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Collaboration between Banks and FinTech Companies

An Assessment of Emerging Organizational Designs within the Financial Services Industry in Norway.

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## **Collaboration between Banks and FinTech Companies**

### **An Assessment of Emerging Organizational Designs within the Financial Services Industry in Norway**

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## Shortenings

PSD2 – Payment Service Directive  
 GFC – Global Financial Crisis  
 FinTech – Financial Technologies  
 CMIP – Capital Market Infrastructure Provider  
 RTS – Regulatory Technical Standard  
 EBA – European Banking Authority  
 EEA – European Economic Area  
 API – Application Programming Interface  
 MVP – Minimum Viable Product  
 SEPA – Single Europe Payments Area  
 CSP – Consumer Service Provider

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## Abstract

By studying how incumbent banks and FinTechs prepare for PSD2 we have assessed what organizational designs that will emerge from collaboration between banks and FinTechs in Norway. We have studied organizational design theory, to discover a collaborative architecture where a closed network of banks, now is opened for third parties such as FinTechs, through open API integrations. Using a qualitative case method, interviewing 11 banks and FinTechs, and using a theoretical background from Organizational Designs, Networks, Ecosystems, Crowdsourcing, Open Sourcing, Collaborative Architecture and Disruptive Innovation we find that banks and FinTech companies are at the learning stages of PSD2 integrations through API's.

The organizational designs that emerge will depend on how well the banks will be able to facilitate for open API's integrations. For the banks the type of organizational design that will emerge will most likely depend who can attract the best and most (FinTechs) to their platform. The platform with the largest network will be the keystone in the ecosystems and will gain the network externalities and distribution power of the end customers. What we are seeing is an organizational architecture that is largely built on the same mechanisms as typical app stores that we have seen emerging in other industries. We also argue that for the open API collaboration to function properly, it would rely on the same mechanisms identified by Fjeldstad et al (2012) where independent actors (FinTech) self-organize; use commons (the banks platform) where the actors share resources, and rely on sets of protocols, processes and infrastructure which enable actors to come together. While the incentives for collaboration for FinTechs to collaborate today with banks are many, the innovation the FinTechs produce is harder to replicate than the banks experience in marketing, compliance and other financial services. However, the network that the banks have is very valuable to the FinTechs, but with the industry opening for other large networks to enter, the banks must prove their position to become the keystone platform.

## INTRODUCTION

In our Master of Science thesis, we intend to gain better understanding of the collaborative organizational architecture emerging in the financial sector in Norway. Utilizing the new regulation Payment Service Directive II, we aim to understand what organizational designs that will emerge from collaboration between established financial institutions and independent actors. We refer to financial institutions as incumbent banks, and new digital entrants as FinTechs. Financial Technology is “the name given to start-ups and more established companies using technology to make financial services more effective and efficient” (Dietz, Moon, & Radnai, 2016). The Payment Service Directive 2 (PSD 2), is a new financial regulation that went into effect on 13 January 2018. The regulation will force banks to open their Application Programming Interfaces (API) to third-parties, if the customer gives consent to give away their customer data. These third-parties could be FinTech companies or others, such as tech giants (Apple Pay, Samsung Pay). We focus our attention on early stage FinTechs, which are agile and relatively small players that drive innovation. Also, we study incumbent Norwegian banks which have communicated that they will have to collaborate with FinTech companies to become more innovative. Banks in Norway have traditionally operated as a closed network for providing payment, liquidity and risk services and thereby creating an extreme asymmetry in favor of the banks, lowering incentives for innovation. PSD2 as a regulation is intended to increase innovation and open the closed network for new actors. We asked our interview objects, what are the attitudes towards PSD2? What are the strategic positions the banks and the FinTechs take to create value? How do these actors organize to create innovation? What are the incentives for collaboration?

Consulting companies have studied this from a bank perspective, but little is known about the FinTech side. To get a holistic view of the complex situation, we interviewed 11 actors in total, both banks, FinTech companies, and FinTech accelerators in Norway. We have also attended several relevant conferences and events and reviewed numerous consulting reports, blogs, articles, and viewed this up against classic and more recent publications in organizational theory.

Our intention is two-fold; One, to shed light on the organizational designs that emerge when large incumbent banks in Norway open for collaboration with relatively small, and early stage, FinTech companies. Second, to contribute to understanding the application of collaborative architectures. We use financial services as industry laboratory to study this. Hence, our research question is:

*“What organizational designs emerge from collaboration between financial institutions and independent actors?”*

### **What to expect when reading this Thesis**

Our research question encompasses three main topics. Creating value, organizing for innovation and incentives for collaboration. We had to take a broad perspective to understand the actors that create this collaborative situation. First, we briefly introduce organizational designs, and then look at networks, including more recent developments describing platforms and ecosystems, which we believe are relevant to understand what is happening in the financial services industry. We then look at methods of organizing open innovation, where we emphasize open source and crowdsourcing as well as disruptive innovations. Following a discussion of our method chosen for this study, we look at the specific case of the banking industry, where the new group of innovative actors, the FinTech companies, are our primary focus. We also introduce sandboxes and hackathons that are relevant for this study. Through interviews with C-level officers in banks and FinTech companies we seek to understand the organizational designs emerging in the intersection between the traditional banking industry and FinTech companies. Our findings are summarized after each section, aiming to help the reader stay on track. We finish up with stating our conclusions and discussing how API ecosystems and platform economies can disrupt the traditional banking landscape. Finally, we some give implications for managers.



## LITERATURE REVIEW

Banks are financial intermediaries and such important firms in the transaction service sector of the economy (North, 1991; North & Wallis, 1982). As with all other networking services, financial services exhibit network externalities, that is, the value of adoption of a service is a function of the size or the composition of the network of other adopters (Katz & Shapiro, 1985; Rohlfs, 1974; Stabell & Fjeldstad, 1998). Network externalities frequently lead to cooperation among otherwise competing firms to extend the size of the network available through the services of each individual firm. Such cooperation is sometimes bilateral, e.g. a bank has arrangements with banks in other markets that represent them, so called correspondent banking. In other cases, national and international third parties have been established to provide interbank relationships or to provide joint services. For example, SWIFT is a clearing house for international payments and the credit card service VISA is owned by several banks collectively who distribute its services. Because of the high interdependency of competing firms, and because banks service relationship between actors in the economy, they form inter-bank relationships that improve their ability to service their customers' need for financial exchange. The inter-firm organization of banking is both more structured and more complex than what is found in many other sectors of the economy. These characteristics of banking guide the below literature review. We start with a brief review of central properties of organizing. Banks exist to reduce transaction costs in the economy and we therefore start with Coase and Williamson's seminal contributions to this theory. Since, collaboration between banks and new financial industry entrants is central to our thesis we further briefly review networks and network services. The main thrust of our literature review is on newer collaborative forms of organizing, such as open source development and crowdsourcing because these features prominently in our empirical domain.

## **Organization**

The understanding of firm organization has developed over time. In the 1930's in his book "The Nature of the Firm," Ronald Coase's deep insight found that the transaction costs of organizing inside the firm in some instances are lower than those associated with organizing through the market. Coase states that "a firm is likely to emerge where a short-term contract would be unsatisfactory." (Coase, 1937) People would use markets when the gain from doing so, net of transaction costs, exceeds the gains from doing the same in a managed firm, net of organizational costs. Coase's work was foundational for transactions cost economics, where institutional economist Oliver Williamson was central in establishing the theory. Williamson found that the cost effective choice of organizing is shown to vary systematically with the attributes of the transaction (Williamson, 1991), and identified three different models of organization, market, hybrid and hierarchy. Traditional organizational forms use hierarchy as mechanism for control and coordination (Williamson, 1975). The literature describes many forms of hierarchy for example; simple hierarchy, divisional, matrix, and multi-firm networks. (Fjeldstad et al., 2012). In a multi firm-network, the hierarchical structures are less visible than in simple forms, but they do not disappear completely. Financial services are one industry that is composed of a network of competing hierarchal actors, that leverage the customers adoption of the network and therefore choose to cooperate to gain from these network externalities.

## **Networks**

How a company creates value can be defined by what activities the company performs. Banking as other financial services facilitates financial relationship among customers, e.g., firms, individuals and government (Economides, 1993; Stabell & Fjeldstad, 1998). As network services they are characterized by network externalities both indirect and direct (Katz and Shapiro 1994). High interdependencies between the various participants in the financial system lead to network externalities. The actors are highly interdependent on each other, and these interdependencies are likely to spill over and be reflected in the way the actors are organized. A network of firms falls somewhere between a hierarchy

and a market. Networks create value by linking activities and resources. (Anderson, Håkansson, & Johanson, 1994). For example, banks, although competitors, are also completely dependent on relationships with each other for the delivery of their services to customers.

Many products have little or no value in isolation but generate value when combined with other products. A market, where households and businesses obtain components of the overall system, is said to have network effects or network externalities e.g. communication networks where you obtain a phone and join the telecommunication system. We see similar networks in financial services, and recent literature (Furr & Shipilov, 2018) shows that the payment processing industry is undergoing tremendous changes. Over the years Mastercard international Inc. has competed against Visa and American Express with a centralized network of banks and merchants that uses Mastercard's infrastructure to process payments from its customers. Mastercard now see the opportunities to broaden its scope of business and to develop new offerings in the growing domain of digital payments offerings.

Katz and Shapiro (1994) divided the basic forces at work into direct and indirect network externalities. Direct network externalities refer to the value each user derive from linking directly to other users of the network. Katz and Shapiro (1994) label this as a single system. A user purchases a product or a service only if that user's private benefit exceeds the cost of buying the product or service. With an increasing number of users in the network, the social benefits for both existing and new users increase, this is because there exist adoption externalities. Since social marginal benefits exceed the private marginal benefits, the value of the network is determined by the size of the network. User's contribution in enlarging the size of the network, increase the willingness to pay for all members of the network.

The indirect network externalities have welfare implications like direct network externalities, however they are less obvious. Katz and Shapiro (1994) describe a market for systems, where the system refers to a collection of two or more components, with an

interface which allows the components to work together. In this system perspective indirect network externalities appear based on interdependencies of complementary goods and future expectations. Software and hardware are complementary goods with indirect network externalities (Church & Gandal, 1993). Unlike direct network externalities one consumer's adoption decision has no impact on other consumers, given the price and the variety of software available. However, in a software/hardware system the network effects arise when users make their purchases over time, either because of repairs, preference changes or updates and new components become available (Katz & Shapiro, 1985). The adoption externalities come about indirectly since it depends on the further variety or prices of the components. To illustrate this one could think of buying a computer. When buying a computer, one would need to choose a system, whether it is e.g. Macintosh or PC. Since this choice leads the customer to being "locked" into the system the customer would also need to anticipate what will happen with this system in the future because the value of the hardware is enhanced as the variety of complementary software increases. The variety of complementary software depends on the total number of consumers who purchase the complementary hardware product. Indirect network externalities lead consumers to place a higher value on the system with greatest variety of software solutions, which is often supplied by many firms subject to some scale economies. (Katz & Shapiro, 1994).

Research on entrepreneurship has seen increase in entrepreneurs in digital platforms where success requires positioning products and services within dynamic digital networks. Srinivasan & Venkatraman (2018) introduce a network-centric view to understand how entrepreneurs occupying the role of third-party developers supports digital platforms by their choices to link to them. In digital platforms there is strong interdependence between the entrepreneurial firms that introduce their product/service and the platform firms for which they launch their products/services (Srinivasan & Venkatraman, 2018). Given the strong interdependency, platform firms use considerable amount of resources to attract entrepreneurs. Similar to the software/hardware paradigm, those platforms with the most extensive network attract entrepreneurs to introduce more complementary products/services.

The distinctive difference between the two types of network externalities depends on the interpretation of the structure to represent a specific service (Economides, 1996). In the figure below, we illustrate two different structures of networks;

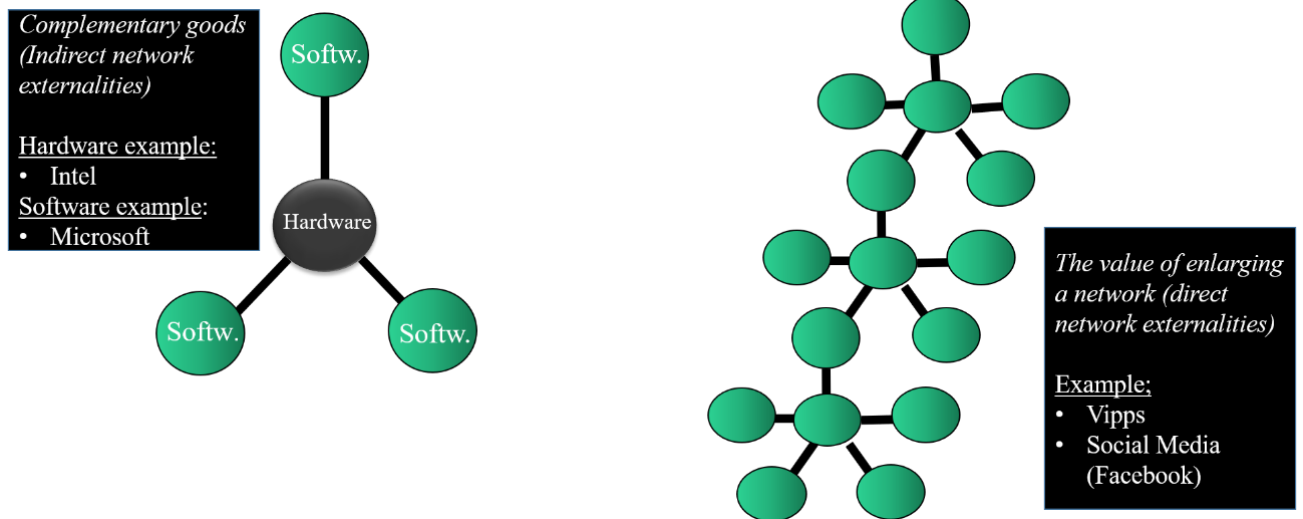


Figure 1: Indirect and Direct Network Externalities

Although there are important network externalities in financial services (Economides, 1993), the banking industry constitutes a relatively closed network. What we know from the financial industry is that all the banks control the network and exclude other actors from entering. With PSD2 being implemented the network is opening for other actors to enter. (As we have illustrated in the next page)

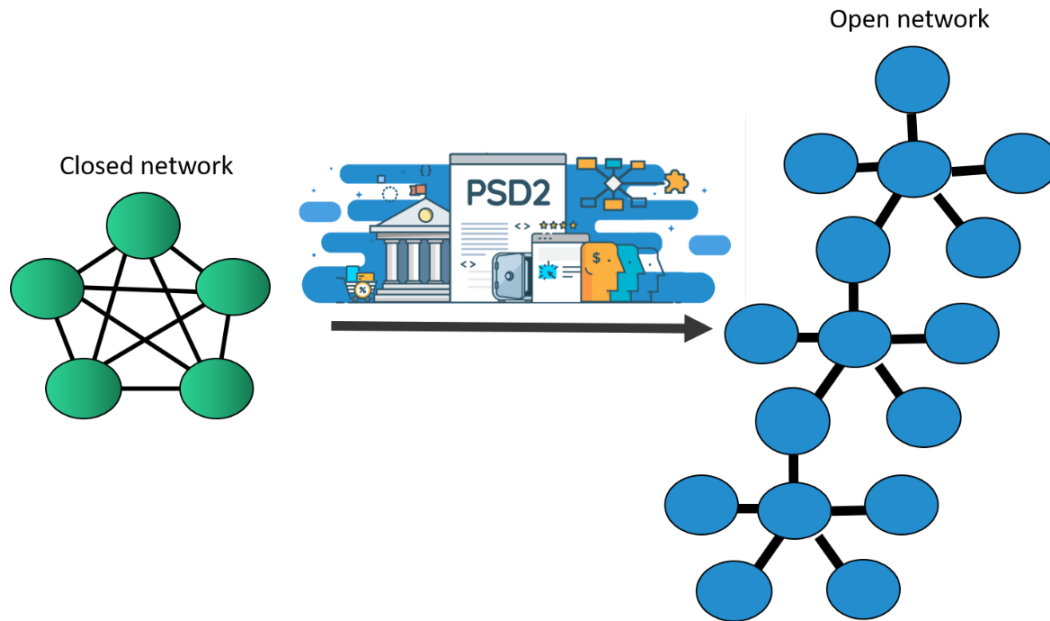


Figure 2: Closed and Open Network

The position orchestrating a network, connecting multiple partners and encouraging them to work together in developing new offerings, has been showed to be increasingly prominent. In the next section we will look at ecosystems, which like indirect network externalities, are characterized by interdependencies.

## **Ecosystems Create Value that No Single Firm Create Alone**

The new ways of collaborating and organizing activities are conceptualized as platforms, and ultimately industry ecosystems (Gawer & Cusumano, 2014). *“Industry platforms can facilitate the generation of a potentially very large number of complementary innovations by tapping into the innovative capabilities of an a priori unconstrained set of external actors, and provide the technological foundation at the heart of innovative business ecosystems”* (p. 428).

The concept of ecosystems, where the interdependencies are more explicit, is now more common both in business strategy (Adner, 2017; Iansiti & Levien, 2004; Spigel, 2017) and in practice (Google, 2015; Tesla, 2018). For an innovating firm to succeed, it often

depends on the efforts of other innovators in its environment (Adner & Kapoor, 2010). However, being part of an ecosystem is also challenging because it requires interdependencies. Partners may be late with internal product development, regulatory delays, financial difficulties, challenging leadership, and so on, which could be a challenge to manage.

Although ecosystems could be challenging to manage, “keystone” companies such as Microsoft, Apple and Google have emerged. These companies connect thousands of organizations together by providing a platform that they are controlling. Banks are not far from operating in a similar system, the financial system is connecting actors domestically and cross border. The distinct difference is that the financial system has been closed and now with PSD2 its being opened. Existing banks most likely would want to take the keystone position in the open ecosystems.

*An ecosystem allows firms to create value that no single firm could have created alone. Keystone companies such as Apple control platforms that other firms depend on.*

Platform ecosystems have become a universal term appearing in new product development and operations management field (Bockstedt, Druehl, & Mishra, 2015; Jiao, Simpson, & Siddique, 2007; Yoo, Rand, Eftekhar, & Rabinovich, 2016), in technology strategy (Eisenmann, Parker, & Van Alstyne, 2006; Gawer & Cusumano, 2002; Parker, Van Alstyne, & Jiang, 2016) and in industrial economics (Armstrong, 2006; Ding & Wright, 2017; Rochet & Tirole, 2003).

Gawer & Cusumano (2014) studied platform based ecosystem in relationship with managing innovation within and outside the firm. They suggested that there are two

*There are two predominant types of platforms, internal or company specific- and external and industry-wide platforms.*

predominant forms of platforms, internal or company specific, and external or industry-wide platforms. The distinct difference is that internal or company specific platforms refer to a firm either working by itself, or with suppliers, in creating the ecosystem. An external, or industry-wide platforms differ in that it is open to outside

firms. Thus, if a larger number of firms participate in the ecosystem the value of being part of the ecosystem is closely related to network effects or network externalities. There is a growing number of firms which seek growth on platform services, but they will not succeed unless every element in a family of complementary innovators also succeeds. (Adner, 2006). We will now move to the section of the literature review where we review various forms of open innovation.

## Organizing in Commons

In industries, where the knowledge base is complex and expanding the source of expertise is widely spread, the locus of innovation extends beyond the firms boundaries and will be found in networks of learning (Powell, Koput, & Smith-Doerr, 1996). Communities for collaborations (commons) create new opportunities for innovations to happen outside the firm, Von Hippel argues that commons have the potential to democratize innovation. Innovation communities has been defined by Von Hippel as “*nodes consisting of individual or firms interconnected by information transfer links which may involve face-to-face, electronic or other communication.*” (Von Hippel, 2005). The important function of a community of innovation is that users are willingly sharing their information with other members of the community. If some members share information of interest of others the community will thrive and drive innovation. Members of these communities can be both users of products and manufacturers of products. The members of these communities can flourish, when at least someone innovate and voluntary reveal their innovations, and other members find this information to be of interest.

*Commons have the possibility to democratize innovation. The important function of a community of innovation is that users willingly share their information with other members of the community*

Within banking services users of financial services often produce the services they need, such as for example accounting systems, long before the banks can produce the same services commercially. 55% of today’s computerized financial services were first



developed and implemented by non-banks for their own use, and 44 % of retail banking services comes from individual users. (Oliveira & von Hippel, 2011) One example of user-created services is computerized aggregation of account information across institutions. This was first created by hackers that saw the need for their own use. Later the non-bank Yodlee adopted this and started providing it to customers, finally in 2006 it was provided by commercial retail banks. (Hemenway, Iff, & Calishain, 2004) When distinguishing between manual and computerized processing, Oliveira and Von Hippel (2011) found that when looking at corporate banking services, 92% of the manual services were self-provided and the remaining 8% was developed jointly by the users and the bank. One example of manual self-provided services developed by users of the bank could be information services and planning solutions. Financial services firms use their customers or users to co-create and drive financial innovation.

Financial services firms typically work with sets of selected customers, (in retail markets) they choose customers which are demanding and that they believe they can cooperate with, while in corporate markets they choose customers to cooperate with that they have long withstanding relationships with. In a study of co-production within the financial services field studying the links between co-production and customer loyalty Auh et.al (2007) found that co-production may have an important role as a basis to be competitive in the financial services industry. With organizing in commons in mind we will now move to open source software projects.

## **Open Source Innovation**

For several decades there has been a common understanding that economic production has happened in one of two ways, either as an employee of a firm or as individuals using

*Open source innovation can create a feeling of a social community and platform where common good can be created and a knowledge economy transcends.*

price signals (Benkler, 2002). Prior to open source it was a common understanding that freeriding on other innovators ideas could lead to problems and destroy the incentives to innovate (Dam, 1995). Open source software communities are online production communities and are

typically geographically spread and use Internet as means of control and coordination (Kollock, 1998). There is an increase trend in the study of open source projects and within industrial economics, we have seen scholars draw attention to the rapid diffusion of open source software, and the significant capital investments in open source projects (Lerner & Tirole, 2002). There are now several thousand “open source projects” on the Web, aimed at creating innovation. The emergence of free collaboratively produced software triggers the interest of the theorists to understand this new organizational form. Suddenly without being told by a leader, or being paid for the engagement, these programmers cooperate toward improving, repairing and developing software.

Open source is significantly different from typical closed software projects in that there is a self selection of tasks and a motivation coming from status and self realization, rather than through directions and salaries (Puranam, 2014). The open source literature has at a large looked at three aspects of open source, the incentives and motivations for contributing into a common, governance and organization, and the competitive dynamics surrounding open source. (Von Krogh, 2006)

As Benkler (2002) puts it the emergence of free software as a substantial force in the software development world poses a puzzle for organizational theory. Free software projects do not rely on neither markets nor hierarchies. Von Hippel and von Krogh (2003) suggest two models are prevalent in organizational science. “*The private investment model*” and “*the collective action model.*” Open source software, used for creating common good is an example of a compound model of innovation that contains both the private and the collective elements.

Perhaps the most widely known open software source code there is, is the operating system Linux (Weber, 2000). Linux is mostly applauded by avid programmers, due to its technical strengths. Open source projects range from small to large-scale projects. Among hackers and programmers, open source is being characterized as both “*a new method for R&D and the core of a new business model. Open source solutions create the feeling of a social community and platform where common good can be created and a*

*knowledge economy to transcend and change existing production structures. Open source has even been referred as a political movement.”* (Weber, 2000). Wikipedia is another example of an open source organization where knowledge is shared and where the locus of control lies within the online community. There is not anyone that is telling the creators of Wikipedia exactly what to write or how to write it. This community is self-organized and is following a bottom-up task management approach working for the public good (Brabham, 2013).

As mentioned the literature has looked at motivations related to open source projects. For open source projects, computer programmers develop the source code largely without the regular incentives we see in market-based, firm based, or hybrid models (Benkler, 2002). Developers of open source projects do not always get paid for their services in cash. Their motivation is solely driven by the enjoyment of the intellectual challenge or the extrinsic rewards such as peer recognitions, sense of belonging, learning from feedback and the signals this send to software firms as a source of excellence (Hippel & Krogh, 2003).

More recently open source software hosting services, such as GitHub, have started to appear. It provides a set of social coding tools. Users of GitHub have the ability to create social profiles where they can identify themselves. The portal is home to over 20 million contributors and over a million code repositories. While many of the projects on the platform are single developer “code dumps”, there are still several multi-developer projects of significant scale (Dabbish, Stuart, Tsay, & Herbsleb, 2012).

In regards to, how to govern the open source community, scholars have found that members of open source communities develop a shared basis of formal authority but limit it with democratic mechanisms that enable experimentation with shifting conceptions of authority over time (O'Mahony & Ferraro, 2007).

### **If ants can self-organize, then perhaps humans can too?**

In knowledge-intensive industries, the environments are uncertain, complex and ambiguous. The need for redesigning the organizational architecture evolves to face these

challenges. Work by Fjeldstad et.al (2012) introduced the actor-oriented organizational architecture which is found in knowledge-intensive sectors characterized by high dynamism and complexity. “This actor-oriented organizational architecture relies on three elements; (1) actors who have the capabilities to *self-organize*; (2) *commons* where the actors share their resources and (3) *protocols, processes and infrastructure* which enable the different actors to collaborate” (Fjeldstad et al., 2012). This organizational architecture challenges the traditional hierarchical organizational form, that is effective in stable and predictable environments.

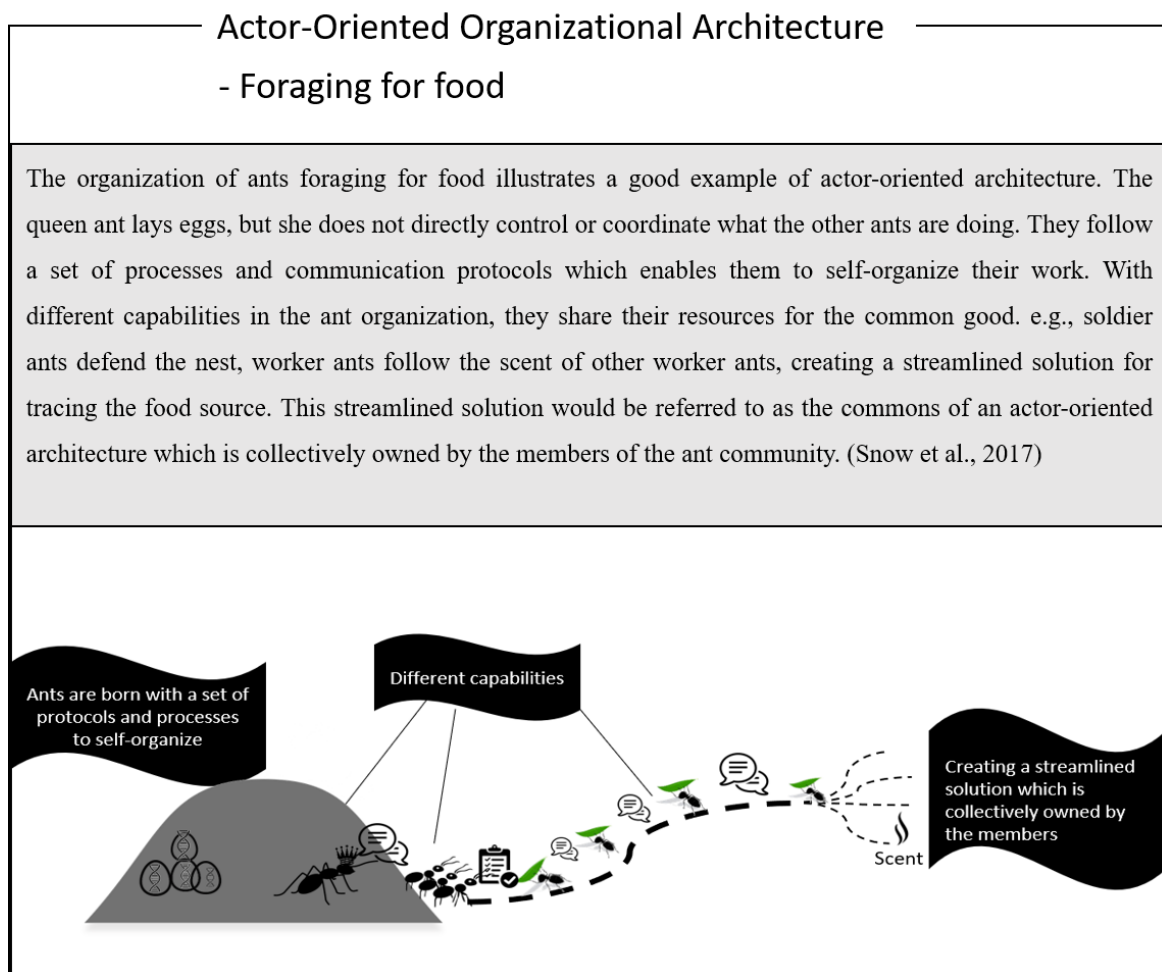


Figure 3: Example of Collaborative Architecture

Among humans, the ant community can be used to understand Open Source Projects. Suddenly we see self-organized actors, often referred to as open source coders, cooperate towards a common goal or project without the typical incentives to be involved in such a project. We will now move to the part of the literature review where we look at crowdsourcing.

## **Open Innovation Crowdsourcing**

As previously mentioned, commons have the potential to democratize innovation (Von Hippel, 2005). The philosophy of commons is that people share their improved version of the product back to the commons, which makes the product increasingly better because it is developed collectively. As the knowledge base of industries gets increasingly more complex, and the source of expertise is widely spread, the locus of innovation extends beyond the firm's boundary (Powell et al., 1996). Enabling companies to harness ideas outside the boundary of the firm is moving companies from a closed innovation model to an open innovation model. Understanding the internal organization, and identifying the gaps in their current business, is critical when following these types of open innovation business models (Chesbrough, 2003).

The financial industry which has previously focused on operational process efficiency rather than process innovation for customers, now shifts towards open innovation. Banking services have become increasingly imitated. Which has resulted in falling margins and moved basic banking products, such as deposit accounts, loans, or credit cards, from differentiated products to commodity (Fasnacht, 2009).

Building innovative business models, which encourage firms to look beyond their existing walls, is crucial for innovation to occur and strengthen the competitive position. Martovoy, Mention and Torkkeli (2012) find that the most important sources of knowledge for innovation in the financial services industry to be the members of the bank, suppliers, industry associates and the public crowd. As previously mentioned the important function of a community of innovation is that users are willing to share their

information with other members of the community (Von Hippel, 2005). According to research from Mention, Martovoy and Torkkeli (Martovoy et al., 2012; Mention & Martovoy, 2013) banks rely most on themselves as the most important source of knowledge leading to innovation.

Not all problems might be as well suited for open source as software development is, simply because some products also require machines to manufacture, involve high costs associated with distribution, and so on. A company investing in these material costs would need to ensure that revenue covers these investments. In an open source model, where revenue sharing is diffuse, the common participant may not be interested in donating his or her talent into a project without a cut of the profit. Crowdsourcing, however, overcomes the problem of revenue sharing by providing a hybrid model of doing profitable business (Brabham, 2008).

Crowdsourcing has been defined as the “*the act of taking a job traditionally performed by a designated agent (usually an employee) and outsourcing it to an undefined, generally large group of people in the form of an open call*” (Howe, 2008). As technologies advance and become more accessible, companies need to access external knowledge to stay competitive and to solve complex problems.

Crowdsourcing may solve complex problems, since the crowd provides access to a pool of competences, ideas and resources, which might be much more crucial than what the firm can find internally (Pénin & Burger-Helmchen, 2011). Brabham (2008) argues that crowdsourcing is a “*legitimate, complex problem-solving model, more than merely a new format for holding contests and awarding prizes*” although it builds on some of the same characteristics. Jeppesen and Lakhani (2010) draw the similarities of open innovation by investigating the characteristic of winners in science problem-solving contests. They found that the provisioning of the winning solution was positively related to increased distance between the solver’s field of technical expertise and the focal firm.

Brabham (2008) proposed two key points which characterize crowdsourcing. First, crowdsourcing involves online communities, which have their own dynamics, clustering around key locations (websites) on the internet that operate with a set of informal rules which is governed by the social interaction among members of the community. Second, the *locus of control* in the problem solving and production process exists between the organization and the public (crowd), and not primarily within one extreme or the other. Brabham (2013) explains crowdsourcing to be a “*top-down, managed process on Threadless’ end, directing an open, bottom-up, creative process in the online community*”.

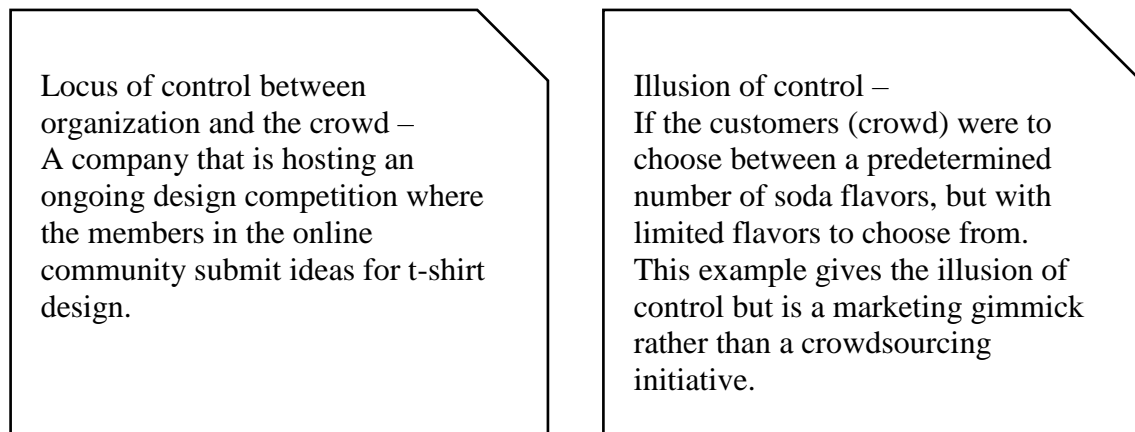


Figure 4 Locus of control (illustration)

Above is an example of the locus of control. For crowdsourcing to function properly it is important that the locus of control resides between the organization and the crowd that is asked to perform the task.

As Bogers et al., (2017) point out, there is great need for further research on crowdsourcing, as open innovation (OI), both pertaining to levels of analysis and different theoretical approaches. Recent research that appear in the categories suggested by Borgers et al: OI cognition and behavior (Schmalz, Carter, & Lee, 2018), OI strategy and design (Prpić, Shukla, Kietzmann, & McCarthy, 2015) , OI Stakeholders (Franzoni & Sauermann, 2014), ecosystem (Furr & Shipilov, 2018; Peer, Brandimarte, Samat, & Acquisti, 2017) and open governance (Litman et al., 2017).

As we now have walked through the literature of organizing for innovation the last section of our literature review will focus on creating value and especially focus on disruptive forms of creating value. As the banks are moving towards open innovation, disruption is arguably a possibility for the FinTechs to create value.

## **Disruptive Innovation**

Innovation has been defined as *production or adoption, assimilation, and exploitation of value-added novelty in economic and social spheres; renewal and enlargement of products, services, and markets; development of new methods of production; and establishment of new management systems.*(Crossan & Apaydin, 2010) The type of innovation this section covers is disruptive forms of innovation. Firms can choose between exploration and exploitation when organizing firm capabilities. Ideally a firm should balance between exploration and exploitation and dedicate enough resources to new activities (*exploration*). In his seminal work, March (1991) argues that firms tend to use organizational learning exploitation strategies, that take myopic positions in the market, which might be successful in the short term, but might be self-destructive in the long run.

Disruptive innovation as a term was coined by Brower and Christensen (1995) and is according to themselves one of the most mis conceptualized terms in strategy literature today (C. M. Christensen, Raynor, & McDonald, 2015). The theory attempts to explain why incumbent firms often end up in what has been referred to as the Innovator's Dilemma: *The decision-making and resource allocation that make a company successful are the very reasons that cause the firm to fail in the face of disruptive innovators, which bring to the market a very different value proposition than previously available.* The unwillingness to cannibalize on one owns assets to the disruptor on a performance path that is nonlinear and is difficult to predict has also been identified by other scholars (Danneels, 2004; Tellis, 2006).



Disruption theory builds on that incumbent firms can fail if they do not use enough resources on exploring new technology, but instead use resources on current technology (*sustaining innovations*). Disruption is then the observation that large incumbent players are challenged by small, less resource intensive companies when large technological changes happens to the industries they are operating in (Bower & Christensen, 1995). Disruption happens at the lower end of the market and new entrants typically target customers overlooked by the myopic incumbent market players.

On the next page a model attempts to explain some of the mechanisms in the relationship between sustaining innovation's and disruptive technologies. Products generally improve with incremental steps over time, where attractive customers are attracted to improvements in these products and are willing to pay high prices, forcing the less attractive customers out of the market. These players lay on the blue line. Disruptive innovations, in contrast, do not attempt to bring better products to established customers in existing markets. Rather, they take a new path by introducing new innovative products or services and offer them to underserved markets. Disruptive technologies offer other benefits; typically they are simpler, more convenient, and less expensive products that appeal to new or less demanding customers. These disruptive technologies are the green line. The dotted red line represents the customer absorption rate, while some customers, might adopt at a lower price they become the early adopters.

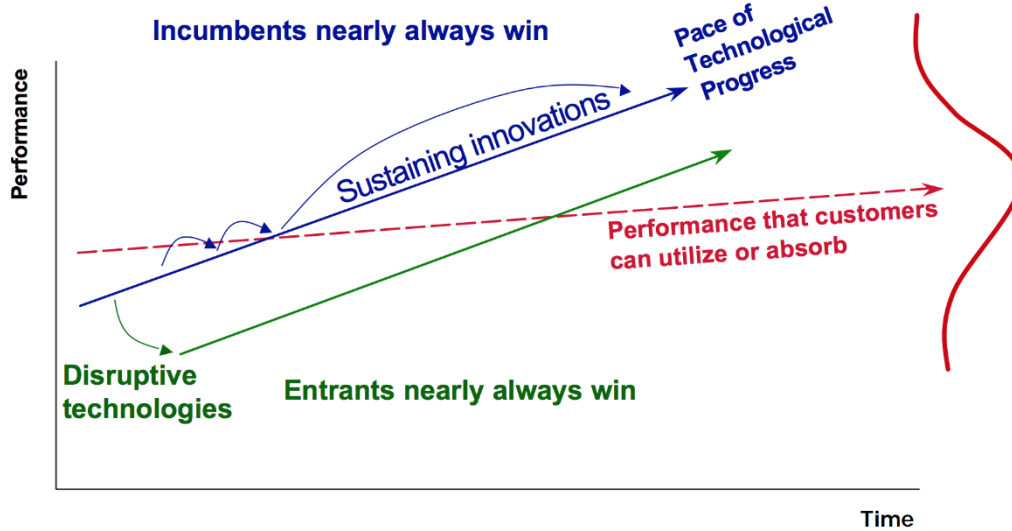


Figure 5 Disruptive Innovation (C. Christensen & Raynor, 2013)

The perhaps most renowned example of a large player being disrupted is Kodak. The once dominating player failed facing the technological changes that happened to the industry. While disruptive competitors were moving into a lower margin digital camera industry, Kodak was unable to take actions before it was bankrupt. There are also several other examples of disruptive innovation's that has happened over time. The transistor radio offered lower quality sounds, but it was portable, so the younger generations would bring it to the beach. In the beginning of portable calculators, they offered very bad computing power, but they were portable and became better and better, and eventually became mainstream taking over the market. In the industry of steel mills, mini mills took over an important position in the business by using scrap metals. (C. Christensen, 2013)

Disruptors start by appealing to low-end or un-served customers and then migrating to the mainstream market. As the banks are moving towards an open network, disruptive innovation is arguably a possibility for the FinTechs to disrupt the financial industry, which we will further elaborate on in the discussion section after the findings. We will now move on to the methodology section of the thesis.

## **RESEARCH METHODOLOGY**

The purpose of our Master of Science thesis is to assess the emerging organizational designs in the financial sector, which has traditionally been characterized by being an isolated, slow moving industry compared to other industries such as telecommunication, computer science etc. We have chosen an exploratory case approach, because we want to understand “what” organizational designs that emerge from collaboration between FinTechs and banks. Since there is no already discovered trends in themes on the theoretical perspective “collaborative architecture” between banks and FinTechs, we believe there is a need for deriving a detailed understanding of this phenomenon by following an exploratory research design (Lee, Collier, & Cullen, 2007). In this thesis we are following an inductive approach where we are looking for a general explanation of the phenomena by doing a multiple case study of banks, FinTech and accelerators (P. N. Ghauri & Grønhaug, 2005; Yin, 1994). We believe this gives us a good opportunity to get a holistic understanding of emerging organizational designs. The FinTechs we have spoken to are all early to mid-phase, with less than 10 employees. The banks we interviewed are large players in the Norwegian banking industry. The inductive study aims at building theory rather than testing it. This fits our research question, surrounding the relatively new phenomena we attempt to examine. We have also read up on secondary sources to understand our main actors, FinTech and banks, and observed several relevant events as mentioned previously.

Since there is little known about what forms of organizational designs that emerge between banks and FinTechs we believe this is a typical example of a qualitative research (P. Ghauri, 2004; Marschan-Piekkari & Welch, 2004). Furthermore, since our interview objects are individuals in the distinctive organizations, qualitative methods is a well suited method, for our data collection and analysis (A. L. Strauss & Corbin, 1990).

### **Research Strategy**

In our thesis we chose to use semi-structured interviews of actors from the financial industry in Norway. The benefits of using semi-structured interviews were that we were

able to decide the questions to be asked, as well as getting a deeper understanding of the answers and key topics the respondents was concerned about.

We have focused our attention primarily on two main types of interview objects. The first type of actor is early phase FinTechs. The second is incumbent banks. In addition, we have chosen to include a third category of actors, which are facilitators for collaboration. These are referred to as accelerators, which help early phase companies grow quickly. We believe that they are relevant to include because they act as network facilitators for collaboration between banks and FinTechs.

We have applied a grounded theory approach when collecting and analyzing data that is “theory derived from data, systematically gathered and analyzed” (A. L. Strauss & Corbin, 1990, p. 121). The reason for choosing grounded theory is because of its repetitive interplay between the collection and analysis of data (Bryman & Bell, 2015). This means that our analysis started after we had completed some of the interviews and the implications of that analysis shaped the next step in the data collection process. The grounded theory approach will be further explained in the section “Data collection and interview guide”.

## **Specific Criteria**

We used initial research and events to identify the most important companies in the FinTech industry. As there are, according to FinTech Mundi (Mundi, 2018), over 80 FinTech companies in Norway, some are more serious actors than others. To ensure the quality of the interview objects before contacting them, we used the accelerator “The Factory” as a help to understand which informants that were relevant for our research question. Below are our criteria for selection:

- **FinTech** – Early stage, less than 10 full-time employees, FinTechs that are affected by PSD2. Interview object: Employees on the managerial level.

- **Banks** – Incumbent Norwegian savings-banks, investments-banks or foreign subsidiary of international banks. Interview object with significant experience 5-10 years and managerial level.
- **Facilitators** – Accelerators which focus on FinTech companies and that have partnerships with banks. Interview object: Employees on the managerial level.

## Research Setting

Our qualitative research contains recognition and selection of individuals that are knowledgeable about the collaboration between financial institutions and banks. For our research we used a non-probability sampling technique (Bryman & Bell, 2015), meaning that those we selected were selected based on what we believe is representative for the population. Thus, a purposive sampling to the participants in relation to our research question. When selecting the interview objects, we selected individual persons representing either a financial institution or FinTech who had relevant knowledge and expertise in the area of our study. We choose to interview members within these organizations which are affected by the PSD2 regulation. According to Bryman and Bell (2015) non-probability sampling techniques related to exploratory work is a good fit when new theoretical ideas might be generated. In our research sample we contacted several firms from the FinTech environment and larger banks representing the financial institutions in Norway. As a result, we interviewed four incumbent banks with employees on managerial level representing the financial institutions, five CEO's representing early stage FinTechs which are affected by the PSD2 regulation and two FinTech accelerators located in the Oslo business area.

Number of Interviews	Institutions	Interview Objects
4	Banks	Managerial level
5	FinTech	CEO
2	Accelerators	Managerial level

Table 1: Informants

In addition to interviewing a total of eleven interview objects we also attended highly relevant events regarding this thesis. The events ranged from being evening events (Kan FinTech bli din vinneroppskrift?) to full day seminars (Future Bank). Attending these highly relevant events gave us a deeper understanding of the FinTech and banking environment in Norway and attitudes towards PSD2. It is also worth mentioning that these events gave us indication to whom we should interview regarding our research question, and where to search for further information.

ORGANIZER	WHAT	WHEN	WHERE
Oslo Innovation Hub	PSD2 specific event, Reverse pitch night	18 January	Mesh
Finans Norge	Futurebank Annual conference with all the banks in Norway	13 February	Oslo Plaza
Explorer HQ	Hot Ideas Cold Drinks Debates	15 March	Explorer HQ
Pitch & Selection	Accelerator Final Pitch Night	5 April	The Factory
Kron	Gender Equality Fintech Seminar	29 May	Folk Oslo
PWC	2x18 Frokostseminar - GDPR: Ingen tillit, ingen data.	24 May	PWC Oslo
PWC	2x18 Frokostseminar: Think big, start small, fail fast - Digital omstilling	26 April	PWC Oslo

Table 2: Events

## Data Collection and Interview Guide

When collecting the primary data, we have used our research question as a primary guide for the semi-structured interviews. The secondary sources of data we have from established literature, consulting reports and events attended.

The primary data collection process started with personally introducing ourselves to potentially interesting informants at FinTech and banking events during the winter of

2018. The unique timing of the PSD2 regulation coming into effect on the 13<sup>th</sup> of January 2018, made it possible for us to meet and understand who the important and appropriate informants with the relevant knowledge were. In other words, our interview objects are handpicked from the most knowledgeable pool of participants in the PSD2 area of banking. From the events attended and background research, we created a list of 13 potential interview candidates that fit the criteria we had selected. From the list we sent invitations via email with the necessary information about our research project. We were able to get 9 interviews in total. We conducted two additional interviews at a later stage in the process. In total we did 11 interviews.

Based on our research question and secondary sources we developed the first draft of the interview guide. The guide allowed us to be flexible in our approach, as well as follow a certain system that helped us to ensure we covered the relevant topics we wanted to discuss.

Each interview was approximately one hour long, and was voice recorded. As soon as the interviews were done, they were transcribed, and the voice files were deleted. During the interviews we attempted to stay on track as much as possible, but as pointed out by Bryman & Bell (2015, p. 480) we encouraged the interview objects to ramble and sometimes go off the topic. This gave us the opportunity to understand what the interview objects considered most important related to each topic discussed. We sometimes asked to follow up questions that deviated from our guide or even asked for further explanations to dive deeper into what could be interesting findings for our research question. The interview guide was there to help us, but not to control us. We do feel that by using the interview guide it was easier for us to analyze the data later, since we covered the same topics for each firm. During the interviews the interview guide naturally developed a bit. Even though we started out with one main interview guide, we found that the guide had to be tailored to each type of actor. We finalized separate guides for banks, for FinTechs and for accelerators, covering the same general topics, but approaching it from different perspectives.

The location of each interview was at the respondent's company headquarters. This ensured that they were in an atmosphere they were comfortable, and we ensured that we could get a feel for the type of organization that we interviewed. For the convenience of our interview objects and to ensure that the interviewer understood the purpose of our study, each interview started out with brief explanation of our research question and the purpose of the study. During the eleven interviews, both researchers were present. This helped us ensure both reliability and quality of each interview conducted. During our data collection period we learned much, and we are satisfied with the number of interviews conducted, especially considering that we also attended several events on PSD2 in addition to the interviews. We have a balanced set of interview objects and they are all of high relevance. One could always want more interviews, but the study is conducted at an early stage of PSD2 and not many actors have the necessary knowledge and experience in this area. Overall, we are very happy with the data material we were able to obtain for this master thesis. Towards the end of the data gathering period, we felt that respondents added similar information to what we had obtained already, ensuring us that we had built the necessary foundations of understanding our research topic.

## **Ethical Considerations**

We applied Diener and Crandall (1978) four ethical principles, risk of harm, informed consent, invasion of privacy and deception when ensuring ethical compliance. We have registered the master thesis project at Personvernombudet (NDS) and considered the rules and regulations from (NSD), in regard to how we treat the anonymity of our interview objects. Our interview objects are our most valuable assets to complete this thesis, and we wish to treat them with the outmost respect in terms of their privacy and anonymity. We have therefore treated each statement anonymously in our findings section, to avoid that the statements could be retraced to the interview objects. To make the interview objects anonymous we have replaced the names with Greek letters. We also made sure that each interview happened on a voluntary basis, that voice recording was informed about before each interview, and that it was possible to withdraw from the research project whenever the interview object would want to.



## Qualitative Data Analysis

In the sections above, we have described and explained how we gathered our data. This section will consider how we analyzed the data that was collected. There are in particular two strategies when conducting analysis of qualitative data that are used; Analytic induction and grounded theory (Bryman & Bell, 2015, p. 581). Since we seek to enrich the theory of collaborative architecture we have used the grounded theory method to analyze the data. Grounded theory is defined as *"theory that was derived from data, systematically gathered and analyzed through the research method. In this method, data collection, analysis and eventually theory stand in close relationship with each other"* (A. Strauss & Corbin, 1998).

Grounded theory consists of four tools; Theoretical sampling, Coding, Theoretical saturation and constant comparison. One of the characteristics of grounded theory is that the process of data collection is generating the theory and decides what data to collect next, and where to find the data. The coding process of grounded theory considers breaking down the data into components which are given names. Unlike quantitative researchers that requires the data to fit into preconceived standardized codes, the grounded theorists' codes emerge while the data are collected.

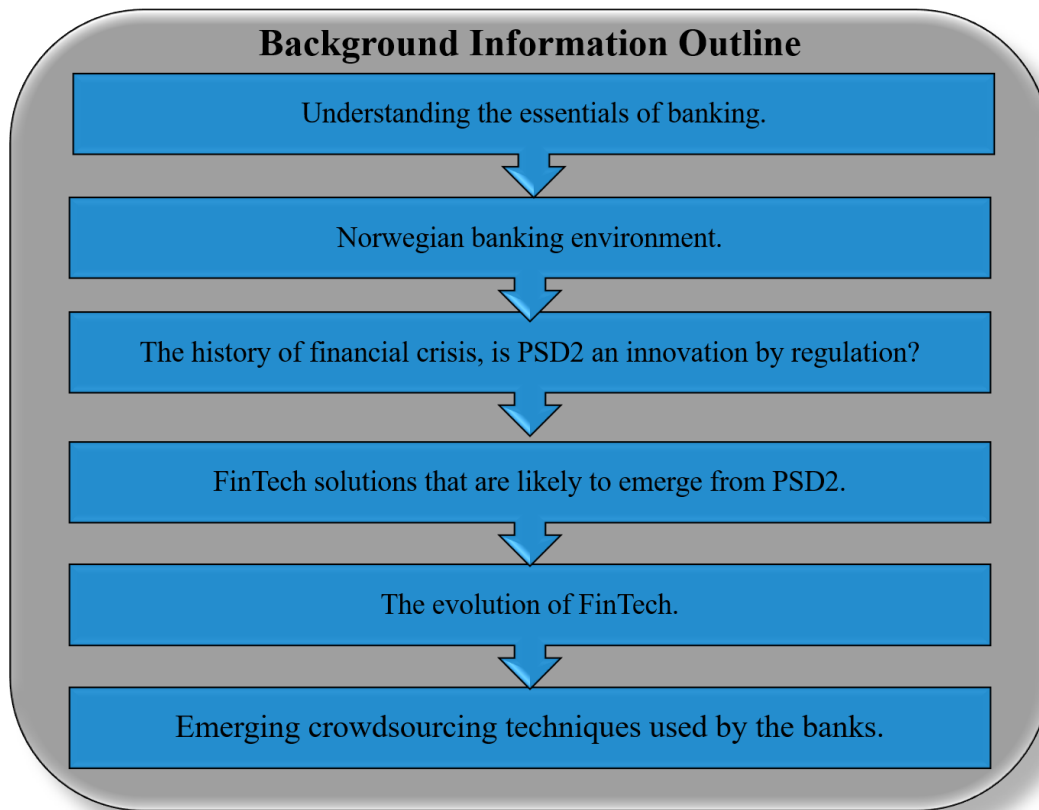
As coding is the pivotal link between collecting and developing an emergent theory to explain the data, we used a line by line coding technique (Charmaz, 2006). During the sensemaking period of the data we tried to stay open and learn about our data by going over the interview scripts first individually and coding these into individual coding tables. As a second coding phase we went over both coding tables with both researchers present, to compare our findings. We then brought forward the categories that we both had viewed as most prominent and focused on these, when making the final coding table (see exhibit 3). We masked the interview objects with Greek letters names that will be present in the primary data findings.

Type	Who
Accelerator	Delta
	Iota
Bank	Beta
	Epsilon
	Eta
	Gamma
FinTech	Alpha
	Kappa
	Lambda
	Theta
	Zeta

Figure 6: Interview objects with Greek letters

## **BACKGORUND: BANKS, REGULATION AND FINTECH**

We start by reviewing key properties of banks and the more recent FinTech industry. We do this because it is necessary to understand the specific situation of opening the closed network in the financial services industry, and to build a foundation to understand value creation, organizing for innovation and incentives for collaboration within this industry. This section creates a deeper understanding of how regulations affects the traditional banking industry, innovation and the emerging FinTech trend. Below is an illustration of what to expect from this section of the master thesis.



*Figure 7 Background Information Outline*

## **Banks are Networks that facilitate Payment, Liquidity and Risk**

Financial institutions are defined as businesses which operate within banking, credit-, financing-, insurance-, pension- and holding institutions. Banks differ from other financial institutions since they are the only institutions with the legal right to receive deposits and other repayable funds from the public, and to provide credit and make guarantees on own account, and to provide payment services (Finanstilsynet, 2016). Other financial institutions offer distinctive types of lending alternatives for customers. e.g., issue credit cards, consumer loans, car loans, leasing agreements, factoring, and so forth.

Multiple banks constitute a closed network of middlemen that facilitate transaction between actors in the economy, by providing three core services *payment, liquidity and risk management services*. Banks traditionally have been trusted actors and people give banks the authority to collect and store their money. This position is both a unique and exclusive position to have. Eriksson, Fjeldstad & Jonsson (2017) categorize financial services into three main activities. These are screening and monitoring economic agents and supplying firms with credit and other financial services, as well as collecting and processing information that allow them to enhance information asymmetries. Lastly, banks provide capital directly or indirectly by signaling creditworthiness.

On a general basis, banks are organized with regional offices, with a geographical overlay, which are further divided into sub-groups with its respective leaders. The banking industry is considered to be line-organized, where there is a clear line from the administrative directors to divisional leaders, and to group leaders (Jacobsen & Thorsvik, 2008). This is a very typical example of organizing hierarchically.

The global financial services sector, in general, has not been very innovative when you compare to other industries, for several reason, such as low competition between actors, favorable regulatory situation and high trust from customers. The Nordics have, however, been at the forefront of technological development within the financial sector. For example, in Norway, strong governmental infrastructure makes filing taxes and

approving payments easy and safe with the use of BankID. Since, the Nordics have been in the forefront of financial technological development there has been a transition of centralization the industry which is important to understand (see exhibit 2).

The Nordic countries represents an outlier, they started sharing major operational activities early and have been in the forefront of technological development within the financial sector. Strong governmental infrastructure has made it possible for the development of the Nordic countries. In Norway the structure of the financial sector consists of different levels. The financial supervisory authority of Norway communicates with the ministry of finance which further communicate with Norges Bank and The Norwegian Ministry of Trade, Industry and Fisheries (see table below). Combined the banks in Norway are put under the protection of Finans Norge where they share operational activities such as providing payments easy and safe. Bank ID, BankAxept and Vipps recently merged to share infrastructure for competing payments providers in the rapidly changing and competitive payment market in Norway. The merger was made to consolidate and make access to BankID and BankAxept across all payment providers in Norway (Konkurransetilsynet, 2018).

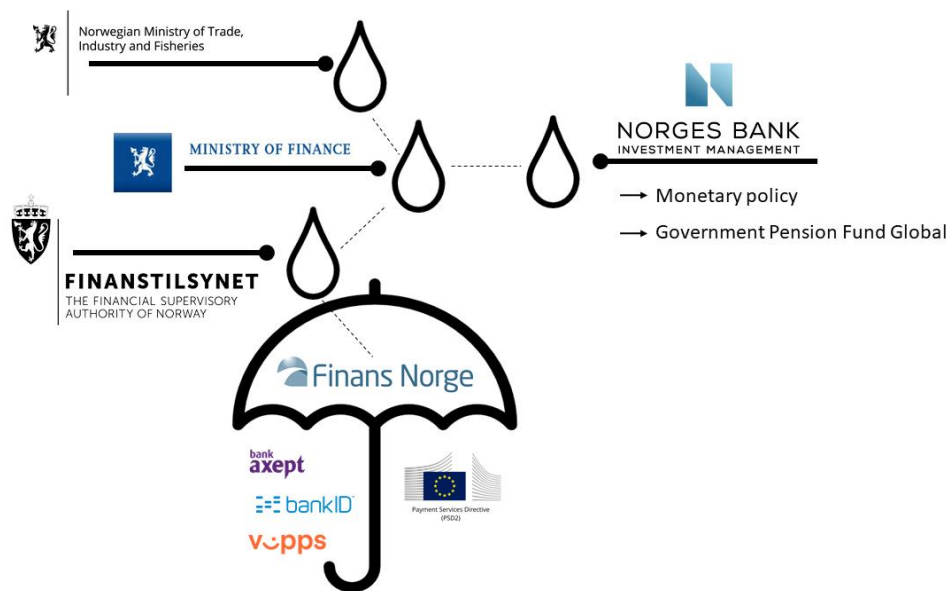


Figure 8 Levels of the financial industry in Norway

## **The Closed Network of Banks in Norway**

In Norway, we differentiate between savings- (Sparebanker) and commercial banks (Forretningsbanker). The main difference between these institutions is the ownership structure and does not have any vital importance for the customer. Commercial banks are organizing as listed corporations while the savingsbanks are organized as self-employed foundations and therefore do not have any distinct owners (Finanstilsynet, 2016). Savings banks have traditionally been a source of providing payment, liquidity, and risk in the economy. It has therefore in Norway been savings banks widely spread with different branches in every city. However, increased connectivity and digitalization has contributed to centralizing the industry in Norway. Alliances between savings banks in Norway have been established to maintain the support for payment, liquidity, and risk in local areas, as well as strengthening the industry to prepare for international competition.

To establish a bank in Norway, banks need a license by the Norwegian authorities or equivalent license granted within the EEA (European Economic Agreement). One part of this license agreement is the requirement of obtaining at least 5 million euro in initial equity (Finanstilsynet, 2017). The license is to ensure financial stability in providing *payment, liquidity and risk management services*. Financial regulations have been essential for creating financial stability for coordination and control, as well as innovation. We will now look at how previous regulations have been used as mechanisms for coordination and control of the financial industry.

## Regulation to Control and Coordinate the Financial Markets

“The great depression” started in New York, October 1929, resulting in a thousand banks being bankrupt, and one-fourth of American deposits disappeared. The Glass- Steagall Act in 1933, which divided commercial banking from investment banking came as a reaction to the depression. Limiting risky investments and securing bank deposits of the people by having guarantees through the FDIC (Federal Deposit Insurance Corporation).

- ❖ *Globally, The Great Depression 1929, Glass -Steagall Act,*
- ❖ *Too big To Fail and GFC, Dodd Frank 2010,*
- ❖ *In Norway, Jappetid and following banking crisis, lack of liquidity and high interest rates*

The act did also prohibiting interstate banking, which was limiting the banks from growing freely. In 1999 the Glass-Steagall act was removed, which enabled individual banks to take risky investments. Interstate banking was allowed a few years earlier.

Now the banks could grow as much as they wanted. Already in 2007, the result was quite clear. Three of the largest banks in America accounted for 40% of total assets. A new expression was announced “Too Big to fail,” but what happens when a large banks path to bankruptcy is a fact? In 2008, when Lehman Brothers, a significant large investment bank went bankrupt, a new global financial crisis was a fact. The ramifications of the GFC (Global Financial Crisis) were dramatic, many lost their jobs and life savings. Again, regulation followed as a reaction to the recession in the same way as the Glass-Steagall act did. This new regulative decision was named the Dodd-Frank Act in 2010, which created the foundation for increased reporting entitlement and stricter investments policies to ensure stability in providing *payment, liquidity and risk management* services again.

The Norwegian banking system have also experienced similar financial crisis. In the post second world war period, Norway experienced economic growth in a regulated environment. Toward the beginning of the 1980’s regulations became looser leading to riskier investments which in a combination with oil prices falling, resulted in a banking crisis in the early 1990’s. The banking crisis in Norway reached its climax in 1991-1992 due to the lack of liquidity, the Norwegian government took over the shares of the three

largest commercial banks in Norway to regain trust in the system and to help the banks recapitalize.

In 2008, the Norwegian banking industry was again faced with a financial crisis due to the bankruptcy of the Lehman Brothers in US. There was extensive distrust among banks and other financial institutions, who did not know if the counterparties had enough capital to cover any losses, or if they were strong enough to face losses (Gram, 2017). Below we have illustrated a story line highlighting how previous financial regulations and crisis in the financial industry have evolved over time, with a focus on Norway.

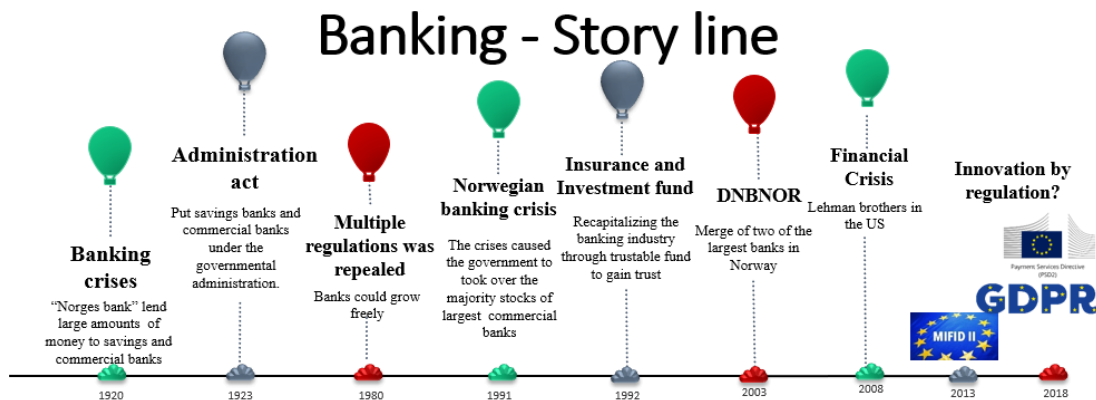


Figure 9: Banking - Story line

After the financial crisis in 2008, there was an emerging trend of starting non-banking companies providing financial services, which were making more efficient services in the financial industry. In the next section we will get a deeper understanding of these non-banking companies referred to as Financial Technology (FinTech) services.

### Evolution of FinTech

Historically, most firms have traditionally organized much of their R&D efforts internally (Mowery, 1983). This has also been true for banks. However, as technological innovation in the banking sectors has accelerated, organizing both innovation and operational

activities internally has become more expensive and less effective than using third parties (McKinsey 2016). In theoretical terms, the specificity of digital assets has gone down, lowering the transaction costs forcing banks to use the market for some of their organization, which is posing a threat to the traditional banking hierarchy.

This increasingly global phenomenon of opening up bank value creation gave rise to a financial technology industry. Financial Technology, the marriage between information technology and financial services, started long before the term FinTech was coined. The term was first used during the Financial Services Technology Consortium in 1990, a project initiated by Citibank for technological cooperation (Arner, Barberis, & Buckley, 2015). As Mowery (1983) mentions, R&D has successfully developed within the large hierarchies. Banks have traditionally built their information systems internally, and then incrementally improved them with new innovations from financial technology gradually. However, because of the GFC in 2008 something new emerged. Many non-banking companies started providing financial services. Since 2014, Google Trends exposes an exponential growth in the number of searches for FinTech, showing the importance of this relatively new phenomenon (Google-Trends, 2018).

The first traces of financial technology came with globalization of technology. The transatlantic cable laid the foundation for international communication in 1866. In 1967 the ATM was introduced by Barclays. As Paul Volker (chairman of the US Federal Reserve) put it after the GFC in 2008:

*“The most important innovation that I have seen in the past 20 years is the automatic teller machine, that really helps people and prevents numerous visits to the bank, it is a real convenience.”* Paul Walker

In other areas of the world, revolutionary financial technology innovations have occurred targeted at serving the poor. In rural countries such as India, Bangladesh, and in Africa, around 1990, telecom industry merged with financial technology and leaped over traditional financial evolutionary steps, by developing cellular solutions to provide storage of money, provide payments, and microfinancing. M-Pesa being a good example of this (Hughes & Lonie, 2007). Financial technology services really took off when the



world wide web was introduced, where banks opened up for e-commerce to retail customers. With increased technological involvement new risks developed for the banks. Risks that previously had not been an issue. Maintaining liquidity being one example. Online bank customers could now withdraw funds instantly, putting stress on the banks. Within investment banking and market making, a significant innovation was the Bloomberg terminal, developed by Michael Bloomberg. The Bloomberg terminal is still today the main supplier of market information on Wall Street and around the world. Over the years the financial industry has been a large purchaser of information technology and consultancy from IT companies, mostly aimed at improving the banks existing systems. Banks, spending on IT is expected to grow further over the coming years. In 2014, \$197 billion was spent on IT in financial services globally (Arner et al., 2015). The regulators saw several challenges emerging because of increased use of technology. However, financial technology until GFC has been about bringing technology into the banking sector.

The FinTech that we focus our attention on is the FinTech that happened after the GFC, where several non-banks started to provide financial services (Arner et al., 2015). We categorize them into two main categories, capital market infrastructure providers (CMIP) (McKinsey, 2018), and FinTech providing consumer services.

## The capital market infrastructure providers



After the GFC regulations increased with implementation of for example Dodd Frank Act (2010) and MIFID II (2008). Non-bank FinTech organizations outside of the typical banking hierarchy started to emerge. These organizations focus on technological solutions targeted at helping banks solve technical problems aimed at being compliant with regulatory requirements. Why would banks use external firms to develop technology? As Benkler (2002) puts it, using the market becomes more effective than organizing internally, after accounting for the organizational and transaction costs. Hence, it is cheaper to buy than develop internally.

Figure 10: CMIP – Dodd Frank Act (2010), MIFID II (2008), (Benkler, 2002)

## FinTechs providing Consumer Service



The GFC certainly lead to a significant loss in customer trust in the banking sector. With the reduction of trust in banks, customers have started to change their mental perceptions about who can provide banking services (Arner et al., 2015). As Bill Gates put it already in 1990: “Banking services are necessary, banks are not”. FinTechs that focus on taking the customer from the bank can do this in a variety of ways, utilizing various technologies. *We define a consumer service FinTech as anything that can be done, with or without a banking license, to serve the end customer with financial services.* Examples are RoboAdvisors, CrowdFunding & CrowdLending platforms, Social savings platforms, as well as payment providers and other types of consumer banking services, organized by non-banks.

Figure 11: FinTech Consumer Service - (Arner et al., 2015)

### *FinTechs in Norway*

In Norway the FinTech industry has started to bloom in the last years. Norway is a country that is particularly well suited to create value by developing a FinTech community. The Norwegian finance sector have long experience with developing digital solutions, and the closed network of financial institutions are among the best in the world at certain areas such as security and identification, with for example Bank ID as an example. Norway also has the third most efficient payment system in Europe, behind Finland and the Netherlands (Economics, 2017). As mentioned previously, there are over 80 large and small FinTech players in Norway. However the exact number is uncertain. The industry is also growing for facilitators, those that provide services for startups. There are several accelerator and incubator programs available in Norway that FinTech companies can attend (FinTechMundi; StartUpLab; TheFactory).

### **Innovation by Regulation – Payment Service Directives I & II**

For the banks it becomes difficult to produce the services that the customers can expect at the rate at which technology is evolving. The result is that even more technological innovation happens outside the banks own hierarchy. This is not different from what Powell (1996) found by studying biotechnology, where it was clear that collaborating in various forms would leave the organization better off compared to doing R&D only internally. However, the banks still have a very dominant position for the customers. In fact, the customers do not in reality have many options besides using the banks existing solutions, when using basic financial services today. This is largely due to previous regulation favoring the banks, giving the banks a unique and central position.

Contrary to when the regulatory space was tightened in 2008, because of the GFC, the regulators chose to open up by implementing the Payment Services Directive (PSD). The directives are administered by the European Commission to regulate payment services

*PSD1 and PSD2 seek to create “innovation by regulation” within payments.*

and payment providers throughout the European union (EU) and the EAA. The directive’s purpose is to increase pan-

European competition and participation in the payments industry, also from non-banks and to provide for a level playing field by harmonizing consumer protection and the rights and obligations for payment providers and users (Commission, 2005). PSD1 in 2007 and PSD2 2015 seek to create “innovation by regulation”. The directives has received significant interests from both incumbent banks, FinTechs, and consultancies due to its large impacts on the banks dominant position (Jörg Sandrock, 2016).

To implement a regulation like this is complicated, and it takes time and efforts both from the regulators and the industry. The regulatory technical standards (RTS) is the standards that the banks and FinTechs will have to follow. The RTS primary objective is to ensure

*Regulatory Technical Standard (RTS) is the standards that the banks and the FinTech have to follow when implementing a regulation.*

consumer protection and to enhance competition. These RTS are developed based on the draft submitted by the European Banking Authority (EBA) (Commission, 2017). Those who have the responsibility to

develop and implement the RTS in Norway is Finanstilsynet (The Financials Supervisor Authority of Norway) in collaboration with Justisdepartementet (Justice Department) and Norges Bank (Norway’s Central Bank ) (Regjeringen, 2017). As of today, it is expected that the implementation of PSD2 and functioning RTS requirements in Norway will be operational in late September 2019.

According to the directive, banks are required to open their payment infrastructure and user data to third party actors. The idea behind this directive is to ensure an easier, faster and more secure solution for consumers to pay for products and services. Today, payment solutions in EU generally are expensive and the transactions are time consuming. To ensure that the customer get a seamless experience this directive encourages innovation. The competition is no longer only about the transactions behind the scene, but rather the seamless customer experience when doing payments. Payment solutions shall be easier in every payment situation, nationally and internationally, and at a reasonable price. In addition to doing payments, banks and FinTechs can aggregate account information

across institutions making smart and innovative banking solutions, challenging today's online banks.

The two new types of service providers are named; payment initiation service providers (PISP) and account information service providers (AISP). The PISP is able to initiate online payments to e-merchants or another beneficiary directly from the bank account via an online portal. Currently there are not many of these services. Debit cards and SEPA payments are normally used. For the AISP third party account aggregation will be enabled to extract information, transaction history and balances, enabling new services to utilize this data in new ways. Below is a model explaining the two types visually.

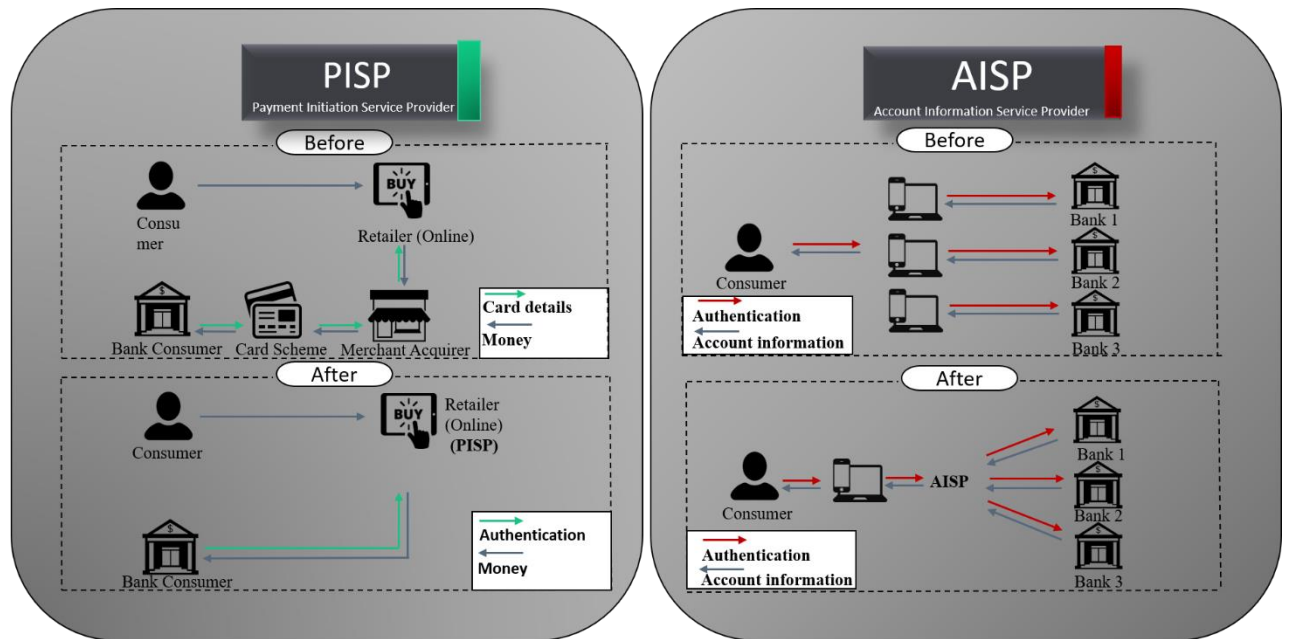


Figure 12: PISP and AISP (Evry Digital, 2017)

These two new types of players (PISP and AISP) have the potential to create value for consumers by changing the financial landscape offering better services, that is likely to emerge from the PSD2 implementation. Currently, without a PISP service a retailer would be provided with payment card details and then request and receive the payments through its bank, a card scheme and the customer's bank account. With PISP services, payments are being initiated directly on behalf of the user. This solution involves fewer parties. It will be created a software "bridge" between the customer's and the retailer's

accounts where the necessary information to make the transaction is exchanged. Peer to peer payment where one pull directly from the bank account, and bill payments are among the types of PISP services we see already. In Sweden for example, "Trustly" is established as an PISP, and its goal is to remove costly middlemen such as debit card and credit cards, which charge fees and interest. Trustly aim to initiate payments and pull straight from the bank account to the merchant. The merchant typically them makes Trustly an alternative on their webpage (Accenture, 2015).

Second, AISP services can access account information from several banks. This type of service is clearly beneficial for customers to get an overview of its economic situation. With AISP services, systems and processes are integrated into one software solution which will increase convenience, integration and efficiency for all types of customers (Nordea, 2016).

In practice to create solutions such as PISP and AISP, application programming interfaces (API) are used to create a set of subroutine definitions, protocols and tools for communication between various software components (Wikipedia). The banks and the FinTechs will be linked together through APIs, which either could be private or open, see table below.

**A private API** is an interface that opens an organizations backend data and application functionality for use by developers working within that organization. Here the API publishers have full control of how the application is developed.

**An open API** in contrast, is publicly available for third party developers to access. This can help to increase revenue for the business, but it lowers the control and can pose a threat to customer data security.

*Figure 13 (API-Academy)*

The PSD2 directive is different than previous directives in that instead of upgrading on existing systems it encourages to create new innovations outside the existing hierarchy. This clearly poses a threat to the existing closed banking network, in that banks risk losing the interface with customer. By regulation FinTechs can access the banks customers information, with the consent of customers. The FinTech can then have its own organization built from scratch, without dealing with the bank legacy systems. This opens up for organizing new and innovative ways of creating value, as well as a new way of collaborating through an open API economy.

Banks have the opportunity to be only compliant players or act more proactively towards the new regulation. Most large banks we spoke to have chosen the strategic position to use a proactive approach where they seek to learn from FinTech companies to manage the right way to handle collaboration with them.

There are FinTech companies which seek to improve the customer experience by providing more user-friendly solutions. Some of the FinTech we interviewed wish to position themselves as the central application in their field of expertise. The FinTech companies often specialize in one or few smaller niche areas, for example, being personal finance managers (AISP), or providing payment solutions (PISP), but also other areas such as RoboAdvisors and crowdlending. From the events we attended we saw actors working hard toward being a common API platform provider between multiple banks and the FinTech consumer services. These actors are looking to earn the revenue based on the API calls between end customers, the FinTechs and the banks internal systems. The main purpose of all the FinTech companies we spoke with is to provide better solutions than the banks currently offer and enter a previously more regulated market.

### **Banks Organizing Innovation through Hackathons or Sandbox**

To facilitate for collaboration with FinTechs the banks have initiated two main activities to encourage for open innovation, they are called Hackathons and Sandboxes. Hackathons and Sandboxes are steps toward more open architectures which seeks collaboration. Traditionally banks have outsourced some of its processes and services to suppliers which

deliver solutions or provide services. An example would be that a bank outsourcing a call center or placing routine and operational processing to low countries such as India, Poland for example.

However, the public (crowd) contributions are more than just delivering an existing solution cheaper. Crowdsourcing is delivering something new and unique, adding value to the organization. Hackathons are coding events where coders meet to develop new codes/solutions and sandboxes are digital testing arenas. These two types of crowdsourcing are activities that the banks in Norway have started to organize to prepare for collaboration in more open architectures. We will now give practical examples of how a hackathon and a sandbox works.

### Hackathon – A Marathon of Innovation

As innovation continues to emerge, efforts enabling innovation to happen emerge as well. The phenomenon of hackathons arises from the unplanned pizza parties of programmers to professional organized corporate events which gathers programmers and others to collaborate intensively over a short period of time in focusing on issues of significance to the participants of the hackathon. Briscoe (2014) defines hackathons as “*an event in which computer programmers and others involved in software development collaborate intensively over a short period of time on software projects*”.

Hackathon often starts with a presentation of the event and the specific subject that is relevant. The hackathon functions as a competition with teams that work together. The programs are very intense and typically extends through a weekend. The participants often end up sleeping there overnight in sleeping bags, eating pizza or staying awake with energy drinks. At the end of such events, programmers normally present their results for the other participants, the organizers or sponsors of the hackathon. Creating a functioning prototype in a short amount of time is frequently the key outcome of a hackathon. The winner of the hackathon is selected by the organizing committee, and there could be monetary rewards involved. In Norway various entities in the financial services industry have organized these types of initiatives.



Banks can make the hackathons exclusive to ensure the quality of the participants. Alternatively, they can keep the hackathons more open, to broaden the possibility to find the new innovations quickly by picking from a larger pool of innovations. The banks can use the hackathons as a collaboration strategy with third parties. Arranging hackathon events with dummy variables or real data have been popular in the banking environment as a result of PSD2 (DNB, 2018; Sbanken, 2018; Sparebank1, 2016).

Other large technology companies also have traditions for organizing hackathons for example, Yahoo, Google, and Lonely Planet have started hosting hackathon events. In 2011 Foursquare had a hackathon that attracted over 500 developers from around the world (Foursquare, 2011). The fundamental idea of the hackathon is to develop something new and unexpected and drive innovation quickly. Governments have also seen the benefit of these open programming efforts, where bringing knowledge capital together for a greater purpose seems to be a way of motivating developers. One example of such an effort is the British government which in 2014 invited to “DementiaHack,” the world’s first hackathon dedicated to improving the lives of people with dementia (Preece, 2014). Both the Canadian government and Facebook have started sponsoring this event as of 2015.

### Sandboxes: The Testing Ground for Open API Collaboration

A sandbox can be defined as a fully functioning environment which a system may be built around, tested and/or run (Ambler, 2005). Sandboxes are digital solutions which seek to improve efficiency and expand customer reach in solving complex and challenging business problems. Sandboxes are also testing grounds and can be used by coders, often also referred to the more technical term working directory, test server, or development server. Banks can develop sandboxes to open up for collaboration with FinTech companies.

The banks sandboxes are closed testing environments where developers outside of the organization can use and develop new codes. Typical access point for a sandbox would

be through websites, portals, intranets, mobile apps and customer software. Access to sandboxes can also be given at Hackathon events, but also by signing up and getting access independently, from home or at work. For example, Nordea have created a sandbox, with detailed user documentation where coders can access the API's of the banks to test their ideas or applications in a safe environment. They refer to this as Open Banking initiatives, where selected FinTech can access the sandbox, with permissions (Nordea).

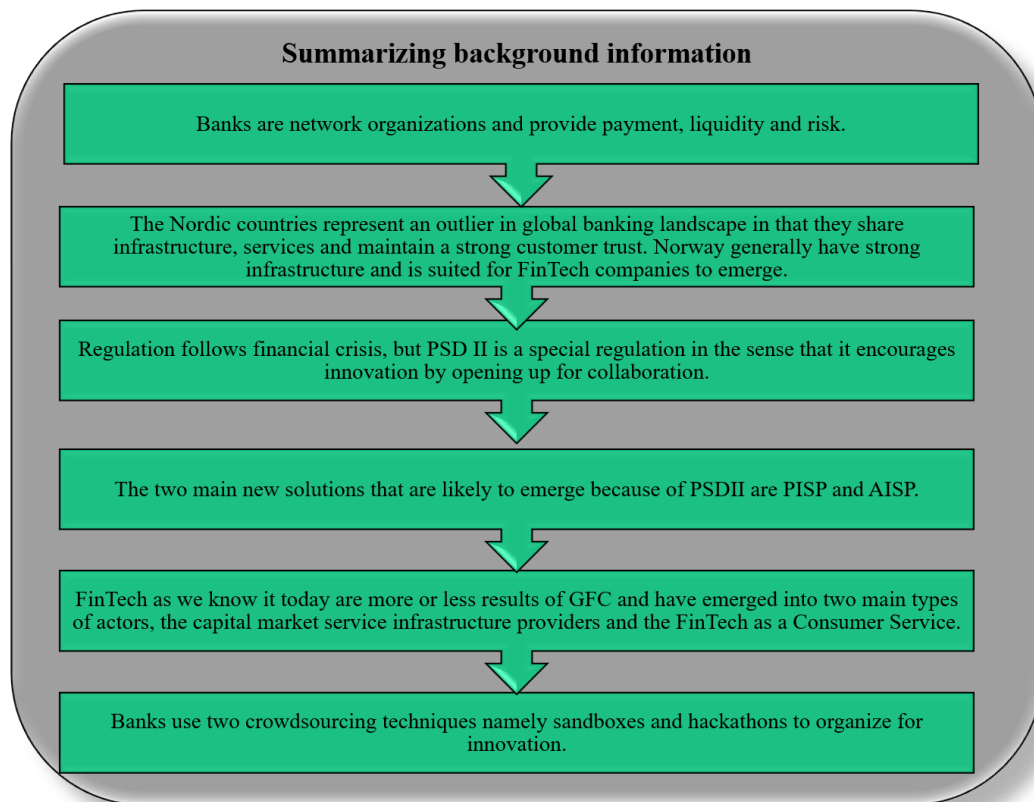


Figure 14: Summarizing background information

## FINDINGS

In our review of the interviews and events that we attended three themes emerged that we summarize in figure 15. The first theme is value creation, the second theme is organizing for innovation, and the third theme involves incentives for collaboration between banks and FinTechs. We have structured our findings in a main dimension, with the three main sections mentioned above. The first order categories are ensuring that we take different perspectives when needed. The second order category describes the most interesting topics from each section. In addition to the interviews we attended seven relevant events and the findings from these are distributed throughout the three main sections as well as an additional section at the end.

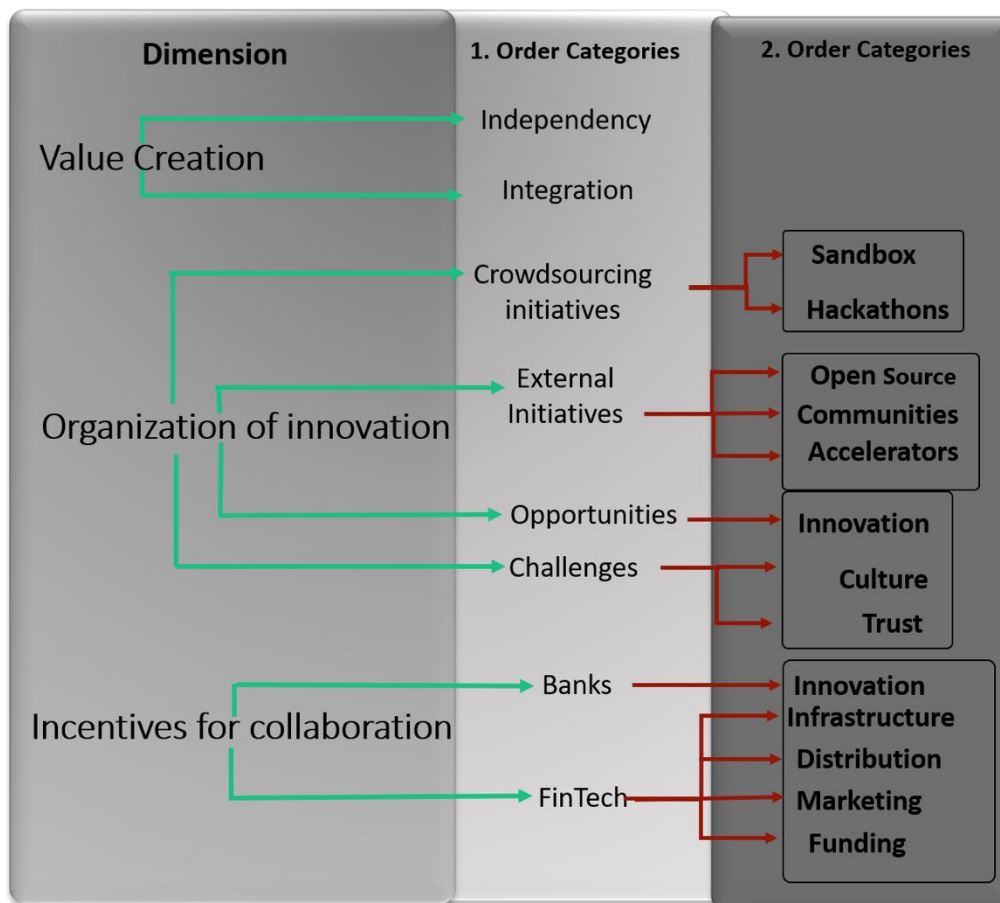


Figure 15: Structuring findings

## Value Creation

In the first section of our findings we asked our interview objects what they believe will create value in the future. Of course, this is the tough question everyone is wondering about but asking directly about what organizational designs that will emerge between banks and FinTech, yielded some interesting discussions with our informants. While this is not a conclusion on “who will win”, it is about managing challenging collaboration, and what considerations to make to create value in collaborative environments. There are many ways to successful collaboration between banks and FinTechs. However, as we reviewed the interviews it became clear to us that managing the tradeoff between integration and independency is challenging.

### *Managing the Tradeoff Between Integration and Independency*

As Beta Bank manager pointed out to us. “*When a FinTech is choosing to collaborate with a bank, then that Fintech has to manage the physical integration it is to collaborate with a large incumbent bank.*” However, being physically integrated into the bank is important when a FinTech is collaborating with a bank. It was consistent with other interviews that the deeper integrated the FinTech becomes, the more distribution power the FinTech can release from the bank, by getting access to the large network of the banks customers, but this benefit comes with a tradeoff. The more integrated, the less agile the FinTech becomes and this can affect the ability to stay innovative and create value.

Managing the distribution power of the bank is essential for a FinTech collaborating with a bank and determines how much value that can be extracted from the network of the bank. Making a change to the product on a quick note becomes much harder when the FinTech integrate deep into the bank. Also, as Beta Bank manager also pointed out, “*the real power of the bank is the people and salesforce of the bank.*” The trust and experience the salesforce bring with them in customer meetings is of significant value. The Fintech that collaborate with banks has to manage communication with the bank employees, so the bank employees are up to date and understand the value of the Fintech product, especially if changes happens to the product.

From the FinTech perspective having the ability to stay independent is of importance to the FinTechs. As FinTech Alpha pointed out to us. *“We want to stay independent, and ideally not create exclusive agreements with banks”*. It became clear to us that the FinTechs wanted to have the ability make quick changes, to its product and services, and therefore saw it more beneficial to stay independent than being part of the network.

- Summary: when integrating deeply into the bank, actively managing the relationship with bank employees is crucial to extract maximum value from the network. However, some FinTech focus on staying independent, because they want to have the ability to make quick changes, and do not see the value of the banking network as that important.

### *Value Creation Considerations.*

#### **Size**

During our interviews we understood that the value creation derived from collaboration between banks and FinTechs is also determined by the size of the FinTechs. The size of the FinTech matters when choosing a strategy for collaboration. As the manager at Gamma Bank pointed out to us, *“The larger the FinTech, the more likely a partnership will occur. The smaller the FinTech, the more likely it would be integrated into the already existing banking structure and rebranded as part of the bank. An alternative for the mid-sized organization could be to white label the FinTech solution on the banks existing platform.”*

#### **Business Models**

A banking manager we spoke to at Eta Bank see three models for the FinTechs to derive value and organize themselves towards collaboration with a bank. The first model would be to use the distribution power of the banks and harvesting the existing customer base of the banks. Harvesting existing customer base means utilizing the PSD2 regulation, taking advantage of the open APIs. In a second model, some actors will seek to combine banking services with other industries, creating new customer demands which are yet to

be discovered. The bank manager at Eta Bank gave the example of NSB and Nabobil where you create seamless customer journey from door to door. A third model will be that some actors generate better services than the banks, and then either challenge the existing solution or starting to collaborate with the banks in providing the new services with the banks.

### **Scalability**

Reviewing the interviews, it also became clear that scalability was central for value creation. For example, as the manager at Gamma bank explained; *“Scalability is a very important factor and will be crucial to extract the value from the large customer base.”* When a small actor like a FinTech emerges from nothing there need to be a focus on the scalability of that service to be attractive as a collaboration partner for the bank. Scale will be part of determining the value creation of collaborating with the banks. This is consistent with other interviews of bank managers which also pointed out that, when bank managers review FinTechs they look at the scalability of the service to determine if this is a good fit for the bank organization. However, with technological innovations, follows automation which means scalability. We see that successful FinTechs in the past have to a large degree been CMIP, that can scale production of back office services for the banks due to automation deriving from technological innovations. For the new FinTechs emerging in consumer services, these FinTech clearly need to be fit to handle the large volumes to serve the network and create value at large scale. Especially since the customer services that comes out of PSD2 entails the two new roles of payment initiation service providers and account information service providers.

### **API Integration**

Those actors who manage to be the most integrated is thought to gain the most customers. Having an organizational structure with few dominant interfaces where different and other services are technically integrated through API connections, was expressed several times by our interview objects. As one CEO at Alpha FinTech explained. *“When I look at what to use of software for my small business I look at what has the most integrations. Slack is one example of a relatively new company that has a wide range of integrations,*

*making it a very attractive platform to use for collaboration.*” Not having to ever leave the “app” is something that is very sought for, just look at the success of WeChat in China.

To summarize, we found four main considerations to take, to successfully create value from collaboration.

- Firstly, considering the size of the FinTech will determine the type of collaboration with the bank. The larger the FinTech the more likely a partnership, the smaller the FinTech the more likely the FinTech will integrate with the banks.
- Second, is that FinTechs need to understand the different organizational designs, when choosing a business model strategy. One model would be to harvest the customers data on PSD2 compliant API's, a second model would be to combine with other industries, and a third model would be to create better payment, liquidity and risk services than the banks themselves.
- Third, when a bank considers whether to collaborate, they look for FinTechs with ability to scale and utilize the banking network.
- Finally, being good at API integration seems to be key to create value whether you collaborate or not.

### **Regulatory Technical Standards that Delay Value Creation**

For the banks and the FinTech we spoke to it became clear to us that the only way to create value right now is to get started with collaboration. However, it is a bit of a regulatory vacuum out there. The delay in the RTS is currently a bottleneck for the FinTech industry, which implies that those FinTech companies that are ready to launch, only await the RTS to be implemented. Getting the RTS ready is not crucial only for the individual FinTech and bank, but also for the nation as a whole to stay competitive.

### **Organizing for Innovation**

As we reviewed the interviews this section, organizing for innovation emerged, because it encompasses ways to collaborate for banks and FinTechs. Various initiatives have been launched aimed at increasing the ability to collaborate between banks and FinTechs. Firstly, we look at different crowdsourcing initiatives created primarily by the banks,

namely sandboxes and hackathons. Secondly, we look at different external initiatives started by other entities. We have called the external initiatives open source, communities and accelerators.

### Crowdsourcing Initiatives

From our analysis of the interviews, banks we spoke to seek collaboration outside their traditional hierarchy. For example, Beta Bank manager expressed that, “*banks crowdsource for innovative ideas, and development using a variety of techniques*”. Crowdsourcing for ideas, does as mentioned previously move the locus of control out of the banking hierarchy and towards the “crowd”.

By crowdsourcing “*something*” a bank can create a faster go-to-market strategy and get a prototype available for testing quickly. Banks can learn about their products and customers quicker from crowdsourcing, by trying something and then if it does not work, try again. However, as Iota the manager of an accelerator explained. “*To crowd something 100%, such as a FinTech company is very difficult and I have yet to see this happen in practice*”. To create incentives to produce something, there needs to be some reward for completing a task. In the next section there is evidence of two crowdsourcing techniques the banks have started to pursue, sandboxes and hackathons.

### *Sandboxes – Banks are Learning*

#### **A New Customer Segments**

According to one of the managers at Epsilon Bank, collaborations between banks and FinTechs through APIs is new for the banks, and “*they are now in a learning phase*”. To learn more without taking risks, which are associated with collaboration, the banks have opened their programming application interfaces (API’s) to third parties in “playgrounds”, namely sandboxes. During our interviews, we have tried to understand more about how sandboxes work, on a strategic level.

The sandbox environment is a closed area where a FinTech can “play”, often with what is referred to as dummy data, sometimes static and sometimes dynamic. This sandbox is used by FinTech’s that want to see how they can pull customer data from the internal



systems of the banks and create complementary services to the existing solutions provided by the banks.

As pointed out by the manager at Epsilon Bank; *“banks are getting a new customer segment. This customer segment is not the end customer, but it is the developer community.”* Since the banks by regulation must provide APIs they also have incentives to make APIs user-friendly. Constructing the most user-friendly APIs which attracts developers into the sandbox is very important. Since it is still very early for both banks and FinTechs, both parties can use the sandboxes to test their third-party solutions on the banks APIs. While the sandboxes are great initiatives to learn for both banks and FinTechs, there are also some complaints and challenges from the FinTechs related to the sandbox environment. From the interviews it became clear to us that some of the FinTechs are not satisfied with the test data available. As two of the founders of FinTech Theta put it: *“There is not enough data, and the data available are not good enough yet”*. However, it is in the early stage of development and the API quality is constantly improving through learning. Learning happened through the feedback mechanisms provided by the community. Both internal bank developers and external FinTechs are contributing to creating a sandbox environment that is constantly improving.

### *Hackathons – Three Key Takeaways*

#### **Quick Innovation in Collaboration with Others**

Hackathons organized by banks bring developers from banks and FinTechs together to build something within a short period of time. Bringing likeminded people together that can create something innovative quickly is an incentive for the banks to organize hackathons. Hackathons are as pointed out earlier, weekend marathons. As one of the FinTech developers that we spoke to from FinTech Zeta put it. *“Code quality is not so import when organizing a hackathon. - just produce something really cool, really quickly in collaboration with others is what matters.”* FinTech Zeta also, pointed out, *“developers that meet at hackathons are incentivized by meeting other developers”*. However, hackathon does not only have to be just for developers, in fact some of the hackathons we have seen can be both for *“developers, finance and strategy professionals as well as students to contribute with their ideas and skillsets”*, according to Accelerator Delta.

As some of the FinTech interviews pointed out to us, developers are not always driven by monetary reward when attending a hackathon. Getting a feeling of belonging to a community might be as important as a monetary reward. Another motivation for attending a hackathon might also be to show their intellectual capacity. From the bank Eta that we spoke to “*attending and producing something good at a hackathon can also lead to work opportunities in the bank*”.

### **Crowdsourcing on the Idea Level and on the Development Level**

However, there is a challenge with organizing hackathon for the banks. As pointed out by the manager we spoke to at Beta Bank it is important to; “*distinguish between crowdsourcing for ideas and crowdsourcing for development.*” While both initiatives can yield excellent results for the banks and FinTechs, they can also produce unfair outcomes.

The crowdsourcing on idea level is the hardest to organize according to Beta Bank. The idea needs to include a robust business model, and if the bank is left with a genius business model, while the FinTech merely got to attend a hackathon, then it is unfair. The banks have a responsibility to create a fair reward mechanism for attendees at hackathons. An example that might illustrate the issue of reward imbalance became clear to us from FinTech Theta which explained that during a hackathon “*A FinTech might get a pizza, and a bank harvest a great business idea.*” It is clearly a need to understand the underlying organizational mechanisms, such as revenue sharing, to facilitate for actual sharing of ideas. This was consistent with other interviews of FinTech companies that also expressed that they will be careful with fully opening for the banks with the current reward system. However, crowdsourcing development, was expressed to some extent to be more tangible and therefore easier to manager. As bank beta expressed “*it is possible to track the work that has been done, and reward based on quality and amount of work.*”

### **Are developers really the new “Rock stars”?**

When developers become the “*rock stars*” being able to implement the strategy, the business model is still the most critical aspect, because without the plan, no implementation. The accelerators Delta that we spoke to expressed it this way; “*The developers wait for scripts and instructions to build something, so the business model needs to be in place first. The idea level is, therefore, the hardest to source from the crowd and at the same time getting it fair.*”

To summarize the banking initiatives related to organizing for innovation through crowdsourcing, we have divided them into four key takeaways.

- Firstly, banks get a new customer segment, namely the developers when organizing for innovation. Developing good API’s seems to be key to attract the best outside software developers to the bank.
- Second, hackathons are about developing a functioning prototype quickly and collaborating with likeminded developers. Hackers are not always incentives by the monetary reward, being part of the groups of likeminded seems key.
- Third, there is a challenge related to getting the reward mechanism fair when organizing hackathons. When sourcing for ideas, banks do not know how to extract in a fair way the ideas generated.
- Fourth, before the “rock star” developers can to their magic the business model needs to be in place. Strategy needs to be created before the developers can do the implementation.

### **External Initiatives for Collaboration**

Now we will move to the external part of the findings section which emerged during our review. Here, we look at the initiatives that facilities for collaboration between banks and FinTechs created by independent organizations such as open source, communities and accelerators.

*Early stage FinTech can build the back-end with free Open Source***Focus on Value Creation**

From the interviews we found examples of early stage FinTechs collaborating with open source communities to get started, before starting to collaborate with banks. Our findings show examples of open sourcing initiatives where coders produce what is referred to as “Lego blocks”, consisting of generic, reusable, codes which multiple companies can use if the companies become part of the open source community. We learned from the accelerator Delta, that some FinTechs in the early phases use “*free open source codes to get started.*” Paying only a fraction of the back-end developer costs FinTechs can use open source code to develop their back-end systems. If a company do not want the code to a be shared with other, then the FinTechs must pay more for the “secret sauce” to stay secret. We have also seen more established FinTechs that pay external developers to modify open source code by forking and storing the code in closed communities such as GitHub.

There are several advantages of using open source code for development of back-end systems, especially for early stage FinTechs. Rather than spending time and resources on back-end development FinTechs can spend their time on creating value for customers and organizing for innovation. We have used facilitator Lambda as an example below to explain, see figure 16.

## Unlocking the keyhole



An illustration of the importance of using open sourced code for back-end development was made, using the metaphor of opening a “locked door”. The key to unlock the door can be seen as the FinTech solution to the customer problem. How the door is opening itself illustrates the front-end system, which is the part the customer sees. Everything around the lock illustrates the back-end system because it is only the necessary material which characterizes it to be a door. E.g., door handle, painting, door frames, etc. The door itself is a metaphor for having the required backend systems in place to redirect focus to the main issue, which is to open the door using a unique key. The unique key represents the FinTech solution which opens the door to the customer. However, the Fintech is not allowed to look inside the lock to understand the key mechanisms, so the only way to make the key fit is through trial and error. Multiple trial and error! Figuring out how the key should be shaped and then how to open the door is the most challenging part of successfully managing a business and should be the main concern of any business. Today every company face the issue of the environment continually changing; this is represented by the keyhole changing too, i.e. the customer preference. The key to unlocking the customer maybe not just to make a key, but to continuously follow the need to change the key, it might work today, but not tomorrow, because the customer preferences might have changed. This metaphor illustrates the importance, that a company should focus on adapting a unique key to fit into the keyhole, and not worry about all the backend systems which are demanding and time-consuming. In other words, the “key” to success is to focus attention on the value creation and use open source software to supply the back-end.

Lambda also discussed the issue many start-ups have, “the ability to foresee customer needs”. By this we mean that companies often think that they know that they have found the key, and then instead of adapting the key constantly, they run around trying to find a keyhole where the lock might fit. Finding a door with a lock where the key might fit, instead of developing the key to fit the lock, often fails due to overconfidence in own abilities. By utilizing open source it’s easier to quickly develop Minimum Viable Prototypes (MVP), focused on the value creation for the company, quickly adapt to changes in the environment.

*Figure 16: Unlocking the keyhole*

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### **How to Make Money from Open APIs**

The revenue sharing mechanism explained to us by Lambda which facilitate open source code is based on how many API calls and script seconds you do each month; the more API calls the more you must pay. This revenue model is creating business incentives for the developers to build high quality codes which will require frequent API calls. This model is an example of how companies can quickly test their MVP in the market. This gives for example a FinTech with a good business idea, but lacking back-end coding experience, an opportunity to launch prototypes that they can present for potential partners e.g. banks.

### *Digital Communities*

The interviews give several examples of banks which separate out distinct digital entities referred to as communities. These communities bring together relevant banks, FinTechs and resources, where members have common and complimentary interests and goals. The community is a “hub” acting as an independent body that works to facilitate the relationships between banks and FinTechs and other relevant actors. As bank manager Beta Bank pointed out, “*It is essential that the hubs stay independent from the banks, primarily to build trust in the community and to avoid losing the innovative spirit. The overall goal for the communities is to create an ecosystem around the community platform which includes all the relevant actors.*” The platforms could include; work portals, FinTechs company presentations, tools, and events.

According to Beta Bank there are several advantages with digital communities. “*The communities can be great for "grass root" initiatives and can help increase GDP since the overall economy is dependent on many small businesses.*” On one side, online community are great for small companies to access resources and establish themselves. On the other side, for the banks it will be easier to contact the FinTech companies, and the banks can scout out what fits their strategy.

*Accelerators are great for Fintech– Network effects, Funding, Education*  
Accelerators are essential for organizing for innovation and for the financial service ecosystem. We have followed the accelerator Delta for over a year, and four main findings have become clear to us. Network effects, funding, business education and the importance of a complete team.

The acceptance into accelerators depends on the level of the FinTech and the goal of the accelerator. Some accelerators act as idea realization centers, where other accelerators want more established teams, ideally with a complete team of both technology and business people. One can think of the accelerator landscape as a place where FinTechs can develop and grow their ideas, but it is central that the FinTechs understand where they are in the ecosystem? Do they have an established team or are they in early stage of idea development? The position can determine the acceptance into the accelerator program. Below we will elaborate on four main findings the Accelerators contribute with in the financial ecosystem.

### **Network Effects – Industry Experts Visit and Give Advice**

Access to a proper network of consultants, mentors, lawyers and all other types of support is valuable for a FinTech planning to start a business. The accelerator Delta invite consulting companies and banks to take a permanent seat within the accelerators. By being there frequently, banks are able to be more integrated with accelerator programs. With the accelerator programs, FinTech companies get increased attention from the banks. During the pitch nights, at the end of each accelerator event, banks can see multiple potential collaborators and decide which will fit the strategy of the bank.

**Funding – Get the Capital from Angel Investors or Banks**

Accelerators provide access to “angel investors” and other forms of funding. Funding comes at various stages and raising capital can happen in many rounds for FinTech companies. According to the manager we spoke to at accelerator Iota; *“In Norway, we have traditionally looked at entrepreneurship as not being very cool. Five to ten years ago if you started a business, it was because you could not find a job. Today it means something entirely different, and positive. It means you are ambitious and want to try something new.”* The culture is changing, good people out of school go to startups, not always to McKinsey or BCG, and industry professionals in high ranking roles drop out of their corporate functions. Because of this cultural change it is getting easier to get funding for start-ups. However, a complete value chain of funding from early stage to established company is not always available, according to some of our interviews.

**Business Education – Attending Accelerators is like Going to School.**

Both the FinTech Alfa and the FinTech Kappa which have taken part in accelerator programs, have compared attending the program to going to school. Having a set schedule and program through the period is aimed to accelerate business growth. Kappa FinTech communicated. *“The period is very hectic and challenging, but extremely rewarding.”*

**Importance of Complete Team**

Often the FinTechs we spoke have a great business idea in place, but they lack the coding experience to put the initiative into action. As business people and technology people complement each other, the accelerator Iota suggested that the most important thing is the team, not to have a great idea. *“You have to have a complete team, of both business people and coders. The reason why a complete team is so important is that most likely the idea will change, but the team will stay the same.”*

To summarize the external initiatives that organize for innovation we will point out three key main takeaways.



- Firstly, that FinTechs instead of developing back-end codes internally, can use open back-end codes to get started. They can then focus at how they can create value for customers, rather than doing the day to day operational routine work.
- Second, that digital communities need stay independent from the banks to function properly and maintain trust in the community. When we encountered these digital platforms that provide jobs, resources etc., they lose their attractiveness when they are too closely connected with one bank.
- Third that FinTech accelerators are central for the financial ecosystem, because they provide access to a network, funding, business education and the understanding of the importance of having a complete team. The accelerator community in Norway has grown into an industry itself, helping Fintech's get started. In general when talking to attendants at accelerators they were very satisfied with the programs.

### Banking Culture and FinTechs Trust

#### **Culture**

Culture is clearly a problem for the banks when organizing for innovation, and this issue becomes even more visible when collaboration with the FinTech comes into effect. As mentioned by CEO of FinTech Alpha, organizational culture is a problem for the banks. *“Banks are risk averse, and bank employees are afraid of making mistakes that can threaten their position in the hierarchy.”* The organizational culture in a FinTech organization is different. FinTechs often think big, start small, fail fast, but then get back up again. FinTechs have a different attitude toward making mistakes which is a challenge for the banks to adapt to. Although the banks are afraid of making mistakes, they are increasingly afraid of missing out on innovation at the same time. Thus, the dilemma is how much collaboration to engage in, and decide where to place the locus of control.

During our interviews, we found that there are “language barrier” between developers and business people. As FinTech Theta stated: *“developers want to talk to other developers, because they speak coding language and there is no knowledge gap.”*

Business people have capabilities that coders do not associate with. FinTech developers do not feel that the business people in the bank fully understand the needs and issues that the developers are facing. FinTech Theta encouraged banks to create a stronger developer community internally, where developers from the banks can talk to FinTech developers and thereby overcome these communication problems.

### **Trust**

Regarding trust, some of the interview objects raised two fundamental issues, sharing of ideas, and evaluation about who to trust. FinTech companies such as Theta had trust issues towards sharing their ideas with the banks. This issue varied depending on the FinTech we asked, but it was particularly an issue for those who had attended hackathons or other types of sourcing events. As Theta pointed out “*We are hesitant of sharing ideas with big banks because banks might steal our idea or code, and that is not cool*”. To our understanding banks need to establish trust with the FinTechs which is attending hackathons and other sourcing events. Banks have traditionally worked towards establishing trust with the customers and now we also see that banks need to work at establishing trusted relationships with FinTechs.

Currently the banks in Norway enjoy trust that they have established over many years. FinTech companies must gain trust from the consumers over time in a similar fashion. It was stated by the bank managers at Beta bank that “*if a FinTech were providing a similar solution as a bank, then the customer would choose the banks solution based on the established trust relationship.*” However, trust towards large established banks is changing. We are currently experiencing a generation shift which was pointed out to us by FinTech Kappa. “*the attitudes toward traditionally trusted organizations are becoming less important, and the solution itself matters more than who produced it.*” FinTech Kappa was referring to how the younger generation would have completely different attitudes towards trust, because they are born into the digital society of Apps with simple solutions.

To summarize, culture and trust for the banks and the FinTechs.

- The banks clearly have a culture problem when communicating with the FinTechs, while FinTechs are fine with failing, bank employees are afraid of losing their positioning the hierarchy. Things still move very slow for the banks.
- The trust aspects have two sides. One is that similar to earlier findings, FinTech do not feel fair treatment when sharing their innovative ideas, and second is that still the Norwegian customers are hesitant to use anything else than their bank, for payment, liquidity and risk services. However, there is as our interview objects pointed out a generation shift happening, where new customers are more open for using other industries and platforms for their typical banking services.

## **Incentives for Collaboration between Banks and FinTech**

### From the Banks Perspective

During our interviews and events, banks are seeking innovation to stay competitive. Banks know that they need to collaborate with FinTechs to do so. This was also reflected when we asked banks about incentives for collaboration with FinTechs. As mentioned previously the banking industry have not been innovative compared to other industries. The PSD2 regulation is opening the industry towards competition and new organizational forms to emerge.

### **Innovation**

When asking the banks about their incentives for collaboration they communicated primarily one clear message to us; access to innovation. Compared to the FinTechs that we spoke to which had several different incentives for collaboration. The banks also spoke about marketing as a way to be recognized for being a collaborative actor that is innovative.

### From the Fintech Perspective

We found more incentives for FinTech companies to collaborate with banks than for banks to collaborate with FinTechs. From the FinTech perspective the most mentioned incentives revolved around funding, marketing, distribution, infrastructure, compliance, and security.

#### **Infrastructure**

We use infrastructure as an overarching term to cover all aspect of operating a bank. Banks are experienced in handling large amounts of customer data, they know payments, liquidity and risk management. The FinTech want access to this knowledge and experience. The core of banking, and infrastructure is what makes a bank a safe place to store money or ask for liquidity for the end customer. Banks enjoy trust from customers because they have a solid infrastructure. When collaborating with a trusted bank, a FinTech can enjoy the network effects from solid infrastructure of a trusted bank. However, not one of the FinTechs that we spoke to wants to become a bank themselves. Instead, they will collaborate with banks when issues arise related to payment, liquidity and risk services.

#### **Distribution**

We define distribution as getting access to the power the banks have to advise products to its customers. FinTechs are new players in a very established financial system and do not have significant customer bases such as the banks. A collaboration with a bank can be essential for a FinTech to get access to the distribution channels of the bank. As Beta bank manager expressed in the value creation section. *“The more the FinTech company integrate with the bank, the less agile they become, but the more distribution power you get.”* This balance is challenging to manage for any FinTech, because too much integration can destroy the ability to iterate quickly and innovate. If a FinTech wants to stay agile, they always have to keep the vast banking organization updated on changes made . It is a challenge to communicate out to all the distribution channels if small changes have been made to the product. However, trusted banking advisors knowing the outcome and including it in customer conversation with already existing customers, are more powerful than organizing distribution alone, as a FinTech. This power comes from

the volume of distribution, as well as the trust the banks have established. Also, customers do not know what they want when it comes to innovative banking services, and the likelihood that a customer will understand the FinTechs value creation, without having a bank supporting it and explaining it, might be hard. The product can be excellent, but in an established industry, it is difficult to enter without distribution power and support from established banks.

### **Marketing**

We define marketing as getting brand recognition with market exposure in public media. Collaboration with a bank is a prerequisite to access marketing. As the CEO of FinTech Alfa put it: *“Being associated with a significant trusted bank will be positive for a FinTech to become known and to build trust and reputation, as well as getting media coverage.”* Marketing can also lead to increased fundraising from other investors. Establishing partnerships can, in fact, benefit both the FinTechs and the banks, because banks also continually seek media attention, primarily related to innovation. The CEO of Alfa FinTech also mentioned that: *“It can be a problem that banks sometimes use FinTech companies as marketing initiatives, to be associated with being innovative, without actually meaning it - this can hurt the FinTech.”* Marketing with the bank goes hand in hand with the integration dilemma, related to distribution above. The FinTechs we spoke with had different opinions about how tightly to integrate with a bank, especially around marketing their brand. Some FinTechs are very passionate about their brand and do not want to for example, white label their solution on the banks platform, while others are indifferent as long as the end-customer gets a better product. As the CEO of FinTech Kappa, a consumer centered FinTech said. *“As long as the customer gets something better than what the current market can offer, I don’t care if we white label to a bank or if we brand our self”*. When asking more about marketing in a different interview, a manager at Iota, an accelerator we interviewed, clearly stated that *“FinTechs cannot compete with banks on marketing, because FinTechs do not possess the same amount of resources as the banks do.”*

## **Funding**

Many of the FinTechs we interviewed mentioned access to funding as a reason for collaboration with a bank. For the FinTech companies, it is critical to survive the early phases and grow to established entities. Raising funds in Norway for the FinTechs we interviewed was expressed by many as a challenge. In Norway, we have long traditions for professional capital being placed in industries we have much knowledge about, such as oil & gas. The private investors in Norway primarily put their money in real estate. According to insight obtained from some of the events we attended, the venture capital and private equity industry in Norway is lacking knowledge to invest in FinTechs, but the situation is improving. Accessing funds in the initial stages is relatively easy for FinTechs, often through “angel investors”. This observation was further confirmed by FinTech Alfa, when stating that *“Getting second round of funding is more difficult, often because FinTechs require larger amount of capital, which is hard to get, however things are getting better.”* The banks have established sizeable corporate venture funds, and there are examples of banks investing heavily in FinTechs recently. Not only financial capital, but smart capital such as knowledge and resources are essential. One of the informants, CEO of Lambda used the fitting analogy. *“Giving a FinTech capital without being sure they pursue the right strategy, would be the same as providing an athlete doping, instead of teaching them how to work out first.”*

All companies need capital, but the FinTechs we spoke to said that funding from banks comes with some challenges. Potentially losing its independence and the innovative spirit that comes with being a small organization, is a challenge. Being a small, agile, organization differs significantly from being an incumbent bank, and the FinTechs interviewed, raised the issue about communication with the right decision makers within in the banks when allocating funds. As the FinTech manager in Alpha said. *“FinTechs need to talk directly with the decision makers in the bank that can match the agility of the FinTech regarding decision making speed.”* For a successful collaboration to happen a requirement for a FinTech is not only getting capital but getting access to it quickly. As Alfa mentioned, *“the funding request was being pushed up and down in the bank organization, before the whole relationship eventually was scrapped.”* While the bank is

trying to figure out how much and in what they can invest, the FinTech dies. The FinTech companies often rely on funding short term to pay employees and make it from month to month, compared to the incumbent banks which have solid liquidity and long-term planning. Being a large, slow, and the sometimes clumsy, bank can in the worst case be detrimental to the FinTech. However, the impression we get from our interview objects and the events we attended, is that the banks are learning that FinTechs needs capital, both smart and quick.

To summarize the incentives for collaboration between banks and FinTechs.

- Banks are incentivized towards collaboration because of the innovation the FinTech can bring to the bank. While this only one incentive it was mentioned by all the banks we spoke to, so this clearly a very strong incentive.
- FinTech on the other hand are incentivized by access to the bank's resources, namely access to infrastructure, distribution power, marketing and access to funding. With access to the infrastructure the banks have, FinTechs do not have to own the same amount of resources. Since the Norwegian customers still trust their banks, they will be more comfortable with the FinTech automatically. The access to the large distribution network of the bank is of course very attractive to the FinTechs. Finally, funding is of interest to the FinTechs, but they mention how difficult it is to get second round funding in Norway. The funding from banks also comes with some baggage, the possibility of losing the independence and agility of the FinTech.

## **Attitudes Towards PSD2 and Strategic Positioning**

The attitude towards the regulation is overall very positive. Not one bank or FinTech that we spoke to viewed PSD2 purely as a threat to their organization. Some of the banks mentioned that if not handled correctly, it could become a threat, but most looked at PSD2 solely as an opportunity. All the FinTechs we spoke with look at PSD2 as an opportunity. The banks communicated that a challenge for the banks is that prices become more transparent in the market across Europe.

The banks expressed that the organization have to do more than just being compliant with the regulation if they want to compete for future positions. For FinTech companies PSD2 is viewed as an advantage. However, both the banks and the FinTech that we spoke with pointed out that also the FinTechs must be regulated because of the regulatory technique standards (RTS), which will be a challenge for them, similarly to the banks.

Because of PSD2 banks must start positioning themselves against FinTech companies. An excellent example of this is what is referred to as *reverse pitching* which happened at the Oslo Innovation Hub, January 2018, where banks pitched their PSD2 initiatives for the community of FinTechs in Norway. Traditionally it has been the other way around, where FinTechs seek capital from investors by pitching their ideas to the banks and investors. From the reverse pitch session, it was clear that banks now seek to collaborate with Fintech companies.



## CONCLUSION

As mentioned in our introduction, our intention is two-folded; one, to shed light on the organizational designs that emerge when large incumbent banks in Norway open for collaboration with relatively small, and early stage, FinTech companies. Second, to contribute to the understanding the application of collaborative architectures. This is in line with our research question: what organizational designs will emerge because of collaboration between banks and FinTech companies.

We find that the organizational designs emerging between banks and FinTech will depend on how well the banks will be at facilitating for open API's integrations with FinTechs. The financial industry is slowly moving in the direction, where the network of actors is opened, allowing FinTechs to crowd around the most attractive operating platforms. These operating platforms might be banks, but they can also come from other industries. We argue that for the open API collaboration to function properly, it would rely on some of the same mechanisms identified by Fjeldstad et al (2012) where independent actors (FinTech) self-organize; use commons (the banks platform) where the actors share resources, and rely on sets of protocols, processes and infrastructure which enable actors to come together. As mentioned in our findings, the problem with the crowdsourcing activities the banks put together today is that there are not always clear incentives for FinTechs to share innovative ideas, hence the banks have a job to do make themselves more attractive as partners for innovative FinTechs. They need to get the reward mechanisms correct, both to increase the incentives and to reduce the complexity of collaborating with independent actors. Even though many of the banks say that FinTech and others need them, one could not argue that operations, marketing and compliance is not replicable, hence the strongest incentive for a FinTech today to work with a bank is the access to the network of customers. That network also exists on other platforms, therefore, banks need to prove that they deserve the keystone position in the ecosystem, instead of other platforms such as Apple or Facebook or someone else that we yet haven't heard about.

## **DISCUSSION**

From the literature review we have explained how organizational design has emerged and we have put emphasis on networks, ecosystems, platforms and various forms of open innovations, such as crowdsourcing and open sourcing. In the findings section we have codified and structured, as well as explained, what our respondents have answered in the interviews and concluded that the banks are moving slowly towards an open network. In this section we will combine what the literature has found about organizational design with our own findings related to the financial services industry in Norway.

The discussion will center around our main research question. *What organizational designs emerges from collaboration between banks and FinTech companies?*

First, we will take a brief look at the general implications of PSD2 we have seen and how it is leveling the playfield for third party actors. Secondly, we will discuss four important perspectives that we think is relevant to bring forward, to explain what organizational forms that will emerge.

### **Leveling the Playfield**

As previously mentioned, the banking industry has developed to be an industry where it is relatively few but large players. PSD2 is representing a major step towards commoditizing the banking sector and leveling the playing field for new market entrants. Perhaps the most important change in the banking sector is that the industry is moving from a closed network of banks towards an open network which includes third parties.

Collaboration will be of importance in the open network of financial services when organizing for innovation. In general, interorganizational collaboration has been shown to reduce risk, speed products to market, decrease the cost of product development, increase process improvement, and provide access to new markets and technologies (Eisenhardt & Schoonhoven, 1996; Fjeldstad et al., 2012; Hagedoorn, 1993; Kogut, 1988; Wheelwright & Clark, 1992). Still it is important that the banks and FinTechs actively

select their strategic position in the collaborative network. Banks and FinTechs which operate across national and organizational borders might have to establish new positions to fit into the new marketplace. Depending on the strategic position, collaboration is going to be important. It is therefore crucial to design reward mechanisms such that people, or firms, get rewarded for collaborating with each other to ensure success.

## **The Challenge of Control and Innovation**

### **Banks Need to Accept Less Control to Become Innovative.**

The banks that we spoke to are apprehensive in giving up control, and the concept of not controlling the project is something that based on our interviews seems hard to grasp for the banks. Most of the banks have created a strategy for how they will control, select and work with the different types of FinTechs. Depending on the size of the FinTechs the banks will choose different strategies; full integration, white labeling, exclusive partnership etc. Because of the power, and the trust in the Norwegian banking system, banks can with good reason be selective in their partnerships. However, with PSD2 allowing FinTechs to legally take customer data through APIs, banks are worried about losing their strong position of control. As our findings mentioned trust is changing, the new generation growing up in a digital age will demand more simple solution than previously. Thus, banks will eventually have to adapt. The banks need to learn how to live with less control, if they want to innovate, and survive long-term.

In the model below, we illustrate the locus of control in different forms of organizational designs. The further out of your organization you move the control, the higher level of innovation you will get. Our analysis suggest that banks are using mostly crowdsourcing forms of innovation, where the locus of control resides between the organization and the crowd.

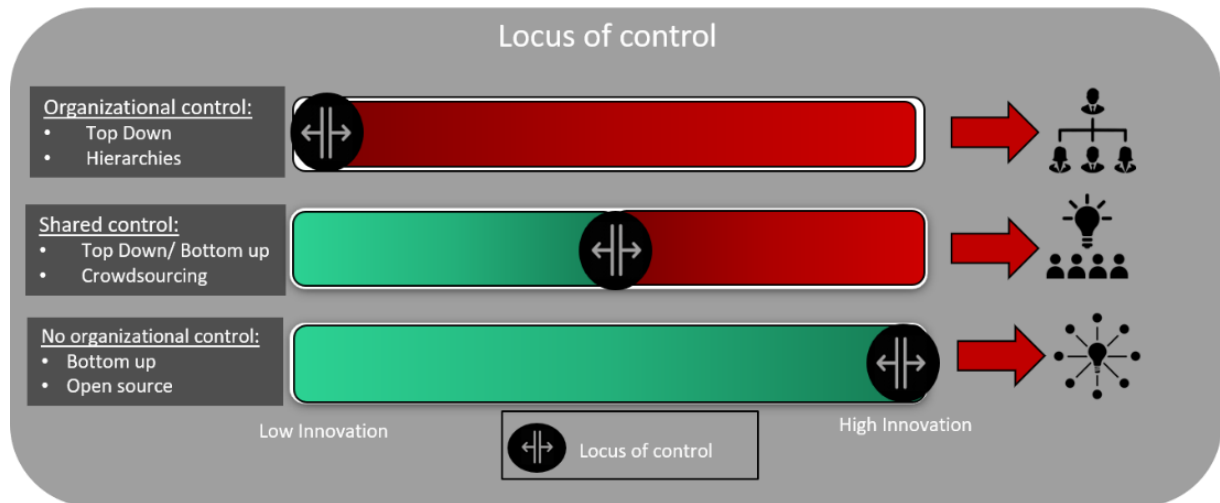


Figure 17: Locus of control

In collaboration with banks, FinTechs are worried that they will not own the organization and lose their independence, thus consequently lose their ability to be innovative. We see that FinTechs are mostly keen on non-exclusive agreements with banks, while banks prefer exclusive agreements. There is a clear disagreement here. However, banks understand that it is important to maintain partnerships outside of their own organization, and the FinTechs need the established trust of the banks. In other words, both types of actors will have to use trade off mechanisms to optimize the level of control vs. level of innovation. (Venaik, Midgley, & Devinney, 2005)

## Organizing for a Collaborative API Economy

### FinTechs and Banks are Collaborating in the Open Network

Traditional organizational design has emerged over time. It is not new that organizations collaborate through, for example, equity joint ventures, co-manufacturing or marketing arrangements. (Powell et al., 1996). In the financial services sector this type of collaboration will very likely continue to occur. The idea is to continue building on the existing banking networks. The banks and the FinTechs that we spoke to will work closely together to use the complementary resources each actor can bring to the relationship, but they now have new ways of collaborating with each other. The new ways are through open APIs that can be modified by both banks and FinTech companies. Firms

still have the choice of hierarchy, market or hybrid models depending on their situation (Benkler, 2002) but will collaborate in an open network. Based on the interviews probably both banks and FinTechs intend to remain hierarchies but will collaborate for complementary resources such as innovation for the banks and accessing the network of customers for the FinTechs. We see clearly that the banks and the FinTechs compete for different types of resources, and that the "projects" overall become too complex to complete alone. Thus, the incentives are strong to collaborate outside of the traditional hierarchy. By adding new services to the network of actors in the financial services industry, the network will grow, and FinTech will manifest their rightful place in the network. The FinTechs will not be dominating the industry yet, but these firms will be important capital market infrastructure providers for the banks to collaborate with, and they can use the FinTech as a consumer service provider, using the bank as an infrastructure provider.

As (Fjeldstad et al., 2012) point out, individual developers of open source projects often have incentives for collaboration outside of the revenue generating incentives. Fully understanding why an actor would work for a project, without the traditional monetary reward, is difficult. Our findings suggest the same is the case for the FinTech industry. We see that by connecting a traditional bank hierarchy with one, or multiple, FinTechs the traditional form of hierarchy is becoming looser in its form. It seems as the development of the API economy is hugely important for the establishment of revenue generating activities to be exploited at a later stage. E.g. a fully functioning API can facilitate for microtransactions to occur to record transactions and share revenue between actors. This creates monetary incentives for developers to build high quality codes. As one of our interview objects stated, the frequency of the API calls will decide how much revenue that will be generated. The FinTech will get some portion of the overall pie, and the pie might grow, but the industry will not be truly disrupted. The banks will still provide payments, liquidity and risk, their core business, but in closer collaboration with FinTech companies.

It is still early in the implementation of the API economy and the banks seem to ramp up and learn from API development right now. One could think of improving APIs as an intermediate activity to prepare for real innovation and collaboration later. According to Powell (1996) for complex, knowledge-intensive industries inter-organizational collaboration and innovation occur in networks of learning. So, while the incentives for the FinTechs to work with the banks in the sandboxes currently are not revenue generating, collaboration might lead to strong learning environments, and revenue generation in the future. The banks that we spoke to said to us, that they have to collaborate, and therefore they have to go outside of their traditional banking hierarchies to do so. This does not imply the end of traditional banking hierarchies, but an opportunity for creating contract-based relationship which is used primarily for control rather than coordination (Fjeldstad et al., 2012).

To summarize, banks and FinTechs will work closely together through open APIs. Both FinTechs and banks might organize hierarchical, but the difference is that they now are collaborating through open APIs. Banks will still be a dominant player in providing payment, liquidity and risk and FinTech will complement the banks and add to the open network. However, we are still in the learning phase of developing a fully functioning open API economy.

## **Organizing for a Platform Economy Driven by API Integrations**

### **Banks and FinTechs Collaborate**

The banks in Norway look to other nations, especially in Asia, where FinTech solutions have developed quicker than in Europe. Integrating with multiple actors through APIs seems key in these geographical areas. WeChat is known for its multipurpose "super app". WeChat includes a wide range of integrated functions, including payment services, chat functions etc. As pointed out by our interview objects, the actor or actors that develop many quality API relationships will be the platform to go to. Those actors which are present and integrated in the most used platforms will be well known. The platform in itself, is not so interesting, it is which integrations and the size of the network that matters. Many of the banks we spoke to give us the impression that they want to become the place to be, or the new "WeChat". However, there is only one WeChat and there is not enough

room for many actors to take this keystone position. For the banks it seems to be a race towards who can connect the most quality APIs making itself attractive as the place to go. But, it might be that banks are too late already and will not be able to take the keystone position. For example, in platform economies, WeChat, other large tech giants such as Google, Amazon or Facebook can take this keystone position in Europe instead of banks. This has happened in China where, Alibaba's affiliate company Ant Financial, which has a market valuation of \$150 billion USD, more than for example Goldman Sachs (CNN, 2018).

## **FinTechs – Disrupting the Banks**

### **FinTechs do not Collaborate with Banks, but take over the Network**

There has been a transformation in the banking industry when financial products and services are provided through Internet channels such as web platforms or mobile applications. However, banks do provide essentially the same products and services as they did in the 1990's: *payment, liquidity and risk management services*. We are entering a new era where the banks monopoly has reached its end. New technologies are making transactions easier, cheaper, and more convenient. Snow, Fjeldstad, Lettl, & Miles (2011) state that *“firms which seek innovation find it less advantageous to innovate solely on their own, and therefore seek opportunities to participate in knowledge communities driven by innovations across segments in the global marketplace”*. In light of our literature review, findings and events, banks have not been customer centric in producing financial services (Oliveira & von Hippel, 2011). We also know that banks are moving extremely slowly in adapting to changes. This fosters an architecture where FinTech might look to other collaborators than the banks, because they cannot survive the slowly adoption. Therefore, we speculate that the banks might be challenged by new actors such as Facebook, Google and Amazon. We further speculate that FinTechs in collaboration with other actors have the potential to democratize innovation in financial services.

Opening the banking network to FinTech can lead to good collaborative results but has its limitations for the FinTechs. What if the FinTech companies take over the network and provide payment, liquid and risk themselves?

**Could Cryptocurrencies be the Payment Layer of Financial Services?**

Crypto-technologies or blockchains, such as Bitcoin, may not only change the way we do payments, but also the whole trading and settlement world (Chishti & Barberis, 2016, p. 228). What makes digital currency so special is that it is "*tracked on a virtual ledger (called the blockchain) that is distributed across a network of computers worldwide and protected by strong encrypted codes*" (Deloitte, 2015). It is not a clear legal and regulatory environment in place for crypto currencies to operate. However, even with the bad reputation which Bitcoin do possess, it has received increased attention by governments wishing to create supportive legal and regulatory environments for digital currencies. When the legal and regulatory environments are in place, what will then restrict digital currencies to trigger simplification of banking processes and cost structures in providing payment transactions? The banks are sitting on the fence, while many FinTechs are focusing on blockchain technology. The negative attitude in the banking industry in Norway is creating an environment where no one learns about this new industry. However, looking at other industries such as the airline industry there is evidence that the cryptocurrency industry is emerging. E.g. Norwegian Air Shuttle recently announced that they want to create a marketplace where customers could buy flight tickets with cryptocurrencies. (Norwegian Air Shuttle)

**Could Equity Crowdfunding and Debt Crowd Lending Provide the Liquidity Layer of Financial Services?**

Since the global financial crisis (GFC) of 2008, banks have reduced significantly their lending alternatives to small and medium businesses (SMB). This has provided an opportunity for Peer-to-peer (P2P) crowdlending and equity crowdfunding companies to emerge, offering capital to their customers through its platform. This could be a typical example of disrupting an industry. New entrants are entering less attractive segments of the industry which the dominant players tend to ignore. While the new entrants target overlooked segments by delivering more suitable solutions at a lower price, the dominant players stay focused on more profitable customers and begin to overserve their existing customer base. As soon as the existing customer base starts adopting the services of these new entrants, disruption has occurred (C. Christensen & Raynor, 2013). If the emerging



trend of crowdfunding companies continues, this will move these crowdfunding companies into the liquidity space of the financial industry.

### **Could Crowd Insurance Provide the Third Layer of Financial Services Risk Management?**

To ensure stability in the liquidity space there is also an emerging trend of creating risk sharing networks (Investopedia, 2018). These networks can provide the necessary stability that the financial industry needs. Risk sharing networks are pooling individuals with similar premiums (age, hobbies, medical history etc.) together in one large pool. Insurance technology has made it easier to gather information about the individuals which have reduced the cost that insurance companies traditionally had to consider. Incorporating the concept of crowdfunding platforms and social networks has led to the movement of Peer-to-Peer insurance, also known as Crowdsurance, which aims at using technology to reduce overhead costs, increase transparency and reduce inefficiency in the insurance industry.

To summarize, crowdfunding companies have emerged and are now serving a low-end customer market of the financial industry by delivering more suitable solutions at a lower price. Currently, crowdfunding companies are dependent on traditional financial services such as doing deposit, withdraws and custodian accounts. If they were to utilize blockchain technology, providing the necessary security with Crowdsurance that the FinTech industry needs, then they could become fully independent of the banks and create a self-organized network of FinTech companies.

However, it is a misconception that disruptive innovations happen overnight. The industry of FinTech companies needs to develop and mature over time, and the authorities need to understand and approve new ways of developing and controlling the industry. The main point is that, if the FinTechs are able to create a complete network of financial services then they become a serious threat to the banks, where FinTechs can be the network provider. The rise of a FinTech empire is not built in a day, but as Bill Gates puts it: "*the world do not need banks, they need banking*".

## MANAGERIAL IMPLICATIONS

In this section we will pose some recommendations for the new collaborative industry we see emerge within the financial services industry. We make three recommendations that FinTech managers can follow, and three recommendations that bank managers can follow.

### Recommendations for FinTechs

1. FinTechs should collaborate and need to understand how important the network is.

The main value of collaboration is the network externalities. Understanding the value of utilizing the network externalities is something many FinTechs struggle to understand. From our findings we see that many FinTechs create solutions where they want to create the network of customers alone. Doing this takes time, capital and many years of demanding work. We have observed indirect network externalities between banks and FinTechs by interviewing both sides and seeing that banks and FinTechs become more interdependent on each other to create value. FinTechs can produce little or no value in isolation but can generate loads value when combined with banks. For FinTechs it is important to understand that it is not necessarily going to be the FinTech with the "best" solution that we will be the most successful, but the FinTechs that utilize the network externalities. So, our first recommendation for the FinTechs is that they should collaborate and utilize the network externalities of banks.

2. FinTechs need to consider if they want to be part of the banking network or if they want to build a competitive network with other FinTechs which are complementing each other.

As banking really boils down to the three areas of payment, liquidity and risk management services, we recommend FinTechs to collaborate with someone that does something else than themselves, or that complements what the FinTech is doing. Katz

and Shapiro (1994) pointed out the indirect network externalities in a Software/Hardware paradigm since these are components that complement each other. Similar, banks and FinTechs complement each other and the interdependency between them are strong. Going head on competition with the banks is at this stage very difficult and requires resources far outside of a FinTechs budget. A FinTech can collaborate with banks or they can collaborate with other FinTech companies. The implications of collaborating with a bank is the issue of being controlled, losing its independency and ability to innovate. A different alternative is to build a network of complimentary FinTech companies that collaborate with each other. We believe that by doing this it is possible to avoid the slow innovation and provide a fully functioning ecosystem of FinTech actors which provide the banking services: payment, liquidity and risk management services. Building a network of FinTech companies will be more challenging than connecting to an existing network with existing banks, but we believe this will yield a larger return in the long run. So, our second recommendation for the FinTechs is that they should decide who they want to collaborate with and understand the implications of this collaboration.

3. FinTechs should target the low-end customers, which is less attractive for the banks.

Utilizing disruption theory, trying to compete with the banks on their existing offerings to existing customers is very difficult, because banks can easily out compete them. Therefore, targeting a less attractive market of customers by providing smart and cheap solutions towards these customers, FinTechs can get traction early on. One successful example of this is the mobile money services in Africa called M-pesa, which is targeting the unbanked customers. So, our last recommendation for the FinTechs is to target the unexplored, unattractive markets, where profits are not obvious.

### **Recommendations for the Banks**

In preparation for PSD2 banks have initiated activities to collaborate with FinTechs such as, hackathons and sandboxes. They have also established own entities that is dedicated

to facilitating collaboration with FinTechs. However, we find three areas of recommendations.

1. Banks need to understand the fundamental theoretical foundations of crowdsourcing.

We believe that the banks do not fully understand the mechanisms of crowdsourcing through sandboxes and hackathons. The banks use the events as a new way of controlling the FinTechs instead of allowing for moving the locus of control out of the organization, and for shared control which is the fundamental idea of crowdsourcing. We have seen that banks often seek FinTech companies that fit into their existing corporate strategy. This is a top down approach that does not facilitate for innovation, in the same way as a typical crowdsourcing top down/bottom up strategy. So, our first recommendation to the banks is that they allow for shared control.

2. Allow the decision makers in the banks get the right authority to make decision towards the FinTechs.

We see that the banks have separate entities and dedicated teams that focus on FinTech companies. However, as FinTech Alpha pointed out we believe that the banks have not given the right employees that work directly with the FinTechs, the correct level of authority to make quick decisions and that they often must go up through the hierarchy to get approvals, for example to give out equity. This takes a lot of time, that the FinTech do not have. Quick decision making is crucial for the survival of a FinTech, which is different from large entities, that can use more time to make decisions. So, our second recommendation is that the employees in the banks working directly with FinTech need clear decision-making authority, and that the entity has the ability and skills necessary in line with the FinTechs expectations.

3. Eliminate the language barriers between business and technology language.

The banks do not fully understand what the FinTechs are proposing when they communicate. The reason why banks not fully understand FinTechs can be because they often speak developer language, while banks are business minded.

Therefore, we suggest two alternatives for the banks to eliminate these technical language barriers. First, is that those decision-making authorities that are representing the banks need to learn how to speak developer language. The second alternative is that banks should bring with them an internal developer to business meetings with FinTechs. By eliminating the language barriers, we believe that the FinTechs will feel more equally treated and less communication will get lost between the two actors.

## **IMPLICATIONS FOR FUTURE RESEARCH**

The study of organizational designs in the financial industry provides rich opportunities for future research. When collaboration between banks and FinTech happens and the closed network is opened and, this happens partly because of regulations. Innovation by regulation, and if this is possible is very interesting to research. Generally, the effect of FinTech entering the financial services sector is something that needs to be researched to a much larger degree, since we suggest these actors potentially can disrupt the financial services industry.

## **LIMITATIONS**

The use of a qualitative case study method limits our ability to quantify what organizational designs that could emerge. However, as there is little quantitatively data on the profitability of collaboration between FinTech and banks the choice of qualitatively case study building grounded theory felt correct. Also, we do realize that the use of case method, might cause case specific elements, but by interviewing multiple actors we have attempted to cover more than just one specific actor. However, the research objective has not been to generalize, but rather to explore what is happening because of PSD2.

We believe that by opening the banking industry there is a potential for transforming the banking landscape radically. It is however important to notice that the customer awareness about the opportunities that PSD2 present is limited. We have spent a significant amount of time studying this topic, in the FinTech and banking environment, and we do get inspired by the opportunities that PSD2 and open banking can provide in the future. However, being in the FinTech environment we may be a bit biased in our perception of what the general population think about the topic and might have a bit to positivist view on the transformation happening. However, we have to the best of our ability tried to only listen to our interview objects, express their knowledge and discuss these findings after.

A final limitation of our research is that we are in the early phase of PSD2. Many actors do not have the strategy plans in place yet, and there are overall very few serious FinTech companies in Norway. Also, since our interview objects know that we are interviewing multiple actors, sometimes competitors, they can be hesitant to share information that can be used by others.

## Exhibits:

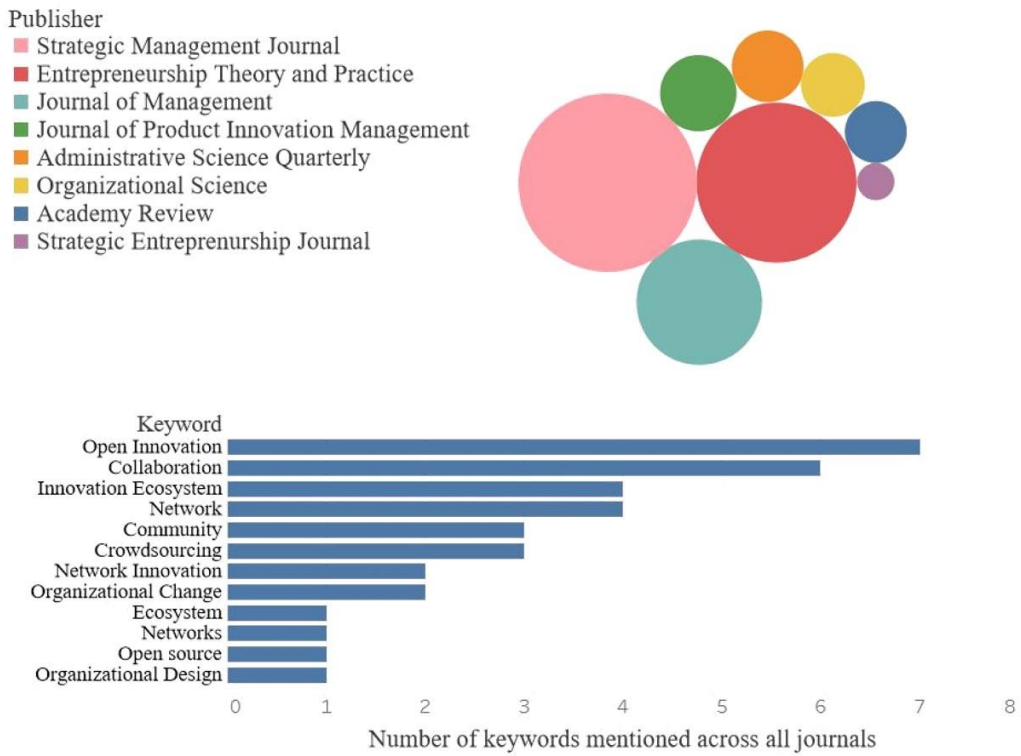


Figure 18: Exhibit 1 (Key search criteria's for literature review)

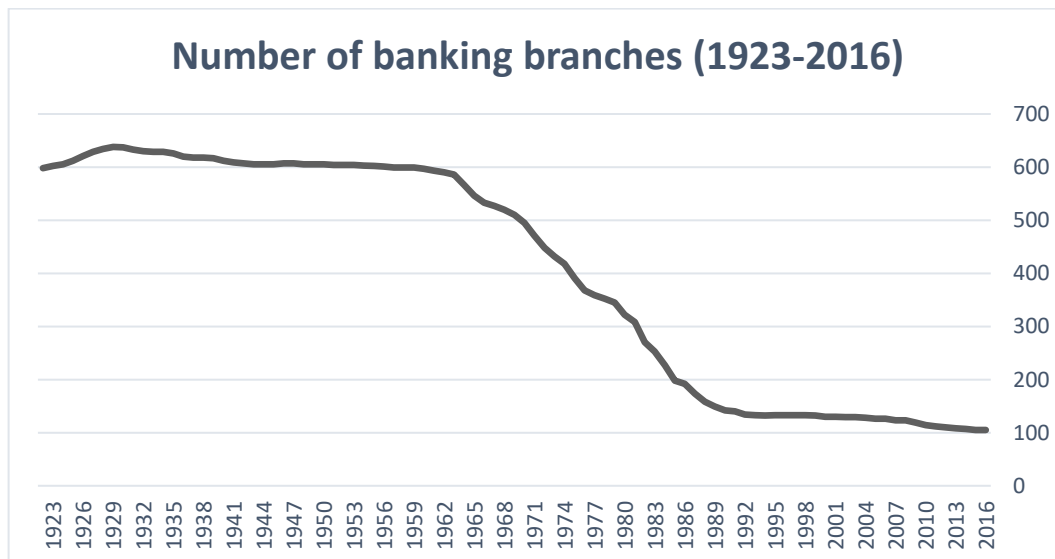


Figure 19: Exhibit 2 (Number of banking branches in Norway between 1923 – 2016)

Topic	Category	Who	
Value Creation	Independency	Alpha	We want to stay independent, and ideally not create exclusive agreements with banks.
	Integration	Alpha	When I look at what to use of software for my small business I look at what has the most integrations. Slack is one example of a relatively new company that has a wide range of integrations, making it a very attractive platform to use for collaboration.
		Beta	<p>Choosing to collaborate with a bank, then that Fintech has to manage the physical integration it is to collaborate with a large incumbent bank.</p> <p>The real power of the bank is the people and salesforce of the bank. The trust and experience they bring with them in customer meetings etc. is highly valuable. The Fintech that collaborate with banks has to manage communication with the bank employees, so the bank employees are up to date and understand the value of the FinTech product.</p>
		Gamma	<p>Scalability is a very important factor and will be crucial to extract the value from the large customer base.</p> <p>The larger the FinTech, the more likely a partnership will occur. The smaller the FinTech, the more likely it would be integrated into the already existing banking structure and rebranded as part of the bank. An alternative for the mid-sized organization could be to white label the FinTech solution on the banks existing platform.</p>
Organizing for Innovation	Crowdsourcing initiatives	Beta	<p>Banks crowdsource for innovative ideas, and development using a variety of techniques.</p> <p>It is important to distinguish between crowdsourcing for ideas and crowdsourcing for development. The crowdsourcing on idea level is the hardest to organize. When crowdsourcing for development it is possible to track the work that has been done, and reward based on quality and amount of work.</p> <p>When crowdsourcing for development it is possible to track the work that has been done, and reward based on quality and amount of work.</p>
		Delta	<p>Developers, finance and strategy professionals and students are welcome to contribute with their ideas and skillsets at hackathons.</p> <p>The developers wait for scripts and instructions to build something, so the business model needs to be in place first. The idea level is, therefore, the hardest to source from the crowd and at the same time getting it fair</p>
		Epsilon	<p>banks are getting a new customer segment. This customer segment is not the end customer, but it is the developer community</p> <p>Collaborations between banks and FinTechs through APIs is new for the banks, and they are now in a learning phase.</p>

Comment broken down by Topic, Category, Who and Comment.



Topic	Category	Who	
Organizing for Innovation	Crowdsourcing initiatives	Eta	Attending and producing something good at a hackathon can also lead to work opportunities in the bank.
		Iota	To crowd "something" 100% such as a FinTech company entirely is very difficult and I have yet to see that in practice.
		Theta	During a hackathon a FinTech might get a pizza, and a bank harvest a great business idea.  There is not enough data, and the data available are not good enough yet
		Zeta	Code quality is not so import when organizing a hackathon. - just produce something really cool, really quickly in collaboration with others is what matters.  developers that meet at hackathons are incentivized by meeting other developers. Developers want to work with other developers, and they are not always driven by monetary reward when attending a hackathon.
Culture		Alpha	Organizational culture is a problem for the banks. Banks are risk averse, and bank employees are afraid of making mistakes that can threaten their position in the hierarchy.
		Theta	Developers want to talk to other developers, because they speak coding language and there is no knowledge gap.  Encourages banks to create a stronger developer community internally, where developers from the banks can talk to FinTech developers and thereby overcome these communication problems.
Distribution		Beta	The more the company integrate with the bank, the less agile they become, while the more distribution power you get.
External initiatives		Alpha	Compared attending accelerator program to going to school.
		Beta	It is essential that the hubs stay independent from the banks, primarily to build trust in the community and to avoid losing the innovative spirit. The overall goal for the communities is to create an ecosystem around the community platform which includes all the relevant actors.  The communities can be great for "grass root" initiatives and can help increase GDP since the overall economy is dependent on many small businesses.

Comment broken down by Topic, Category, Who and Comment.

Topic	Category	Who	
Organizing for Innovation	External initiatives	Delta	<p>Some early stage FinTechs use free open source codes to get started</p> <p>Understand the business model first, then take the next step, which is the coding. It is costly to change the architecture, so a FinTech start up need to get the value proposition right to proceed to coding it up.</p>
		Iota	<p>In Norway, we have traditionally looked at entrepreneurship as not being very cool. Five to ten years ago if you started a business, it was because you could not find a job. Today it means something entirely different, and positive. It means you are ambitious and want to try something new.</p> <p>You have to have a complete team, of both business people and coders. The reason why a complete team is so important is that most likely the idea will change, but the team will stay the same.</p>
		Kappa	Compared attending accelerator program to going to school. The period is very hectic and challenging, but extremely rewarding.
		Lambda	<p>“Lego blocks”, consisting of generic, reusable, codes which multiple companies can use if the companies become part of the open source community</p> <p>Another issue many startups have is the ability to foresee customer needs.</p> <p>Unlocking the keydoor (Illustration)</p>
Organizing for Innovation		Eta	Three models for the FinTech, to organize themselves towards collaboration with a bank. 1. Distribution Power 2. Combining banking services with other industries 3. Actors generating better services than the banks.
		Gamma	The larger the FinTech, the more likely a partnership will occur and the smaller the FinTech, the more likely it would be integrated into the already existing banking structure and rebranded as part of the bank. An alternative for the mid-sized organization could be to white label the FinTech solution on the banks existing platform.
Trust		Beta	if a FinTech were providing a similar solution as a banks, then the customer would choose the banks solution based on the established trust relationship
		Kappa	The attitudes toward traditionally trusted organizations are becoming less important, and the solution itself matters more than who produced it.
		Theta	We are hesitant of sharing ideas with big banks because banks might steal our idea or code, and that is not cool.

Comment broken down by Topic, Category, Who and Comment.

Topic	Category	Who	
Incentives for Collaboration	Incentives - FinTechs	Alpha	Being associated with a significant trusted bank will be positive for a FinTech to become known and to build trust and reputation, as well as getting media coverage  FinTechs need to talk directly with the decision makers in the bank that can match the agility of the FinTech regarding decision making speed.  Getting second round of funding is more difficult, often because FinTechs require larger amount of capital, which is hard to get, however things are getting better  It can be a problem that banks sometimes use FinTech companies as marketing initiatives, to be associated with being innovative, without actually meaning it - this can hurt the FinTech  The funding request was being pushed up and down in the bank organization, before the whole relationship eventually was scrapped
		Iota	FinTechs cannot compete with banks on marketing, because FinTechs do not possess the same amount of resources as the banks do
		Kappa	As long as the customer gets something better than what the current market can offer, I don't care if we white label to a bank or if we brand ourself.
		Lambda	Giving a FinTech capital without being sure they pursued the right strategy, would be the same as providing an athlete doping, instead of teaching them how to work out first, it seldom works.

Comment broken down by Topic, Category, Who and Comment.

Type	Who
Accelerator	Delta
	Iota
Bank	Beta
	Epsilon
	Eta
	Gamma
FinTech	Alpha
	Kappa
	Lambda
	Theta
	Zeta

Figure 20 Exhibit 3  
(Interviews)

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