. The types of data an organization collects and uses can have significant implications for privacy, security, and how services or products are tailored to individuals (World Economic Forum, 2018). "Traditional forms" of customer data refer to basic and static information, like identity and financial records, historically collected directly from customers. On the contrary, "emerging forms" represent newer, dynamic data categories, such as digital IDs, social media activity, and real-time health or location data, often gathered indirectly through modern technologies and digital interactions – or even artificially created such as in the case of synthetic data.

	<b>Traditional forms</b>	<b>Emerging forms</b>
<b>Identity</b>	Public records, tax filings	Fingerprints, photographs, iris scans, digital IDs
<b>Health</b>	Medical records, insurance claims	Fitness tracking, sleep/eating habits
<b>Financial</b>	Bank statements, credit scores	Peer-to-peer payments, online budgeting
<b>Social</b>	Organization registries	Social media connections and activities
<b>Location</b>	Telephone books	Geolocation tracking
<b>Media behaviour</b>	Library checkout histories	Web browsing activities, content streaming

*Figure 4.1: Types of data and their traditional and emerging forms according to the World Economic Forum (2018).*

- Data collection approach:** refers to the various methods used by companies to gather information about their customers (World Economic Forum, 2018). These methods include volunteering, observing, inferring, and collection from third parties (World Economic Forum, 2018). For instance, when a customer applies for a mortgage at a bank, they voluntarily share certain information like their demographic details and income – this is volunteered data. The bank then keeps track of the customer's loan payment history, which constitutes observed data. Figure 4.2 showcases the different collection methods as well as types of data that can be collected with respective

methods.

	Definition	Examples
Volunteered data	Explicitly provided by customer	Demographic data, self-reported income
Observed data	Created through customer activity	Transaction history, web browsing history
Inferred data	Proprietary forecasts using other data types	Underwriting output, customer profiles
Third-party data	Purchased by institution	FICO credit score, background check

Figure 4.2: The different approaches to data collection (World Economic Forum, 2018).

- **Data usage:** refers to how organizations apply the information they've collected (World Economic Forum, 2018). This could involve a variety of activities such as making business decisions, improving products or services, managing risk, executing marketing strategies, or sharing with third parties (World Economic Forum, 2018). It also includes the legal requirements of data usage, like anti-financial-crime reporting requirements (World Economic Forum, 2018). The term emphasizes that data isn't just collected, it's actively used to achieve certain objectives or goals.

Data analytics has become an integral part of the business within financial services and is a common usage method (World Economic Forum, 2018; IFC, 2017). Data analytics can be broadly categorized into four categories: descriptive, diagnostic, predictive, and prescriptive (Stackpole, 2023; IFC, 2017).

- **Descriptive analytics** is a type of data analysis that interprets historical data to identify patterns and trends from the past (IFC, 2017; Stackpole, 2023). It involves a variety of techniques like data gathering, data mining, data classification, and data visualization to break down raw data and identify patterns. The goal of descriptive analytics is to analyze and interpret data to understand what has occurred in a business, project, or process over a certain period (IFC, 2017).
- **Diagnostic analytics** is a form of data analysis that is focused on understanding the reasons behind past outcomes. It goes a step further than descriptive analytics by exploring and interpreting historical data to answer the question "Why did it happen?" (IFC, 2017). Examples of techniques include A/B-testing, regression, and segmentation (IFC, 2017).
- **Predictive analytics** broadly encompasses the techniques and technology used to process large volumes of data (OECD, 2021; Stackpole, 2023). This process uncovers

patterns and correlations, generates profit-driving insights, and most importantly, enables accurate and timely predictions of future trends (OECD, 2021).

- **Prescriptive analytics** is a form of advanced analytics that not only predicts future outcomes but also suggests actions to benefit from those predictions (IFC, 2017; Stackpole, 2023). It attempts to answer the questions "What do we need to do to achieve this?".

Data analytics allow financial service providers to deduce sensitive information from data that doesn't directly relate to an individual's financial profile, such as past purchasing behavior, electricity usage, or social media activities of their contacts (OECD, 2021). According to the same OECD report (2021), the growing abundance of personal consumer data paired with increasingly advanced analytical tools and artificial intelligence has enabled financial service providers to develop the following functions and services:

- **Customer Profiling:** Data derived from online behavior, geolocation, electronic payments, and wearables can offer financial service providers insightful knowledge about their customers' financial habits, promoting more nuanced customer segmentation as well as increase levels of customer satisfaction and retention (Elgendy and Elragal, 2014). Additionally, it aids in identifying potential sales and marketing opportunities.
- **Account Aggregation:** This refers to compiling information from different accounts (such as checking, investment, savings accounts) into one single place to facilitate personal financial management (World Economic Forum, 2018). The advent of open banking has significantly propelled the prevalence of these services, and with the upcoming trend of open finance, this progression is anticipated to intensify even further (OECD, 2021).
- **Risk Assessment:** Data from various sources aids in risk evaluations (OECD, 2021). Utilizing high-efficiency analytics, individual risk profiles, usually managed independently across different departments, can be consolidated into comprehensive enterprise-wide risk profiles. This can aid in risk mitigation (Elgendy and Elragal, 2014). For instance:
  - **Credit:** In jurisdictions with positive credit scoring systems (where not only negative credit markers are reported), big data and advanced analytics have led to the creation of credit scoring tools that utilize thousands of individual data points (OECD, 2021).
  - **Insurance:** Providers can use aggregated data for risk assessments across diverse domains to enable more precise risk segmentation and risk-based pricing. For example, data from activity trackers or phones can estimate a policyholder's potential lifespan. This data can then be used in the customer's life insurance (OECD, 2017)
- **Fraud Detection:** In terms of fraud detection, specifically within financial services, the application of big data analytics is crucial for identifying and averting fraudulent activities

(Elgendy and Elragal, 2014). While analytics are already widely employed in automated fraud detection systems, various organizations and industries are now exploring the power of big data to enhance these systems. Big data analysis allows the companies to draw from a larger pool of data and conduct more rapid analytics (Elgendy and Elragal, 2014).

The increasing use of data in financial services has already brought benefits for consumers: For instance, costs have been reduced through amplified competition and the emergence of FinTech companies, especially within the payments and lending sectors (OECD, 2021). Services that aggregate financial and payment data from consumer bank accounts have also been developed for dashboard and accounting products (OECD, 2021). Additionally, robo-advisors have made financial advice accessible to consumers who couldn't previously afford one-on-one consultations (OECD, 2017). However, the increased use of personal data also introduces new risks, necessitating a comprehensive policy response that includes financial education and awareness alongside consumer protection in the financial sector (OECD, 2021). This will be discussed further down in "Data security, privacy, and trust in open finance".

## 4.1 Data in the context of open finance

An effective open finance framework should be founded on suitable data availability and access, characterized by fairness, transparency, and proportionality (European Commission, 2022). According to Awrey and Macey (2022), there are three intertwined principles of data that are at the core of open finance:

- **Data Access:** This principle underscores the customers' ability to view all the personal and transactional data collected and generated by a financial institution about them (Awrey and Macey, 2022).. This can be accomplished by either explicitly assigning property rights of this data to customers or by mandating financial institutions to provide this data to customers upon their request (Awrey and Macey, 2022).. Related to data access is data sharing. This refers to empowering customers to instruct their financial institutions to share their personal data with specified third parties, including, most crucially, other financial institutions (Awrey and Macey, 2022).. Data access and data sharing together form the cornerstone of Open Finance (Awrey and Macey, 2022).
- **Data Portability:** This principle, as defined by the International Standards Organization [ISO], refers to the "capability to effortlessly transfer data from one system to another without the necessity to re-input the data" (ISO, 2017). GDPR provides for a right of data portability (FCA, 2019) Data portability can be of two types (Awrey and Macey, 2022):
  - Export type: This allows customers to download a digital copy of their personal and transactional data from one financial institution's information systems, which can then be uploaded onto the systems of other institutions.
  - Platform type: This relies on an automated digital interface to facilitate the transfer of customer data from one financial institution to another, potentially

enabling large-scale and real-time transfer of customer information among financial institutions.

- **Data Interoperability:** As defined by the ISO (2017), data interoperability involves the "capability of multiple systems or applications to share information, and to mutually utilize the exchanged information." Essentially, it involves the creation of standard protocols that allow separate or compartmentalized information systems to automatically send specified data requests to each other, and in turn, automatically receive the requested information in a designated format (Awrey and Macey, 2022).. This standardization allows financial institutions that adhere to these protocols to seamlessly integrate into an existing network. It provides these institutions with the ability to access customer data from other network participants, without granting direct access to their underlying information systems. APIs are the primary technological tools that facilitate data interoperability (Awrey and Macey, 2022).

Regulations for data access and sharing mark a crucial initial move towards open finance. With this, existing legal, tech, and financial hurdles that are part of the current system will hopefully be broken down. However, data sharing and accessing may not be enough to fully address issues caused by the expensive process of changing banks, the cost advantages of larger companies, or the benefits that come from having a large network of users. This is where the role of data portability and interoperability becomes significant. Effective rules for data portability supplement the data access and sharing rules by guaranteeing customers the convenience of transferring their personal and transactional data from one financial service provider to another in open finance (Awrey and Macey, 2022).

### **Data standardization and breadth of data sharing in open finance**

Similar to the case of APIs, there has been a discussion on the need for standardization of data in open finance. The expert group on open finance appointed by the EC has said that data standardization is an important element to support open finance (European Commission, 2022). According to a McKinsey (2021) report, attaining the full potential of data sharing in an open data economy, which by extension includes open finance, necessitates a degree of data standardization. This level of standardization is presently lacking in many economies (McKinsey, 2021c). McKinsey defined data standardization as the extent to which standardized mechanisms exist for sharing data and the associated cost of access (McKinsey, 2021c). For large-scale operations, certain data-sharing use cases need the data to be easily obtainable via standardized APIs with minimal cost, which has been discussed above (McKinsey, 2021c). The Expert Group to the European Commission [EGEC] suggests that standardization can be achieved by outlining the specific data fields to be shared, how these fields should be filled, and the minimum criteria required to implement established APIs (European Commission, 2022). The potential areas for this standardization could encompass authentication and identity management, potentially leveraging standards from the eIDAS Regulation. Technical requirements may also be included, such as field names, syntax for messaging formats, protocols for exchanging information, and adherence to globally accepted data standards (European Commission, 2022).

Broad data sharing should accompany high data standardization to ensure that all interested parties can access the data, catering to a diverse array of use cases (McKinsey, 2021c). According to McKinsey (2021b), this would encourage engagement, widespread use, and involvement in the open data paradigm. The value that open data brings are largely determined by these two facets: standardization and breadth of data sharing, i.e. openness (McKinsey, 2021c). Breadth of data sharing refers to how broadly data is shared and the mechanisms in place that drive the data sharing (McKinsey, 2021c). Financial institutions need ongoing access to a range of consumer data to enhance and customize their offerings (McKinsey, 2021c). One example is the expedited process of mortgage closure that consumers can experience when they provide their potential lenders with one-time access to the necessary data (McKinsey, 2021c). To operate at scale necessary in open finance, it would require data sharing over time across a wide range of types of financial data with consumer consent (McKinsey, 2021c). Capturing more of the potential value of open finance will require a greater degree of data standardization and broader data sharing (McKinsey, 2021c). The EGEC advocates for a cross-sectoral and multilateral approach to data sharing (European Commission, 2022). The intention of this approach is to prevent any competitive distortions among firms offering products, intermediaries, third-party providers, and other key stakeholders. Equal access to data can be hindered when one group of market players holds all the relevant data. By implementing a standardized and direct data access framework, competition could be maintained on a level playing field for all relevant market participants. This would not only preserve effective competition, but also enhance transparency and encourage customers and providers to switch by clarifying which data are accessible (European Commission, 2022).

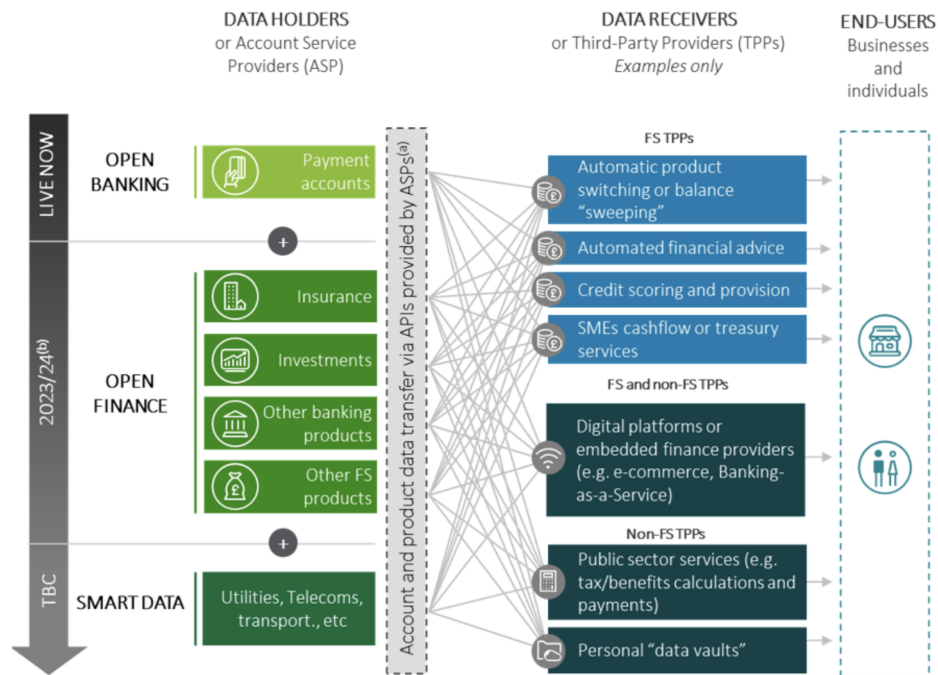
### **Data compensation model in open finance**

Open finance should be rooted in fair and proportionate data access for all market participants - big or small; startup or incumbent (European Commission, 2022). It is crucial to establish a fair distribution of costs among various players in the data value chain to ensure a competitive playing field (European Commission, 2022). By providing fair and proportionate data access, a customer-oriented perspective can be fostered, allowing customers to leverage their data to access a wider variety of products and services (European Commission, 2022). The European Banking Authority has noted that, within the context of PSD2, the obligation for entities to provide APIs free of charge to TPPs did not foster the right incentives for these entities to invest in developing high-quality APIs (European Commission, 2022). Against the backdrop of this and to ensure fair competition in open finance, the EGEC recognizes that it may require the fair allocation of costs among different players of the data value chain. This cost allocation could allow data holders to recoup the expenses related to the collection, generation, preparation, and sharing of data, potentially with a reasonable profit margin. This could be established based on a horizontal approach (i.e. across all sectors), in alignment with the proposals in the Data Act, which necessitates the compensation to be fair, unbiased, and rational (European Commission, 2022). Including a compensation scheme in the data sharing framework of open finance could thus incentivise high quality data sharing (European Commission, 2022). For open finance to grow, it is important to maintain incentives for data holders to continue investing in high-quality data collection and processing (European Commission, 2022). The inclusion of a compensation

rule in the upcoming open finance framework – as well as its specific design – is still undecided as of 2022 (Vezzoso, 2022).

### Data sharing flow in open finance

Deloitte (2022) has mapped the high-level data flow going from open banking to open finance and beyond. The data flow starts with data holders, i.e. entities that are in possession of the customer financial data. In open banking, this was primarily payment account data. Going into open finance, the type of data holders and data will include insurance, investments, and what they call “other” banking and financial service products. Through the use of APIs, the data can be disseminated and accessed by Data Receivers. This includes TPPs or any other entities that require access to financial data. Deloitte groups the TPPs into Financial Services TPPs and non-financial services TPPs. Using the accessed financial data, the TPPs can offer individuals and businesses with various products and services. For financial services, these include: automatic product switching, automated financial advice, and credit scoring. For non-financial services, these include personal “data vaults” and public sector services such as tax calculations. Deloitte also envisions a combinatory FS and non-FS product and services which would include digital platforms or embedded services such as banking-as-a-service. In the future, Deloitte also foresees the sharing and accessing of what they call “smart data” which include utility, telecom, and transport companies to share data as well. The entire flow diagram is presented in figure 4.3.



(a) Subject to customer’s consent (b) Estimate based on UK policy announcements and commitments

Figure 4.3: Data flow diagram going from open banking, to open finance, and finally “smart data” (Deloitte, 2022).



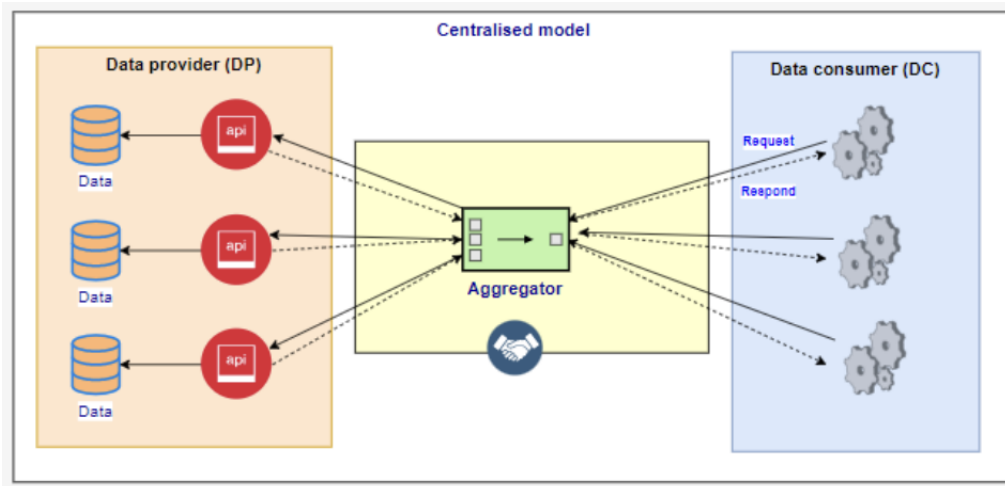
**Table 4.1: Financial data that will be shared in open finance, according to FCA (2019).**

Market	Data shared
Savings	<ul style="list-style-type: none"> <li>• Product information (features, terms including fees or charges)</li> <li>• Balance and transaction information</li> </ul>
Mortgages	<ul style="list-style-type: none"> <li>• Product information (features, terms including fees or charges)</li> <li>• Balance (size of the loan) and property value</li> <li>• Payment history</li> </ul>
Consumer Credit	<ul style="list-style-type: none"> <li>• Product information (features, terms including fees or charges)</li> <li>• Credit amounts, limits and balances</li> <li>• Payment and usage history</li> </ul>
Investments	<ul style="list-style-type: none"> <li>• Product information (features, terms including fees or charges)</li> <li>• Balance and transaction information</li> <li>• Investment history and historical risk exposure</li> </ul>
Pensions	<ul style="list-style-type: none"> <li>• Product information</li> <li>• Fund value and projection</li> <li>• Contribution history</li> <li>• Fees and charges for invested assets</li> <li>• Current contribution rate</li> <li>• Drawdown rate in decumulation</li> </ul>
Insurance	<ul style="list-style-type: none"> <li>• Product information (policy features, terms including fees or charges, exclusions)</li> <li>• Basic customer data (name, address, claims history data)</li> <li>• Additional customer information</li> </ul>

The Bank for International Settlements [BIS] released a report in 2022, wherein they discuss how to enable open finance through APIs. In that report, they define data-sharing as the provision of data by a data holder to a third party with the consent of the data owner. The report defines data-sharing as the provision of data by a data holder to a third party with the consent of the data owner. Data sharing encompasses not only the redistribution of data based on commercial and non-commercial data-sharing agreements but also the use of various practices, technologies, architectural structures, cultural aspects, and legal frameworks associated with digital information transactions between individuals or organizations. It's important to note that data-sharing is not solely about the data itself, but also the processes involved in the exchange of data (BIS, 2022). In the context of open finance, the data sharing flow will be dependent on where the data is stored, identifying the consumers, and determining which APIs to use (BIS, 2022). Furthermore, the flow of data sharing will also be influenced by the responsibilities of the parties involved and the structure of obtaining the mandatory users' consent. With that, BIS envisions primarily three models for data sharing in open finance: centralized, decentralized, and trust-ecosystem.

In a centralized model, a data aggregator collects all the information. The institution responsible for the data exchange, or the data provider, maintains complete control over the data sharing process. This includes control over the authorization and authentication procedures needed to access the data through the aggregator. One of the primary advantages of this model is the fast response time for data retrieval, as it's quicker to gather data from a central aggregator,

essentially a consolidated source, than from multiple disparate sources. If there is a centralized data repository, the institution responsible for centralizing the data also bears the responsibility for maintaining privacy and information technology security. Figure 4.4 is a high level depiction of a centralized model.



*Figure 4.4: illustrates the data flow in a centralized model as described by BIS (2022). A “data provider” is an entity that possesses financial data, while a “data consumer” is any entity that seeks access to this financial data.*

In a decentralized model data stays at its source or point of service (BIS, 2022). However, each member agrees to individually share their data with other participants. Each organization maintains ownership and control of its own data within its source databases. One of the main benefits of this model is that it ensures access to the most current data, and each participant can negotiate what data they want to share. There might be a central group that maintains a list or directory, which helps facilitate data transfers using standard methods. However, because data transfers happen directly between participants, there isn't always a uniform standard for exchanging data. This can pose a challenge as there isn't a standard, predefined field about what and how to share data between participants. Each participant negotiates individually based on what's available. The advantage however, is that response times are usually quicker than in the centralized model because it's a direct connection without a central entity involved. Figure 4.5 depicts a high level picture of a decentralized model.

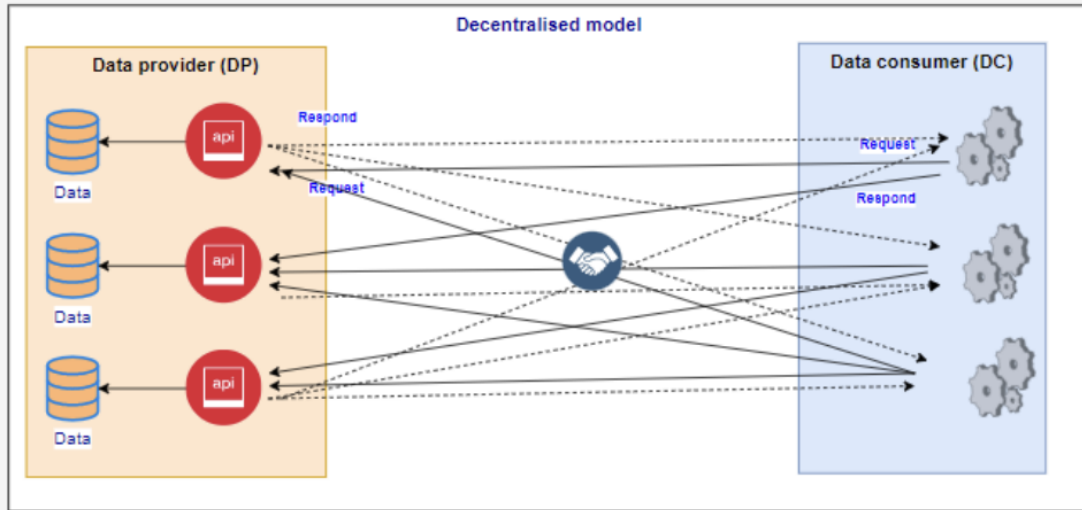


Figure 4.5: A depiction of the data flow in a decentralized model according to BIS (2022).

In the trust-ecosystem model, there's no need for an aggregator if standards are well defined, eliminating the need for a central entity (BIS, 2022). The main pillars of this model are standardization, testing, and a rigorous certification process. This model combines elements of both centralization and decentralization. It uses a decentralized approach for data-sharing but a centralized one for managing identities. The trust-ecosystem model is built on a trust framework that registers both data providers and consumers. It necessitates a registration process for participants, secure communications, and a standard for exchanging information through an API. Given that the application of standards can sometimes differ, even minimally, the model asserts the need for a certification process overseen by certification authorities. This ensures that all parties are adhering to the agreed-upon standards. Figure 4.6 depicts a high level picture of a trust-ecosystem model.

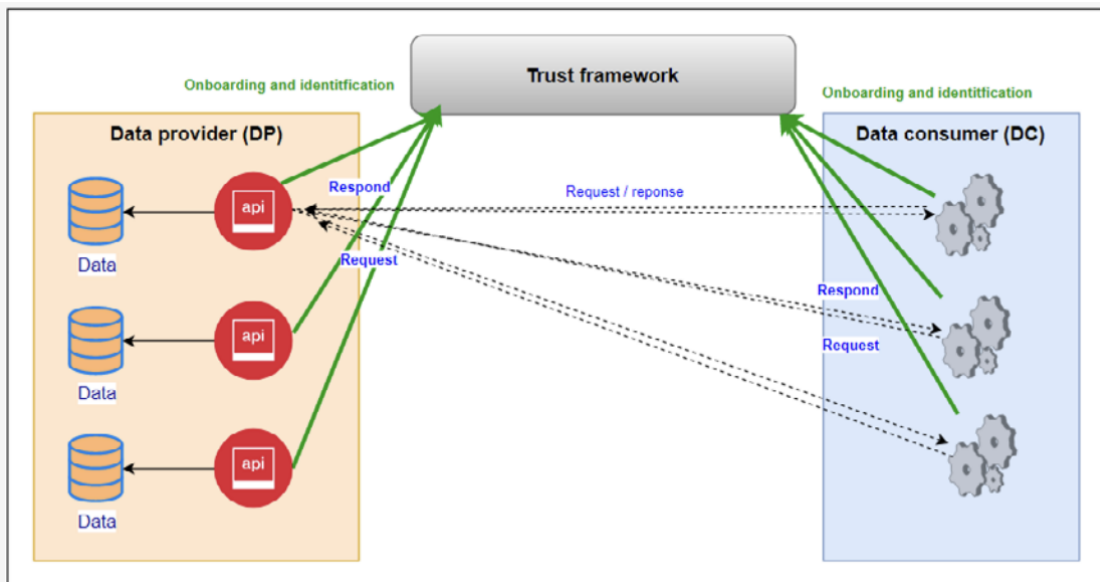


Figure 4.6: A depiction of the data flow in a trust-ecosystem model (BIS, 2022).

Data sharing forms a cornerstone of open banking and open finance initiatives (BIS, 2022). The FCA (2019) has identified a range of financial data that could be shared by providers as part of open finance, presented in Table 4.1. Data-sharing fosters transparency in the digital realm and encourages extensive reciprocity and collaboration within the wider financial ecosystem. There are numerous benefits to data-sharing, such as fostering a transparent digital society, fostering reciprocity and collaboration in the financial ecosystem, and amalgamating data from various sources to enhance the quality and value of services. It also facilitates improved decision-making, enables the delivery of superior products, and empowers individuals by giving them ownership of their data.

## 4.2 Data security, privacy, and consent in open finance

Data security will be at the heart of open finance (World Economic Forum, 2018). One of the key learnings from open banking was indeed the importance of addressing customer concerns related to data protection and cyber security (EY, 2022). Since open finance deals with highly sensitive customer data combined with increased availability and openness of it, the future open finance regulatory framework will undoubtedly require strict regulation and involvement from supervisory authorities (EY, 2022). Additionally, this also highlights the importance for the customer to have a higher level of control around the access to the data (EY, 2022). Crucial to this is the use of consents, which are fundamental for privacy assurance (FCA, 2019). These consents ensure that access to data is always consciously granted by the data owner, with the time and scope of access limited as needed. The successful processing of consents relies upon firms providing sufficient information, and in a clear format, to enable the consumer to both understand how their data will be used and make an informed decision (FCA, 2019). In order to enable widespread data sharing, significant questions about how to ensure user consent and data security need to be addressed (McKinsey, 2021c). Customers appreciate that data about them can be used to create tailored products and services but are concerned about privacy and misuse of that data (World Economic Forum, 2018). Particularly in open finance, lack of customer data safeguards can weaken trust and thus lead to poor participation amongst consumers (World Economic Forum, 2018). Companies face substantial risks when they fail to safeguard customer data properly. The challenge of data protection is multifaceted: data is at risk of misuse by bad actors within a company, theft by cybercriminals, or inappropriate sharing with third parties (World Economic Forum, 2018).

### 4.2.1 Privacy concerns from consumers

*Which?* (2018) has made an extensive literature review regarding consumer sentiment towards data sharing, collecting, and usage by companies. In it, is also an extensive literature review regarding the security and privacy concerns from consumers. In the same report, it was found that for consumers, privacy is about personal control. They want to be able to decide when, how, and to what extent their information is shared with others. While privacy may not be their immediate concern, it gains importance when they are prompted to contemplate it. Consumers

generally believe in their inherent right to privacy and expect organizations to uphold this principle. They express concerns about practices such as location tracking, sharing browser history, and the prospect of organizations accumulating "too much" personal data by correlating identifiable information like names and addresses with time and location-based data.

Consumers desire transparency about the utilization of their data (TISA, 2022). In particular, people are concerned about the passing on of data to third parties – for example, a majority (68 percent) say they were concerned about their data being sold on to third parties for marketing purposes and separate research has found that 63 percent of people say that companies selling anonymous data is a concern (Ipsos, 2016). There is also a concern amongst consumers about the number of companies that hold personal data, how many other companies it is shared with and whether the passing on of their data would ever end (Ipsos, 2016). They wish to have the options to opt-in or opt-out of various permissions, dictate who can access their data, and decide how long their information should be retained (Which?, 2018). Despite being skeptical, customers generally don't have a full understanding of what exactly data sharing and collection entails, nor what it is used for (Which?, 2018). Though, the majority of consumers believe organizations exclusively use their personal data for monetary profit (Which?, 2018). There's notably less support for the commercial use of data, particularly when it's being used by an entity other than the consumer's primary banking institution.

At present, companies primarily rely on terms and conditions to inform consumers about their data usage (Ipsos, 2016). However, a majority of internet users (57 percent) admit to seldom or never reading these terms and conditions statements on websites (Ipsos, 2016). Thus, while individuals acknowledge that information about data usage likely exists, they also believe it has been intentionally obscured, requiring significant time and effort to uncover (Ipsos, 2016). When it comes to attitudes towards data privacy, consumers can be divided into three groups: privacy pragmatists, privacy fundamentalists, and privacy unconcerned (DMA, 2018).

- Privacy pragmatists, (50% of the population) evaluate on a case-by-case basis whether the benefit of a service or its improvement justifies the disclosure of the requested information. They are inclined to view their personal data as an asset that can be negotiated for superior deals and offers (DMA, 2018).
- Privacy fundamentalists (25% of the population) are typically from an older demographic and less frequent users of the internet and social media. They are reluctant to divulge personal information, even if it means forgoing enhanced services (DMA, 2018).
- Lastly, the Privacy unconcerned, (25% of the population) are not troubled by the collection and use of their personal data. This group exhibits a generally favorable attitude towards sharing their personal information. It is primarily the younger generation that falls into this category, as they have grown up with technology and are comfortable with accepting the status quo of data exchange and are less concerned about privacy issues (DMA, 2018).

Interestingly, there has been a noticeable decline in privacy concerns over time (DMA, 2018). In the UK, the percentage of individuals voicing worries about online privacy has dropped from 84 percent in 2012 to 75 percent in 2015 according to recent research. While a diminished level of concern is observable across almost all age groups, the trend is especially pronounced among

younger consumers (DMA, 2018). Attitudes towards data usage also depend on the individuals personal characteristics, digital skills and their trust in the firms using the data (DNB, 2021).

#### 4.2.2 Security concerns from customers

A recent consumer survey underscored the perception among many individuals and small businesses that open banking presents more risks than benefits, with security being one of the top concerns (Open Banking, 2019). It's understandable that banks and other financial service providers are attractive targets for cybercriminals, and the advent of open finance could potentially intensify this issue (Gemini, 2021). With the dispersion of consumer data across multiple institutions, each with distinct security protocols under open finance, the likelihood and attractiveness of cyberattacks could increase (Gemini, 2021). Consequently, the implementation of comprehensive cybersecurity measures becomes an absolute necessity in the open finance landscape (Gemini, 2021).

Indeed, data security is of major concern amongst consumers when it comes to data sharing (Which?, 2018). When surveyed, 72 percent of respondents voiced concerns about companies' ability to safeguard their data (Which?, 2018). These apprehensions primarily stem from worries about organizations mishandling consumers' data or falling victim to cyberattacks, rather than from fears about the security of data on the consumer's end (Which?, 2018). Common issues regarding data security include safety of personal details (e.g. from identity theft and hacking) and lack of safety around financial transactions (Which?, 2018). The latter includes banking/paying bills online and buying/selling online, particularly when consumers have to enter their debit/credit card information online (Which?, 2018).

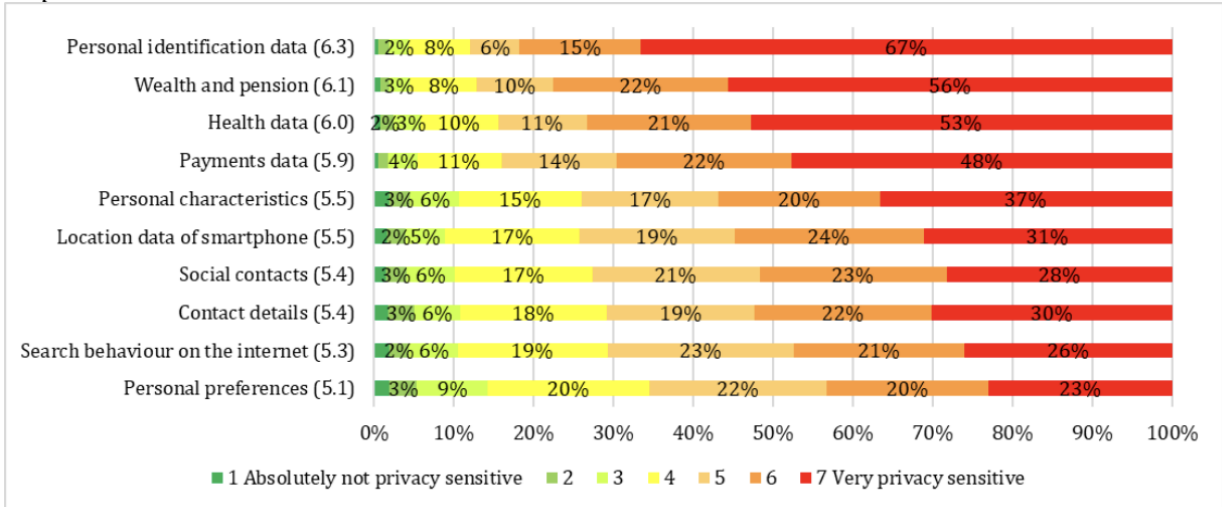
In a survey by IBM (2019), it was found that almost everyone (94 percent) expects businesses to do more to safeguard their consumers against cybersecurity threats. In the same report, more than half (53 percent) report that the degree to which a company can protect its customers' data from cyber attacks plays a crucial role in influencing whether customers choose to do business with them, even surpassing the importance of the quality of the company's products and services. Additionally, consumers feel that the responsibility of clarifying how personal information is used in today's business context should primarily fall on the companies that collected the data, more so than the government, third-party users of the information, or even watchdog groups (IBM, 2019). However, in a report by DMA (2016). Consumers felt that they themselves should bear the ultimate responsibility for their data security and just 7 percent claimed that this responsibility should fall on the shoulders of brands/industry (Which?, 2018). While people are uniformly concerned about privacy, concern about security is more varied (Which?, 2018). However, reassuring consumers on the security of data-sharing, and opening their eyes to the new possibilities and associated benefits, will likely require a national consumer awareness campaign (Technation, n.d.).

#### 4.2.3 What type of data consumers are willing to share

Research conducted by Clarke and Nicholls (2021) revealed that:

- 77 percent of consumers are either unwilling or uncertain about sharing their bank balance information to obtain loan offers, even when they're on the verge of overdrawing their accounts.
- 74 percent of individuals either would not contemplate or are uncertain about sharing their transactional data on a one-off basis to evaluate their affordability for a mortgage, loan, or credit card.
- 65 percent of individuals are either reluctant or unsure about sharing their transaction details on a one-time basis to determine if they could secure a more favorable deal for utilities or insurance.
- 69 percent of individuals either wouldn't contemplate or are uncertain about regularly sharing their transaction details to explore the possibility of obtaining a more advantageous deal by switching to a cheaper mortgage or bank account.

The research by Clarke and Nicholls (2021) underscores a significant degree of consumer reluctance or uncertainty towards sharing personal financial data, even when it could potentially lead to better loan offers, more affordable mortgages or credit cards, more favorable utility or insurance deals, or cheaper mortgages or bank accounts. This is indeed in alignment with other research that has found customers to be particularly sensitive about sharing financial information about themselves (PwC, 2022; DNB, 2021; Which?, 2018). However, there are also different degrees to which consumers are willing to share financial data (DNB, 2021; Which?, 2018). In a survey conducted by DNB in 2021, participants were asked to evaluate the level of sensitivity they attributed to various types of their personal data from a privacy perspective. In the survey, it was found that wealth and pensions are amongst the most sensitive to sharing, even more sensitive than health data – see Figure 4.7 (DNB, 2021). However, payments data was found to be less sensitive than health data, albeit still sensitive (DNB, 2021). Interestingly, in a different report by Which? (2018), it was found that consumers are least inclined to share data about their bank account statements with companies, see Figure 4.8. This is then followed by household bills information and online purchasing history information and then by loyalty membership information (Which?, 2018). The variations in the sensitivity of different types of financial data are likely attributable to differences in methodology between the two reports. Nevertheless, it can be safe to conclude that financial data is sensitive to share with companies.



Note: 2,488 respondents. The average privacy sensitivity is in brackets behind the type of data.

Figure 4.7: How consumers classify the degree of sensitivity of their data, privacy wise (DNB, 2021).

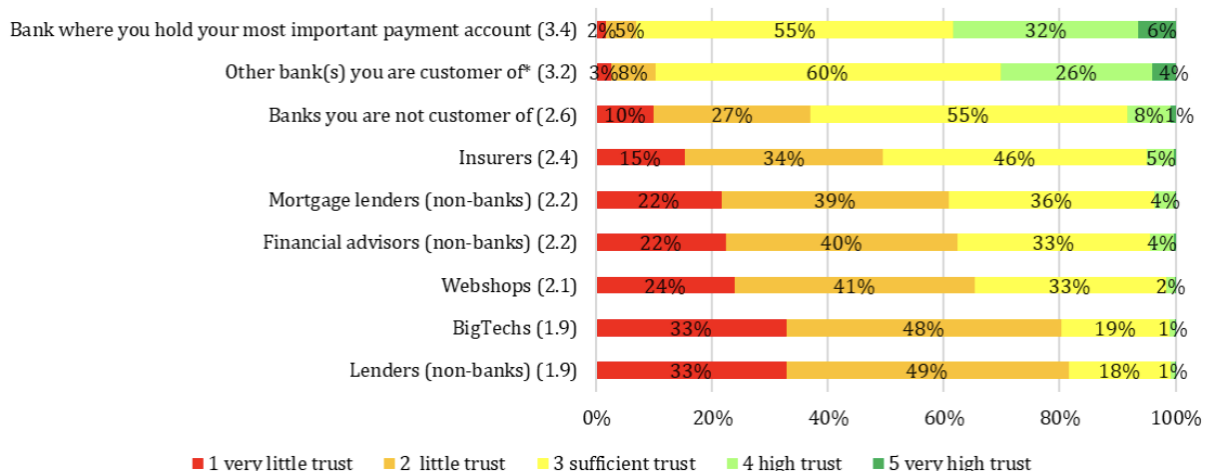
The most money			The least money
<ul style="list-style-type: none"> <li>Bank account statement</li> <li>Digital communication history</li> </ul>	<ul style="list-style-type: none"> <li>Social networking profile and activities</li> <li>Physical location history</li> <li>Health records</li> </ul>	<ul style="list-style-type: none"> <li>Household bills</li> <li>Online purchasing history</li> <li>Internet browsing</li> <li>Search history</li> <li>Demographic information</li> </ul>	<ul style="list-style-type: none"> <li>Loyalty card data</li> <li>Online advertising clicks</li> </ul>

Figure 4.8: Which type of data consumers perceive to be the most sensitive (Which?, 2018). “Most money” and “least money” respectively means how much money respondents were willing to pay to not share the data with organizations.

#### 4.2.4 Who consumers are willing to share their financial information with.

Customers are most willing to share financial information with banks at which they have a payment account (DNB, 2021). This is then followed by banks at which they’re a customer and banks in which they have no relation to (DNB, 2021). This is then followed by other financial institutions such as insurers, non-bank mortgage lenders, and non-bank financial advisory companies (DNB, 2021). Compared to banks however, these are distrusted by a wider margin. When it comes to sharing financial information, webshops, Big Tech companies, and non-bank lenders are generally the least trusted. The findings from the DNB (2021) report is presented in figure 4.9.





Note: 2,488 observations. The average score is provided between brackets. \*Only answered by 1,160 respondents with accounts at multiple banks.

Figure 4.9: The types of entities that consumers trust to share their data with (DNB, 2021).

Another survey by Ipsos (2016) found banks to generally be the most trusted organization when it comes to sharing financial information. This corroborates the findings from the DNB report from 2021. The higher levels of trust that banks enjoy could be because they have more experience in dealing with sensitive information as well as facing larger reputational risks in case data is mishandled (Ipsos, 2016). However, in contrast to the DNB report, Ipsos found government and public service organizations to be the second most trusted entity after banks. This is then followed by online retail companies (such as Amazon), search engines, supermarkets, and amongst the bottom, social media. The findings from the Ipsos (2016) report is presented in Figure 4.10. What can be deduced from the both DNB report and Ipsos report is that banks are the most trusted organizations when it comes to data sharing. Similarly, non-bank organizations are generally distrusted when it comes to sharing financial information.

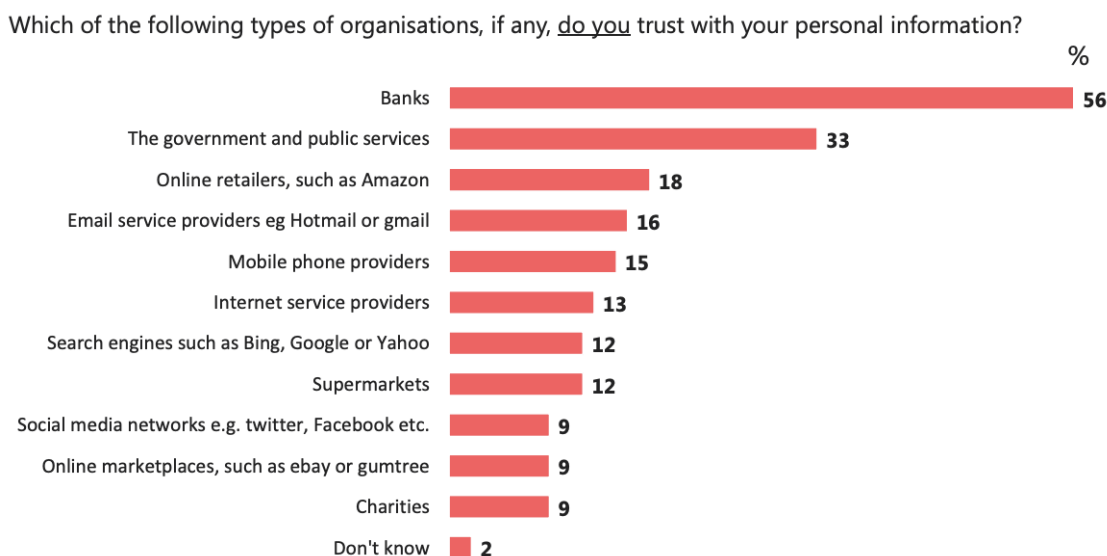


Figure 4.10: Organizations that respondents trust to share their data with (Ipsos, 2016)

## 4.2.5 Why consumers share data

The primary determining factor for consumers when deciding to share their personal data depends on the level of trust they have in the organization involved. (DNB, 2021; DMA, 2018, TISA, 2022). Indeed, trust in services plays a crucial role in consumers' decisions to share data, as it helps them evaluate whether an organization will maintain their data's privacy and security (Which?, 2018). Specifically, four key elements contribute to establishing this trust (Which?, 2018; Ipsos, 2016):

- 1. Offering clarity and transparency regarding the collection and utilization of data:** Organizations should be fully open about what data they collect/use and what they will do with it. Most felt that they can find out what a company does with their data only if they are willing to do some digging on their website – there is still a belief that consumers are not being put first. Even those with advanced technical abilities had issues with reading terms and conditions and cookie policies (Ipsos, 2016)
- 2. Allowing consumers the option to refuse any use of their data:** Many consumers acknowledge that they frequently have the option to opt out, but they found the language used in these "opt-out" options to be confusing. For instance, it wasn't always clear whether they should check or uncheck a box to refuse marketing information. Some participants were also uncertain about the complete implications of opting out. There could be instances when a consumer is open to receiving information about relevant products from the company, but this doesn't imply their consent to receive promotional communications about new products and services, or to have their data disseminated or sold (Ipsos, 2016).
- 3. Ensuring the security of consumers' data.** Consumer concerns extend beyond the security of their own devices against hackers; they are equally worried about the protection of their data once it's in the hands of companies (Ipsos, 2016).
- 4. The level of familiarity:** Consumers often use familiarity as a quick rule of thumb to ascertain an organization's trustworthiness. Well-established brands are thought to bear greater reputational risks in the event of a data breach. In a similar vein, consumers believe that globally recognized brands would have to be prudent with their data practices, as the potential repercussions of poor practice are too substantial to risk (Which?, 2018).

Despite trust being an important aspect of data sharing, many consumers responded positively towards data sharing in return for financial compensation (DNB, 2021). Generally, research examining the link between financial incentives and privacy has indicated that assigning a monetary value to privacy is challenging (Acquisti et al., 2015). People often express high regard for their privacy, yet they are not very willing to pay for it (Acquisti et al., 2015). In a study by World Economic Forum (2021), it was found that half of the consumers were willing to compromise on privacy for complimentary or discounted products. For instance, 45 percent of participants were open to having their car driving habits tracked in return for lower insurance premiums (DNB, 2021). In line with this, 35 percent of consumers revealed that they were willing to provide personal information as long as they “get what they want” (Which?, 2018).

Customer's are also willing to provide personal information if it is "for the greater good" (Which?, 2018). Primarily, consumer's were willing to share personal information if it was for the benefit of others, such as healthcare information for health research (Goulding et al., 2014). People that were not willing to share personal information for "the greater good" often wanted a tangible benefit in return (Goulding et al., 2014). Other reasons that consumers share their data is if it is absolutely necessary for the product or service to function and if the data being shared is anonymized (Which?, 2018; DNB, 2021).

### 4.3 The implication for organizations

For organizations, ensuring trust between them and consumers are key for data sharing (DNB, 2021; DMA, 2018, TISA, 2022). According to research by Gustavsson and Johansson (2006), security and privacy are important factors for the consumer to trust an organization. While businesses cannot directly manipulate their customers' trust, they can foster environments that promote a sense of trustworthiness (Gustavsson and Johansson, 2006). Factors to establish trust are context dependent and depend on the customer's concerns (which can vary between individuals and time) and as well as the current situation in which they share information (Gustavsson and Johansson, 2006). With that said, there are many recommendations in literature on what organizations can do to increase trust and encourage data sharing from consumers. Table 4.2 presents a synopsis of the actions to take.

**TABLE 4.2: The recommendations from literature on strengthening data protection**

<p><b>Privacy measures</b></p> <ul style="list-style-type: none"> <li>- Use anonymous data whenever possible<sup>5,1</sup></li> <li>- Obtain informed consumer consent when collecting personal data<sup>5,1</sup></li> <li>- Abide by data-retention rules if data is not anonymous<sup>5</sup></li> <li>- Do not use third-party database content without authorization<sup>5</sup></li> <li>- What data they are sharing<sup>1,3</sup></li> <li>- Which organizations they are sharing data with<sup>1,3</sup></li> <li>- How long the data will be accessed by those organizations<sup>1,3</sup></li> <li>- For what purpose the data will be used<sup>1,3</sup></li> <li>- How consent for data sharing can be withdrawn<sup>1,3</sup></li> <li>- Privacy policy (on visible place)<sup>2,5</sup></li> <li>- Strict compliance at all times with the GDPR<sup>6</sup></li> </ul>	<p><b>Security measures</b></p> <ul style="list-style-type: none"> <li>- Ensure data is correct and secure at all times<sup>3</sup></li> <li>- Make tools available to consumers, offering control over their data<sup>3</sup></li> <li>- Information about how security solutions work<sup>2</sup></li> <li>- Mark or seal (certificate from third party)<sup>2</sup></li> <li>- Security policy (on visible place)<sup>2</sup></li> <li>- Implement Traceability: Companies should ensure they can track and identify instances of improper data usage or access in case of a security breach<sup>1</sup></li> <li>- a clear liability framework, who is responsible in which cases<sup>1</sup></li> <li>- What the avenues for queries and redress are in the event of misuse or abuse<sup>4</sup></li> </ul>
<p><b>Other measures</b></p> <ul style="list-style-type: none"> <li>- Do not use data that seems freely available without analyzing the legal risks<sup>3</sup></li> <li>- Communicate the value proposition for consumers<sup>5</sup></li> <li>- Finding a win-win proposition with a fair value exchange between the consumer and business<sup>5</sup></li> <li>- regularly monitor legal and cultural changes<sup>5</sup></li> <li>- adapt to new behaviors and consumer practices<sup>5</sup></li> <li>- Which parties and purposes are essential to receiving the service, and which are not, with the option to opt out of the non-essentials – and a clear explanation if that would involve paying a higher price or different terms<sup>4</sup></li> <li>- The potential consequences of data sharing over the long-term (e.g. your insurance premium might go up or down)<sup>4</sup></li> <li>- The introduction of consent management tools; provide all of the information via an accessible dashboard that collates all of a person’s consents on an ongoing basis and enables them to make changes<sup>6,3</sup></li> <li>- Design and test communication to ensure that everyone can understand<sup>3</sup></li> <li>- Allow customers to inquire about the reasoning behind any decision made, such as the appropriateness of the model methodology or the justification of the output<sup>1</sup></li> <li>- Give customers the right to rectify any incorrect or incomplete data about them held by the company<sup>1</sup></li> </ul>	
<p><b>Sources</b></p> <p><sup>1</sup>World Economic Forum, 2018; <sup>2</sup>Gustavsson and Johansson, 2006; <sup>3</sup>Clarke and Nicholls, 2021; <sup>4</sup>FCA, 2019; <sup>5</sup>BCG, 2015; <sup>6</sup>European Commission, 2022</p>	

**The issue of consent and control**

In a study by the World Economic Forum (2018), 84 percent of respondents said that they have “less than sufficient control” over their data. Open finance would address this by providing consumers the opportunity to give consent for TPPs to access their financial data that is being held by a different firm. Indeed, the vision for open finance – as mentioned many times by now – is to allow the consumer for greater control over their data and the possibility of making better financial choices (Clarke and Nicholls, 2021). In opposition to consumers' desire for increased control over their data, studies suggest that individuals have come to accept data sharing as a prerequisite for engaging with our progressively digital society (Which?, 2018). They often perceive themselves as having no option but to surrender their information if they wish to utilize a specific product or service (Which?, 2018). Data sharing prompts often occur at the crucial moment when a user needs a product or service. Individuals tend to make financial decisions

like securing a loan under stressful and uncertain conditions, making it challenging to assess complex alternatives (Clarke and Nicholls, 2021) Generally, a significant portion of consumers (58 percent) believe that full access to all products and services necessitates data disclosure; this is seen as a forced choice, not a fair one (Which?, 2018). There are worries that, in the future, digital brands may be able to impose any conditions they choose, and people will be obliged to accept these terms as a mandatory requirement for accessing essential financial services (Which?, 2018; Clarke and Nicholls, 2021). This further erodes the idea that individuals attain control through granting or withholding their “consent”. The data that is shared in open finance can be used to infer and reveal information about other people in the consumer’s social network without their knowledge or consent (Clarke and Nicholls, 2021). People want to be clearly informed about how their data will be used; to be able to opt-in and out of different permissions to have say over who their data is shared with, and for how long it is retained. However awareness does not equate to understanding – even when consumers are aware of data collection methods they do not necessarily know what this entails or the effects this could have on them (FCA, 2019). Adding to this problem is the fact that terms and conditions regarding privacy policies are often difficult for consumers to comprehend due to their utilization of complex, legal language and occasionally ambiguous formulation (Au et al., n.d.; Clarke and Nicholls, 2021). Additionally, data sharing contracts often involve complex chains of data which often authorizes many firms to access it than what might be first apparent. There is therefore a real danger that people will fail to understand the full implications of allowing access to open finance data (FCA, 2019). This makes it difficult for people to understand the full implication of allowing access to open finance data, which undermines the notion of “informed consent” (Clarke and Nicholls, 2021; FCA, 2019). With that said, there are many recommendations in literature on what organizations can do to increase trust and encourage data sharing from consumers, as shown in Table 4.2. The FCA (2019) especially acknowledges the need for consent management tools that enable consumers to exercise meaningful control over their data and its potential users. However, there currently isn't an effective mechanism in place to ensure that consumers comprehend how their data will be utilized and the value that could be derived from it (FCA, 2019).

### **Lack of legal framework**

A clear set of data rights would both protect consumers and build trust in open finance. Consistent standards around giving and withdrawing consent are particularly important (FCA, 2019). Currently, there’s no open finance framework. Instead, companies will have to build their data sharing and accessing practices as stipulated in GDPR and PSD2 (Clarke and Nicholls, 2021; FCA, 2019). While firms must comply with the General Data Protection Regulation (GDPR), it may not be sufficient for open finance due to its non-specific design. GDPR doesn't require explicit consent or automatic expiry, and it allows data processing even without consumer requests. Moreover, GDPR only covers identifiable personal data processing.

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# Chapter 5: The business of open finance

This chapter discusses the business aspects of open finance, commencing with an in-depth theoretical discourse on value. It encompasses a detailed examination of the concept of value, then going into how it is created and captured, along with a detailed look at the Value Chain framework. Following this, the chapter dives into the intricacies of these ecosystems, explaining how different components interact to create a cohesive whole, culminating into specific emphasis on these ecosystems in the broader context of open finance. Finally, the chapter presents a literature review that discusses various use cases of open finance.

## 5.1 Value creation and value capture

### **Value**

Creating and delivering value propositions are critical issues that businesses have to carefully consider in their strategies (Almoatazbillah, 2012). In the contemporary business landscape marked by competition and rapid changes, delivering value to customers has become paramount to sustain momentum and stay competitive (Almoatazbillah, 2012). The success of firms can be linked to the value it provides to customers (Capon and Hulbert, 2007). As the landscape continues to change, so too does the customer's need and the value they seek (Almoatazbillah, 2012). Anderson et al. (2006) define value as "the worth in monetary terms of the technical, economic, service, and social benefits a customer receives in exchange for the price it pays for a market offering". Macdonald et al. (2016) on the other hand, define value as "all customer-perceived consequences arising from a solution that facilitate or hinder achievement of the customer's goals." However, according to Bowman and Ambrosini (2000), a distinction needs to be made between "use value" and "exchange value". Use value is defined as the "specific qualities of the product perceived by customers in relation to their needs", e.g. the acceleration and styling of the car, the taste and texture of the apple, etc (Bowman and Ambrosini, 2003). As a result, use value is subjective since it is evaluated and perceived by the customer themselves. Exchange value refers to price. It is the monetary amount realized at a single point in time when the exchange of the goods takes place (Bowman and Ambrosini, 2000). The realization of the exchange value happens when a sale occurs. Macdonald et al.'s (2016) conceptualization of value appears to align closely with Bowman and Ambrosini's (2000) definition of use value. Likewise, the definition of exchange value seems to resonate with the definition of value as put forth by Anderson et al. (2006). Another important definition to clarify is that of value proposition. According to Buttle (2009), the value proposition is an explicit promise made by a company to its customers that it will deliver a particular bundle of value creating benefits. Lanning (2000) defines value proposition as the "entire set of experiences, including value for money that an organization brings to customers". This set or combination of experiences might be perceived by customers as being "superior, equal or inferior to alternatives" (Almoatazbillah, 2012). Understanding these definitions and their applications is critical for businesses. An effective balance between creating use value for customers and capturing exchange value is essential for a business to achieve and maintain competitive

advantage in the market (Chesbrough et al, 2018; Almoatazbillah, 2012; Priem, 2007; Jovanovic et al., 2020).

### **Value creation**

Chesbrough et al. (2018) defines value creation as “an actor’s attempt to increase value”, wherein an actor is “engaging in a resource-deployment process and the perceived benefits of that process outweigh the perceived sacrifices.” In simpler terms, value creation can be described as the process where actors, through the effective use of resources, engage in a series of activities that allow them to gradually achieve greater value (Chesbrough et al., 2018). Referring to Bowman and Ambrosini's (2000) concepts of use value and exchange value, Priem (2007) suggests that when value is created, it leads to one of three outcomes from the consumer's perspective: (1) The consumer is prepared to pay for a new benefit, (2) The consumer is willing to pay more for a product or service they perceive as superior, or (3) The consumer decides to purchase a previously available benefit at a lower cost, often leading to them buying in larger quantities. Similarly, Lepak et al. (2007) observes that value creation depends on the relative amount of value that is subjectively realized by a customer and that this subjective value realization must translate into the users willingness to exchange a monetary amount for the value received. As such, from a consumer's perspective, value creation is about amplifying the usefulness of a product or service (increasing use value) or reducing its cost (decreasing exchange value) (Priem, 2007). It can be argued that providers focused on use value possess greater potential for long-term competitive advantage as they are more aligned to customers (Chesbrough et al., 2018).

### **Value capture**

Value capture can be defined as the process of securing profits from value creation and the distribution of those profits among participating actors such as providers, customers, and partners (Jovanovic et al., 2020; Chesbrough et al., 2018). In line with this, according to Bowman and Ambrosini (2000), the profit that a firm makes is essentially the value that it has managed to capture. To successfully capture value, it's essential to establish proper governance structures to ensure that value creation is greater than the cost of realizing that value and that the value surplus is distributed fairly among partners (Jovanovic et al., 2020). The value capture process should thus involve activities that enable providers and customers to decide how the additional value should be allocated between provider and customer (Jovanovic et al., 2020). The profit realized from value creation is influenced by the comparisons that customers make between the company's product, their own needs, and the potential alternatives offered by competitors (Bowman and Ambrosini, 2000). As such, the value captured will be determined by the bargaining dynamic between providers and customers (Bowman and Ambrosini, 2000). According to Porter (1980), the bargaining power of a customer increases when there are similar, easily available alternatives and when the costs of switching to these alternatives are low. This situation, in turn, limits the providers capacity to capture value by charging higher prices (Bowman and Ambrosini, 2000).



## 5.2 Value chain

The Value Chain concept was introduced by Michael E. Porter in his book "Competitive Advantage: Creating and Sustaining Superior Performance" in 1985. The Value Chain is a model that helps to analyze specific activities through which firms can create and deliver value. The final value added in a product or service is the result of the aggregation of the value added in each of different activities during the production process (Baraibar-Diez et al., 2022). By breaking down a company into strategically significant tasks, a more profound understanding of current cost behaviors and potential differentiation opportunities can be achieved (Porter, 1985). This not only helps identify competitive advantages but also pinpoints activities that might be more efficiently outsourced or reassigned to a different player (Baraibar-Diez et al., 2022; Porter, 1985). This model has been, and still is, a key tool in strategic management, aiding in understanding value creation within organizations and bolstering their competitiveness (Baraibar-Diez et al., 2022). In Porter's (1985) model, the value chain is broken down into two types of activities: primary and support activities. A detailed description of the constituent primary and support activities are provided below. The framework is also illustrated in figure 5.1.

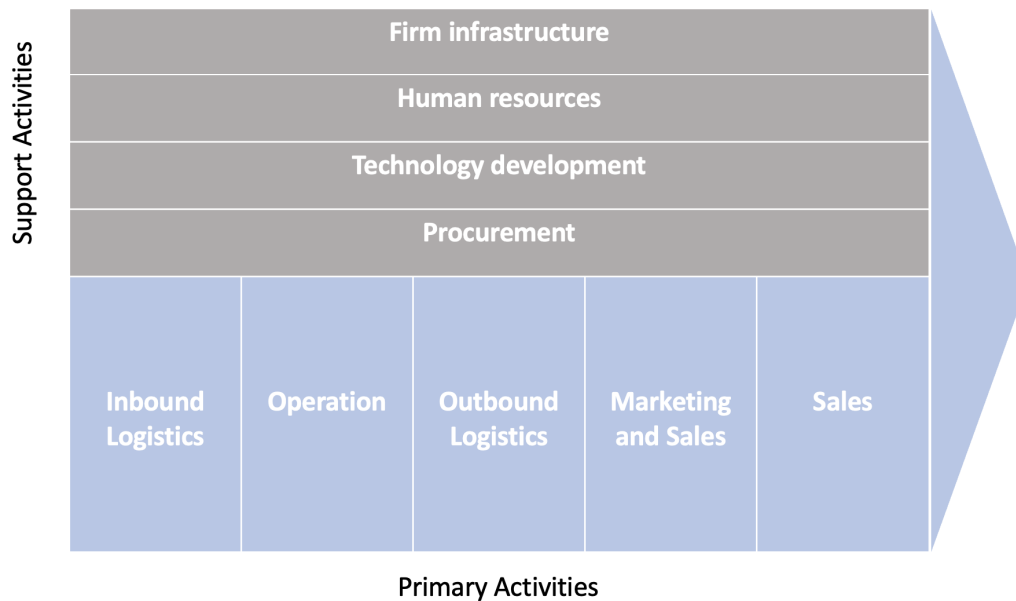


Figure 5.1: Illustrative overview of the Value Chain framework (illustration made by author)

### Primary Activities:

- Inbound Logistics: These are the activities related to receiving and storing raw materials, and distributing these materials to the manufacturing units. Activities such as material handling, warehousing, inventory control, vehicle scheduling, and returns to suppliers are part of inbound logistics.
- Operations: These are the activities related to the conversion of inputs into final product form. It includes machining, packaging, assembly, equipment maintenance, testing, and all other value-creating activities that transform the inputs into the final product.

- **Outbound Logistics:** These are the activities required to get the finished product to the customer, including warehousing, order fulfillment, transportation, distribution management, etc.
- **Marketing and Sales:** These are the activities associated with getting buyers to purchase the product, including channel selection, advertising, promotion, selling, pricing, retail management, etc.
- **Service:** These are the activities related to maintaining the value of the product after it has been sold and delivered. This includes installation, after-sale service, customer support, warranty, etc.

#### **Support Activities:**

- **Firm Infrastructure:** This refers to a company's organizational structure, control systems, company culture, etc.
- **Human Resource Management:** This includes activities such as recruiting, hiring, training, development, and compensation of employees.
- **Technology Development:** These activities can be broadly defined and include technology development to support the value chain activities, such as Research and Development, process automation, redesigning of processes, etc.
- **Procurement:** This is the acquisition of inputs, or resources, for the firm, including vendor selection, negotiation, strategic partnerships, etc.

Despite Porter's original thought of these activities being contained within an organization, the reality is that these activities frequently span multiple organizations (Holweg and Pil, 2006; Piboonrunroj et al., 2017). Firms' competitiveness increasingly depends on what happens along the value chains, and the different stakeholders are increasingly aware of the importance of understanding their functioning (Baraibar-Diez et al., 2022). This orderly progression envisioned in the Value Chain framework by Porter allows managers to formulate profitable strategies and coordinate operations. But it can also put a stranglehold on businesses at a time when the greatest opportunities for value creation (and the most significant threats to long-term survival) often originate outside the traditional, linear view (Holweg and Pil, 2006). A company's value chain is typically part of a larger value system that includes companies either upstream (suppliers) or downstream (distribution channels), or both (Baraibar-Diez et al., 2022). The interconnected nature of today's business landscape has meant that value creation is not confined to the boundaries of a single organization, but often involves multiple entities across different industries (Holweg and Pil, 2006). This has necessitated a broader view of the value chain, recognizing the roles and contributions of various external actors, such as suppliers, partners, and customers (Holweg and Pil, 2006; Piboonrunroj et al., 2017). Therefore, a comprehensive understanding of the value chain now necessitates a more inclusive perspective that encompasses both internal operations and external collaborations. This shift in focus has significant implications for strategic decision-making, as it prompts organizations to optimize their entire value system, rather than just their internal operations (Holweg and Pil, 2006; Piboonrunroj et al., 2017). By looking beyond the internal activities, companies can expand their activities to be vertical (as companies explore opportunities upstream or downstream from the adjacent tiers in their existing value chain), horizontal (as companies identify opportunities

from spanning similar tiers in multiple value chains) or even diagonal (as companies look more integratively across value chains and tiers for prospects to enhance performance and mitigate risk) (Holweg and Pil, 2006).

## 5.3 Business ecosystem

### Definition

The current volatile and intensely competitive market landscape presents industries with unprecedented challenges. There are a wide variety of trends – some of which has already been discussed in this paper – that have radically reshaped the competitive dynamics within and across industry boundaries. As a result, many firms are looking beyond traditional strategies striving for additional competitive edges. Specifically, nurturing collaborative ties among business partners to realize meaningful synergy is crucial for success. Hence, the notion of a business ecosystem becomes significant (Moore, 1993; Li, 2009). There are many definitions of what constitutes a business system. The term was coined by Moore (1993), defining it as an economic community of loosely-coupled interacting organizations and individuals who produce valuable goods and services and may operate outside their traditional industry boundaries. EY (2021), for example, defines business ecosystem as “a purposeful business arrangement between two or more entities (the members) to create and share in collective value for a common set of customers”. Every business ecosystem consists of various contributors, with at least one acting as the primary organizer or orchestrator (Moore, 1993; EY, 2021). Linden and Teece (2017) offer a definition that aligns closely to Moore’s, stating that a “business ecosystem contains a number of firms that work together – and also compete – to create and sustain new markets and new products.” McKinsey (2021a), on the other hand, defines ecosystems as “interconnected sets of services through which users can fulfill a variety of cross-sectoral needs in one integrated experience.” This definition falls in line with what many scholars refer to as “digital business ecosystem”, which essentially is an extension of Moore’s original term (Effah et al., 2019). BCG (2022), makes a distinction between two types of business ecosystems: transactional and solution. In transactional ecosystems, a central organization links two sides of a market, such as buyers and sellers on a digital marketplace. An example of a transactional ecosystem is Alibaba. In the solutions ecosystem, a core orchestrator coordinates the offerings of multiple complementary entities. These definitions diverge greatly from the previous, more academic ones, demonstrating that there isn’t a universally agreed-upon definition of an ecosystem in the practical business realm. Nevertheless, the overarching concept of a business ecosystem draws from biological ecosystems in nature. Just as biological organisms interact with each other and their environment to form an ecosystem, businesses interact with each other and their environment to form a business ecosystem (Moore, 1993). For this paper, the definition of business ecosystem will be an amalgamation of Moore’s, EY’s, Linden and Teece’s and McKinsey’s definitions: A business ecosystem is a network of organizations working together to create interconnected solutions and integrated experiences for a shared customer base.

The overall business ecosystem concept can enhance understanding and provide creative thinking when studying business networks and business. Ecosystems open up a new way of looking at the structure, interaction and exchanges among organizations. It moves the analysis to the system level in which many sectors and industries behave like a massively interconnected structure of organizations, technologies, consumers and products. As part of a larger system, firms can play different roles to increase their performance,

### **Platform versus ecosystem**

At the heart of most ecosystems is a “platform” (Effah et al., 2019; Linden and Teece, 2017). A platform can be best described as a collection of tools, innovations and services that other ecosystem participants can use to enhance their performance, create innovations and collaborate (Effah et al., 2019). While platforms have existed for some time, the advent of digital technologies has greatly amplified their scope by facilitating technical interoperability between ecosystem participants (Linden and Teece, 2017). Accordingly, this has led to the seamless integration of previously distinct products (Linden and Teece, 2017). A platform can be a combination of hardware and software that establishes guidelines, interfaces, and standards (Linden and Teece, 2017). An example of a well known platform is Apple’s, which constitutes both the tangible hardware such as the iPhone and intangible software such as the iOS operating system. This setup enables third-party contributors to enhance value and foster interaction among each other and/or with users (Linden and Teece, 2017; McKinsey, 2021). Other companies with similar platform enabled ecosystems are Google, Amazon, Facebook, Alibaba, etc. Together, these ecosystems enable the connection of a wider spectrum of service providers to the customer’s life and can thus facilitate customer value creation by offering more options and an integrated experience (Lähteenmäki et al., 2022).

Business ecosystems have an overarching purpose to create collective value for common customers, and thus require orchestration (EY, 2021). Whether they play the role of orchestrator or simply a participant, each member's brand contributes significantly to the value propositions within the ecosystem – wherein the whole value proposition is greater than the sum of its parts (Moore, 1993; EY, 2021; Effah et al., 2019; Li, 2009). From the customer’s point of view, ecosystems have unbundled so that instead of one service provider, several potential service providers are available for them to choose from and re-bundle the service. This highlights the customer’s central role in integrating services according to their value formation processes as a central actor in their ecosystem (Lähteenmäki et al., 2022). For instance, offerings like payment services or wealth management were traditionally developed with certain demographic milestones in mind, such as buying a house, getting married etc (Lähteenmäki et al., 2022). But the reality of a customer's life seldom aligns with these static assumptions. This is a fact that is acknowledged and addressed within the customer ecosystem framework. Instead of having a static, dyadic relationship between customer and service provider, a more moving and continuous relationship can be formed wherein resources needed for value creation changes and varies over time and depending on actors (Lähteenmäki et al., 2022).

### **Motivations for ecosystem**

Any type of firm can benefit from ecosystems, everything from startups to large incumbents.

In a report by BCG (2022), they've identified five main internal reasons to create or join an ecosystem. These are:

- **Strengthen the core business through complements.** Ecosystem partners can supply products and services that enhance a company's core proposition.
- **Protect the core business from other ecosystems.** Participation in an ecosystem provides a company with a more effective defense against potential threats from rival ecosystems than if the company operated outside of an ecosystem.
- **Expand market access for existing offerings.** Ecosystems can open new sales channels for existing products or services.
- **Make money in areas related to the main business.** Partners in an ecosystem can help you make money in areas that are related to your main business.
- **Launch new ventures separate from the core business.** Companies can also capitalize on opportunities within an ecosystem by launching new ventures that are separate from the core business

These motivations will have a great impact on the subsequent strategy and dictate how a firm engages with and navigates its role within the ecosystem, ultimately influencing the overall success and growth of the ecosystem itself (BCG, 2022a).

Every successful ecosystem is based on a compelling value proposition—it solves a concrete business problem (BCG, 2022a). As such, not only should the company analyze its internal motivations for venturing out on an ecosystem endeavor, it should also analyze the external factors that ultimately will shape the competitive landscape, impact the dynamics of the ecosystem, and influence the company's strategic opportunities within that ecosystem (BCG, 2022a). The optimal strategy to pinpoint a promising ecosystem opportunity involves analyzing the customer journey and pinpointing market frictions - these could be frustrations, unmet needs, or unfulfilled desires that are too substantial or complex for a single company to address (BCG, 2022a). Especially challenging frictions for customers or suppliers pose a large opportunity for companies to invest and develop a successful ecosystem (BCG, 2022a).

Examples of such frictions include:

- **Fragmented Demand.** Ecosystem platforms have the capability to aggregate the demands of numerous small customers, and make them economically accessible to suppliers
- **Fragmented Supply.** Platforms can unite the offerings from a broad array of small-scale suppliers, simplifying the search and transaction process for prospective purchasers.
- **Lack of Supplier Coordination.** Ecosystems can facilitate the provision of comprehensive customer solutions that requires extensive coordination of various independent suppliers of products or services
- **Lack of Co-Innovation.** Occasionally, friction resolution necessitates multiple innovations by companies across different sectors and industries, which need to be closely aligned to achieve their full impact

### **Building an ecosystem**

According to BCG (2022a), there are six critical factors for a successful ecosystem. McKinsey (2021a) have similarly also identified a number of key factors. These are:

- **Value proposition** (McKinsey, 2021; BCG, 2022a). In ecosystem dynamics, a significant balance to strike within the customer value proposition lies between focusing on the scope and variety of the offering and prioritizing the quality of customer experience. A strong focus on customer experience typically requires a higher investment in areas such as enhanced platform functionality, and additional services, or a set of offerings. Ecosystems using this approach can compete in unique ways that are tough for rivals to copy without risking their core value propositions. An ecosystem offering that stretches across too many sectors without a distinct value proposition can seem generic and diluted. Instead, to make a significant impact, it's better to concentrate on a smaller segment initially. Before expanding the offering, the company should thoroughly validate the concept with target customers and business leaders who have a stake in the proposition. This validation process should aim to clarify the customer journey from start to finish, the partner network, and the internal capabilities, infrastructure, and operational model required to back it up. Considering the magnitude of the project, a cross-functional team consisting of designers, product owners, and operations specialists should create a comprehensive roadmap for developing the offering. This allows the organization to penetrate the market swiftly and seize opportunities ahead of the competition
- **Include key partners** (BCG, 2022a; McKinsey, 2021a; McKinsey, 2017b). Encourage partners to participate by presenting an attractive suite of benefits and incentives. In addition to a clear customer value proposition, there should also be a clear value proposition for ecosystem participants. How well the companies cooperate across sectoral and industry boundaries will be manifested in the integrated customer journey. For instance, the journey of how a customer seamlessly buys groceries from a grocer, discovers an insurance offering, gets prequalified, and applies for insurance. But designing for the overall experience is equally important. For example, a holistic customer-engagement and loyalty program may enable customers to earn points that can be aggregated and used within any sector included in the ecosystem. Finally, these cross-sectoral propositions will likely include a complex set of partner relationships, and designers can help to visualize how those relationships develop. Large incumbent companies possess numerous competitive advantages such as trust, brand recognition, data, and financial resources, which can significantly influence the future development of ecosystems. They have the potential to become key partners in this space. Creating a solid bond with end users and customers is vital. Ownership of this connection may vary – sometimes the orchestrator may wholly own it, sometimes it might be shared, and other times a third party has to provide that access. Regardless, leveraging this strong connection is crucial. The degree of customer intimacy, whether it's owned, shared, or leveraged, can significantly impact the dynamics of the ecosystem.
- **Ensure adequate mass of suppliers and customers** (BCG, 2022a; McKinsey, 2021). One of the significant hurdles companies encounter when launching ecosystems is the dilemma of securing sufficient participation from both customers and contributors. The resolution lies in pinpointing and subsidizing whichever aspect of the market needs to be bolstered to reach a critical mass.
- **The importance of data** (McKinsey, 2017b). Orchestrators, as the operators who own the data and have the ability to determine the first touchpoint for customers and control

what, when, and how customers receive services, wield significant power over the entire ecosystem. Additionally, it's crucial to utilize, track, and leverage data. This data may not necessarily be collected by the company themselves, but could be collective data accessible from various sources, such as partners and suppliers. The deeper a company's understanding of its customers, the more equipped it is to provide a comprehensive, seamless digital experience. Furthermore, this knowledge enables the company to connect more services within its ecosystem to its customers, thereby enhancing its learning and improving its operations over time. This shared intelligence from data can play a pivotal role in the dynamics of the ecosystem.

- **Establish the right governance model** (BCG, 2022a; McKinsey, 2021a). The governance model of the ecosystem can serve as a significant competitive advantage. An open model makes it easier for contributors to join all while offering them more freedom. A closed model restricts internal competition and promotes better alignment among contributors. The governance model must find the right balance between openness, which attracts partners, stimulates growth, and fosters innovation, and closed aspects, which ensure consistent quality and alignment. For instance, publishers rejected Sony's e-reader platform because its open model did not adequately safeguard their copyrights. They chose Amazon's Kindle, a highly closed platform that only loaded content from Amazon and prevented users from transferring books to other devices, printers, and readers. However, an excessively closed governance model can stifle an ecosystem's growth.
- **Focus on scale before scope** (BCG, 2022a). Unlike the conventional innovation process where a new product or service is fully developed, tested in a pilot market, and then scaled, successful business ecosystems adopt a contrasting strategy. They commence with a concise value proposition of restricted scope and concentrate on amassing scale before broadening the scope of their offering.
- **Don't forget the social context** (BCG, 2022a). Many successful ecosystem players have experienced substantial backlash from consumers, partners, competitors, and regulators. To build social trust and secure societal acceptance, orchestrators must establish an ecosystem governance model that is consistent and fair. Consistency in governance means ensuring that its mechanisms are clear, easy to comprehend, complete, aligned within, and constant over time. On the other hand, fairness in governance implies adherence to local regulations and standards, avoidance of biases, such as those in data algorithms and access, and the fostering of trust among all participants. An ecosystem can only thrive in the long term if it creates tangible value and distributes it fairly among its participants.

### **Value capture in ecosystem**

Many ecosystems have achieved great revenue growth but are not still not making enough profit (BCG, 2022a). It does make sense that many ecosystems have weak profit outlooks as the key imperative is to focus on value creation first. This approach will expand the overall value of the ecosystem, subsequently increasing the participants portion of the value. The benefits of digital ecosystems won't be distributed evenly, however (McKinsey, 2018b). An ecosystem in which all members prioritize their individual gains may struggle to foster the necessary cooperation to

generate any value to be shared initially (BCG, 2022a). According to BCG (2022a), ecosystem orchestrators need to focus on two aspects of value capture. Firstly, they must monetize the benefits that the ecosystem creates for its participants (ecosystem monetization). Secondly, they have to distribute the generated value among its participants (value distribution). Table 5.1 discusses the two aspects to value capture.

**Table 5.1: The two aspects of monetizing the ecosystem and distributing the value (BCG, 2022a)**

	Ecosystem monetization	Value distribution
Scope	<ul style="list-style-type: none"> <li>• <b>Maximize overall value:</b> The orchestrator must ensure that the ecosystem as a whole is growing in value.</li> <li>• <b>Guarantee profit for key contributors:</b> The orchestrator needs to ensure that key contributors gain enough profit to motivate their continued participation.</li> <li>• <b>Capture a fair share of the value:</b> The orchestrator should also make sure to secure a fair share of the overall value for itself.</li> <li>• <b>Do not stifle growth:</b> The monetization strategies should not hinder the growth of the ecosystem but instead should incentivize and encourage participation.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Access to customers:</b> Orchestrators control who gets to connect with the customer base.</li> <li>• <b>Data:</b> Orchestrators decide who has access to the valuable user data generated within the ecosystem.</li> <li>• <b>Intellectual Property:</b> Orchestrators may control the use and distribution of intellectual property within the ecosystem.</li> <li>• <b>Money:</b> Orchestrators may decide how monetary benefits are divided among participants.</li> </ul>
How	<ul style="list-style-type: none"> <li>• <b>Licensing and transaction fees:</b> Charge fees to participants for licensing or transactions.</li> <li>• <b>Revenue sharing:</b> Implement a revenue-sharing model with participants.</li> <li>• <b>Sale of additional products or services:</b> Generate revenue through the sale of supplementary products or services.</li> <li>• <b>Subsidizing participation:</b> Provide subsidies to the side of the market that is less willing to participate to encourage their involvement.</li> <li>• <b>Encouraging increased usage and recruitment:</b> Offer incentives for increased usage of the ecosystem's services and rewards for bringing in new participants.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Gatekeep:</b> Control crucial points, e.g. customer access, essential products or services, and system bottlenecks</li> <li>• <b>Coring:</b> Orchestrators can integrate their own versions of successful applications developed by complementary partners into their offering.</li> <li>• <b>Commoditization of contributors' offerings:</b> Orchestrators can implement rules to stimulate competition among contributors, restrict differentiation opportunities, control pricing, or foster the entry of new competitors.</li> </ul>

However, BCG (2022a) contends that orchestrators should be cautious not to overreach in their pursuit of value capture or misuse their authority. They must mitigate the risks of losing their contributors' support. The lack of support could manifest itself as increased multihoming – when contributors partake in multiple competing ecosystems; disintermediation – when participants circumvent the platform and connect directly; or forking – when contributors leverage the resources of the ecosystem to become direct competitors (BCG, 2022a). To this end, orchestrators should continuously monitor the health of their ecosystems and watch for warning



signs, such as falling engagement levels, complaints of exploitative behavior, negative social media coverage, or a rise in legal actions against the platform.

### Ecosystem strategy over time

To be successful, many ecosystems will have to be adaptable and likely pivot in their journey to success (BCG, 2022a). Companies embarking on a journey to create an ecosystem should be of strategic directions. According to BCG (2022a), there are two approaches to the ecosystem strategy: Growing an existing ecosystem or moving beyond an existing ecosystem, as showcased in Table 5.2.

**Table 5.2: The future strategic directions for ecosystems (BCG, 2022a).**

Growing an existing ecosystem	Moving beyond an existing ecosystem
<p><b>Geographic Expansion:</b></p> <ul style="list-style-type: none"> <li>• Increase geographic coverage</li> <li>• Transfer of local models to additional locations</li> </ul> <p><b>Market Consolidation:</b></p> <ul style="list-style-type: none"> <li>• Expand offerings and boost market share through acquisitions.</li> <li>• Implement roll-up strategies to purchase numerous smaller competitors, effectively consolidating the market.</li> </ul> <p><b>Scope Expansion:</b></p> <ul style="list-style-type: none"> <li>• Introduce new products or services</li> <li>• Create a comprehensive and integrated “super app”</li> </ul> <p><b>Business Model Change:</b></p> <ul style="list-style-type: none"> <li>• Move to open market model</li> </ul>	<p><b>Ecosystem Carryover:</b></p> <ul style="list-style-type: none"> <li>• Leverage assets of one ecosystem (users, partners, tech) to create a parallel ecosystem</li> </ul> <p><b>Portfolio diversification:</b></p> <ul style="list-style-type: none"> <li>• Build a portfolio of independent ecosystem</li> </ul> <p><b>Contributor play:</b></p> <ul style="list-style-type: none"> <li>• Offer products and services from own ecosystem in another ecosystem</li> </ul> <p><b>Infrastructure play:</b></p> <ul style="list-style-type: none"> <li>• Offer own tech or infrastructure as a service to other ecosystems</li> </ul>

With the above strategies in mind, companies should also consider the following (McKinsey, 2018b): Firstly, it’s important to recognize that not all the potential value in the distribution economy will be accessible to every player. Therefore, all participants must identify and prioritize the ecosystems where they have a competitive advantage and the potential to succeed. Secondly, an effective ecosystem strategy demands excellence across several areas such as organizational culture, technology, and customer engagement. Companies need to identify the key competencies that will set them apart in an ecosystem and evaluate whether their organization possesses adequate strength in these areas.

## 5.4 Ecosystems in open finance

As is familiar by now, PSD2 forced banks within the EU to open their data troves for payments to TPPs, which has led to the development of open banking. Open banking has opened up the resources needed for customer value formation not to be generated by one actor alone but with others. This in turn, has enabled a multitude of TPPs to combine their resources to engage in

their customer's life and facilitate value formation (Lähteenmäki et al., 2022). As a result, ecosystems of financial services providers and customers have started to form (Lähteenmäki et al., 2022; McKinsey, 2017b). With this, customers are given the power to more flexibly reassemble resources to suit their specific needs within their unique social contexts. Simultaneously, open finance signifies a transformative shift in the realm of financial collaboration, often being referred to as the "open finance ecosystem" (Insurely, 2022). For financial institutions, participating in these ecosystems is no longer an option but a competitive imperative (EY, 2020b). This ecosystem encapsulates data sharing across a broad spectrum of financial products and sectors (Insurely, 2022). This allows consumers to securely share their insurance data with trustworthy third-party entities, enabling enhanced experiences, tailored solutions, and overall improvement of their financial well-being (Insurely, 2022). In such an ecosystem, the customer can be empowered to orchestrate a set of resources that is offered by a variety of service providers and collect a combination of the resources most suitable for their own value formation (Lähteenmäki et al., 2022). Thus, actors other than a focal service provider and the customer, the customer's own social environment, can become a meaningful part of customer value creation (Lähteenmäki et al., 2022). This means service providers must see the networking and integration needed between ecosystem actors from another angle, from a customer perspective, which has not traditionally been the case.

#### 5.4.1 Strategic roles in open finance ecosystem

As financial services companies navigate the shift towards ecosystem-based operations, it is crucial that they strategically define their roles, business models, and operations. This should be based on their unique strengths, decisions regarding customer ownership, their focus within the value chain, and their revenue generation model (EY, 2020b). However, there is no real consensus as to what roles there are in the open finance ecosystem. Generally, different sources have their own take on the matter. Below are a few sources and their views on the roles in open finance ecosystems.

EY (2020) has identified four roles that companies can have in an open finance ecosystem. These are:

- **Product or Category Leader:** These financial services companies leverage customer data to create innovative digital products and deliver value-added services. They aim to excel in specific areas, such as offering the best investment product or the most efficient credit application process, attracting others in the ecosystem to use their services. They might collaborate with FinTechs to develop products and then distribute them on their own or third-party platforms within the ecosystem. These leaders add value to the ecosystem through both cooperation and competition.
- **Infrastructure Leader:** These FIs focus on models like "Bank as a Service" (BaaS) to diversify and create alternative revenue streams. They provide quick, on-demand infrastructure, regulatory framework access, and a set of API or white-label products. These FIs support other companies without a license or those who aim for rapid market entry to launch products and services in the ecosystem, functioning similarly to Amazon Web Services (AWS) - as a cloud for banking and insurance.

- **Maintain Status Quo:** Some FIs may opt for minimal changes to their business model, providing only the basic level of customer data access required by open banking regulations. However, given technological advancements, the pace of change, and evolving customer expectations, this approach may not be sustainable in the long term.
- **Ecosystem Orchestrator:** An orchestrator operates a marketplace where numerous buyers and sellers can connect, interact, and transact. They own and foster customer relationships, have the flexibility to negotiate various deals with partners, collaborate closely with the developer community, control access to the ecosystem, and connect participants to optimize customer value. This role is highly attractive as it monetizes both the customer relationship and access to customers on the platform.

According to Awrey and Macey (2022), there will be four groups of key players to the open finance ecosystem, as depicted in figure 5.3. These four players are:

- **Consumers:** They are unique in the ecosystem, as they both produce the raw material (data) used to design and market financial products and services, and consume these products and services. This data can include personal and transactional information, which is extremely valuable to financial institutions and merchants for designing better products, marketing strategies, and potentially exploiting behavioral biases.
- **Incumbent Financial Institutions:** These are established entities like banks, brokerage firms, asset managers, insurance companies, etc. These institutions typically have large customer bases and potentially dominant market positions due to their long-standing presence in the business.
- **Fintech Disruptors:** This refers to innovations in the financial sector enabled by digital technology. Fintech can disrupt existing industry structures, blur industry boundaries, facilitate strategic disintermediation, revolutionize product and service delivery, provide new gateways for entrepreneurship, and increase access to financial services.
- **Data Aggregators:** These are technological platforms that connect other players in the Open Finance ecosystem. They develop and manage APIs designed to access customer data held by incumbent financial institutions and share it with fintech disruptors. They either serve as a centralized repository of customer data or provide advanced data analytics to help clients better design and market their products and services.

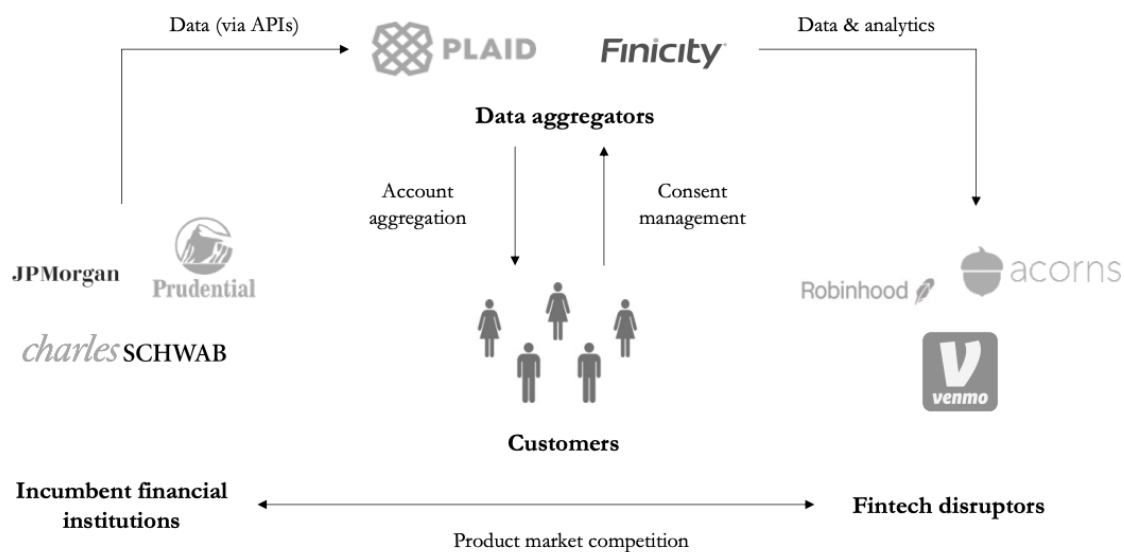


Figure 5.3: The open finance ecosystem according to Awrey and Macey (2022).

Gozman et al. (2018) identified service creation and distribution as important yet discrete factors for understanding the ecosystem roles in open banking. With these two dimensions, the authors were able to identify four generic roles in the open banking ecosystem, illustrated in Figure 5.4. These are integrator, producer, distributor and platform. Most of the larger financial institutions already play roles of integrator, producer and distributor simultaneously across different business lines, whereas the platform role is still at a very early stage of development – at the time of the research paper. The authors exclusively focus on the role that a bank can play in such an ecosystem. The roles are described in more detail below:

- **Integrator Role:** In this position, a bank provides a service that is created and distributed entirely in-house. The bank controls the whole value chain, ensuring that both the product offering and customer experience are fully managed under its own brand. This role is currently prevalent among many banks who have extended their traditional control over the value chain into the digital realm.
- **Producer Role:** This role involves a collaborative approach where the product or service is created by the bank but distributed to the customers by a third party, such as fintech firms or internet giants. This partnership could raise concerns regarding customer ownership and branding.
- **Distributor Role:** As banks embrace open banking principles, they can expand their digital market presence by adopting the role of a distributor. In this capacity, a bank distributes third-party products and services through its own channels, thereby broadening its offerings.
- **Platform Role:** In this role, a bank operates as an intermediary, facilitating the business operations of others, often in a peer-to-peer business context. This should not be confused with the IT understanding of a platform, which refers to the infrastructure needed to run a bank's operations. Platforms have transformative potential in the current

digital era, as they offer a competitive advantage by fostering community engagement. This platform model, however, needs further development in the financial industry.

**Table 5.4: The four roles for banks in an open banking ecosystem (Gozman et al., 2018).**

	In house distribution	Third party distribution
In house products and services creation	Integrator	Producer
Third party products and services creation	Distributor	Facilitator

Deloitte (2022) has also conceptualized four strategic roles that financial services companies can play in the emerging open finance ecosystem. These are:

- **The one stop shop:** trusted brands with strong technical capabilities could leverage open finance to access financial data of the customer’s to offer a full range of tailored services and seamless digital customer journeys. This role would be similar to the “integrator” role by Gozman et al. (2018).
- **The “service-as-a” play:** firms that derive their competitive advantage from the strength of their products and services could ditch the customer interface. Instead, they could access customers through TPPs and form strategic partnerships to offer competitive products/services on leading digital platforms. This would be akin to the “producer” role by Gozman et al (2018).
- **The interface:** firms with an already established platform could focus on the customer interface and relationships. Financial services and products would be embedded in their platform but come from different, external providers. This scenario aligns with the “distributor” role as described by Gozman et al. (2018).
- **The utility:** in this role, the company would provide the infrastructure and analytical capabilities to third parties to assist them in distribution and product/service creation. This role would be analogous to the “platform” role as described by Gozman et al. (2018).

As can be seen, there are many different opinions on the different roles that will emerge in an open finance ecosystem. Moreover, as was seen between Gozman et al. and Deloitte’s description of the ecosystem role, they are in essence similar but only with different labels. Choosing the right role requires a comprehensive evaluation of an organization’s assets and capabilities, and an assessment of the potential value it can bring to customers (Gozman et al., 2018; EY, 2020b; McKinsey, 2021g). Ultimately, an organization might decide to diversify its approach and pursue multiple roles (Gozman et al., 2018). In this new ecosystem, companies that wish to leverage TPPs or other companies for the distribution of their products and services will have to adapt a B2B2C or even a B2B2B distribution model (McKinsey, 2021g). Companies must take into account the broader context of the entire open finance ecosystem when deciding which strategic role to play (Deloitte, 2022). For instance, most existing firms will likely need significant upgrades to their technology and data infrastructure to remain competitive in an open finance ecosystem. In addition to that, future regulation might also dictate how the technology and data infrastructure may look like, which of course companies will have to adhere to

(Deloitte, 2022). What's more, emerging policy and regulation beyond data infrastructure must also be taken into account in order to understand how it will affect the open finance strategies of participating organizations in the long run (Deloitte, 2022). Hence, firms should evaluate the cumulative effect of the changing legislative and regulatory environment on their Open Finance strategies from the beginning and continue to review it. Moreover, firms will need to invest in ensuring that their product design, governance, and risk and compliance capabilities can effectively identify and respond to future regulatory changes (Deloitte, 2022).

#### 5.4.2 Market dynamic

For customers, open finance ecosystems will increase their access to financial services, all while giving them greater user convenience and improved product options (McKinsey, 2021g). The ubiquity of data sharing in open finance is anticipated to unify the value proposition that extends beyond what end users could previously obtain – or, at least, could obtain seamlessly from one interface (McKinsey, 2021g). These data-driven initiatives, which include designing tailored products, customized pricing, and targeted communication, can enhance cross-selling or up-selling potential, crucial for transforming a client into a profitable source (McKinsey, 2021g; Fedeli et al., 2022). Loyalty and retention can also be boosted by financial incumbents proactively identifying and fulfilling customers' needs and wants (Fedeli et al., 2022). This data-enriched approach towards customer relationships allows for a more personalized and fine-tuned customer experience, further enhancing the value proposition of open finance ecosystems (Fedeli et al., 2022). This enhanced data usage, however, can potentially lower customers' costs, but it may also shift their primary relationship to an open finance consolidator platform, which unifies all services and has the most influence over the customer experience and relationship (McKinsey, 2021g). This approach presents promising opportunities for revenue growth. In an open finance ecosystem, the key competitive differentiator is likely to be the ability of firms to offer highly customized services to their customers (Fedeli et al., 2022). Given the wealth of financial data that would be accessible, companies can leverage this to better understand their customers' preferences, behaviors, and needs. This can enable them to tailor their products and services to match these needs, offering a level of personalization that wouldn't be possible without such data (Fedeli et al., 2022). However, achieving this level of customization requires advanced analytics and machine learning capabilities to process and make sense of the vast amounts of data. As such, companies that can effectively harness the power of data analytics will likely emerge as the leaders in the open finance ecosystem (Fedeli et al., 2022).

In the open finance landscape, trust will be an important asset (EY, 2020a). The extent to which customers embrace open finance solutions is dependent on both their understanding of the benefits and their trust in the providers (EY, 2020a). Traditional financial brands, due to their long-standing reputation, have a substantial advantage as they are often more trusted with handling customers' finances and personal data compared to startups or non-financial companies (EY, 2020a). In order to succeed in the open finance ecosystem, companies should prioritize building and maintaining trust, ensuring robust security measures and planning for

potential incidents (EY, 2020a). The ability to resolve customer issues promptly and effectively, irrespective of fault, can help in fostering trust (EY, 2020a).

Fintech firms, non-traditional financial and incumbent financial institutions could benefit greatly from widespread data sharing in an open finance ecosystem. Primarily, there will be four benefits according to McKinsey (2021c):

- **Increased operational efficiency:** Open financial data could reduce costs by delivering verified data digitally. This can facilitate the adoption of automation technologies, thereby increasing efficiency. Additionally, this can improve the customer experience by allowing for quicker and more transparent interactions with service providers. Financial data sharing also helps avoid multiple manual data handoffs that lead to errors, rework, and less efficient outcomes. Open finance will allow access to the original, authoritative data source that holds the most accurate and reliable information. The investments into data infrastructure and data standardization will hopefully better quality and cleaner data. This greatly cuts down the costs involved in fixing mistakes in customer data management.
- **Improved Fraud Detection:** Access to comprehensive, real-time customer data across all financial services can significantly enhance fraud detection methods. This not only reduces costs for institutions but also enhances customer experience. Data sharing can assist in identifying various types of fraud such as ID fraud, payment fraud, and credit application fraud, by providing additional evidence to identify suspicious activities
- **Efficient Data Intermediation:** Open-data systems can streamline data collection and utilization, particularly when financial institutions lack direct knowledge about prospective customers. Institutions often rely on third-party data providers for information ranging from basic identification to behavioral insights, which can be a cumbersome and costly process. With open-data systems, direct access to this data through APIs simplifies the intermediation process. This reduces costs related to sourcing data from third parties for purposes like customer targeting, lead generation, and mortgage underwriting

Awrey and Macey (2022) foresee a few things happening with respect to the dynamic in an open finance ecosystem. Specifically, they foresee a more level information field, more vibrant competition, better financial products and services, a more resilient financial system, as well as potential competitive distortion.

- **More level information field:** This refers to the accessing and sharing of financial information between ecosystem participants (Awrey and Macey, 2022). This means that no one player can hold any financial information that others cannot access, and thus devoid them of any advantage that such an information asymmetry may endow them with.
- **Better financial products and services:** Open finance is anticipated to generate substantial benefits for consumers, derived chiefly from two sources. Firstly, it encourages financial institutions to utilize technology more efficiently, leveraging vast customer data to optimize the automation of data collection, organization, analysis, and use. Secondly, it enhances consumers' effective use of information and technology. By unlocking access to incumbent data vaults, it facilitates aggregation of customer information across platforms, aiding in comparison and choice of financial products. This,

coupled with the rise of technology to guide consumer decision-making, can boost consumer confidence and encourage more active, informed choices. Furthermore, the amalgamation of advanced data analytics with superior information helps to counteract inherent biases in consumer decision-making, leading to improved financial decisions and ultimately, consumer welfare.

- **More resilient financial system:** By reducing the concentration of consumers, assets, and activities in a few large incumbents, open finance can contribute to a more stable financial structure. Firstly, by lowering switching costs and entry barriers through improved data access, sharing, portability, and interoperability, it can promote the decentralization of financial products and services. Secondly, it can mitigate the economic impact of institutional failures. By enabling borrowers to easily share information with potential new lenders, Open Finance can minimize the costs of such failures, shield against severe credit contractions, and reduce the need for costly and distortive bailouts.
- **More vibrant competition:** A level information field, facilitated by the open accessing and sharing of financial data, fosters a more balanced and vigorous competition. When no single player can monopolize certain financial information, competitive advantages based on information asymmetry are reduced. Furthermore, lower switching costs in an open finance ecosystem empower consumers to shift between providers more freely, thereby encouraging providers to continuously improve their offerings to retain or attract customers. Additionally, network effects and economies of scale become increasingly important, potentially leading to more efficient operations. However, to ensure this level of competition, data portability and interoperability are crucial, as they enable seamless data sharing and use across different platforms and services.
- **Potential competitive distortion:** More vibrant competition however is not a guarantee. On the flip side of that, dominant data aggregators or other platform players (see roles above) can exert market power in several ways, thus undermining free competition. First, they can manipulate the pricing of their products and services. Second, they can selectively restrict platform access, which can complicate negotiations and become a strategic tool if competing in the same markets as their clients. A more significant concern is the potential for these aggregators to directly enter the markets served by their clients, becoming horizontal competitors. This could lead to developing their own banking, brokerage services, asset management, insurance, or financial apps. If this happens, it could lead to new forms of unfair practices, like increasing prices unfairly or blocking access to their platform to put pressure on their competition. Some firms may decide to not participate in the open finance ecosystem, which could lead to fewer product choices for consumers, possibly hurting competition. While the shift to an open finance ecosystem initially promises a leveled information field, stimulating fair competition and better financial products, the long-term implications could lead to new challenges. In essence, a dominant aggregator could use its monopoly over customer data to disadvantage rivals in the markets where they compete directly. These dominant players, by using their platform's strength, could unfairly affect competition. They could bring back the uneven information access that open finance tries to fix, making the market less competitive. Dominance of few TPPs (or other participants in the open



finance ecosystem) might result in weak competition and stifle innovation. The FCA (2019) has also hypothesized a similar scenario to this.

## 5.5 Use cases

Though, open finance currently isn't "in effect", so to speak. There are some initiatives that can be considered open finance. Specifically, these initiatives already exist today without open finance, but open finance will enhance, integrate, and overall improve these services that already exist today. This is what is meant by "ongoing initiatives". Potential initiatives, that will be discussed further down, are primarily initiatives that don't exist today (or exist in a very limited scope) but would be possible and see a more widespread proliferation with open finance.

### 5.5.1 Ongoing initiatives

**Embedded finance** – Embedded finance is the concept of integrating financial services into non-financial applications, platforms, or businesses, aiming to provide a seamless and enhanced user experience (PwC, 2022; Bain, 2022b). Examples of embedded finance range from ride-sharing apps like Uber integrating payment services, to e-commerce platforms like Amazon offering insurance products, or Apple enabling their customers to make payments via Apple Pay (Bain, 2022b). Open banking (and in the future open finance) are the enabling foundation for embedded finance (Strands, n.d.; Hensen and Kötting, 2021; Tink, 2022). It leverages the data accessibility to seamlessly integrate financial services within non-financial digital platforms. From the customers perspective, embedded finance represents a practical application of open finance principles (Wordline, 2022).

**Buy-Now-Pay-Later** – BNPL schemes are financial services that allow consumers to purchase goods immediately and pay for them over time (Forbes, 2023). Typically, these payments are spread out over a series of installments, often without interest if paid within a specific period (Forbes, 2023). These schemes have become popular with online retailers and are often presented as a payment option at checkout (Tink, 2022).. They can be particularly attractive for larger purchases as they enable consumers to manage their cash flow more effectively. BNPL schemes fit into the broader open finance landscape because they are often offered by fintech companies that leverage open banking APIs to connect with users' bank accounts (Bain, 2022b). These schemes can in the future also provide valuable data for other financial service providers within the open finance ecosystem. For example, data about a consumer's usage of BNPL services could be utilized by other financial institutions to understand a consumer's credit behavior and financial management, in turn allowing them to offer better terms and ultimately attract and retain customers (GoCardLess, 2023a). For consumers, this will allow for even easier access to credit, flexible payment options, and more seamless and integrated purchasing experiences (GoCardLess, 2023a). BNPL can be seen as a limited, practical implementation of embedded finance (and thus open finance) (Tink, 2022; Hensen and Kötting, 2021)

**Point of sale lending** – Point of Sale (PoS) lending refers to the process where consumers are offered a loan at the point of making a purchase (Bain, 2022b). This can happen in-store or online, and is typically facilitated by a third-party lender who partners with the retailer (Kevin, 2023). A well known provider of POS lending is – as with BNPL – Klarna. The loan allows consumers to pay for their purchase over a set period of time. This way, interest is usually paid over a period of 6 to 12 months. This is a major difference from BNPL, which typically doesn't have these interest charges. POS lending can also be seen as embedded finance, and thus by extension as open finance (Bain, 2022b). Open finance will in the future make POS lending better and faster. It lets lenders see a buyer's full financial picture, including things like taxes and investments. This helps them quickly make loans that fit the buyer's needs. It also helps them make safer lending decisions. This makes getting a loan at the time of purchase a smoother and more personal experience for the buyer (Kevin, 2022)

**Personal finance management** – PFM services refer to tools or platforms that provide users with a comprehensive view of their financial transactions and help individuals manage their finances (GoCardLess, 2023a). With open banking, consumer's have been able to link their bank accounts with these apps to gain seamless, real-time into their spending habits (GoCardLess, 2023a; Which?, 2023). These apps allow users to categorize their spending, set budget goals, and receive notifications when they overspend (GoCardLess, 2023a; Which?, 2023). Moreover, they allow you to analyze financial data to provide insights and recommendations for improving customers' financial health. Information that these apps cannot currently access can be typed in manually by the customer, which can be cumbersome and time consuming. With open finance, these apps will be able to access a wider pool of the customers' financial information from various financial institutions (GoCardLess, 2023b). In open finance (and with user permission), they will be able to pull in data from bank accounts, credit card accounts, investment accounts, mortgages, and insurances (GoCardLess, 2023b). This provides a comprehensive view of a user's financial situation and enables the tools to provide personalized advice and insights. Examples of personal finance apps that leverage open finance principles include: Mint, Personal Capital, and You Need a Budget, among others.

**Comparison services** – Financial comparison services are platforms that allow consumers to compare various financial products from different providers in a centralized place (FinTechNews, 2017). These platforms can cover a wide range of financial products, including insurance policies, mortgages, loans, credit cards, savings accounts, and more. The aim is to help consumers find the best deals and make informed decisions based on their individual needs and circumstances (ThePayPers, 2023). Consumers face significant time and other resource constraints when it comes to these services. These constraints are compounded by the high costs of identifying financial products and services that satisfy their specific needs (Awrey and Macey, 2022). Open finance has the potential to significantly enhance these services. Today, these platforms primarily provide a general comparison based on the input given by the user. With open finance, these platforms could access a user's financial data (with their consent) to provide more personalized and accurate comparisons (Awrey and Macey, 2022). For example, an open finance-enabled comparison platform could take into account a user's credit score, income, spending habits, and more to recommend the best credit card or mortgage for their

specific situation (Awrey and Macey, 2022). Examples of comparison services include: Lendo (for lending), Konsumenternas (for insurance), and Compricer (for lending), among others.

## 5.5.2 Potential use cases

**Credit assessment**– There are already many extensive and established credit assessment and worthiness services available today. These services traditionally rely on data like payment history, current debts, credit history length, new credit, and types of credit used to calculate credit scores (FCA, 2019). However, with open finance, the services and means of actually assessing credit worthiness will revolutionize. Open finance would promote the sharing of a wider range of financial data among authorized institutions, which could include everything from bank account transactions to investments, savings, mortgages, and insurance policies. Open finance could credit assessments by allowing lenders to consider a broader range of financial information, making it possible for more people to prove their creditworthiness. With this wealth of data, TPPs could perform more accurate and faster credit assessments (TISA, 2019; Nordea, 2022a; FCA, 2019). It could allow third-party providers to gain a comprehensive view of an individual's complete financial information, leading to faster, more accurate credit assessment and the identification of suitable credit products (TISA, 2019; Nordea, 2022a). This could also result in greater access to credit. Currently, individuals without a sufficient credit history – such as young adults or newly arrived immigrants – often struggle to access credit. As services like buy-now-pay-later and instant microloans become more common, the importance of affordability checks based on cash flow, rather than static credit scores, is likely to increase. This would enable real-time decision-making for alternative lending products without affecting a consumer's credit rating.

**Automation of Switching and Renewals:** Open finance can significantly streamline and automate the processes of switching and renewing financial products (FCA, 2019). In traditional models, the process of switching or renewing financial products such as insurance policies, loans, or utility services can be cumbersome and time-consuming. With open finance, however, consumers could grant permission to an automated service to access their financial data. This service could analyze their current financial products, compare them with available alternatives in the market, and identify better deals based on the consumer's unique financial situation and preferences (FCA, 2019; Deloitte, 2022). The service could even automate the switching process, transferring the consumer to the new product or service with minimal hassle (Deloitte, 2022). In this way, open finance could encourage comparison shopping and foster competition among service providers (FCA, 2019).

**New Advisory and Financial Support Services:** Open finance can facilitate the creation of new advisory and financial support services that simplify the financial decision-making process for consumers (FCA, 2019; TISA, 2022; GoCardLess, 2023b). Currently, many individuals struggle to manage and optimize their finances due to the complexity of financial products and the difficulty of tracking multiple accounts and transactions. With open finance, consumers can authorize advisory services to access their comprehensive financial data across various institutions and products. This could include information from savings accounts, credit cards, loans, investments, and more. Having access to this holistic view of a person's finances, the

advisory service can provide personalized advice and recommendations that accurately reflect the individual's financial situation and goals (FCA, 2019; Fedeli et al, 2022). This may include advice on budgeting, saving, investing, debt management, and other aspects of financial planning. For instance, these dashboards can guide a consumer on the best course of action for extra windfall money that they may receive, such as whether to put it into a savings account, make a mortgage overpayment, or invest it in a pension (FCA, 2019). Additionally, the dashboard can facilitate the transaction on behalf of the consumer.

**Open insurance** – Open insurance enables information sharing within the insurance industry (Insurely, 2022). It creates more digital and open relationships between insurance companies and their customers. It can be seen as the open banking of insurances (EIOPA, 2021). Open insurance will allow for informed decisions at every step of the insurance journey, as well as frictionless switching and management features (Insurely, 2022). Consumers can seamlessly share their current insurance information, get a transparent comparison to an alternative policy, and buy a new policy, all digitally after collecting all insurance policies in one digital overview (Insurely, 2022; EIOPA, 2021). With open finance insurance providers can tap the huge flows of real-time data to boost their product offerings. They can deliver on-demand, personalized services and experiences with variable pricing (Accenture, 2020). More customer-centric information will lead to more well-informed business decisions for insurance companies of the future. Also, in-house processes are likely to improve, leading to a more cost-efficient administration, decreased operating costs and rapid but informed product development (EY, 2022). Open insurance has the potential to revolutionize the industry by making insurance more accessible, transparent, personalized and allow for closer ties with customers (Insurely, 2022). Closer ties with customers will allow insurers to introduce new ecosystem services that combine their offerings with those of business partners outside the insurance industry (Accenture, 2020). This in turn can allow insurance to be integrated into other customer journeys – such as when buying a home, moving houses, or renovating a kitchen – providing benefit to customer, insurance provider, and the platform provider (McKinsey, 2017a).

Other types of use cases that were briefly mentioned in literature include (Nordea, 2022a; Belvo, 2022; Plaid, 2022; TISA, 2022; FCA, 2019):

- Other types of financial dashboards (pension, investments etc.)
- services that move cash into and out of current accounts automatically to avoid bank overdraft charges and provide a higher rate of return on cash balances
- Tools for debt advisors that use a client's transaction data to populate financial statements
- Open Energy is a concept similar to Open Banking and Open Finance, but applied to the energy sector. Consumers could share their energy usage data with different service providers to get personalized recommendations for energy-saving measures, or to compare prices and switch to the most cost-effective supplier.
- Mailbox where all invoices are sent to and wherein payment is automatically executed

# Chapter 6: Empirics

The findings drawn from the conducted interviews. The collated data from these interviews has been structured to tell a cohesive story that can lend further depth to the research and subsequent discussion in the following chapter. From the interviews, the information will be presented under the following subheadings: The road to open finance, retail businesses in open finance, ecosystems in open finance, the markets structure and market dynamics, and lastly data privacy in open finance. The specific subheadings have been chosen strategically to provide an organized and comprehensive presentation of the collected data, as well as highlight common patterns and topics that emerged across the interviews conducted. The people an overview of the people interviewed can be found in Table 2.1 on page 10.

## 6.1 The road to open finance

### 6.1.1 The vision of open finance

According to many of the interviewees, the key and main driver of open finance will be legislation (IS2, IS6, IS4). This is because banks have no economic incentive to open up their data vault and share it freely (IS1, IS6, IS2). As such, there needs to be a strong push from legislators to enable open finance through legislative frameworks (IS2, IS3, IS1). In particular, the legislators - in this case being EC - need to have a clear objective and purpose when driving this push towards open finance. This will ensure that the legal frameworks put in place create an environment that fosters innovation, competition, and collaboration while simultaneously safeguarding consumer data privacy (IS2, IS3). Without a clear objective and purpose, the potential benefits of open finance may not materialize (IS2). Therefore, it is crucial for the EC to lead the way in creating a regulatory framework that encourages the growth of open finance and its benefits. The core idea behind PSD2 – and the soon upcoming PSD3 – all about creating better financial services for the customer by proxy of opening up access to payment data, thereby fostering increased competition in the European financial services sector. By breaking down the data oligopoly of larger financial institutions, TPPs can more easily enter the financial market and thus create innovative products and services for the end consumer (IS6). This way, consumers can access a wider range of financial services and products from various providers, including fintechs and other non-banking entities, leading to increased choice, flexibility, and convenience. This can potentially lead to better pricing and more personalized services, ultimately benefiting consumers in the long run (IS6). Open finance will be a continuation of this vision and should further build upon what has already been accomplished with open banking; open finance should increase the competition, further break down the monopoly of banks, continue to open up and push for greater prospects of new financial services (IS2). Open banking has seen a strong development in Europe and it has indeed led to better possibilities for consumers to control their financial data. However, it has developed in a way not originally intended. Competition is still not entirely free; there are different levels to the players in open banking which has caused new entrants to struggle to compete on an equal footing with the incumbents (IS2). Moreover, open banking has been quite limited in its scope, as there has only been initiatives around the payment space, payment accounts and the account information

(IS2). Open finance is therefore expected to address the limitations of open banking by promoting greater opportunities for the development of financial services. Ultimately, open finance will further build upon the vision of open banking.

### 6.1.2 The legislation of open finance

The current legislation for open banking will be applicable for open finance (IS4). Notwithstanding, it is important that regulation is developed in order for open finance to become a reality (IS3). It is important to look at the problems of open banking to understand how open finance will develop (IS1). In particular is the lack of API standardization currently seen in the open banking space today (IS1). There are no uniformed standards for it (IS1). One way to standardize it would be to use Stripe (an American financial services company similar to Klarna) as a benchmark for API standards. Another issue lies in the requirement that open banking APIs have to be provided for free. According to IS1, there needs to be a revenue model for banks in this regard for open finance to succeed (IS1). However, the specifics of such a model are unclear and its impact on open finance's development may be negligible, according to IS6. Furthermore, PSD2 was one sided in the sense that it only mandated banks to develop APIs (IS1). In IS1's opinion, other participants in open finance, like fintechs, should also be obliged to provide APIs. It needs to be a two-way street. As open finance encompasses a broader range of products and services than open banking, equitable data sharing across all participants would thus be highly beneficial (IS1). IS7 agrees that enforcing balanced data sharing among license holders is key for open finance. Not only that, a framework should be established outlining what type of data points to standardize and how these data points should be made available. It will be the only way to ensure a high level of data quality, according to IS3. As such, there needs to be stricter regulation than what is currently seen in the payments space (IS1).

*“Regulation is most definitely key for open finance but it needs to be done in the right way”*

- IS1

### 6.1.3 The timeline of open finance

The journey towards open finance is expected to unfold gradually (IS2, IS6). The building blocks for open finance are in essence already established in the form of PSD2 (Payment Services Directive 2) and the soon to be PSD3. The API mandate from PSD2 was a big technical shift in the financial services industry. A technical shift which is still happening today and that will continue to do so for a long time ahead (IS6). It is crucial to understand that not everything will be in place from day one (IS6). In the initial stages of open finance, there may be some haziness as different players embark on experimentation and explore different approaches. With time, there will be more clarity about what works and what doesn't. As such, the journey towards open finance will be a lengthy, iterative, and gradual process (IS6). However, it is important to note that legislators will continue to play a pivotal role in driving and shaping this transformative process (IS6). When it comes to the business aspect, the impetus behind open finance will likely originate from entities other than traditional banks, with emerging players introducing new, innovative products and services (IS2). Moreover, the evolution of open finance is expected to

occur in successive waves, further emphasizing its incremental and progressive nature (IS6). Initially, the focus is anticipated to be on sectors such as mortgages and pensions, potentially paving the way for subsequent developments in sophisticated investment products (IS6). Open banking is still in an immature stage despite having been around for some time (IS5). This is even more so true for open finance (IS5). The problem is that many people fail to realize the gap between the current state and the end goal (IS5, IS6). It is important to acknowledge that the realization of the end goal (i.e. the full implementation of open finance) is still significantly distant, likely being five years or more into the future (IS6).

## 6.2 Retail business in open finance

Companies are interested in having a bigger ownership stake in their customers' financial well-being (IS3). Open finance will solve this (IS3). Licensed TPPs will be able to access a larger swath of customer's financial data, such as insurance and pension and thereby allow for a new type of information gathering for companies to better understand "what are we offering to our customers" and "are our offerings relevant to our customers" (IS3). The data that will be available to access in open finance will allow companies to be in a better position to validate hypotheses about their customers, and then use that information to refine offerings and develop new services (IS3). In the end, open finance is all about bringing benefits for the consumer. However, the flipside of open finance is that TPPs can access the data to gain insights into competitors' customers. This access enables TPPs to develop competing products and services that may be more appealing to these customers (IS3). To effectively respond to this, companies will have to be forward thinking and proactive, and use the financial data accessible through open finance to their own advantage to create better products and services. By offering products and services that are more tailored to the individual customer or offering complete packages of relevant products and services, companies can discourage customers from switching the current ecosystem to a competitor (IS3). Open finance will be about going beyond the core value; it will be about complementing the core value proposition (IS3). From a business perspective, open finance will allow companies to understand their customers on a deeper level (IS2, IS3). From that, companies will be able to make relevant changes to their offerings and offer tailored solutions to their customers (IS3). This will cultivate more loyal customers who actively choose to stay within the same company ecosystem (IS3). Long term, this will translate into higher revenue for the company (IS3).

Retail companies have several options to choose from when determining their role in the open finance landscape. They can opt to become a licensed TPP and leverage open finance to directly access the financial data themselves and develop new products and services that cater to the customers' needs (IS4, IS1, IS3, IS6). This is of course a considerable commitment to make (IS6). Alternatively, they can choose to collaborate with existing third-party providers or established financial institutions to access customer financial data and build tailored offerings (IS3). Their choice will ultimately depend on the company's scope (IS3). The companies will have to carefully consider the associated opportunities, risks, and regulatory requirements to determine the best course of action. Companies will really have to think through "What is our

core business?”, “What are we good at?”, and “What should we leave to others?”. There needs to be a clear focus on a pertinent customer problem in order to create value (IS4, IS8). Companies should therefore use the financial data to *understand* and not just to sell (IS2). Companies need to understand the customer pain-points related to payments and financing. Companies should look at the entire journey from the customer’s perspective, from end-to-end (IS6). For a retail company with brick and mortar stores, they should try to engage the customer well before they enter the store and leave the store (IS6). In the end, open finance is about creating better services for the customer (IS6). As such, there also needs to be a more customer friendly mindset (IS2). The strategic thinking should be “how can we make things easier for our customer”.

How companies interact with partners in an open finance ecosystem will also be heavily influenced by whether they will *provide* the financial data or *access* the financial data. In turn, this will depend on the level of API standardization (IS1). Additionally, the level of API standardization amongst data holders will affect the strategies of companies. If there are varying degrees of standardization, companies should consider working with an intermediate (IS1). Notwithstanding, it is likely that the legislation will force API providers to provide a minimum level of availability/standardization (IS3).

The open finance data will be important for companies - but companies will need to have an idea of what they actually want to do with the data: What do they want to use the information for and why is it important (IS1). While access to data is a crucial factor for companies operating in open finance, collaboration and driving innovation with partners will be equally essential for their success (IS2, IS6). In open finance, retail companies will have to dare to test and dare to try new ideas (IS2). The significance of a network of partnerships lies not in its size or scope but rather in its ability to foster innovation (IS2). To succeed in open finance, companies must actively seek out like-minded, complementary partners with whom they can establish long-term collaborations, enabling them to pool their expertise and resources to drive innovation and create value for their customers (IS2). A significant issue in the contemporary open banking landscape is the lack of long-term commitment from TPPs (IS6, IS5). Many TPPs are led by young entrepreneurs who are primarily motivated by the prospect of being acquired by a larger company (IS6). This lack of long-term commitment can result in uncertainties for businesses that require stable partnerships. Additionally, these TPPs may have limited understanding of the needs of businesses, which can lead to a misalignment of expectations and requirements. As such, it is imperative that businesses are explicitly clear about their needs and find like-minded, long-term TPPs to form partnerships with. Ultimately, openness is not solely about gaining access to data but also about facilitating collaboration with external partners (IS2). As such, it is important that companies cultivate a laboratory-like environment that encourages experimentation and fosters collective development with other participants in the ecosystem. This approach will enable companies to harness the full potential of open finance and leverage their partnerships to drive innovation, create value, and benefit customers (IS2).



## 6.3 Ecosystems in open finance

In an ecosystem, different players can come together using digital platforms to co-create value. Open finance and open banking is the digitalization process wherein banks can develop platforms to create ecosystems where multiple actors can work together in order to create new innovations and digital services for all engaged actors (IS5).

In the early stages of open finance, the roles of various players within the ecosystem will most likely be somewhat unclear. However, as time progresses and as the dust settles (which may take several years), the specific roles of different actors will become clearer and distinct ecosystems will sprout with their respective participants (IS3). Alternatively, the current roles in the open banking ecosystem could also be applicable for open finance. In such a scenario, it can help to consider a few factors when deciding on which role to play. Companies should first gain a comprehensive understanding of their market situation and assess the extent of their influence within the market. For instance, if a company's brand is perceived as weak or not favorably received by consumers, it may be advantageous to focus on being a producer of products and services while entrusting the distribution to other entities. On the other hand, if the brand holds strong recognition, adopting a platform approach to attract customers can prove beneficial (IS1). A problem related to this is that many companies have different operating names and legal names, which can be confusing for consumers and thus undermine trust (IS1). In addition to that, it depends on the customer base as well. For example, if the customers are asking for more advanced types of products and services than what is currently beyond the offering of the company, an option could be for the company to potentially distribute products and services from other providers through its own platform. In that sense, it's also about partnership strategy. In situations where competitors are providing offerings that consumers desire but are beyond the capabilities of your own company, several potential approaches can be considered. One option is to attempt internal development to provide the desired offering. This could be a viable option if the company possesses the capabilities and resources to deliver a superior product. Alternatively, partnering with the competitor is another possibility, or even considering an acquisition to integrate their capabilities into your own operations. In the end, it boils down to what kind of customer base of the company and perhaps if the company has any dedicated strategy for different customer segments but also the partnership strategy. It very much varies from case-by-case and it can thus be hard to formulate a single, all-encompassing strategy. Ultimately, there are no simple answers to this (IS1).

As open banking evolves into an established standard and starts progressing towards open finance, there will be a collective sense of understanding that this is the way forward where different actors will find their rightful place (IS3). Over time, this will foster a heightened level of trust among the ecosystem's constituent partners as more participants recognize the benefits. As a result, larger incumbents will demonstrate a growing willingness to engage in cooperation and collaboration. This is the way in which ecosystems will develop within open finance (IS3). Thus, the collective understanding and collaborative mindset will shape the formation and growth of ecosystems within open finance (IS3). However, this can only be realized when there is a solid foundation of trust established among the stakeholders (IS3). As the willingness to

collaborate grows, it will allow for additional TPPs to enter the market. These TPPs can create new ecosystems around new, innovative products and services for the end consumer while also benefiting the larger companies (IS3). Ultimately, the essence of open finance ecosystems lies in creating a win-win situation for all stakeholders involved (IS3). It revolves around identifying and seizing collaborative opportunities that lead to mutual benefits for everyone participating in the ecosystem (IS3). Nothing will happen if the stakeholders cannot see the benefit of it (IS3). But exactly how the ecosystems will look like is hard to understand today. Most likely, there will be diverse ecosystems tailored to the needs of different stakeholders, each with its own distinct understanding and interpretation of what constitutes the ecosystem. The ecosystems could be industry specific or use case specific. In addition, there could also be different sub-ecosystems within the ecosystems (IS3). While the various ecosystems within open finance may be compatible with one another, their multitude contributes to a dynamic and fluid landscape.

### 6.3.1 The key factors for successful ecosystems in open finance.

Many interviewees highlight that the mindset of ecosystem stakeholders is vital for success (IS4, IS2, IS1, IS3). There has to be a common strategic vision amongst the actors (IS4). Since the ecosystem revolves around the context of the interaction between actors, there needs to be a common objective to co-create value (IS5). In a similar vein, actors must seek collaborative opportunities that yield mutual benefits, creating a win-win scenario for all (IS3). Cultivating strong trust and ensuring absolute transparency among the actors is imperative for successful ecosystems to sprout (IS3). Platform owners in an ecosystem will have to provide the right tools and resources for the actors in said ecosystem (IS5). This could for instance be providing adequate APIs and software development tools (IS5). Additionally, platform owners need to have a governance strategy for their ecosystem (IS5).

*“Once you have examples of successful ecosystems, it will be able to spread and eventually lead to self-sustaining (sv. självgående) ecosystems within open finance”*

- IS3

## 6.4 The market structure and dynamics

### 6.4.1 Competition on the market

The primary objective of open finance is to dismantle the monopoly held by larger financial institutions and promote a more competitive and inclusive financial landscape (IS6). In doing so, the barriers to entry into the financial market will be lower (IS1, IS2). Historically, banks have been too entrenched into their current business and are not innovative enough (IS2). The banks already make enough money as is to today, hence the lack of reason for them to change their business model and innovate (IS2, IS6, IS5). Their limited willingness to collaborate and share data with external parties highlights the necessity for a legislative push of open finance. The legislative framework associated with open finance is crucial in mandating incumbent financial institutions to share a minimum set of data with external entities (IS3). With such data sharing

obligations, the barriers to entry can be lowered and create a more level playing field for TPPs and other external parties to enter, fostering increased competition and market dynamism within the financial services sector.

The increased competition will hopefully lead to a faster moving market, wherein more innovative products and services can be created (IS2, IS3). While banks will continue to occupy a central position within this transformed market dynamic, their role will become more “invisible” in nature, particularly in relation to end customers (IS2). Instead, TPPs and retail companies will assume the forefront, acting as intermediaries in the delivery of financial services (IS2). For instance, the customer will no longer need to directly approach an insurance company to purchase insurance products. Instead, the insurance company will operate behind the scenes while retail companies take the forefront, offering and selling these services directly to customers (IS2). In essence, the open finance market dynamic will be more about facilitating products and services, resulting in enhanced relationships between customer, retail companies, and financial services providers (IS2).

#### 6.4.2 Lower barriers to entry is a double edged sword

To establish such a market dynamic within the open finance landscape, legislative measures have to be based on the principle of fairness, ensuring equitable access and sharing of data among all participants (IS1). This fairness principle is crucial to prevent a scenario where emerging services and products predominantly cater to larger companies, inadvertently neglecting the interests and opportunities available to smaller enterprises (IS1). By promoting equal access to data and fostering a level playing field, the legislative framework can encourage a diverse range of companies, irrespective of their size, to actively participate and contribute to the evolving open finance ecosystem (IS1). In doing so, barriers to entry can be lowered in a conducive manner. However, lowering the barriers to entry is a double edged sword (IS1). Now that everyone can access data on equal terms, competitors can access the financial information of each other's customers (IS5). On the flip side, customers will also have a better possibility of comparing the prices between the different providers, making it easier for them to switch products and services (IS1). Taken together, the competition could increase to the detriment of the providers profit margins. Moreover, organizations risk losing the relationship with their customers as a result of the increased competition (IS1). All of this underscores the importance of collaboration and value co-creation between the players of open finance (IS5).

#### 6.4.3 The advantage of larger incumbents

Notwithstanding the aforementioned factors, it is likely that larger incumbents are predisposed to have an advantage within the open finance landscape (IS3). Their substantial size affords them an organizational advantage, as they possess the capacity to consolidate their extensive resources and integrate them into a comprehensive value proposition for customers (IS3). They have the wherewithal to make the required investments into the open finance infrastructure and overall have a larger pool of institutionalized knowledge, skills, and other types of resources to draw from (IS3). Again, owing to their size, larger incumbents are likely to exhibit better scalability potential in comparison to new entrants (IS3). What's more, the larger incumbents already have a large customer base and an established brand (IS3, IS4). For these reasons, it

is likely that the future of open finance will predominantly focus around the larger incumbents, such as banks and large retail companies (IS5).

*“You know, I think the future of open banking and open finance will be between banks and large companies”*

- IS5

## 6.5 Data privacy in open finance

When requesting customers to share their data, a direct approach is likely to be met with unwillingness (IS4). The concept of data sharing has to be reframed in order to persuade customers to willingly provide their information. An effective strategy involves framing data sharing as a value proposition that offers convenience and tangible benefits to customers (IS4). (IS4) argues that the key lies in creating a compelling convenience factor that incentivizes customers to share their data (IS4). By emphasizing the convenience customers gain from sharing their data, companies can engender a more favorable disposition towards data sharing and encourage active participation in the open finance ecosystem. In opposition to the emphasis on convenience, IS2 argues that the significance of convenience in motivating data sharing is overstated. Instead, IS2 suggests that the critical aspect lies in having a well-defined data strategy that is effectively communicated to consumers (IS2). By transparently conveying the purpose and value of data sharing, companies can instill confidence and trust in consumers, thereby encouraging them to willingly share their data within the context of open finance. Companies should adopt a customer-centric perspective when contemplating the handling of consumer data, reflecting on "what is the best way to handle such data?" and "what represents the most ethical manner of data handling?" (IS2) In this regard, companies have the opportunity to surpass regulatory requirements and proactively implement practices that exceed minimum standards in data management, reinforcing trust and confidence among consumers (IS2). Subsequently, they should integrate these principles into their overall data strategy and, most importantly, diligently adhere to them (IS2). Lastly, companies should be explicit with their approach to data handling. Transparency is fundamental to data sharing and data access. By openly and honestly communicating the purpose behind data access and clearly articulating the intended use of the data, companies can establish a long-term and trustworthy foundation which underpins their data access practices (IS2). IS3, is in agreement that transparency and honesty can take you very far, however, it has to be combined with strong regulations.

Regarding data sharing, consumers tend to place greater trust in banks compared to other entities (IS1, IS2, IS5). This is primarily due to the more stringent regulations governing data usage and handling within the banking sector. Customers are not taking the necessary steps themselves to protect their data and instead expect the banks to protect it for them (IS1). For example, a considerable number of customers unknowingly provide consent to data sharing without comprehending the specific details of such an agreement (IS1). There is significant room for improvement regarding knowledge sharing between customers and the companies responsible for collecting their data. It is crucial to ensure that customers are well-informed about the scope of data usage by companies, including what is permissible, what is possible,

and what is prohibited. If all of the stakeholders of open finance were on the same page regarding data access and privacy, it would lay a foundation more conducive to data sharing because people would know exactly what's going on with their data (IS1). It is therefore imperative that companies actively engage in educating consumers about the specific types of data they (the company) need and why they need it (IS1, IS3). The key to building trust in data accessing lies within education, which will take its due time (IS3).

One potential way to accelerate and empower customers' understanding of data access is to use the power of AI (IS2). By leveraging large language models, customers can acquire a valuable tool to augment their analytical capabilities, helping them understand the legal intricacies of data accessing (IS2). Through that, companies can build the trust necessary to facilitate data accessing and sharing in open finance. Other key considerations when building trust is to start small (IS1). By starting small and gradually expanding data access and sharing practices, companies can demonstrate their commitment to privacy, security, and responsible data handling (IS1). This incremental approach allows for the cultivation of trust among stakeholders, promoting transparency, and mitigating potential concerns (IS1). What's also important is that when you have the data, don't misuse it (IS1). Companies should also be aware that data accessing is a delicate matter and finding a balance between providing benefit and data access is difficult (IS1). IS1 illustrates this by drawing a comparison between customer data related to the frequency of purchasing fuel for their vehicles and the frequency of purchasing wine. On one hand, customers may welcome companies utilizing their fuel consumption data to identify money-saving solutions. On the other hand, sharing data about their wine purchases with a life insurance company would be perceived as excessively invasive. If a company goes too far in terms of data usage and intrusion, it risks damaging its relationship with the customer, potentially leading to a permanent loss of trust. Striking the right balance is difficult and companies only have one chance to get it right (IS1).

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# Chapter 7: Analysis and Discussion

This chapter will analyze the information gathered from the comprehensive literature review and the insights gleaned from interviews. This chapter will first discuss the drivers of open finance, then narrow down the discussion to the ecosystem of open finance. Following this, the discussion will elaborate on how retail companies can function within the open finance framework. This chapter will then discuss how organizations should approach the issue of data protection within the context of open finance. Lastly is a discussion of potential use cases.

## 7.1 The drivers of open finance

Drawing on the comprehensive literature review and rich qualitative data gathered from multiple interviews, four key drivers have been identified: Regulation, data, technology, and business. The drivers can be seen as factors that are necessary for open finance to materialize. Consequently, these drivers will shape the trajectory of development in the open finance landscape, ultimately determining the level of success and impact open finance will have. It is therefore important to understand these drivers as they not only highlight the critical areas of focus for enabling open finance, but also shed light on potential hurdles that need to be overcome to ensure its successful implementation and adoption. Table 7.3 presents an overview of the drivers of open finance.

### 7.1.1 Regulation as a driver for open finance

As was seen with open banking, regulation will be the single most important driver in enabling open finance. Although there are currently many regulations governing data (e.g. data act, GDPR, PSD2 etc.), but so far nothing explicit for the case of open finance. As such, all data sharing and accessing (as well as protection and privacy) that is envisioned in open finance has to currently be done in accordance with current regulations, which are not far reaching enough to accommodate for open finance. Table 7.1 presents the current and anticipated legislation related to open finance.

It is important to realize that the current regulatory framework – despite its shortcomings – has nevertheless laid the groundwork necessary to move towards open finance. Although PSD2 concerns open banking, it has been established from literature that open banking is part of the broader open finance. As such, PSD2 can also be seen (in a limited manner) as regulation steering us towards the direction of open finance. Whether the new open finance framework will replace PSD2 is uncertain. It could be that the expected PSD3 is baked into the new open finance framework, and thus replacing PSD2 while also introducing open finance. However, it could also be the case that PSD3 is a stand alone revision apart from the expected open finance regulation in the future. Nevertheless, it is clear that PSD2 has contributed towards the movement to open finance. Likewise, GDPR has also laid the foundational groundwork necessary for open finance. The new open finance regulation is unlikely to replace GDPR entirely when it comes to data protection. This is because GDPR is general and

industry-neutral. Thus, GDPR will almost certainly exist in parallel with the future open finance framework(s). As such, it will directly impact data protection in an open finance setting. It can be expected, however, that the open finance framework will build and expand upon GDPR and be specific for financial data protection. Table 7.2, presents an analytical overview of the legislative situation of open finance.

**Table 7.1: Current legislative situation of open finance. This list is based on the findings from the literature review and interviews (Author’s original work)**

Current legislation	GDPR - concerns general data protection. It is not specific enough for open finance  PSD2 – open banking regulation, not broad enough for open finance
Expected legislation	Open finance regulation – anticipated to create a unifying and targeted regulatory framework to enable open finance  Data act – will regulate B2B data sharing across industries and reinforcing trust in data sharing intermediaries. Will not stipulate new access rights, however.  PSD3 – anticipated to address the current shortfalls of PSD2

**Table 7.2. The present legal situation pertaining to open finance (Author’s original work)**

	Enabling open finance	Inhibiting open finance
PSD2	<p><b>Payment account data</b> - PSD2 allowed for payment account data (a type of financial data) to be shared, marking a step towards broader open finance</p> <p><b>Strong customer authentication</b> - has ensured a safer environment for financial transactions and data exchange, laying the groundwork for the environment needed in open finance.</p> <p><b>Investments into API infrastructure</b> - PSD2 has forced banks and TPPs to invest into their technological infrastructure, paving the way for open finance.</p> <p><b>Innovation</b> - PSD2 has spurred innovative services and products, which has helped understand customer demands and ultimately brought customer benefits. Ultimately, open finance is about bringing benefits to consumers.</p>	<p><b>Limited financial scope</b> - currently, PSD2 is only limited to payment account data. As such, it does not include the other types of financial data envisioned in open finance</p> <p><b>No API standards</b> - the lack of API standards has made it difficult to obtain data across banks in a consistent manner, which has affected data accessibility. Open finance envisages a high level of data accessibility.</p> <p><b>No data standards</b> - no data standards has led to varying degrees of quality amongst data holders. In open finance, financial data will be used to gain insights into the customer. However, if data quality is poor or varies a lot between data holders, it can impact the ability to gain insights and ultimate potential to extract value from it.</p> <p><b>Only banks have to provide data</b> - currently, only banks have to provide data access to licensed TPPs. In open finance, the idea is that all financial institutions should provide access to their financial data.</p> <p><b>No compensation model</b> - Banks had to maintain costly API infrastructure while not being compensated for it. This led to lower incentives for banks to maintain high quality API infrastructure. High quality API infrastructure is important for open finance to take hold</p>



<p>GDPR</p>	<p><b>Data protection and privacy</b> – GDPR has been an important step in ensuring data protection and privacy, which of course will be an important aspect of open finance. It has set the standard for which future regulation will have to surpass.</p> <p><b>Consent</b> - freely given consent is required for organizations to use the data. This has led to the development of more robust and transparent consent management practices. These practices are crucial in an open finance context, where consumers need to have clear control over who can access their financial data and for what purposes.</p> <p><b>Data portability</b> - empowers individuals to access and reuse their personal data across multiple services, enabling easy and secure transfer between IT environments without compromising usability. This provision is fundamental for open finance, as it allows consumers to easily share their financial data with different service providers, enabling a range of personalized financial services.</p> <p><b>Trust</b> - By setting high standards for data privacy and protection, GDPR has helped to build consumer trust and confidence in data-sharing practices, laying the foundational work for the trust required in open finance.</p> <p><b>Right to erasure</b> – GDPR allows individuals in certain situations to request that organizations that hold their data delete it. This endows the individual with some degree of control over their data, which is one of the important aspects of open finance</p>	<p><b>Only identifiable personal data</b> - GDPR concerns identifiable personal data and as such may not be far reaching enough to encompass all of the financial data envisioned in open finance. Financial data is very sensitive and regulation should reflect that.</p> <p><b>Inadequate consent mechanisms</b> – While GDPR emphasizes the importance of user consent for data processing, it doesn't provide specific guidelines for how consent management should be implemented in an open finance context. Specifically it doesn't say anything about how to ensure "informed" or "explicit" consent. Additionally, data processing (including sharing) doesn't always need to be asked for directly by the customer, and consent for this doesn't automatically expire after a certain time.</p> <p><b>Liability</b> - Since open finance will call for open access to financial data, data holders cannot refuse to not share data. What happens when those who access data do not have adequate data protection measures? The question of who is liable is not straightforward and can be complex. Open finance will require more clarity in this regard.</p> <p><b>Inefficiencies in data portability</b> - although data portability is guaranteed in GDPR, there are no technical standards for how it should be done. As such, it can be difficult and cumbersome for data subjects to actually port their data. Also, there is also no right for a third party to access the data on an individual's behalf.</p>
<p><b>sources</b></p>	<p>Interviews, Vessozo, 2022, FCA, 2019, Nicholls and Clarke, 2021, TISA, 2022, Konsentus, 2022, Plaid, 2020</p>	

It is evident that regulation is the single most important factor for the enablement of open finance. It will affect the underlying technological infrastructure, the data sharing/accessing principles and the data itself, and ultimately how business is conducted in open finance, thus shaping the entire outcome of open finance. The successful realization of open finance will require the development and implementation of a comprehensive, robust, and adaptive regulatory framework. It will need to extend beyond existing data regulations and be specifically tailored to the unique requirements of open finance, ultimately serving as the foundation upon which a secure, innovative, and inclusive open finance ecosystem can be built. Regulation will exclusively have to be pushed by the regulatory authorities. As such, organizations individually

have limited influence on this driving factor. Collectively though, organizations can still voice their opinions through open consultations sessions and through that have limited influence.

### 7.1.2 Data as a driver for open finance

Data is another crucial driver for open finance. Of course, the whole idea of open finance is precisely about free and equitable access to a wider range of financial data. In today's business landscape, data is a competitive advantage and as such many companies have little incentive to share data freely. Without data accessing, there can be no open finance. This again underscores the importance of regulation. Robust regulation is needed to create an environment where data sharing becomes not only feasible but mandatory as well as equitable for all participants.

#### **Mandatory and equitable data sharing**

The principle of mandatory data sharing underpins the open finance model, promoting fairness and reciprocity among all participants. It ensures that all entities involved, whether they are accessing data or providing it, are held to the same requirements. This reciprocity is crucial in creating a balanced and competitive ecosystem. Without a mandate for data sharing, the potential for disparity arises. For instance, some participants could choose to only access data without sharing their own, creating an inequitable situation. This could lead to a skewed market dynamic where certain players gain an unfair advantage by leveraging the data they access, without reciprocating the same benefit to others. This imbalance could undermine the very core tenet of open finance. Therefore, ensuring mandatory data sharing is a pivotal aspect in realizing the full potential of open finance. Ensuring access to this wide array of data calls for regulatory measures that go beyond the current frameworks.

#### **Data protection and consent**

While it's important for rules to be in place to ensure companies share data, it's just as important to make sure this doesn't put people's personal and financial information at risk. Thus, the challenge is creating rules that allow data to be shared easily, but also keep people's information safe and secure. This is a difficult task, but undoubtedly an important one. This will require the involvement of both regulators and the various players in the financial ecosystem, including banks, fintechs, and other financial institutions, to collaboratively devise strategies and standards that respect and uphold consumer data privacy while promoting the open sharing of financial data. The issue of data privacy, security and protection has been discussed extensively in literature as well as in the interviews conducted. Due to the importance of this topic, further discussion will be done below but for now it is left as is.

#### **Data standardization**

Then, there is also the question of how such data should be standardized – which has been raised in both literature and in the interviews conducted. PSD2 did not call for any type of standardization of the data. This led to varying qualities of data being accessed, which in turn limited the potential for open banking. A key aspect of open finance is to use data to gain insights into customers. Thus, the insights that can be gained are directly related to the quality of the data. By ensuring a set of data standardization in open finance, better quality and cleaner

data can hopefully be achieved. This can cut down the costs involved in fixing mistakes in customer data management. The data standardization would not only relate to the quality of data itself, but also to its portability and interoperability. As identified in literature, data accessing and sharing needs to be complemented by data portability and interoperability. Effective regulations enforcing data portability could enhance the current rules around data access and sharing, by providing a mechanism that ensures customers can conveniently transfer their personal and transactional data from one financial service provider to another within the open finance framework. This advancement further levels the playing field, reducing barriers to switch providers and fostering healthy competition. The implementation of data portability and interoperability could help mitigate potential market imbalances, and reinforce the fundamental principles of open finance – fairness, reciprocity, and innovation. Most likely, the EU will implement the suggestions of ECGC has laid forth regarding data standardization in open finance.

### **Compensation model for data**

Both literature and interviews underscore the need for a compensation model for data access in open finance. PSD2 did not include such a compensation model. As such, many banks did not have any incentive in investing into their data systems and upholding high data quality. Since the EU has mentioned the importance of a compensation model, it can be expected that a future open finance framework will include such.

### **Organizations potential to influence data as a driver**

Organizations can still exert some level of control in this area. For example, they can invest in their data systems and management tools, ensuring they are equipped to deliver data of high quality and standardization. While the exact specifications of data standardization in open finance remain uncertain, it would be prudent for businesses to align with international standards and conduct benchmarking exercises for data quality and management. Further, they can participate in discussions around regulatory frameworks and contribute their insights on data management and data quality. By being proactive, they can have a voice in shaping the future of open finance, ensuring it is beneficial for all parties involved, from financial institutions to consumers. Ultimately, organizations that take the lead in data quality and standardization stand to benefit the most from the move towards open finance. They can position themselves as leaders in the industry, gain competitive advantages, and provide better services to their customers.

## **7.1.3 Technology as a driver for open finance**

For open finance to materialize, there needs to be in place a robust technology structure that enables data to be accessed and shared across organizations. As with open banking, APIs are pivotal in the realization of this infrastructure.

### **API standardization and equitable implementation requirements**

The problem with these APIs in open banking – as noted in literature as well as in the interviews – was that many of the banks had old legacy systems that on many levels made it difficult for them to roll out these APIs. Furthermore, there was no standardization of these API, resulting in

large inconsistencies between the banks APIs. This has led to quality, availability, reliability issues of APIs in the open banking ecosystems. Because of this, TPPs had to adjust to each unique API or leverage other TPPs that acted as an aggregator. Both literature sources and interviewees highlight the necessity for API standardization in open finance in order to facilitate the large volumes of financial data exchange that is expected. The EGEN recognizes the need for API standardization in open finance. However, they also warn that excessive standardization may lead to technical and cost challenges for market participants. The group advocates for a flexible approach to API requirements, suggesting that varying degrees and methods of standardization may be more suitable for different facets of open finance. The company Stripe was mentioned in one of the interviews for their API standards. These standards could potentially serve as a benchmark for other entities in the open finance ecosystem, given their well-documented efficiency and user-friendliness. API standardization in the open finance ecosystem, given its diverse nature, may not be achieved instantly. Accommodating the unique requirements of all participants, from traditional banks to fintech startups, may necessitate a prolonged, iterative process involving continuous feedback and refinement, even after the framework is in place. Lastly, regarding APIs, is also the expectation that other ecosystem participants should provide APIs not just banks, as was the case in open banking. A universal API implementation would create a more equitable data accessing regime and foster a balanced ecosystem where all participants, not just banks, contribute to and benefit from the data exchange. This would not only enhance the overall functionality and efficiency of open finance, but also drive competition and innovation, promoting better financial services for consumers.

### **Compensation model**

Mirroring the concerns raised about free data access in open banking, both academic literature and interviewees have advocated for the introduction of a compensation model. The compensation model would also allow for companies to invest into and maintain the costly API infrastructure needed in open finance. Especially, if these APIs are expected to be of high quality and adhere to industry standards. In open banking, banks were not compensated when data was accessed, which led to them not having the incentive to invest into open banking infrastructure. A compensation model would provide financial institutions with a tangible incentive to invest in the necessary API infrastructure for open finance. By offsetting some of the costs associated with maintaining and improving this infrastructure, a compensation model would encourage banks and other entities to ensure their APIs are of high quality and in alignment with industry standards, thereby contributing to a more efficient and reliable open finance ecosystem.

### **Digital ID**

Another technology mentioned in literature that will be important in open finance is digital ID. Ubiquitous use of digital ID is a critical technological infrastructure needed to enable the full potential of open finance. High-assurance digital IDs, as highlighted in reviewed literature sources, play a crucial role in open data systems by empowering user data control, enhancing online security, and protecting privacy while simplifying account management. Without such IDs, the complexity of securely managing a digital footprint may increase for consumers. Simultaneously, digital IDs bolster customer authentication, serving as a safeguard against

potential cyber-attacks targeting APIs and mitigating the risk of fraud and financial crimes that could occur without proper identity verification checks. In open banking, the necessity of strong authentication was stipulated under SCA. In open finance, it can be expected that a similar stipulation will be mandated and perhaps even expanded upon. As the scope of open finance broadens to encompass a wider range of financial activities and services beyond just banking, the need for robust and reliable customer authentication becomes even more paramount. Implementing digital IDs in open finance poses challenges such as privacy, security, trust-building, and widespread adoption. It's crucial that the framework includes robust guidelines and protections for both consumers and financial institutions. However, no single entity can resolve the digital ID issue – it requires a collective effort involving financial institutions and regulatory authorities.

### **Organizations influence on technology as a driver**

Similar to data practices in open finance, individual companies can influence the technology of open finance to a certain extent. Companies can invest into robust API networks even today, and contribute to the establishment of API standardization. Companies can devote resources to developing robust and reliable APIs. This can include hiring experienced API developers, investing in API development tools and technologies, and setting aside time and budget for API testing and optimization. For instance, literary sources mentioned OpenAPI, W3C, OASIS, IETF, and Open Container Initiative as common international and industry-accepted standards for API. Similarly, the API standard of Stripe was mentioned in one of the interviews as the industry benchmark for open banking API. Regularly monitoring API performance can also help companies identify and address any issues promptly. This can involve tracking metrics such as response times, error rates, and usage patterns. Although current open finance is not here yet, companies can still request high standard APIs in data sharing agreements to lay the foundation needed in open finance. However, ensuring high API standards across the entire open finance ecosystem will require the collective effort of all participating entities. It will also necessitate the active involvement and robust regulatory oversight of governing authorities. Regulatory bodies will need to stipulate clear guidelines for API standards, possibly incorporating existing international standards where applicable, while also ensuring a level playing field for all market participants.

### **7.1.4 Business as a driver for open finance**

Open finance, at its core, is about delivering value to customers through innovation. For it to realize its full potential, companies – whether it is TPPs, banks, or any other organizations participating using open finance – need to identify ways to generate and capture value that can result in profitable business models. Without clear economic incentives, participation in open finance may be limited, and consequently, the immense potential benefits it holds for consumers may remain undelivered. Open finance is contingent on businesses finding ways to create compelling value propositions that can bring benefits to consumers and foster widespread participation of all ecosystem members. The underlying idea with freely accessing customers' financial data is to equalize the informational landscape, thus fostering increased competition and transparency amongst established financial incumbents, TPPs, and other participants in the ecosystem.

### **Compelling value propositions are key**

To understand the business rationale of freely sharing financial data in open finance, it can be helpful to examine the precedents established by open banking. The core idea of PSD2 revolved around enabling better financial products and services for consumers through increased access to payment data. This, in turn, was designed to boost competition within the European financial services industry. By permitting licensed TPPs unrestricted access to payment data, the financial sector's entry barriers could be dismantled, thereby facilitating easier market entry, disrupting the traditional landscape, and enhancing competition. Ultimately, this would lead to increased innovation leading to innovative financial products and services for end consumers, increasing choice, flexibility and convenience. Indeed, open banking has seen strong development in Europe, which has led to a proliferation of innovative financial products and services for end consumers, increasing choice, flexibility and convenience. It's important to remember that the ultimate goal of these efforts is to provide superior value to the end users – the consumers. The business rationale behind open finance will be crucial in driving its adoption – as it was for open banking. The pursuit of open finance is not just about accessing a wider range of financial data, but primarily about enhancing the financial lives of consumers, offering them a wealth of high-quality, responsive, and personalized financial products and services. This focus on customer value is the guiding principle that will drive the evolution of open finance.

In the evolving landscape of open finance, data analytics, digitalization, omnichannel strategy and personalization play instrumental roles. The free accessing of financial data by open finance lays the groundwork for a level playing field, where the edge comes from gaining superior insights, not just data access. Businesses can leverage advanced data analytics to delve deeper into customer behaviors and preferences, enabling them to create more personalized and tailored products and services. Open finance is not only about creating superior value propositions for consumers through new financial services and products for consumers, it is also about extending the reach of that value to a broader scope of people and promoting financial inclusivity. For traditionally underserved groups, such as the unbanked or underbanked populations, immigrants, and expats, this could be revolutionary. These individuals often face barriers to accessing traditional financial services due to lack of identification, credit history, or simply geographical location. By lowering the barriers to entry, open finance can extend the reach of financial services to these individuals, providing them with the opportunity to manage their finances better and ultimately improve their financial wellbeing. As such, the expansive access to financial data enables businesses to offer more relevant, tailored, holistic, and integrated solutions that cater to each customer's unique needs. This level of personalization aims to enrich customer experience, foster loyalty, and offer avenues for up-selling and cross-selling. Further, the advancement of digitalization enables the distribution of various financial services through digital channels, such as being embedded in customer journeys. Customers will be able to seamlessly access financial services across multiple digital channels, whether it is on a retail website, a mobile banking app, or aggregator platform. In the end, it all circles back towards the core tenet of bringing benefit to customers. Therefore, the business side of open finance needs to be underpinned by a strong customer-centric focus

driven by data analytics, digitalization, and a focus on providing tailored financial solutions to meet the customer wherever, whenever, and however.

### **Collaborations and partnerships**

Open finance also promotes new forms of collaboration between organizations, such as partnerships. Both literature and interviewees emphasize the importance of collaborative relationships in achieving the full potential of open finance. These partnerships in open finance will be underpinned by broader ecosystems with interconnected entities, ranging from traditional financial institutions, TPPs, to even non-financial entities – fostering a more diverse and robust open finance environment. In open finance, the key to success lies not in operating in isolation, but in fostering dynamic and mutually beneficial partnerships. In these ecosystems, data sharing and collaboration become the norm rather than the exception. These ecosystems can lead to shared innovation and value co-creation, where companies can leverage each other's resources, knowledge, and expertise to develop more innovative, integrated, personalized, and holistic financial services that meet a wider range of customer needs. – ultimately bringing a superior value proposition. The driving force of open finance is finding win-win situations for all through partnerships and wider ecosystem participation, creating a network effect that increases the value of the ecosystem as a whole. As such, partnerships and broader ecosystems are integral drivers for open finance within the context of business.

### **Organizations influence on business as a driver**

Unlike the above discussed drivers for open finance, organizations exert the most influence over the business aspect as a driving force of open finance. Ultimately, the success of open finance hinges on its ability to deliver value to consumers. Organizations are key architects in creating and implementing strategies and innovations that deliver on the promised value of open finance. A notable area of influence lies in their ability to invest in data analytics capabilities. By doing so, they can unlock valuable insights from financial data, enabling them to devise more personalized, tailored products and services that meet the unique needs of consumers. Collaboration is another area where organizations can significantly influence the course of open finance. By forging strategic partnerships and alliances within the ecosystem, organizations can accelerate innovation, broaden their reach, and unlock new opportunities for growth. Additionally, the ability of a company to implement personalization, digitalization, and an omnichannel approach is a clear indication of its influence on open finance as a business driving factor. Companies with robust capabilities in these areas can lead the way in shaping the open finance landscape, setting new standards for customer experience with personalized services and seamless interactions across multiple channels and driving industry-wide innovation. In summary, businesses and organizations hold a substantial influence over the driving factor of business of open finance. Their strategies, innovations, and collaborations will significantly shape the development of open finance and determine its success in delivering value to consumers and promoting financial inclusivity. This influence underscores the responsibility that organizations bear in driving the evolution of open finance. Due to the importance of this driver and the degree of influence that organizations have, it will be discussed further as part of the ecosystem analysis below.

**Table 7.3: An overview of the drivers of open finance (Author’s original work)**

Key Drivers:	Regulation	Data	Technology	Business
<b>Enabling factors:</b>	<ul style="list-style-type: none"> <li>- GDPR (limited)</li> <li>- PSD2 (limited)</li> <li>- Open finance regulation (future)</li> <li>- Data act (future)</li> <li>- PSD3 (future)</li> </ul>	<ul style="list-style-type: none"> <li>- Universal Data Sharing</li> <li>- Portability</li> <li>- Interoperability</li> <li>- Data standardization</li> <li>- Compensation model</li> <li>- Breadth of data sharing</li> <li>- Data privacy and security</li> <li>- User consent</li> </ul>	<ul style="list-style-type: none"> <li>- API standardization</li> <li>- Universal API implementation</li> <li>- Digital ID</li> <li>- Data tracking</li> <li>- Consent tracking</li> <li>- Compensation model</li> </ul>	<ul style="list-style-type: none"> <li>- Compelling value proposition</li> <li>- Partnerships and collaborations</li> <li>- Ecosystems</li> <li>- Data analytics</li> <li>- Digitalization</li> <li>- Omnichannel</li> <li>- Personalization</li> </ul>
<b>Organization’s ability to influence:</b>	Low	Medium	Medium	High

### 7.1.5 What the driving factors mean for the evolution of open finance

While the drivers of open finance are crucial for its development and fulfillment of its promises, it is important to acknowledge that the process will unfold over an extended timeframe. A legal framework for open finance will presumably not be in place until a few years in the future. Literary sources and interviewees indicate it to be at earliest around 2025-2026. Though, even with a legal framework in place, many interviewees emphasize that it will likely take time for industry and regulatory authorities to figure out and work out all of the intricacies to open finance. Problems pertaining to API standardization, data standardization, compensations models, competitive market dynamics, regulatory uncertainties, and even data privacy and protection will require gradual, continuous and interactive efforts to address and resolve. One can look at the development of open banking (PSD2) to get a sense of how open finance will evolve. Open banking has indeed seen strong development in Europe and brought about the promised benefits for consumers. Despite that however, there are still many problems persisting. The anticipated PSD3 is expected to address the many problems still persistent in open banking. A similar situation is likely to occur with the rollout of open finance, with an initial framework followed by subsequent revisions and expansions as lessons are learned and improvements are made. It is worth noting that the evolution of open finance may also be influenced by other regulatory frameworks, such as potential revisions to the GDPR or the introduction of Data Act – and most likely *will* require additional frameworks pertaining to data and consumer protection. Another crucial aspect is building trust among consumers and stakeholders. Trust in open finance will take time to establish, as individuals become more familiar with the concept, understand its benefits, and gain confidence in the security and privacy of their financial data. While open finance represents a potential paradigm shift with promising benefits for consumers, service providers, and the overall financial ecosystem, it's a complex and multifaceted initiative. The journey towards open finance is not just a simple, linear path, but rather a dynamic, complex process influenced by myriad factors including technology evolution, regulation changes, market dynamics, and consumer behavior. It's likely that we will



witness a series of trials, successes, setbacks, and breakthroughs before the vision of open finance fully materializes.

## 7.2 The open finance ecosystem

As established by literary sources as well as in the interviews conducted, ecosystems will play a crucial role in open finance. Even so, open finance itself, can be described as an ecosystem itself, consisting of many players and ecosystems itself – essentially, these are smaller sub-ecosystems centered around specific businesses, collectively constituting the broader open finance landscape. From the literary sources reviewed and insights gained through interviews, a comprehensive understanding of the various roles and players within the ecosystem has been attained. With that, It is important to distinguish between the players in the ecosystem and the roles they fulfill. Understanding this distinction is essential to comprehending the intricacies of open finance and enable players to better position themselves.

### 7.2.1 Players in the ecosystem

Players refer to the different entities, primarily organizations, that are taking part in the ecosystem. From the literature review and interviews conducted, the players in open finance are likely to be: Incumbent financial institutions, TPPs, non-financial companies, and customers. An overview of the identified players are presented in Table 7.4.

**Table 7.4: Overview of the players in the broader open finance ecosystem (Author’s original work)**

Player	Description	Example
Incumbent Financial Institutions	These include established banks, insurance companies, and other traditional finance entities. They bring significant resources to the ecosystem, including vast customer bases, robust financial assets, and deeply rooted operational systems. With years, even decades, of experience in providing financial services, these institutions possess immense knowledge of regulatory frameworks and risk management strategies. As such, they have strong brands and are trusted amongst customers. These incumbents can be further sub-categorized depending on what types of financial services they offer. For example, MasterCard and Nordea are incumbent financial institutions, but they have different kinds of financial data and offer different kinds of financial services and products, and may contribute to open finance in different ways.	<ul style="list-style-type: none"> <li>- Nordea</li> <li>- If</li> <li>- MasterCard</li> <li>- Avanza</li> <li>- Länsförsäkringar</li> <li>- Icano</li> <li>- SEB</li> <li>- Pensionsmyndigheten</li> </ul>

TPPs	TPPs are a new breed of players that have emerged with the open banking movement. These entities can be fintech startups, tech firms, or smaller financial companies. TPPs bring to the table their proficiency in technology, agility, and specialized or niche knowledge to the open finance ecosystem. This allows them to identify and address specific gaps or inefficiencies in the financial sector that traditional institutions might overlook. As such, TPPs are disrupting the way financial services are delivered and consumed, often providing more efficient, flexible, and user-friendly solutions. TPPs can also be further sub-categorized depending on what they specialize in. For instance, TPPs may focus solely on payments while some TPPs become data aggregators (i.e. aggregate financial data from various IFIs).	<ul style="list-style-type: none"> <li>- Klarna</li> <li>- Insurely</li> <li>- Tink</li> <li>- Jiffity</li> <li>- TrueLayer</li> <li>- GoCardless</li> <li>- Stripe</li> </ul>
Non-Financial Companies	Non-financial companies, such as retailers, telecom, or e-commerce companies, will also participate in the open finance ecosystem. They bring a broad customer base, expertise in their respective industries, and an established distribution network. They add another layer of diversity to the ecosystem, blurring the lines between traditional finance and other industries.	<ul style="list-style-type: none"> <li>- IKEA</li> <li>- Apple</li> <li>- Amazon</li> <li>- MediaMarkt</li> <li>- Google</li> <li>- Uber</li> <li>- Samsung</li> </ul>
Customers	Customers are central players in the open finance ecosystem. Their needs, preferences, and behaviors serve as the primary drivers behind the development and improvement of financial products and services. Their behavior and choices significantly influence market competition, organizational partnerships, and the direction of innovation.	

The open finance ecosystem is a vibrant and complex network with diverse players. Each of these players brings their unique perspective, capabilities, and market influence to the open finance ecosystem. Their interactions, whether through competition or collaboration, drive changes and advancements within the ecosystem. Together, the players create new products, services, or business models that can deliver greater value to customers, significantly influencing the direction and the overall state of the broader open finance ecosystem. By harnessing the shared data, capabilities, and resources in the ecosystem, players can co-create solutions that address customers' needs more effectively and holistically. To gain a comprehensive understanding of how these players can effectively complement each other and leverage combined resources and capabilities, it is essential to explore the roles they can play within the open finance ecosystem.

**Roles in the ecosystem**

Numerous literary sources have extensively described the various roles that exist within its ecosystem. While these roles may be referred to by different names, they share fundamental similarities in their functions and contributions. Understanding these roles is crucial for comprehending the dynamics and interactions within the open finance ecosystem, as well as the value they collectively bring to the broader financial landscape. Their role will dictate how the players that fulfill these roles will leverage their capabilities and resources. It's crucial to understand that players and roles are not synonymous. A single player may fulfill multiple roles,

and likewise, a single role could be shared among different players. The interplay between players and their roles has significant implications for the business model and operational dynamics of open finance.

As mentioned, many of the reviewed sources describe various roles that are more or less similar to each other. Gozman et al. (2018) described various roles that banks could take on in an open banking ecosystem, based on the two factors of service creation and distribution. Deloitte and EY described various roles organizations could take on in an open finance ecosystem. Using Gozman et al (2018) two factors of service creation and distribution, the roles described in their model can be combined with the models of Deloitte and EY to be expanded to include all types of organizations (not just banks) and expanded to the broader landscape of open finance (not just open banking). This results in a new yet familiar model of Table 7.5.

**Table 7.5: Gozman et al.’s (2018) model that has been extended to (1) the domain of open finance and (2) encompass other organizations than just banks**

	In house distribution	Third party distribution
In house products and services creation	Integrator	Producer
Third party products and services creation	Distributor	Facilitator

- **Producer** – These organizations focus on leveraging their capabilities and resources combined with access to financial data to offer innovative, competitive financial products and services. They choose to forgo the customer interface in favor of gaining access to customers through strategic partnerships with other organizations. This role is particularly fitting for organizations that may have a weaker brand or are seeking to expand their customer base by being embedded in the distribution channels of various other organizations. However, the producer role can raise concerns about customer ownership and branding as the distribution process involves other parties.
- **Distributor** – This role allows organizations to significantly expand their digital market presence by distributing third-party products and services through their own channels. This strategy broadens their offerings and enhances their value to customers. These organizations focus on customer interface and relationships, acting as the conduit between external financial service providers and end-users. The financial services and products they provide are embedded in their platforms but originate from different, external providers. This position provides an opportunity to tap into the offerings of diverse service providers, giving customers a wide range of options.
- **Facilitator** – This role is essentially an intermediary one. Organizations in this position facilitate the business operations of others by providing quick, on-demand infrastructure and regulatory framework access. They act as a crucial backbone in the open finance ecosystem, providing infrastructure and analytical capabilities to third parties to assist in

distribution and product/service creation. This support enables other companies, especially those without a license or those targeting rapid market entry, to launch their products and services in the ecosystem swiftly and effectively.

- Integrator – Organizations adopting the Integrator role are those with strong and wide-spread capabilities and resources that can leverage open finance to access customers' financial data to produce their own products and services and distribute it themselves. This enables them to offer a full range of tailored services and seamless digital customer journeys. Their in-house focus allows them to control the entire value chain from product development to customer interaction. Both the product offering and customer experience are managed entirely under the organization's brand. While this approach provides full control over the customer journey, it might require adaptation to keep pace with technological advancements and evolving customer expectations.

#### Combinatory roles

- Only inhouse service creation – Organizations focused solely on in-house service creation combine aspects of the Producer and Integrator roles. They adopt a hybrid approach that involves not only delivering their products and services through their own interfaces but also embedding them within the platforms of other organizations. This strategy allows them to extend their reach and gain exposure to a wider customer base. By combining these two positions, the organization can exploit opportunities for growth and innovation while tapping into new markets and demographics. One challenge can be to maintain a consistent customer experience across the distribution channels.
- Only inhouse distribution – Organizations that specialize in in-house distribution borrow elements from the Distributor and Integrator roles. They focus on maintaining control over the customer interface and managing customer relationships while offering a mix of in-house and third-party products and services. By retaining full control over the distribution process, these organizations can fully control the customer journey, enabling them to offer tailored and more consistent customer experiences all while protecting the integrity of their brand.

One role that isn't captured in the now expanded model of Gozman et al (2018) is that of the orchestrator. The orchestrator role has been mentioned in many literature sources pertaining to ecosystems. Every business ecosystem is composed of a multitude of participants with different roles. However, there is at least one key entity that takes on the role of the orchestrator. That is, regardless of what role an organization plays in the expanded Gozman et al. (2018) model, someone will have to shoulder the additional role of being an orchestrator. The orchestrator serves as the key organizer, coordinating the activities and offerings of multiple complementary entities within the ecosystem. At the heart of the orchestrator's responsibility lies the relationship with ecosystem participants, including customers. Creating and maintaining a solid bond with these participants is crucial to the success of the ecosystem. The orchestrator dictates the nature of these relationships and manages the overall interaction between customers and other ecosystem participants. As such, the orchestrator determines which entities are able to

contribute their products or services and which customers can benefit from them. This strategic role makes the orchestrator role both influential and attractive.

### 7.2.2 Ecosystem Dynamics

From the reviewed literature and interviews conducted, there can be made some tentative predictions about the competitive dynamic in the broader open finance ecosystem. Indeed, both literature and interviewees underscore the ambition of open finance to dismantle the monopolistic position that larger financial incumbents enjoy and thus promote a more competitive and inclusive financial landscape, for businesses and customers alike. Now that financial data can be freely accessed in open finance, the barriers to entry will be considerably lower. These new entrants will no longer need to amass the data resources that incumbents previously had exclusive access to, leveling the playing field. As such, it can be expected that open finance will see the participation of a diverse range of companies, regardless of size, that actively participate and contribute to the evolving open finance ecosystem. This will likely lead to fierce competition in the open finance scene. This will likely lead to fierce competition in the open finance scene. Therefore, it's crucial for companies to innovate and differentiate their offerings in order to stay competitive. This could mean more personalized services, better integration of financial and non-financial services, and increased attention to user experience and convenience. In this competitive landscape, ecosystems could be key – wherein the players take on complementing roles to leverage their unique strengths to provide comprehensive and compelling solutions.

Moreover, with the data portability and interoperability anticipated in open finance, it will be easier for customers to switch between providers freely, putting additional pressure on organizations to continuously improve their value proposition to attract and retain customers. Ultimately, customers will be the biggest beneficiaries in this new competitive environment. It can at the same time be at the detriment to the organizations participating in the open finance ecosystem, eating away their profit margins and risk losing the relationship with the customers. This is also why it is important that the organizations work together in an ecosystem to co-create value, creating more value together than what they could've done on their own. This is why open finance will favor packaged, integrated solutions that are tailored to the customers' needs. Indeed, both literature and interviewed experts highlight that the essence of freely sharing financial data is to better understand the customers, and from that understanding create better value propositions. Thus, the implication is that ecosystems that can combine data and utilize their collective analytical capabilities will likely emerge as the leaders. In this newer and more fast-paced environment, organizational speed and flexibility are also key to respond and adapt to competitive pressures and customer demands.

### 7.2.3 Key ingredients for a successful ecosystem

From the reviewed literature and interviews conducted, a number of key ingredients for a successful open finance ecosystem have been identified.

**Mindset** - The mindset within the open finance ecosystem is a critical factor, as underscored by the interviewed experts. They emphasize the need for a forward-thinking and collaborative mindset that is open to experimentation, development, and innovation, akin to a laboratory-like environment. Choosing the right partners is crucial in this dynamic landscape. The ecosystem comprises a complex set of partner relationships, which can be effectively visualized and managed with the help of designers. Large incumbent companies, with their competitive advantages such as trust, brand recognition, data, and financial resources, can significantly shape the trajectory of these ecosystems. Their potential role as key partners cannot be overstated as they often serve as catalysts for growth and innovation. In addition to selecting the right partners, ensuring long-term strategic alignment among all players is essential. This alignment helps to establish a unified direction, fostering cohesion and synergy within the ecosystem. It's not only about working together but about moving together towards shared goals and objectives.

**Value co-creation / value proposition for all** – Value co-creation and a clear value proposition for all participants are critical aspects of a successful ecosystem in open finance. Central to this value creation is a clear focus on solving customer problems – essentially answering the question, "how can we make things easier for our customers?" This approach ensures that all efforts are channeled towards enhancing the customer experience and delivering solutions that truly meet their needs. Complementing the core value proposition with an understanding of customer needs often results in a comprehensive solution that customers find valuable. However, value creation should not be customer-focused alone (even though it is an integral part). A sustainable ecosystem thrives when it generates tangible value for all participants and distributes it equitably. By presenting an attractive suite of benefits and incentives, ecosystem partners are encouraged to participate and collaborate actively – allowing for more value to be created that both customers and participants alike can reap in a win-win fashion.

**Governance model** – The governance model plays a fundamental role in the operation and success of an open finance ecosystem. It establishes the ground rules and mechanisms that guide interactions among all participants, including customers and organizations. Fairness is an aspect of governance. It involves adherence to local regulations and standards, and fostering a sense of trust among all participants. A fair governance model can help ensure all players, regardless of their size or resources, have an equal opportunity to contribute and benefit from the ecosystem. Fairness fosters higher levels of trust which can encourage a greater willingness to collaborate and share resources or capabilities, fostering a more vibrant and innovative ecosystem. Consistency in governance means ensuring that its mechanisms are clear, easy to understand, comprehensive, internally aligned, and remain stable over time. This consistency provides a predictable environment that can encourage participation and investment from organizations. The governance model must also strike a balance between being open, which can attract partners and foster growth and innovation, and being closed, which ensures consistent quality and alignment among contributors.

**Data** – Data is a driving force in the open finance ecosystem. The free access to financial data, coupled with data from partners and other sources, can be a significant differentiating factor

among organizations in the ecosystem. Companies need to harness this data effectively – utilizing, tracking, and leveraging it to deepen their understanding of customers. Data should be used not just to sell, but more importantly, to understand. A comprehensive and deep understanding of customers equips a company to provide an integrated and tailored value proposition in a seamless way. It allows companies to connect more services within its ecosystem to every unique customer. With this, increased revenue will follow. Approaches to privacy and security concerns are also crucial aspects of data management. As the open finance ecosystem deals with sensitive financial data, how these issues are addressed can be a differentiating factor among ecosystems. A robust approach that effectively manages privacy and security concerns while maximizing the benefits of data utilization can significantly boost trust and participation in the ecosystem. The issue of data privacy and protection is discussed further below.

## 7.4 Retail companies in the open finance ecosystem

Having thoroughly understood the open finance ecosystem, it's now time to delve into how retail companies can strategically position themselves in ecosystems to both capture and create value using open finance. To start, it's important to assess the opportunities and risks and challenges of retail companies as they enter the open finance ecosystem. A quick overview of the strengths and risks and challenges are presented in Table 7.6.

**Table 7.6: The opportunities as well as the risks and challenges that retail companies face in open finance (Author’s original work)**

Opportunities	Risk and challenges
Brand trust and recognition Large customer base Financial resources Distribution capabilities (omnichannel) Non financial services products and services (complementary value) Marketing and Sales Capabilities Data Analytics	Regulatory Complexity Data protection and privacy issues Customer trust Unclear value proposition Insufficient infrastructure investments Over reliance on partners Poor consumer outcomes Ethical issues

### 7.4.1 Opportunities

In the context of open finance, retail companies have several promising opportunities that can enable them to capitalize on the changing financial landscape. The opportunities of retail companies in an open finance context is detailed in Table 7.7, see next page. These opportunities encompass various aspects, such as access to vast customer data and financial resources, strong brand trust, extensive customer bases, and advanced distribution capabilities. By leveraging these opportunities, retail companies can expand their market presence, and position themselves at a favorable position in the open finance ecosystem.

**Table 7.7: An overview of the opportunities that retail companies bring to open finance and the potential actions to capitalize on said opportunities (Author's original work).**

Opportunities	Description	Potential action
Data Analytics	<p>Many retailers already gather significant quantities of data about their customers. This data, coupled with the financial data accessed through open finance, can provide them with powerful insights into customer behavior, preferences, and needs. Many smaller TPPs operating in the open finance may not possess the capabilities to analyze data as comprehensively or effectively as larger retail companies</p>	<ul style="list-style-type: none"> <li>● Analyze financial data to understand financial habits of customers</li> <li>● Understand the greater context of the customers life situation</li> <li>● Segment customers based on their financial health</li> <li>● Predict future behavior</li> <li>● Explain past behavior</li> <li>● Churn prediction for financial customers</li> </ul>
Brand Trust and Recognition	<p>Established retail companies often have a strong brand presence and customer trust built over the years. Their reputable brand may attract incumbent financial institutions and other partners who see value in associating with a trusted brand, and view it as an opportunity to expand their own customer base and enhance their offerings</p>	<ul style="list-style-type: none"> <li>● Include brand component everywhere</li> <li>● Showcase past successes in communication to reinforce brand</li> <li>● Co-branded partnerships with financial institutions</li> <li>● Leverage loyalty programs</li> </ul>
Large Customer Base	<p>Retailers often have a vast customer base, which can be an invaluable asset when venturing into the open finance ecosystem. They can cross-sell and up-sell financial products and services to their existing customers, thereby reducing the cost of customer acquisition. Other organizations may find partnerships with the retail company attractive due to the potential access to its extensive customer base for offering their financial services.</p>	<ul style="list-style-type: none"> <li>● Focus on scaling financial products and services to meet the large customer base</li> <li>● Employ financial data for better customer segmentation</li> <li>● Have broad scope to meet varying needs</li> <li>● Leverage the large customer base to attract strategic partners in open finance</li> <li>● Use their understanding of the customer base to assist partners in designing financial products or services</li> </ul>
Financial Resources	<p>Retailers with significant financial resources have the ability to make substantial investments that will be required when venturing into open finance. Their financial strength could also provide them with a buffer to handle any risks or unexpected challenges that arise as they navigate this new terrain.</p>	<ul style="list-style-type: none"> <li>● Invest into API infrastructure</li> <li>● Invest into regulatory compliance</li> <li>● Invest into their strategic partnerships</li> <li>● Allocate a portion of financial resources specifically for testing and iterating ideas</li> <li>● Strategic M&amp;As</li> </ul>



Distribution Capabilities	Retailers with advanced omnichannel capabilities can provide financial services through various channels – online, in-app, in-store, etc, thus increasing their reach. They have a great deal of experience in delivering a smooth and consistent customer experience, which can be another differentiating factor in open finance.	<ul style="list-style-type: none"> <li>• Ensure easy onboarding for open finance related products and services</li> <li>• Make the customer journey intuitive – easy to follow through and easy to understand value proposition</li> <li>• Focus on accessibility: Meet the customer where they are – everywhere, whenever</li> </ul>
Non-financial Services Products & Services	Retailers can provide a wider and more integrated value proposition by combining their non-financial products and services with financial services. This integrated approach can make their offerings more appealing and differentiated.	<ul style="list-style-type: none"> <li>• Bundled offerings to be relevant to individual customers need</li> <li>• Design products and services that cater to underserved or unbanked populations</li> <li>• Use financial services to cross-selling and up-selling non-financial products/services</li> </ul>
Marketing and Sales Capabilities	Retailers often have sophisticated marketing and sales capabilities, which can help them effectively market their new financial services and reach a broader audience.	<ul style="list-style-type: none"> <li>• Increase the visibility of new financial services in all channels</li> <li>• Focus on customer interaction by providing personalized content</li> <li>• Emphasize the unique value proposition of open finance</li> <li>• Financial education content</li> <li>• Be a thought leader in open finance</li> </ul>

### 7.4.2 Risks and challenges

In the rapidly evolving landscape of open finance, retail companies encounter both risks and challenges that require careful consideration and strategic action. These hurdles can impact their ability to successfully navigate the world of financial services while maintaining customer trust and brand reputation. Table 7.8 outlines the challenges faced by retail companies, ranging from over-reliance on partners to navigating complex regulatory environments and ensuring data protection and privacy. On the other hand, Table 7.9 and Table 7.10 highlights the internal and external risks associated with retail companies entering open finance. Understanding and addressing these risks and challenges are crucial for retail companies to seize the opportunities presented by open finance and emerge as strong contenders in this dynamic ecosystem.

**Table 7.8: The challenges that retail companies are facing in open finance and the potential action to address them (Author’s original work).**

Challenge	Description	Potential actions
Over reliance on partners	If retail companies rely too much on third-party financial service providers, they are at risk if these parties fail to deliver. Any issues with the third-party services could reflect negatively on the retail company and damage their brand reputation.	<ul style="list-style-type: none"> <li>● Develop internal capabilities to deliver FS products and services</li> <li>● Collaborate with trusted financial partners</li> <li>● Establish contingency plans in case of disruptions</li> <li>● Clearly communicate to customers the role of third-party providers</li> </ul>
Data protection and privacy issues	Retail companies must manage sensitive financial data responsibly, ensuring it's protected and secure. This can be a challenging task, especially with inadequate regulation. Due to the importance of this challenge, it will be discussed further below.	See Table 7.11
Regulatory complexity	The rules and regulations in open finance will most likely be intricate and multifaceted – if going by open banking. Retail companies, which may not have the same level of expertise or understanding in regulatory matters as financial institutions, could find this a significant hurdle. It could potentially require significant time, effort, and resources to ensure compliance. Moreover, the regulatory ambiguity as retail companies ventures into open finance can slow or hinder them to use open finance.	<ul style="list-style-type: none"> <li>● Participate in EU open consultations</li> <li>● Stay informed</li> <li>● Prioritize compliance with existing regulations</li> <li>● Conduct regulatory impact assessment</li> <li>● Leverage partnerships to navigate regulatory complexity</li> </ul>

**Table 7.9: The internal risks that retail companies could face in open finance and the potential actions to address them (Author’s original work).**

Risks	Description	Potential actions
Unclear Value Proposition	Many customers might be confused as to why retail companies have ventured into financial services, especially in open finance when they are expected to consent to sharing their financial data. This uncertainty can lead to skepticism or reluctance on the part of customers to engage with these new services. Retail companies will have to formulate a strong and compelling value proposition that seamlessly combines their existing offerings with new financial services in a way that is not only beneficial but also intuitive to the customer.	<ul style="list-style-type: none"> <li>● Clearly define and communicate the benefits</li> <li>● Seek direct customer feedback – combine with accessed financial data</li> <li>● Regularly evaluate and refine the value proposition</li> <li>● Focus on the problems that customers are currently facing</li> <li>● Test the new ideas with a small group of customers before scaling</li> <li>● Conduct market research to identify needs and gaps in current offerings</li> </ul>
Technical Infrastructure	Open finance will most likely entail data and API standardizations. Participating in open finance will thus require significant investments in technological infrastructure. For instance, retailers would need to develop or acquire systems to manage data securely, comply with regulations, and integrate financial services into their existing operations. This can represent a substantial upfront cost. Moreover, a compensation model in open finance could mean that extensive data access could incur high costs.	<ul style="list-style-type: none"> <li>● Conduct data quality assessments and compare to industry</li> <li>● Implement recognized industry standards (API)</li> <li>● Assess cost of maintaining infrastructure (API, database)</li> <li>● Assess the scalability of the existing infrastructure to handle increased data volume and traffic in open finance</li> <li>● Identify potential TPPs to help meet open finance's expected technical needs.</li> </ul>

**Table 7.10: The external risks that retail companies could face in open finance and the potential actions to address them (Author’s original work).**

Poor consumer outcomes	Poor consumer outcomes can arise if retail companies fail to prioritize consumer-centric approaches. Exclusionary practices or a heavy reliance on customer data can lead to unfair treatment, resulting in worse prices and limited access for certain customers	<ul style="list-style-type: none"> <li>● Provide clear and transparent information about products and services offered</li> <li>● Offer financial education and guidance</li> <li>● Implement robust customer complaint handling processes</li> <li>● Offer baseline FS products that anyone (or large majority) can be eligible for</li> <li>● Regularly assess consumer outcomes to identify areas of concern</li> </ul>
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Customer trust	Even though retail companies may have strong relationships with their customers, financial services require a different kind of trust. Especially in open finance where retail companies will access their financial data. Building this trust can take time and effort, and any missteps could harm the relationship with their customers.	<ul style="list-style-type: none"> <li>● Start small before going big</li> <li>● Strict regulatory compliance</li> <li>● Emphasize the unique value proposition of open finance</li> <li>● Financial education content</li> <li>● Collaborate with trusted financial partners</li> <li>● Emphasize the customer's role in open finance</li> </ul>
Ethical issues	Ethical concerns can arise in open finance, such as inadequate customer data protection, unfair or discriminatory practices, or lack of transparency. Failure to address ethical issues can damage customer trust, attract regulatory scrutiny, and impact long-term sustainability and reputation.	<ul style="list-style-type: none"> <li>● Ensure strict regulatory compliance</li> <li>● Go above and beyond regulation – ethical strategy</li> <li>● Do what is best for customer, not business</li> <li>● Clearly and transparently communicate commitment to ethical standards</li> <li>● Address ethical issues promptly and transparently</li> </ul>

**What it means for retail ecosystems in open finance and value creation and capture**

Retail companies are strategically positioned to capitalize on in-house distribution by taking on the combined role of integrator and distributor, as outlined in the extended Gozman et al. (2018) model. Leveraging their strong distribution networks, large customer bases, robust customer relationships, and effective marketing and sales capabilities, retail companies can attract partners to their ecosystem to provide embedded products and services in their channels. This combined role can allow retail companies to additionally focus on developing their own financial services and products, which can be delivered through their own channels. The extent of their reliance on partners will depend on their strategic vision and commitment to leveraging open finance. They have the option to obtain their own license, assuming that open finance will require similar licenses as seen in open banking, allowing them to have more control over data access and the creation of financial products and services. Alternatively, they can consider acquiring a company that holds the necessary license or collaborate closely with select partners who possess the licenses. These approaches offer greater flexibility, but at the same time, may involve less control over the overall process. The decision will depend on their strategic vision and commitment to using open finance.

In addition to the role above, retail companies are uniquely positioned to assume the role of orchestrators within the open finance ecosystem due to several key factors. Firstly, their robust brand identity can be instrumental in establishing trust and stimulating engagement in the open finance realm. Their financial resources enable them to make substantial investments necessary for technological infrastructure, compliance measures, and strategic ventures. Additionally, their existing relationships with a vast customer base provide an advantageous starting point for introducing new financial services in open finance. Furthermore, the combination of their non-financial and financial product offerings, bolstered by their sophisticated data analytics capabilities, puts them at the forefront of designing integrated, personalized services. Combined, these factors put retailers in a strong position from which they can attract partners to their ecosystem and dictate the dynamic of said partnership. Retail

companies are thus ideal players to fulfill the influential and strategic orchestrator role in an ecosystem, effectively coordinating the interactions and offerings within the ecosystem for the benefit of all participants.

A depiction of an ecosystem that retail companies might build using open finance is shown in Figure 7.1. To begin with, financial data is shared freely in the ecosystem. The data is assumed to be able to be accessed by all of the players in the ecosystem through APIs. Retail companies have the added advantage of being able to leverage data that they collect through their ordinary retail operations, combining it with financial data to gain even deeper insights. The retail company can choose to share this data with ecosystem participants (though, not obliged to). The insights from the data accessed is used to create financial products and services. In the retailer's ecosystem, this can happen internally within the retailer, or externally by the ecosystem participants. The ecosystem participants would primarily be creating their own products and services that they then distribute via third-parties – in this case it is distributed via the retailer's channels. This is illustrated in the figure as arrows going from the external products and services creation to the retailers distribution channel. As such, the retail company, who is in charge of the distribution, can have tighter control over customer channels and relationships while combining in-house and third-party products and services. This, combined with the integration of both internal and external products and services, can ensure that the retail company can create superior value propositions to the customer. By being in control of distribution, the retail company can manage customer channels and relationships more effectively and directly. That way, they can have greater ownership of their customers. This can be in the sense that they have greater influence over the interactions, conversions, and possibilities to cross-sell and up-sell, allowing for value to be captured (i.e. more revenue). However, with the more dynamic and fast-paced competitive landscape that is expected in open finance, being able to move fast in certain situations is key. In those circumstances, retail companies can temporarily take on the additional role of facilitator allowing them to quickly "offer" new products and services through external distribution channels. This can complement the overall value proposition that the ecosystem offers to the customer, allowing for better opportunities to capture value. This is illustrated in Figure 7.1, where the arrows from the external products and services creation point towards external distribution.

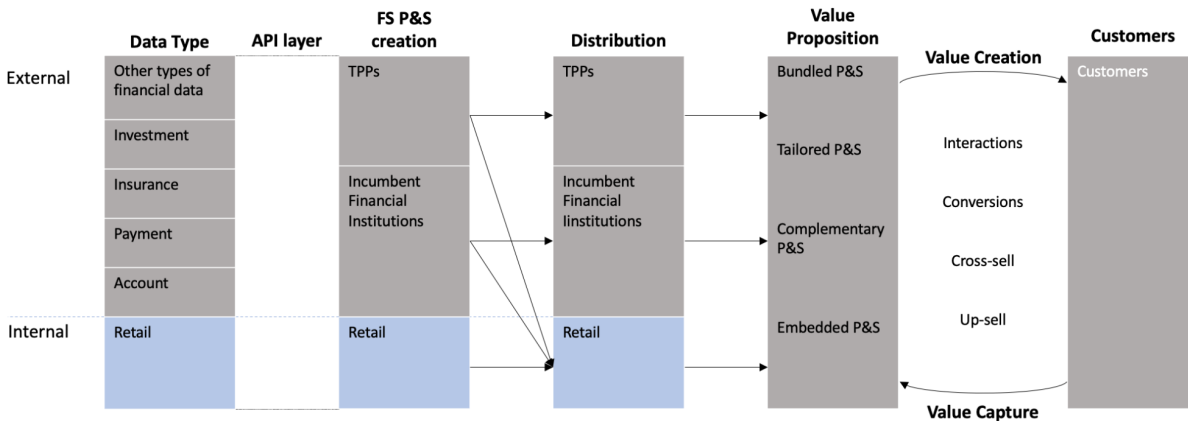


Figure 7.1: A depiction of the data flow in an ecosystem to understand how retailers create and capture value.

## 7.5 Balancing data privacy and security with benefits

Open finance offers numerous benefits like user control over personal data and informed decision-making through greater data access. However, this comes with increased complexity in data privacy and security due to the sensitive nature of financial information. To ensure the success of open finance, robust guarantees for data safety and privacy are needed, requiring efforts from regulators, organizations, and individuals alike. The following section explores the current challenges that retail organizations face in regards to data privacy and consent in open finance. This is then followed by potential approaches that retail companies could employ to address these challenges. Lastly, is a discussion about the limitations of the influence that retail organizations have in this regard.

A fundamental concept in open finance is the empowerment of consumers to have a greater degree of control over their data. They should be able to determine to whom and for what they give consent, maintain a clear overview of the consent they've granted, and have the ability to revoke that consent when desired. While this idea has been consistently echoed in both academic literature and interviews as an essential component of open finance, the specifics of how such a mechanism would function in practice remain unclear, especially with regards to technology and regulation. Similarly, the concept of data transparency is integral to open finance. In addition to being able to control the consent they provide for data sharing, consumers should also have clear visibility into what specific data is being shared, who is receiving it, and who is accessing it. This level of transparency is vital in ensuring consumers have full control over their financial data, thereby increasing their trust in the open finance ecosystem. However, as with consent management, the practical implementation of this level of transparency presents significant technological and regulatory challenges. The necessary technology must be able to accurately track and report data access and sharing activities in a way that is understandable to consumers. These topics, along with data privacy and security,

are of high importance in open finance and warrant further in-depth discussion. These subjects will be explored in detail in, below.

It's critical to ensure that consumers have genuinely given their "explicit" and "informed" consent for their data to be used. Presently, there aren't any legal systems in place that guarantee such clear and knowledgeable consent from consumers. Additionally, there aren't any mechanisms that allow consumers to comprehensively view and manage the consents they've granted to companies in the context of open finance (or any other context for that matter).

### **How retailers should approach data privacy and protection in open finance**

It is important to understand exactly what challenges retailers are facing in this regard. What can be gathered from literature, is that customers do not trust retail companies when it comes to data handling. This is not made better by the fact that customers perceive financial data as highly sensitive. Further complicating the situation is the issue of consent. While consent is a cornerstone of data sharing, there are concerns from literature sources that it isn't always fully informed nor an actually considered decision. Customers often don't fully understand the details and implications of what they are consenting to, and may view providing consent as a necessary requirement to access services rather than a voluntary choice. Literature has also questioned whether informing customers will actually lead to any changes, as awareness does not necessarily lead to informed consent. Moreover, always asking for consent can also lead to consent fatigue, where customers become so overwhelmed with frequent consent requests that they may hastily agree without fully understanding the implications, thereby eroding the value of informed consent. This highlights the tricky situations that retail companies have to navigate with regards to data privacy and consumer control in open finance. The challenges are highlighted in Table 7.11.

From the literature and interviews, a prevalent suggestion is for organizations to handle customer data with transparency and honesty. This should also be combined with efforts to educate customers about data accessing, creating awareness and addressing misconceptions. Together, these measures can guide organizations to address the issue with a pragmatic approach.

Transparency in this context refers to businesses being open and forthcoming about their data privacy and security practices. This includes clearly informing customers about what data is being collected, how it's being used, who it's being shared with, and for what purposes. It's about ensuring customers have all the necessary information at their disposal to make informed decisions about their data. Transparency implies that organizations are not hiding any aspect of their data practices, and it allows customers to see the details of data handling "behind the scenes".

As part of being honest and transparent, companies should couple it with initiatives aimed at educating the public. This involves clearly explaining to customers the purpose of data collection and sharing, and how these actions can benefit them. By creating awareness and addressing common misconceptions, companies can empower customers with the knowledge they need to

make informed decisions about their data. This educational approach can help dispel fears, clarify misunderstandings, and boost consumer confidence in retail organizations' data handling practices and in the broader data accessing regime in open finance.

These should be the guiding principles that companies adhere to when dealing with matters related to data privacy, security, and obtaining user consent. In actionable terms, this includes explicitly conveying to consumers what they stand to gain in exchange for their data. For instance, communicating that specific benefits or services will only be available if they agree to share their data, while opting not to share might result in the loss of these benefits. Although this might help in the immediate term, it has to be combined with a broader data management and ethics strategy to have an enduring effect. Driving questions for the strategy should be "How can we ensure maximum transparency in our data handling practices?" and "what represents the most ethical manner of data handling?". An exhaustive list of potential actions in this regard are presented in Table 7.11.

### **The limitations of retail companies influence on data privacy**

While organizations will play a critical role with regards to the data issue in open finance, some aspects remain outside or limited with respect to their influence. Regulation is one such area that requires substantial revision. As discussed in Table 7.2 above, current data protections and consent requirements are inadequate for the evolving landscape of open finance. A comprehensive liability framework must be established, clearly outlining who is responsible if things go wrong, e.g. data breaches by partners downstream in the data chain, cross-border disputes, etc. Organizations might have the ability to establish these liability agreements independently, in collaboration with other entities. This could be done on either a bilateral or multilateral basis, and could be integrated as a part of their ecosystem governance models. However, considering the complex dynamics of data access and organizational relationships within open finance, such an approach could quickly become impractical and too cumbersome to implement. It could also lead to inconsistencies between ecosystems, making it unclear for consumers what their courses of action could be in case of a dispute.

Another challenge arises from the way open finance aims to provide customers with enhanced control over their data and consent. The goal is to empower consumers to manage their own financial data, deciding when, where, and how it is used. As established in literature and interviews, achieving this level of control is complex. It requires a robust consent management infrastructure that allows customers to easily grant, withdraw, and manage their consent. These tools would necessitate significant standardization in terms of interoperability and portability, a task currently unfeasible due to the technological and regulatory limitations.

If all companies adopted the approach of honesty and transparency in conjunction with strong regulatory push and guidelines from regulatory authorities, it would instill confidence and trust in consumers, thereby encouraging them to willingly share their data within the context of open finance.



**Table 7.11: Challenges and suggested potential actions retail companies can take with regards to consent, data privacy, and data security (Author’s original work).**

Challenges	Potential actions
<p>General</p> <ul style="list-style-type: none"> <li>● Lower trust for retail companies</li> <li>● Inadequate regulation</li> </ul> <p>Consent</p> <ul style="list-style-type: none"> <li>● Customer see consent as requirement, not optional (opt-out instead of opt-in)</li> <li>● Lack of granular consent (consent to everything or nothing)</li> <li>● Insufficient opportunities to withdraw consent</li> <li>● Difficulties in tracking consent given</li> <li>● Awareness does not necessarily mean informed consent</li> </ul> <p>Data privacy and security</p> <ul style="list-style-type: none"> <li>● Customers unsure of how to raise concerns</li> <li>● Customers unaware of steps to take in the event of data misuse or abuse</li> <li>● Customer misunderstanding purpose of data sharing/accessing</li> <li>● Difficult to track the entire chain of data movement</li> <li>● Value proposition not enticing enough to share data</li> <li>● Customer’s not taking appropriate measures to safeguard their data</li> <li>● Customers expect companies to handle their data safely</li> <li>● Customer’s feel that companies aren’t completely honest</li> <li>● Misconceptions about data sharing</li> </ul>	<p>General</p> <ul style="list-style-type: none"> <li>● Data ethics strategy - go beyond what is required by regulation</li> <li>● Strict compliance at all times with GDPR</li> <li>● Regularly monitor legal and cultural changes</li> <li>● Adapt to new behaviors and consumer practices</li> <li>● Design and test communication to ensure that everyone can understand</li> </ul> <p>Consent</p> <ul style="list-style-type: none"> <li>● Communicate the value proposition for consumers – e.g. you gain/lose this from (not) sharing</li> <li>● Provide information on how to revoke consent</li> <li>● Provide information on how long information is stored</li> <li>● Explain the potential consequences of data sharing over the long-term (e.g. worse/better interest rates)</li> <li>● Remind customers regularly of what they have provided consent to (e.g. every 90 days)</li> </ul> <p>Data privacy and security</p> <ul style="list-style-type: none"> <li>● Clearly explain what data type of data is collected and why it is needed</li> <li>● Explain with whom data is shared with and why, and how long</li> <li>● Emphasize that data is accessed from trusted parties, e.g. banks</li> <li>● Enable customers to question the rationale behind personalized decisions, such as product or service recommendations</li> <li>● Provide Information about how security solutions work</li> <li>● Have a visible security certification</li> <li>● Have privacy and security policy (on visible place)</li> <li>● Use anonymous data whenever possible</li> </ul>

## 7.6 Open finance use cases most relevant to retail companies

This section will discuss the most relevant use cases for retail companies using open finance. This discussion draws from use cases found in literature, combined with insights from interviews and analysis above. This part should be seen more as a creative and informed brainstorming session and not necessarily as an action plan for open finance.

### **Bill splitting**

Retail companies could offer a tool that allows roommates or family members to split the cost of purchases. Such a tool would calculate shares, send reminders, and process payments. This could be offered through a platform, where each member can see how much they owe. By offering a built-in solution for this, retail companies could enhance its customer-centric approach and add significant value for customers making shared purchases – fostering a stronger relationship with its customers, potentially increasing brand loyalty and customer retention

### **Utility bill management:**

Retail companies could partner with utility providers to enable customers to manage and pay their utility bills on their retail platform (app or similar). This would be an additional convenience for the customers. If customers have high utility bills (e.g. electricity), retail companies could suggest lower power consuming lighting bulbs or other smart products and services that could reduce their utility costs. Additionally, integrating the bill management tool in the finance hub could create a seamless and convenient experience for customers, potentially increasing their engagement and loyalty to the brand. This service could also contribute to the retail companies sustainability goals, by encouraging and facilitating more energy-efficient consumption habits among their customers

### **Integrated Smart Home Solutions:**

Retail companies could partner with tech companies to offer integrated solutions for customers looking to make their homes smarter. This could include products with built-in wireless charging, smart lighting systems, or even smart blinds, all bundled with financing services. Additionally, the data gathered from these smart home solutions could be used to gain deeper insights into customers' habits, preferences, and lifestyles. For example, data on energy usage from a smart lighting system could potentially be used to offer personalized energy-saving tips or even related financial products, such as green energy loans or insurance products. By consolidating the customer's financial services with their retail and smart home services, it could simplify the management of their financial lives.

### **Alternative data for creditworthiness:**

As mentioned earlier, retail companies could leverage alternative data such as rental payments, utility bills, or mobile phone bills to assess the creditworthiness of customers who do not have a conventional credit history. This data, when used appropriately, can provide valuable insights into a person's financial responsibility and permit those traditionally financially excluded – such as the unbanked or immigrants – to access financial products and services tailored to their needs. This approach would allow the traditionally financially excluded groups to become a part

of the open finance system. Not only does this create a more inclusive financial environment, but it also opens up a new customer segment for retail companies

**Financial education initiatives:**

Retail companies could invest in financial literacy initiatives to educate these customers about managing their finances, the importance of credit, and how to use financial products responsibly. This could also help build trust and establish retail companies as a reliable partner in their financial journey. Moreover, by integrating this education with the above mentioned utility bill management service, retail companies could provide practical, real-world examples of how better financial management can lead to significant savings. For instance, they could use data to show customers how choosing alternative utility providers, or using energy more efficiently, could help reduce their monthly expenses.

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# Chapter 8: Conclusions

This chapter will summarize the research findings and relate it back to the original research questions. In addition, this chapter will discuss the scientific contributions made by the study, while also highlighting potential avenues for future research.

## 8.1 Answering the research questions

### **RQ 1a: What are the key trends and drivers shaping the evolution of open finance?**

The key drivers that are shaping the evolution of open finance were identified to be: regulation, data, technology, and business.

Regulation will shape the entire outcome of open finance. Current regulation of PSD2 and GDPR has laid the foundation necessary to move towards open finance, but is not adequate to handle the full intricacies of it. Future regulatory frameworks need to be specific to open finance. Questions such as liability, obligation to share data, data and infrastructure standardization, new data protection and consent mechanisms need to be introduced. Regulation will thus shape the entire outcome of open finance. The successful realization of open finance will require the development and implementation of a comprehensive, robust, and adaptive regulatory framework. Individual organizations will have little potential to influence this driving factor.

Data is another key driver for open finance. Open finance is built on the premise of accessing financial data. As such, it is crucial to establish high standards of data quality, interoperability, and portability. To encourage participants in open finance to invest in maintaining high-quality data and promoting standardization, the implementation of a compensation model will be necessary. Mandatory data sharing becomes essential to enable the principles of open finance to be realized effectively. Equally important are strong mechanisms for data privacy, security, and obtaining customer consent, as the nature of open finance involves accessing sensitive financial information. Organizations have some degree of influence on this driving factor.

Technology serves as another key driver in advancing open finance. In particular, the data accessing/sharing infrastructure – in this case APIs – needs to be standardized to facilitate smooth and large scale data accessing. A compensation model would encourage participants to invest into and maintain high quality APIs. These high quality APIs need to be implemented by everyone wishing to participate in open finance. The technology also concerns digital ID. As open finance will involve sensitive financial data, there needs to be strong mechanisms in place to ensure user data control, enhancing security, and privacy protection. Organizations also have some degree of influence on this driving factor.

Lastly it is the key driver of business. Open finance is ultimately all about bringing benefits to customers. This entails providing clear economic incentives for participation and establishing a compelling value proposition for customers. The ultimate goal is to enhance the financial lives of consumers by offering a wide array of integrated and personalized financial products and services. The customer-centric approach is the guiding principle that shapes the evolution of

open finance. In this dynamic landscape, collaborations and partnerships are crucial components. The broader ecosystems formed through collaborations enable synergies among various stakeholders, fostering innovation and superior value propositions. Data analytics, digitalization, omnichannel strategies, and personalization all play instrumental roles in this, as they will enable the efficient utilization of data, seamless digital experiences, and tailored offerings to meet the specific needs of customers. As such, organizations do not only have a large influence on this key driver, but are an instrumental part of it.

The evolution of open finance will ultimately be determined by the four driving factors. Establishing a legal framework for open finance will be a time-consuming process, beginning with an initial framework and followed by subsequent revisions and expansions based on lessons learned and improvements made. Developing trust in open finance will require time as well as individuals become more acquainted with the concept, understanding its benefits, and gaining confidence in the security and privacy of their financial data. Taking the four key drivers into consideration, the path to open finance will not be straightforward but rather a dynamic and complex process influenced. It's likely that open finance will undergo a series of trials, adaptation, and iterations before the vision fully materializes.

#### **RQ 1b: How might open finance impact the market structures and industry dynamics of financial services?**

Open finance aims to disrupt the monopolistic position of incumbent financial institutions, promoting a more competitive and inclusive landscape. With the accessibility of financial data, barriers to entry are lowered, allowing diverse companies of all sizes to participate actively. This is expected to foster fierce competition in the open finance scene, requiring companies to innovate and differentiate their offerings. Ecosystems will play a crucial role, as players leverage their unique strengths to provide comprehensive solutions. Data portability and interoperability will enable easier customer switching between providers, putting pressure on organizations to continuously improve their value proposition. While customers stand to benefit the most, organizations face the risk of shrinking profit margins and losing customer relationships. Collaboration within ecosystems becomes essential to co-create value and deliver tailored solutions. The leaders will be those who effectively combine data and leverage collective analytical capabilities. Speed and flexibility are also vital to respond and adapt to competitive pressures and customer demands in this dynamic environment.

#### **RQ 2: How can retail companies effectively position themselves strategically to create an ecosystem using open finance to create and capture value**

Retail companies are optimally positioned to benefit from in-house distribution by serving as integrators and distributors as proposed by the expanded Gozman et al. (2018) model. They can leverage their strong customer relationships, extensive distribution networks, and significant marketing prowess to attract partners to their ecosystem and offer embedded services and products via their channels. This dual role allows them to create their own financial services and products, depending on their strategic focus and dedication to open finance.

Retailers can also act as orchestrators within the open finance ecosystem due to their trusted brand identity, financial resources, and extensive customer relationships. Their dual offerings of non-financial and financial products, complemented by their data analytics capabilities, put them at the forefront of personalized service design. Together, these factors place retailers in a strong position to attract partners to their ecosystem and shape its dynamics. Hence, retail companies are perfectly suited to assume the influential and strategic role of orchestrator within an ecosystem.

In the envisaged open finance ecosystem, retail companies can harness both financial and retail operation data to derive valuable insights. They can use this data to create and distribute financial products and services internally or through ecosystem partners. Their control over distribution allows them to effectively manage customer relationships and create superior value propositions. To respond swiftly to open finance's dynamic competition, they may also temporarily serve as facilitators, offering new products and services via external channels. Overall, retail companies' unique position equips them to capture greater value from open finance.

**RQ 3: What are the risks and challenges that retail companies could face in the changing landscape of open finance and how should they manage these?**

From the research, identified challenges were: Over reliance on partners, data protection and privacy issues, and regulatory complexity. Identified risks were, unclear value proposition, poor consumer outcomes, technical infrastructure, customer trust, ethical issues. See Table 7.8 and Table 7.9 on how companies should manage these.

**RQ 4: How should retail companies navigate the tension between the potential benefits of data sharing and collection in open finance and the need to build consumer trust in their data handling practices?**

Trust, transparency and education are key. These guiding principles of a retailer's approach to data privacy, security, and obtaining user consent. Retail companies must be forthright about their data privacy and security practices, ensuring customers understand what data is being collected, how it's being used, with whom it's being shared, and for what purposes. In addition, companies should educate customers about data access and how it benefits them, thereby dispelling misconceptions and increasing trust in their data practices. This might involve clearly explaining the benefits consumers can access in exchange for their data. However, to be truly effective, these efforts should form part of a broader data management and ethics strategy, with key driving questions such as "How can we ensure maximum transparency in our data handling practices?" and "What represents the most ethical manner of data handling?". Combining transparency, honesty, and education with strong regulatory guidance could instill customer confidence, promoting willingness to share data within the open finance context. This concerted approach is crucial for the successful implementation of open finance initiatives.

## 8.2 Contributions to science

This paper has significantly enriched academic knowledge by bringing the retail perspective to the forefront in open finance discourse, which has been predominantly shaped by the financial industry. A significant aspect of this paper is understanding the dynamics of business ecosystems in open finance and the strategies that retail companies can employ to effectively position themselves and successfully build and contribute to the growth of these ecosystems. Moreover, this paper has also touched upon the issue of data – a pivotal issue within open finance – again, with a strong retail focus. While there's abundant practitioner literature on open finance from a financial industry standpoint, there's a noticeable lack of sources that view open finance through a retail lens. This lack is even more pronounced in academic literature. Thus, this study marks a considerable contribution to the uncharted academic territory of open finance from a retail perspective. In particular, this paper has made significant contributions by delving into the challenges and risks faced by retail companies in the open finance landscape. By providing potential actions to address these obstacles, the study offers valuable insights to both academia and industry practitioners seeking to understand the intricacies of open finance from a retail standpoint.

The exploration of drivers of open finance in this thesis has contributed to science by providing a comprehensive understanding of the key factors shaping the evolution of open finance. This contribution is particularly valuable for academia as it fills the gap in existing literature by presenting a detailed analysis of how these drivers influence the development and implementation of open finance, offering valuable insights into the strategic decision-making process for industry practitioners.

The study's examination of the ecosystem landscape of open finance and strategies for positioning retail companies within it also constitutes a significant contribution to science. This contribution enriches academic knowledge by providing a clear picture of the ecosystem's intricate network and the dynamics among various players. Furthermore, the exploration of roles that organizations can fulfill within the ecosystem, adds depth to the understanding of how different entities can collaborate and contribute to the growth of the open finance landscape. This insight is of great value to both academia and industry professionals seeking to leverage ecosystem dynamics for business development and strategic positioning.

Regarding data protection for retail companies in open finance, the paper makes a significant contribution by highlighting the challenges and risks associated with data privacy and consent. This contribution advances academic knowledge by not only identifying the problems but also by offering actionable solutions, paving the way for further research and improvements in data protection practices within the context of open finance.



## 8.3 Future research

The study has taken a holistic approach to the retail perspective on open finance, offering a comprehensive view of the field. However, this broad scope has also revealed several other intricate facets of the open finance ecosystem that require further exploration.

One such aspect is the data infrastructure. While the study touched on data infrastructure in terms of its importance and implications, it did not deeply explore the technical side of implementing and maintaining such an infrastructure. This involves the detailed specifics of technology selection, architecture design, data security measures, interoperability standards, and more. Understanding these technical aspects is crucial for a retail company to successfully build a robust and efficient data infrastructure that supports their open finance initiatives. Future research could delve into these areas, providing valuable insights for retail companies in their open finance journey.

While this study made significant strides in examining the regulatory aspects of open finance, further exploration in this field is essential. Indeed, regulatory complexity of open finance presents a unique challenge for retail companies, particularly since regulations have traditionally been designed with financial institutions in mind. Future research could focus on exploring best practices in regulatory compliance in the open finance context. Additionally, academic and policy research could focus on exploring the potential for regulatory frameworks that accommodate the unique needs and characteristics of retail companies in open finance. This could involve comparative studies of different regulatory approaches and their impact on retail companies, empirical analysis of regulatory outcomes, and the development of recommendations for regulatory reform.

Studying specific examples of retail companies that have ventured into financial services, could provide insights into practical challenges and effective strategies for open finance. This could involve both success stories and less successful attempts, providing a comprehensive understanding of the factors influencing success. This can be combined with the results from this study. The fusion of these specific case insights with the broader findings of this study could provide a step-by-step plan for retail companies seeking to leverage open finance

Further research could also explore the impact of partnerships in the context of open finance. Specifically, how the nature of partnerships, such as with banks or financial technology companies, could affect customer perceptions and trust. It would be insightful to examine whether these partnerships enhance or dilute the retail company's brand, and how they can be effectively managed to derive maximum value. This could be done through in-depth qualitative interviews combined with quantitative surveys.

A significant gap observed in the existing literature is the dominance of organizational narratives in shaping the discourse around open finance. There's a noticeable lack of studies that directly engage with and capture the perspectives of customers, who are, after all, the end-users of these services. While organizations can offer valuable insights into the operational, regulatory,

and strategic aspects of open finance, their perspectives may not fully encompass or accurately represent the diverse experiences, perceptions, and concerns of customers. Thus, it's imperative for future research to prioritize the direct measurement and understanding of customer viewpoints. This could involve employing methods such as surveys, interviews, or focus groups to gather comprehensive insights into customer attitudes towards open finance, their concerns, their perceptions of its benefits and risks, among other things.

#### **Potential research questions for future studies**

- What are the technical challenges and solutions for implementing and maintaining data infrastructure for open finance in retail companies?
- What are the technical challenges retail companies face in integrating their existing data infrastructure with open finance technologies, and how can these challenges be overcome?
- How can retail companies ensure the scalability of their data infrastructure to handle increased data volume and traffic in open finance?
- How do partnerships between retail companies and financial institutions or fintechs impact customer trust and perception of the retail company's brand? What strategies can retail companies use to manage these partnerships effectively?
- To what extent does a well-established partnership with a bank enhance the trust and acceptance of the retail company's open finance initiatives among customers?
- How do retail companies manage the potential impact of partnerships on their brand image and reputation in the open finance context?
- What regulatory changes or additions would be beneficial for retail companies in open finance? How can retail companies effectively influence these regulatory changes?
- How can retail companies influence the regulatory decision-making process in open finance?
- What are the challenges retail companies face in regulatory compliance pertaining to open finance and how can they overcome them?
- What are the key elements of open finance that customers find most challenging to understand?
- How can retail companies tailor their education initiatives to different customer demographics?
- How does improved customer understanding of open finance influence their behavior?

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# Appendix A: Interview guide

Below is the interview guide used for the semi-structured interviews.

- What are some key enablers and trends of open finance?
  - Enablers
  - Trends
  
- How do you think open finance might evolve over the coming years?
  - Regulator push?
  - Market driven push?
  - Gradual or great leaps?
- How should the legislation around open finance be created? Important points to address
  
- How do you see the market structure of financial services being impacted as open finance continues to gain traction?
  - Two sided market?
  - How is open finance impacting the market structures of financial services, and what are the implications for traditional players and new entrants?
  - Who will be the key players, what role will they play?
    - In particular, what role will companies play
    - How will the key players interact and interplay in open finance
  - Monopolization?
  - How will competition look like?
  
- How do you think open finance will affect the industry dynamic of financial services?
  - How will the threat of new entrants look like?
  - How will innovation look like?
  - How will partnerships look like?
  - How will company networks look like?
  - Cross-industry collaboration?
  - How do you think customers' behaviors and expectations will change with open finance?
  
- How can non-bank retail companies benefit from Open Finance?
- What strategic options do financial services companies have to respond to the emergence of open finance?
  - What would you recommend to focus on first/what to learn/what to improve to succeed within open finance evolution

- What are the key factors that companies should consider when designing their open finance strategy
  - Strategic positioning?
  - Partnerships/Networks
  - Competition?
  - Innovation?
  - Consumer?
  - Technology? APIs?
  - What strategies do you recommend for staying competitive?
  
- In your opinion, which types of financial services companies are likely to benefit the most from open finance?
  
- What is your vision for how open finance can create a new ecosystem of financial products and services?
  - What are the key components that make such an ecosystem successful?
  
- How do you see the role of partnerships and collaboration in shaping the competitive dynamics of open finance, and what are the key success factors for such partnerships?
  - How can companies identify and prioritize the key stakeholders to involve in their open finance ecosystem, such as customers, partners, and developers
  
- Open finance has a lot of use cases, e.g. [name a few]
  - What uses cases come to their mind first? Any examples of ongoing initiatives of successful implementation of open finance in the markets?
  - how can companies actually monetize these and create a business model to actually capture the value from it?
  - What are the integral parts to effectively create and capture value using open finance?
  
- What are the best practices for API design and implementation in open finance, and how can companies stay up-to-date with the latest developments in this area?
  
- What role do standards and industry consortia play in API development and implementation in open finance, and how can companies get involved in these initiatives?

- What types of APIs will be most commonly used in open finance, and how can companies select the right APIs for their needs?
- What are some risks and challenges companies might face as open finance is introduced? How can they be mitigated?
  - Regulatory
    - How should companies navigate the current lack of regulations?
    - How should companies position themselves to be able to quickly act on new regulation as it is introduced?
  - Technical
    - The development of API
    - What are some of the technical challenges that companies face when integrating open finance into their existing systems?
    - How can companies collaborate with other players in the ecosystem to develop shared technology solutions and reduce duplication of effort?
    - Technical integration between different organizations?
    - The cost of infrastructure?
    - Varying levels of digitalization?
  - Business
    - increased/reduced competition?
    - capital/funding issues?
    - Poor consumer outcomes?
    - Narrow scope?
    - risk of losing its reputation and trusted brand?
    - Monopolization? Market consolidation by large incumbents?
  - Operation
    - What are some operational risks associated with open finance?
    - How should companies manage interoperability challenges, internally and externally
  - Consumer
    - Exclusion of some currently underserved populations?
    - exclusion of consumers who opt out of data sharing?
    - Uncertainty around customer expectations and needs?
  - Data privacy and protection
    - How can companies ensure the security and privacy of user data in an open finance ecosystem?
    - Misuse of data?
    - Reluctance from stakeholders to share data (consumers, businesses)
    - Data breaches, fraud, and phishing

- How should the the risks and challenges be prioritized (in terms of impact and likelihood of happening)
- How can companies engage different stakeholders (consumers, legislators, other companies) to handle these challenges and risks?
- Many consumers view companies with distrust regarding their data privacy, how can companies overcome this barrier?
- How can companies effectively communicate the value proposition of open finance to their customers and stakeholders?
- How can companies build trust and maintain strong relationships with customers in the open finance ecosystem?
- What steps do you take to ensure that customers are fully informed about the data companies collect and how it will be used?
- What steps can companies take to ensure that customers actually are in control of their data and how it is used?
- How can companies ensure informed consent from the customer?
- How do you balance the need for data collection and sharing with the privacy concerns of your customers?
- How can companies create and maintain trust with their stakeholders when sharing financial data within an open finance ecosystem?
- Thank them for their time and effort
- Is there anything else you would like to add to our discussions?
  - Any important topics that we did not touch upon?
  - Expand on previous answers you gave?



- Do you have any other questions for me?
  
- Thank them again for their time and ask if it is possible for me to reach out to them on email if I have any follow up questions
- Ask them if they would like to stay anonymous in my thesis
- Tell them that I will send them a copy of my finished work

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# Addendum: FIDA - the open finance framework

On June 28th 2023, the European Commission released a proposed framework for Financial Data Access [FIDA]. This was the anticipated open finance framework discussed through the thesis. A proposal for a revision of PSD2, officially called PSD3, was also put forth. FIDA was proposed because the EC identified three main problem areas with regards to financial data sharing. Quoted directly from European Commission (2023), these are:

- Consumers reluctant to share data due to the absence of tools to manage data sharing permissions
- Poor interface to share financial data because data holders (i.e. financial institutions) are not always under obligation to share such data and because it is not in their business interest to do so
- Expensive and cumbersome for data users (i.e. other financial institutions and fintechs) to access data due to poor interfaces to share data

In order to address these issues, the FIDA framework establishes the following:

- The option, but not the obligation, to share their financial data with data users to access better data-driven financial and information products and services (e.g. financial product comparison tools, personalized online advice)
- The obligation of data holders to share customer data, upon customer's consent, by establishing the necessary technical systems
- Consent dashboard must be provided by data holders, showing who is accessing the customer's data and for what purpose. Consent can be revoked and given in the dashboard.
- Standardization of customer data and technical interfaces that both data holders and data users must adhere to
- Clear liability framework for data breaches and dispute resolution in financial data sharing to prevent liability risks from discouraging data availability
- Compensation models to encourage data holders to establish high-quality interfaces by offering fair payments from data users

The above points are quoted directly from European Commission (2023)

## **Impact assessment**

The predictions made in this thesis, drawing from other literary sources and the interviews conducted, have largely been realized. These include the establishment of a compensation model, equitable data and infrastructure standardization, and a comprehensive liability framework. The consent dashboard is an interesting stipulation from the EC, given that many sources were unsure of the technical feasibility. However, with the implementation of data and infrastructure standardization, it paves the way for the technical feasibility of such a consent model.

The need for standardization of data and technical infrastructure will entail substantial financial investments from the participants involved. This standardization, as discussed in the thesis, is

crucial for facilitating secure and efficient data sharing between diverse entities in the financial ecosystem. §. With more participants in the financial ecosystem and increased competition, consumers stand to benefit from a wider variety of financial services, personalized offerings, and enhanced user experience. Smaller players in particular, such as fintech startups, would be better equipped to compete and innovate.

To encourage the creation of high-quality interfaces, the framework permits data holders to seek compensation. This essentially means that the costs incurred in developing and maintaining these interfaces could be offset by payments from data users. This provision creates an economic incentive for data holders to invest in superior data-sharing infrastructure, which benefits all participants in the open finance ecosystem by ensuring efficient and reliable access to data. Nevertheless, the compensation model might inadvertently deter data users from accessing comprehensive data sets, as they might choose to access only essential data to control their expenses. This could potentially limit their ability to gain a holistic understanding of a customer's financial situation, consequently impacting the degree of personalization that can be offered.

The introduction of a clear liability framework, coupled with a consent management tool, can significantly enhance the trust, transparency, and control required for customers to willingly share their data. The liability framework ensures that customers have legal recourse in case of data breaches or misuse, thereby fostering trust in the system. Meanwhile, the consent management tool allows customers to control who has access to their data and for what purpose, promoting transparency and giving customers greater control over their personal information. Together, these measures form a strong foundation for customers to build trust with the data privacy and security in the broader open finance ecosystem.

The current framework seems to primarily specify financial institutions and fintechs, making it unclear whether non-financial organizations, such as retail companies, can participate directly in the financial data access ecosystem. An exclusion of non-financial companies to participate in FIDA could impact the possibility of retail companies to produce their own financial products and services using the financial data access. In response to this, retail companies may need to rely on TPPs to access the necessary data and provide relevant financial products and services in open finance. This would thus push retailers to having to take the role of being exclusively distributor. However, this reliance on TPPs could potentially limit the control that retail companies have over the financial products and services they offer. By relying on TPPs for data access and distribution, retail companies may have less autonomy and influence over the design and customization of their financial offerings. Moreover, now that many non-financial companies will have to use TPPs, they will have to compete to include them in their respective ecosystem. This dynamic could give TPPs stronger influence in shaping the partnerships they enter into. Furthermore, TPPs could leverage this influence to join multiple ecosystems to widen their customer reach.

Moreover, it could be that retail companies have intentionally been left out of the framework. The reasoning behind this is that the EC wants to keep it exclusively to financial companies as a

proof of concept, to make sure that the trust and transparency for customers to share their data can first be established and iron out potential issues, before expanding the scope to include non-financial organizations. This could also play into the prediction of a gradual and iterative approach to open finance, as predicted in the thesis.

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