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Master Thesis

Innovation Alliances: A Case Study of the Norwegian Financial Services Industry

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Kevin Andersen and Kristina Lund Leivestad

Executive Summary

The objective of this master thesis is to study the connection between strategic alliances and innovation. We conducted an explorative case study of alliance formations in the Norwegian financial industry from 2014 to 2017. This study involved 22 semi-structured interviews and numerous secondary data sources, as well as academic literature on alliances and innovation. Analysis of our data reaped an understanding for how and why firms employed alliances to innovate for mobile payment platforms, blockchain technology, and other highly uncertain outcomes.

To conclude our empirical findings, we present a matrix to inform the decision-making of firms establishing alliances. We propose that the structure of an innovation alliance will vary according to the firm's need for control and speed of the innovation outcome. We also present a conceptual model of interorganisational innovation to illustrate the ways in which firms can employ alliances for different innovation purposes. Our findings contradict the "*disrupt or be disrupted*" mentality often encountered in organisational innovation. We instead propose a holistic view of innovation alliances as a medium for achieving balance between exploration and exploitation. The thesis concludes by discussing the implications our findings may have for managers and suggesting possibilities for further research.

1. Introduction

In this master thesis, we investigate our research question of **how and why companies employ strategic alliances for innovating in rapidly changing environments**. Our main finding is that strategic alliances can be used to innovate for a specific innovation outcome, but also can create contexts for the organisation to learn and identify innovation outcomes. This finding places strategic alliances at the heart of both exploratory and exploitative innovation processes.

Across industries, organisations increasingly turn to strategic alliances as a means to cope with new rules of competition (Yasuda, 2005). Gulati (1998a) defines strategic alliances as "*voluntary arrangements between firms involving exchange, sharing, or codevelopment of products, technologies, or services*" (p.293). Strategic alliances come in many forms and their central features are likely to vary, depending on their motives and goals.

The motive investigated in this study is innovation, which we define as the organisational process and outcome of discovering and developing new products, services, processes, and business models (Crossan & Apaydin, 2010). Innovation is a critical source of competitive advantage (Dess & Picken, 2000; Tushman & O'Reilly III, 1996). However, we criticise the widespread application of *disruptive* innovation theory (Christensen, Raynor, & McDonald, 2015b), which at its core seeks to explain firm failure rather than success. In this thesis, we aim to provide an understanding of innovation beyond the "*innovate or die*" and "*disrupt or be disrupted*" paradigms offered by Christensen, which are counterproductive for realising successful innovation (Lepore, 2014).

Instead, we set out to form a holistic understanding of innovation and the ways in which innovation can be accomplished through differently structured strategic alliances. We conducted a case study on strategic alliance formations among actors in the Norwegian financial services industry from 2014 to 2017. We focus on alliances formed in two technological domains, namely mobile payment platforms and blockchain technology. The industry has experienced and is still undergoing a drastic transformation triggered by market forces, technological development, regulatory changes, and organisational changes (Fasnacht, 2009).

In 2007, innovation in the bank sector saw derivative products derail the entire world's economy and ruin the financial well-being of millions of people across the world. The financial services industry came under global regulatory

pressures as governments worked to drastically reduce the risk of future economic collapse. Since then, technology has been developed at unprecedented rates as financial services firms struggle to quickly adapt and launch high-tech solutions.

With the advent of financial technologies (*fintech*) and a new regulatory landscape, banks are innovating with renewed vigour, but this time together in networked innovation. The Economist points to the critical role of collaboration in the wave of fintech: "*the winners from disruption will be those firms, old and new, that best figure out how to collaborate with each other to create win-win partnerships*" (2017).

The structure of this thesis is as follows. We continue with a review of the relevant literature. Then, we present the research methodology adopted in our study, and the empirical findings afforded by our case study. We then build on existing literature and our empirical findings to propose a conceptual model of interorganisational innovation. Finally, we conclude with our study's implications for researchers and practitioners.

2. Literature Review

In the following section, we use existing literature to form a conceptual understanding of innovation and strategic alliances. We identify four interrelated determinants of innovation: *Organisational Factors*, *Market*, *Technology*, and *Regulation*. We also explore the theoretical motivations for establishing different forms of strategic alliances. At the end of our literature review, we identify a gap in the literature connecting innovation and alliances, which serves as the basis for our research design.

2.1 What is Innovation?

Innovation has permeated all areas of business as a critical source of competitive advantage (Dess & Picken, 2000). In their systematic review of innovation literature, Crossan and Apaydin (2010) identify a multitude of differing perspectives of innovation and its implications for organisations. Many researchers and practitioners use the terms creativity, inventions, and innovations interchangeably (Dance, 2008). However, this 'loose' application of the term is an "impediment to the systematic analysis" of innovation and can lead to ambiguity when making strategic decisions (Crossan & Apaydin, 2010).

Steve Jobs once said, "*creativity is just connecting things*" (Wolf, 1996). In his book *Where Good Ideas Come From*, Johnson (2010) extends the concept of an "adjacent possible" to dictate the finite number of inventions available to be discovered at any given time (Burkus, 2014). The "adjacent possible" are those discoveries made possible by existing ideas and combinations of already discovered elements. Although connecting existing ideas for new discoveries is a critical component of innovation, we consider the concept as a more complex phenomenon occurring within and among firms.

We adopt the definition posited by Crossan and Apaydin (2010, p. 1135), who combined different literary perspectives for a broad, yet comprehensive view of organisational innovation:

> "*Innovation is: [the] production or adoption, assimilation, and exploitation of a 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. It is both a process and an outcome.*"

The authors' definition captures several significant aspects of innovation, including the dual-role of innovation as both a process and an outcome.

Crossan and Apaydin (2010) also remark how practitioner-based measures and models are often disconnected from academic research on innovation. The authors propose a practical framework of organisational innovation based on theory to address this gap in the literature:

Figure 1. Framework of Organisational Innovation
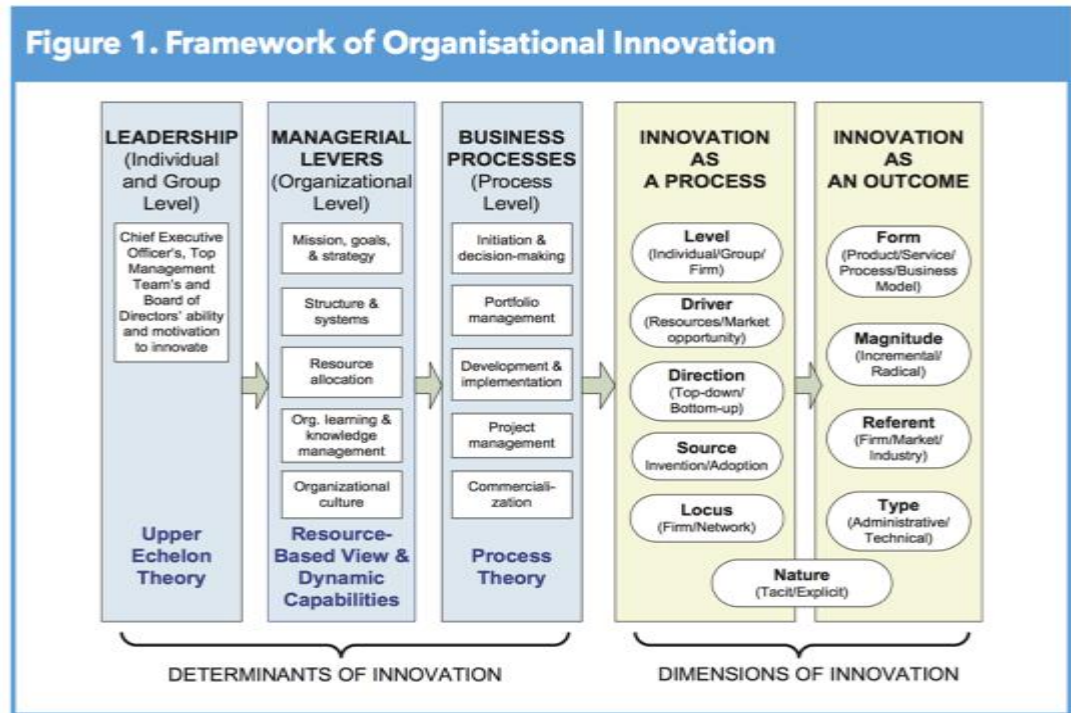
The organisational determinants of innovation affect an interactive innovation process (Slappendel, 1996), and thereby the innovation outcome. The authors expressly target the organisational level of analysis, and confine their model to firm-level determinants of innovation to "*provide a practical basis on which managers can build structures and systems that would enable innovation within a firm*" (p. 1156); the model's *determinants of innovation* include those elements of innovation that can be actively changed by the organisation and its members.

Crossan and Apaydin (2010) recognise the limitation of their single-level model and propose to use the Strategy as Practice (SAP) view to combine the individual, firm, contextual, and process variables from literature. The SAP perspective considers the strategic activities of organisational actors and their effect on organisational outcomes, as well as the feedback loop between organisational actors and their organisational context (Whittington, 2006). The authors argue that the SAP perspective can effectively link firm-level variables with the actions of individuals in their organisational contexts. However, this approach would still risk

excluding factors external to the organisation that affect its innovation process. Following Porter (1980), firm strategy does not exist independent of developments in the market.

It is worthwhile to mention the emerging theory on *open innovation*, a process whereby firms aim to seamlessly innovate in an embedded environment of co-innovators (Fasnacht, 2009). Technologies and ideas external to the company are brought into the firm's own innovation process, and under-utilised ideas and technologies in the firm are allowed to be incorporated into innovation processes external to the company (Chesbrough, 2011).

To provide a holistic understanding of the relationship between innovation and alliance structures, we adopt a macro perspective to place the firm in an industrial context and consider the external drivers for innovating within and among firms. We also include the firm level of analysis to illustrate how these external factors inform organisational factors. Open innovation is therefore not specifically investigated in our study, although its implications on our results and chosen industry are examined in section *5. Empirical Findings*.

2.2 What are the key determinants of Innovation?

Although Crossan and Apaydin (2010) identify a comprehensive set of innovation determinants internal to the organisation, external factors "*shape the general business environment in which firms operate*" (European Bank for Reconstruction and Development (EBRD), 2014). There are various factors influencing firms' incentives and ability to innovate, including the prevalence of existing technology, accessible skilled workforce and access to finance (Boundless, 2016; European Bank for Reconstruction and Development (EBRD), 2014).

Through our review of the literature, we have identified *market forces, technology,* and *regulation* as external factors influencing the innovation process. To understand innovation in a holistic manner, we combine these external factors with the internal *organisational factors* of Crossan and Apaydin (2010) to constitute a comprehensive set of determinants of innovation:

Table 1. Determinants of Innovation	
Determinant	**Explanation**
Organisational Factors	Firm structures and actors operationalise resources and create contexts for innovation
Market	The forces of competition drive the need to innovate
Technology	Serves as input to the innovation process
Regulation	Simultaneously drives and inhibits innovation by governing competition and ensuring compliance

Each determinant of innovation drives the innovation process in a unique way. A holistic understanding of the innovation process and resulting innovation outcome depends on realising the effect of each determinant, as well as learning the interplay between these determinants. In the following section, we introduce the theoretical basis for each of the identified determinants of innovation.

2.2.1 Organisational Factors

Crossan and Apaydin (2010) propose that dynamic innovation capabilities allow firms to build competitive advantage and reside in the five managerial levers: mission/goals/strategies; structures and systems; resource allocation; organisational learning and knowledge management tools; and culture. In his seminal paper, March (1991) discusses the difficulty of balancing firm resources between exploration of new possibilities and the exploitation of old certainties. March (1991) argues that organisational learning tends to favour exploitation, which provides short-term success but can be self-destructive in the long run.

Bower and Christensen (1995) propose disruptive innovation as a theory for why firms fail, arguing that firms often devote scarce resources to improve prevailing technology (*sustaining innovations*) instead of exploring new technology (*disruptive innovation*). Christensen's theory of disruption hinges on what he terms 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 innovations, which bring to the market "*a very different value proposition than had been available previously*" (Christensen, 2002, p. XVii). Proper management of organisational factors is therefore critical to innovation.

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Following the Crossan and Apaydin (2010) framework, we recognise that the leader's' ability and motivation to innovate creates the organisational context for innovation. The innovation process of the firm is contingent on the values, experiences, and personalities of the CEO and top management team/Board of Directors (Crossan & Apaydin, 2010). The organisational mission and strategy establish direction for the firm while the remaining managerial levers provide the necessary support for innovation practices. The organisational-level determinants also affect the business processes of innovation, which relate to the decision-making and task management activities in the firm. These organisational determinants of innovation combine to determine the mode and extent to which exploratory innovation is pursued in the firm (March, 1991).

2.2.2 Market

The essence of a market perspective lies in the competition between firms. Porter (1980) proposes five forces of competition: *rivalry among existing competitors, the threat of new entrants, bargaining power of suppliers, bargaining power of buyers,* and *threat of substitutes*. Together these forces define an industry's structure and shape the nature of competitive interaction within an industry (Porter, 2008):

Figure 2. The Five Forces That Shape Industry Competition

Porter (2008)
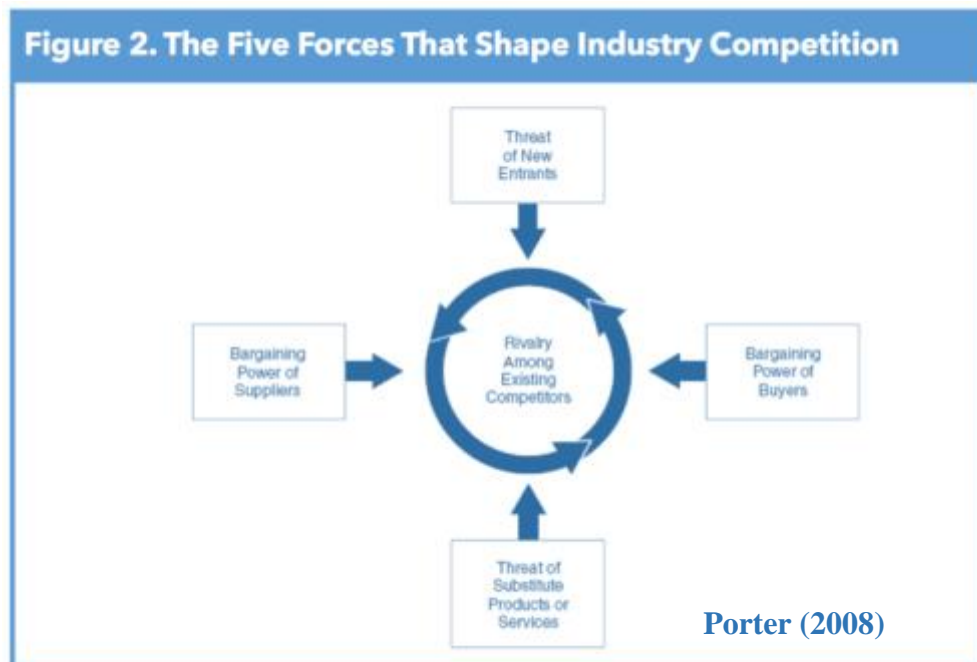
The firm's role is therefore to understand the forces shaping its industry and strategically position its business in the market (Porter, 1996). The bargaining power of suppliers is for the most part not explored in this research since we

specifically study financial services firms, which are examples of value networks rather than value chains (Stabell & Fjeldstad, 1998).

A change in market conditions often precipitates the demise of large, once-successful companies (Sull, 1999): Kodak's failure to embrace digital cameras led to its eventual bankrupcy (Kotter, 2012), companies producing PCs, software and printers completely replaced typewriter manufacturers (Rothaermel, 2001), and the Swedish manufacturer of mechanical calculators Facit AB disappeared in the shift to electronic calculators (Sandström, 2013).

These cases exemplify the competitive forces of new entrants and substitute products; they are also textbook examples of *disruptive innovation.* Christensen (2002) highlights how rivalry among existing competitors leads to more sustaining improvements than what is bargained for by the buyers. In their search for higher profits, incumbents overshoot the market. Meanwhile, flexible new entrants are keen to launch radically new technologies and dislodge dominant technologies to disrupt the market[1].

Since its introduction, Christensen's theory of disruptive innovation has been praised, widely adopted, and consequently widely misapplied (Christensen et al., 2015b)[2]. The theory has also attracted notable amounts of academic criticism. Danneels (2004) criticises Christensen for not having established clear-cut criteria to determine if an innovation is classified a <u>disruptive</u> innovation.

Lepore (2014) criticises the theory's historical evidence, citing inaccuracies that lead to the incorrect conclusion that disruptors win in the market. Instead, she argues, victory in the market seems to have gone to firms that were good at incremental improvements, regardless of whether they were first in the market with the disruption. She also rejects disruptive innovation as a theory of change, citing "circular arguments":

> *"If an established company doesn't disrupt, it will fail, and if it fails it must be because it didn't disrupt. When a startup fails, that's a success, since epidemic failure is a hallmark of disruptive innovation. When an established company succeeds, that's only because it hasn't yet failed. And, when any of these things happen, all of them are only further evidence of disruption."*

Finally, Lepore (2014) points to examples of the theory's failure as a predictive model: a stock fund based on the theory that underperformed the market,

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[1] Please see appendix 1 for Christensen's model of disruptive innovation
[2] Please see appendix 2 for an overview of disruptive innovation literature

and Christensen's comments in 2007 that "*the prediction of the theory would be that Apple won't succeed with the iPhone.*"

Although radically new technologies and innovative business models are important for firm strategy, the adage "*disrupt, or be disrupted*" is an absolutist and potentially dangerous anchor for strategizing. Instead, we consider the ways in which all forces of market competition influence innovation. In this way, we return our focus from the futility of disruption to the firm's balance between exploration and exploitation. The distinction may seem insignificant, however, disruption prescribes unpredictability while the exploration-exploitation tension of March (1991) addresses organisational action and can be mapped against the competitive forces of the industry.

As one executive informed PA Consulting for its Scandinavian Financial Services Newsletter: "*If you get obsessed with being radical or different, you forget you are there to help your customers manage what is going on in their lives financially*" (PA, 2016, p. 18). This insight underscores the importance of considering the customer in a market perspective beyond bargaining power; changes in consumer behaviour and needs will affect the firm's value proposition and its approach to innovation.

2.2.3 Technology

A traditional perspective on innovation builds on technological breakthroughs (Schumpeter, 1934). However, defining innovation only as technological development limits its scope and hinders theoretical advancement (Snyder, Witell, Gustafsson, Fombelle, & Kristensson, 2016). Instead, in keeping with the adjacent possible of innovation outcomes, we find evidence that technologies serve as inputs to the innovation process. The nascent smart car industry was only made possible by strides in GPS, motion sensor, data processing, battery, and automotive technological domains (Burkus, 2014). Technology is an important driver for innovation, in particular because it is scalable, "*demonstrating a consistent trend toward new innovations as a result of improving upon current ones*" (Boundless, 2016).

2.2.4 Regulation

The global financial crisis of 2008 has prompted a significant increase in rules and regulations across industries, and today's financial markets are more

regulated than ever before (Fasnacht, 2009). As non-compliance is increasingly met with fines and more severe penalties, regulatory changes present a great challenge for firms in all industries. In its annual survey of strategic challenges facing global organisations, PwC (2017a) reported that 42% of CEOs are extremely concerned about the threat of over-regulation on their organisation's growth prospects. In the EY (2016) Capital Confidence Barometer, 18% of senior executives saw industry regulations as the largest source of disruption to their core business. More specifically, PA Consulting's analysis of the Scandinavian financial services industry reported that 28% of respondents list restrictive sector-wide regulation as their top barrier to innovation (PA, 2016).

On the other hand, regulation can drive innovation. The Economist (2009) credits government regulations as the most important factor for the success of the US information technology industry. In their book, Cowhey, Aronson, and Abelson (2008) make the case that regulation sometimes fragments industries to replace monoliths with specialised and modularised companies that work together to build on complementary skills. As a result, the industry experiences tremendous innovation and establishes common standards. The role of regulation on innovation is therefore split across the challenge of compliance and the effect on market competition.

Through a theoretical lens, we can identify four categorical determinants of innovation and their effects in isolation. However, the interplay between determinants will vary depending on the situation and is therefore further investigated in our study (from section *3. Methodology*). We now turn our attention to the literature on alliances formed among firms for strategic purposes.

2.3 Strategic Alliances: An Overview

As innovation and continuous renewal becomes increasingly important, the ways in which firms can acquire and develop new resources sits at the heart of strategic theory. In the following section, we investigate the existing theory on strategic alliances. We start by defining the term *strategic alliance*. We then introduce the resource-based view and transaction cost economics to explain the reasons for establishing alliances. Thereafter we present the four structures of alliances adopted from literature and their differentiating characteristics. Following

this section, we investigate the literature combining innovation and alliance theory and identify the gap in this literature that substantiates our study.

2.3.1 What are Strategic Alliances?

Strategic alliances are cooperative arrangements between organisations (Das & Teng, 1998). Although most definitions rely on a shared tenet of firms working together towards a common goal (hence, "strategic"), there is no conclusive definition and different perspectives disagree regarding the number of member firms. Some researchers explicitly define strategic alliances as occurring between two firms (Gulati, 1998b; Stolwijk, Ortt, & den Hartigh, 2013), while other academic literature includes cases of two or more organisations collaborating (Agarwal, Croson, & Mahoney, 2010).

We adopt a broad and comprehensive perspective of strategic alliances to represent the whole of hybrid organisational structures (see below for Williamson (1991), including so-called "alliance networks" (Baum et al., 2000). However, we refrain from analysing in-depth the structural and quantitative variables of alliance networks, such as network connectivity, density, and structural holes (Stolwijk et al., 2013).

We adopt the following definition of strategic alliances:

> *"An alliance is established when two or more organizations mutually see collaboration as beneficial, so organizational goals and external opportunities jointly determine alliance formation"* (Mitsuhashi & Greve, 2009, p. 977)

We consider that this definition plays well to our broad scope and fits with the internal and external determinants of innovation as identified in the first part of our literature review.

2.3.2 Theoretical Rationales for Establishing Alliances

The most salient explanations for establishing strategic alliances are provided by the resource-based view (RBV) of the firm and transaction cost-economics (TCE) (Yasuda, 2005). These theories each adopt a unique perspective of the firm and its environment. The RBV opens the black-box of the firm to analyse the internal factors leading to competitive advantage (Penrose & Pitelis, 2009); (Wernerfelt, 1984). However, TCE is concerned with the external boundaries of the firm and its transactions with other entities in the market (Williamson, 1985). We

have chosen to adopt both theories for a dual-perspective of alliance motivation, as these theories combined mirror our internal-external perspective on innovation and its determinants.

The RBV holds that firms establish strategic alliances to bring together complementary assets owned by different organisations (Stuart, 2000). Strategic alliances allow firms to share tangible resources (such as physical and financial assets) or intangible resources (such as technology, skilled personnel and reputation) for mutual benefit (Das & Teng, 1998). The RBV thus recognises the resources and factors within the organisation as a motivation for alliances.

According to the transaction cost perspective, strategic alliances are formed if *"the associated costs are minimized amongst other strategic options"* (Yasuda, 2005, p. 765). Williamson (1991) argues that firms will choose among three discrete structural alternatives for conducting a transaction (e.g. acquiring or developing new resources): *market* (buying or selling with suppliers, competitors, or customers), *hierarchy* (internal development), and *hybrid* (interorganisational design). The choice among governance structures depends on the costs relating to coordinating and monitoring a transaction. Firms enter strategic alliances to minimise "*the total cost required to achieve specific business goals"* (Yasuda, 2005, p. 765). TCE is useful as it identifies alliances as a distinct strategic option from market transactions and internal development.

2.3.3 What types of alternative structures can alliances take?

The structure of an alliance provides a setting for continuous interaction among alliance partners and is critical for achieving the partners' strategic and operational objectives (Yoshino & Rangan, 1995). Yasuda (2005) identifies four discrete alliance structures in his typology of alliances: *technology licence, joint R&D agreements, sourcing agreements,* and *joint ventures*. In the following table, we present the four structural alternatives along with their main characteristics.

Table 2. Alliance Structures and Main Characteristics	
Alliance Structure	**Alliance Characteristics**
Technology Licence	The firm is allowed to deploy another party's intellectual technology for its own use in return for compensation.
Joint R&D	Firms collaborate and share resources to develop specific technologies or solutions subject to mutually agreed upon goals.
Sourcing Agreement	Firms consign manufacturing services to partners that provide customised and finished (or semi-finished) products.
Joint Venture (JV)	Two or more firms pool resources to create a legal entity owned by the partner firms.

Adopted from Yasuda (2005)

The rationale for choosing one alliance structure over another is explained by the two theoretical perspectives of RBV and TCE:

Table 3. Explaining alliances with RBV and TCE		
Alliance Structure	**Resource-Based View**	**Transaction Cost Economics**
Technology Licence	Firms exchange technological and financial resources	Licensing fee is lower than costs of internal development
Joint R&D	Firms combine technological and financial resources	Costs for joint R&D are lower than for in-house R&D
Sourcing Agreement	Firms exchange manufacturing resources and financial resources	Cost for consignment is lower than in-house production
Joint Venture (JV)	Firms combine technological, financial, manufacturing, and distribution resources	Costs related to joint venture are lower than costs of solo operation

Adopted from Yasuda (2005)

2.4 Alliances and Innovation

Innovation involves high levels of uncertainty. As a result, firms often partner up to pool complementary capabilities, share risks, reduce costs, and gain access to new markets, technologies, and knowledge (Powell, Koput, & Smith-Doerr, 1996). More than 50% of radical innovation projects include partnerships because of the intricacy and resource intensity involved (Barczak, Griffin, & Kahn, 2009). Studying biotech firms, Powell et al. (1996, p. 116) found that "*when the knowledge base of an industry is both complex and expanding and the sources of expertise are widely dispersed, the locus of innovation will be found in networks of learning, rather than in individual firms*." Further, Das (2014) highlight the importance of forming alliances in high-technology industries to enhance R&D and innovation.

In their report "Is Collaboration the New Innovation?", EY (2016) argues that digital innovations challenge companies to move fast or risk falling behind. As such, traditional solutions like mergers and acquisitions are proving too costly and cumbersome in the face of an ever-shortening innovation cycle. Firms are therefore entering an increasing number of strategic alliances and "*industrial mash-ups*"[3] for innovation. As senior executives remain bullish on deal making overall, strategic alliances are expected to increase dramatically (Liu & Brody, 2016).

Despite the manifest importance of alliances for organisational innovation, there is limited academic research that investigates the interplay between these two concepts. The formation of alliances is not independent of its purpose to innovate (Das, 2014), yet there is little academic evidence that explores the ways in which different alliance structures are employed for different innovations. Some studies have investigated individual determinants of innovation, such as technology or organisational factors, and attempted to explicate a relationship with strategic alliance formations.

For instance, Cainarca, Colombo, and Mariotti (1991) argue that the relative maturity of the technology underpinning an industry will directly affect the rationale for entering one form of strategic alliance over another. Stolwijk et al. (2013) review the literature on the joint evolution of alliance networks and

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[3] In an industrial mash-up, a company shares an asset or capability with one or more partners in a way that creates new possibilities for all—without infringing on the company's ongoing use of the asset. Participants develop new products and services rapidly by piecing together components from an ecosystem of collaborating partners. Such mash-ups may take many forms, but unlike mergers or JVs, mash-ups operate under simple collaboration agreements that may not specify financial terms (EY, 2016).

technology, arguing that the development of technology shapes the evolution of alliances over time, and vice versa. The authors call for further research to investigate *how* the structure and composition of alliance networks change in response to technological developments.

2.5 Literature Review Summary

Multiple studies attribute innovation as the overarching motivation for establishing an alliance (Das, 2014; Rothaermel, Hitt, Ireland, Camp, & Sexton, 2001). Some researchers have studied the relationship between particular determinants of innovation and strategic alliances, such as Stolwijk et al. (2013) and Cainarca et al. (1991) above. However, to the best of our knowledge, there is no academic literature that establishes a holistic understanding that connects innovation to strategic alliance formations. This involves linking the identified multi-level determinants of innovation to the decisions involved in forming strategic alliances. Therefore, further research is required to explain how and in what instances firms employ strategic alliances for innovation.

Figure 3. Illustrating the Gap in Literature
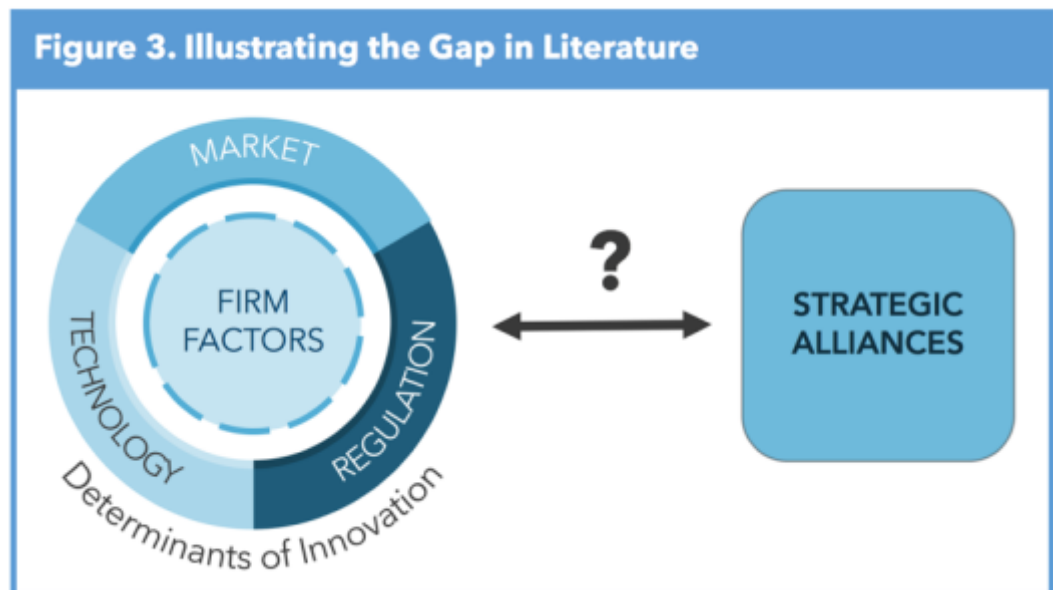
3. Methodology

In this section, we explain and justify our research design, and clarify the methods used for data collection. Thereafter, we introduce the case we studied, before elaborating on the approach applied when analysing and ensuring the quality of the data.

3.1 Research Philosophy

The objective of this thesis is to increase our understanding of **how and why companies employ strategic alliances for innovating in highly dynamic environments**. Our assumptions on the nature of organisations and how we find out about them fit the interpretive sociological paradigm of (Burrell & Morgan, 1979). That is to say, our research is "*informed by a concern to understand the world as it is, to understand the fundamental nature of the social world at the level of subjective experience*" (Burrell & Morgan, 1979, p. 28).

We explore alliances as instances created from the perceptions and consequent actions of social actors (Gioia, Corley, & Hamilton, 2013), following a subjectivist ontology where the nature of reality is socially constructed (Saunders, Lewis, & Thornhill, 2009). We adopt an interpretivist epistemological position "*to enter the social world of our research subjects and understand their world from their point of view*" (Saunders et al., 2009, p. 116).

3.2 Qualitative Research Design

Ultimately, we aim to generate theory that connects innovation and alliances. Our study is therefore inductive in nature, exploring the relationship between theory and research, in which the former is generated out of the latter (Bryman & Bell, 2015). Furthermore, the interpretive research philosophy lends itself to in-depth investigations and qualitative research methods (Saunders et al., 2009), which reject the practices of the natural scientific method and instead focus on how individuals make sense of their social world (Bryman & Bell, 2015).

Among qualitative research methods, the case study approach is a very popular method for creating theoretical constructs and propositions from empirical evidence (Eisenhardt & Graebner, 2007). According to Yin (2014), case studies are particularly interesting when (1) the researcher is trying to answer "why" and "how" questions; (2) the researcher has limited control of behavioural events; and (3) the

study focuses on a contemporary phenomenon. In addition, case studies serve as distinct experiments that investigates the rich, real-world context of the phenomenon (Eisenhardt & Graebner, 2007). Therefore, the case study approach is optimal for understanding the subjective reasons for establishing alliances and how social actors make decisions for organisational innovation.

3.3 Framing our Case Study

The unit of analysis in our single case study is the formation of innovation alliances in the Norwegian financial services industry from 2014 to 2017. The Norwegian financial services industry has captured the interest of media and academic researchers alike as it continues to undergo a drastic transformation; many actors in the industry are forced to revisit their core business strategy: "who are we and what is our role in society?". This case is suitable for answering our research question as innovation and alliances have both been heavily targeted as solutions for this fundamental business question. We also chose this industry because we are interested in financial services and assumed reasonable access to prospective interview candidates. Another motivation was the amount of press coverage and consulting reports that assured a wealth of secondary data.

We have focused our research on the ways in which social actors established innovation alliances for mobile payment and blockchain technologies in the time period 2014-2017, thereby bounding the case temporally and behaviourally (Yin, 2014). We chose to hone in on these two financial technologies due to an elevated interest from financial services firms, as indicated by investments and extensive publicity. Whereas blockchain is a relatively new and underdeveloped infrastructure technology, mobile payments have had time to reach maturity as a consumer-oriented product technology. These fundamental differences have implications for innovation and interfirm collaboration. Thus, these technologies are particularly relevant contexts for understanding innovation in financial services firms and the role of strategic alliances.

We acknowledge the non-traditional casing method that we have used by framing a single case around multiple events, as opposed to a single person, event, or firm. However, we investigate these events as alliances formed in one geographic market for a given period and within one of two technological domains. This holistic casing grants a better balance between detailed information and market-wide developments, enabling us to perform a thorough multi-level case study of the

industry as a whole. This is important for answering our research question, which seeks to explain the role of strategic alliances when innovating in rapidly changing environments.

Although the boundaries of our case are clearly defined, a certain degree of flexibility was necessary for our data collection to remain consistent with the nature of inductive research. Throughout our data collection process, we have not excluded discussions or material on instances of alliances and innovation that did not fall under the two focal technologies. Discussions about other mobile solutions, and fintech advancements such as artificial intelligence (AI) and robotics, yielded thought-provoking insights into the employment of alliances for innovation. Although we are investigating strategic alliances in the Norwegian market, it is impossible to isolate the Norwegian competition from that of the Nordics as some of the biggest players compete in multiple markets. Thus, we refer to developments in the Nordic market when appropriate.

3.4 Data Collection

Early in our research design process, we recognised the need for primary data to understand the perceptions and motivations of key social actors in the financial services industry. Interviews are a popular and highly efficient data collection method for gathering rich, empirical primary data, especially when the phenomenon is rare or infrequent (Eisenhardt & Graebner, 2007).

Supporting the qualitative research design and our exploratory research purpose, we chose to conduct semi-structured and in-depth interviews (IDIs). Semi-structured IDIs allow for the flexibility to ask follow-up questions and probe interviewees to explain or build on their responses, which is likely to open for novel insights and emergent themes (Saunders et al., 2009). This is important for our interpretive research philosophy as it allows us to understand the perceptions that informants ascribe to the phenomenon studied: namely, innovation alliances.

When interviewing respondents about past events and decisions, we are likely to encounter a mismatch between perceptions and exhibited behaviour due to various forms of bias (Saunders et al., 2009). The hindsight bias "*leads people retrospectively to see an event as having been inevitable, regardless of their predictions before the event*" while the attributional bias "*causes people, including strategic-level managers, to attribute favourable outcomes to the actions of*

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themselves or their associates and unfavourable outcomes to uncontrollable forces" (Huber & Power, 1985, p. 173).

To mitigate the risk of convergent retrospective sensemaking and/or impression management, we engaged multiple highly knowledgeable informants with differing perspectives on the focal phenomenon (Eisenhardt & Graebner, 2007). We interviewed organisational actors from different functional areas in different companies, as well as actors from other relevant organisations. The informants from these varied sources were all key personnel with in-depth knowledge of blockchain, mobile payments, strategic partnerships, and/or internal innovation processes.

During this research project, we have conducted a total of 22 interviews over our preliminary (7 interviews) and primary data (15 interviews) collection phase. We have also participated at conferences, seminars, and events, including:

- *OsloFinTech Fest: Future of FinTech & Banking*
- *PSD2 Workshop* by Bits and BankID
- *Blockchain in Finance - an evening with world leading fintech r3*
- Workshop: *European FinTech Policy & Regulation*
- *Smart contracts and the DAO war*

Figure 4. Timeline of Research Project
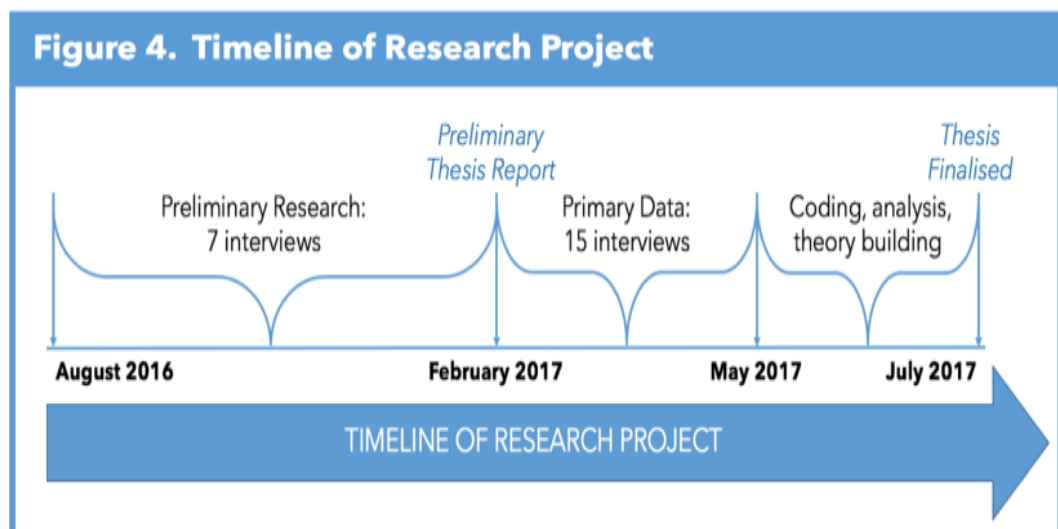
We spent a considerable amount of time performing preliminary research, since this is an important stage in narrowing down the scope of the thesis. This process was likely to save us valuable time and effort as it allows for modification and refocusing before too much time is committed to the project (Bryman & Bell, 2015). Our level of involvement in the fintech community and preliminary research also helped us identify and secure interviews with pertinent interview candidates.

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As the research moved from preliminary to primary interviews, our sampling method shifted from a snowball and personal networking approach, to a purposeful sampling of candidates based on who seemed likely to provide the most useful data. Informants included managerial and line employees at large financial institutions, start-up companies, and supporting/infrastructural organisations. We strove to interview all relevant parties in identified alliances to include varied interpretations of each alliance. We also interviewed fintech startups as viable partners in innovation alliances since they represent an important source of innovation in the Norwegian financial services industry. Lastly, we interviewed supporting organisations to get valuable insight about market forces, regulations, and cross-industry cooperation initiatives.

Interviewees were asked about the innovation decision-making process in their organisations, as well as specific instances of alliance formation. Most of the interviews were focused towards mobile payments. In the following table, the interviews are categorised by the fintech (mobile payment/blockchain) and type of alliance investigated:

Table 4. Distribution of Interviews			
Alliance Structure	*Focal Technology*	*Number of interviewees*	*Number of interviews*
Sourcing Agreement	*Mobile Payments*	*3*	*1*
Technology licence	*Mobile Payments*	3	3
Joint R&D	*Blockchain*	4	3
Joint Venture (JV)	*Mobile Payments*	5	3
General Partnership and Innovation Strategies	-	4	4
Startups & Innovation	-	5	3

We chose to include both the number of interviewees and the number of interviews conducted, as some interviews included multiple informants. This is efficient as it allows us to schedule one meeting at a time; however, it introduces the possibility that informants modify their answers when others are present. Another possible bias is that informants may interpret questions differently and

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whoever speaks first will determine the "correct" interpretation, thereby limiting the number of potential perspectives (Bryman & Bell, 2015). Some of our primary interviews overlapped and the total number of primary data interviews was 15.

Our data collection process also benefited from the wealth of secondary data afforded by financial magazines, press releases, newspaper articles, speeches, podcasts, and consulting reports. These data sources provided empirical evidence and reporting of events, as well as insight into the market dynamics and firm behaviours that brought on the innovation alliances in our study.

3.5 Data Analysis

The case study research design relies on continuous evaluation and interpretation of collected data. Since interviewing and analyses tend to proceed together (Langley, 1999), the following section often describes our analysis strategy in tandem with our data collection process. Our analysis strategy followed the trend of qualitative research by evolving serendipitously throughout the process (Creswell, 2013). However, in retrospect, we recognise that the steps in our analysis followed the general contours of the Creswell (2013, p. 183) data analysis spiral:

Figure 5. The Data Analysis Spiral (Creswell, 2013)
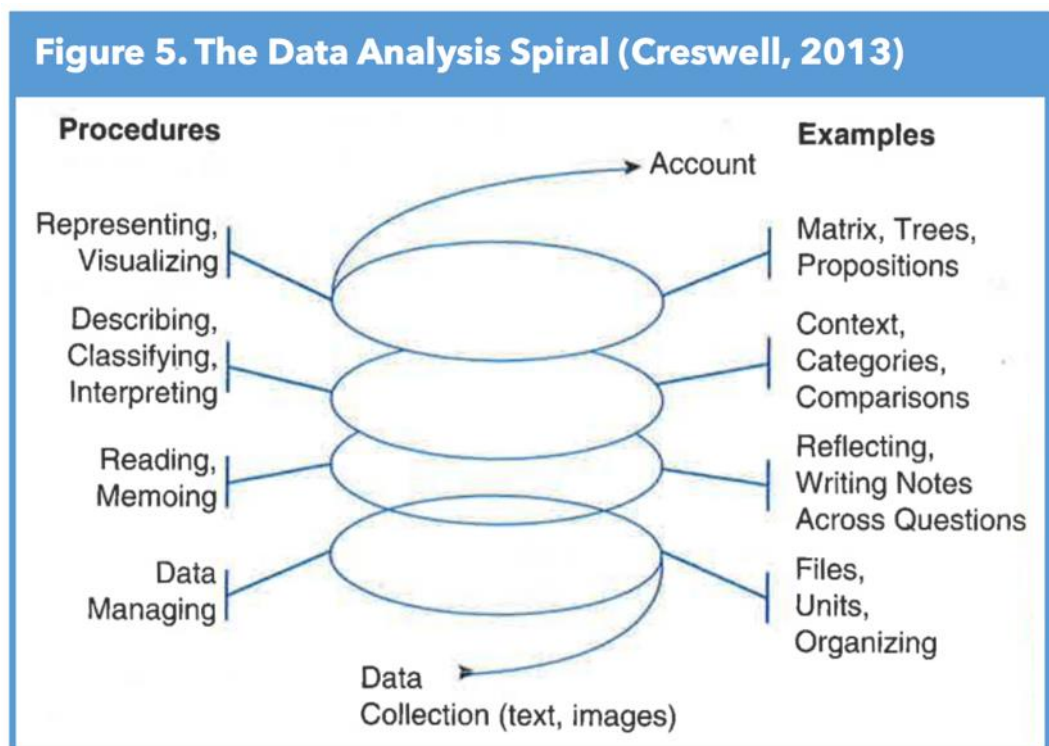
Data Managing. Throughout the data collection process we transcribed those interviews that had been recorded. In total, 11 interviews were transcribed and combined with interview notes from 4 non-recorded interviews. The aggregated

data made up approximately 100,000 words and 200 pages of transcribed material, which was collected in a compendium with relevant headings and imported into Computer Assisted Qualitative Data AnalysiS software *NVivo*.

Reading and Memoing. This stage involved reading through the compendium in its entirety multiple times and making notes about common emerging concepts. We also made connections to relevant articles and other secondary data sources.

Describing, Classifying, and Interpreting Data into Codes. The cross-analysis of primary interviews and secondary data sources enabled us to establish a chronological description of critical events, forming the backbone for the presentation of results. Next, we aggregated data by categorising the information according to a priori codes to guide an initial "lean coding" review - five or six categories of with shorthand labels (Creswell, 2013). While a "prefigured" coding scheme has the potential drawback of limiting our analysis, we continued to code top-level nodes and be open to themes not initially included. Ultimately, we arrived at six top-level nodes in our *NVivo* analysis, each with its own "family" of sub-themes. These nodes corresponded to our preconfigured themes arising from our literature review: Alliances, Other Strategic Alternatives, Technology, Market, Organisational Factors, and Regulation (categorisation is presented below).

The coding process occurred synchronously as interviews were split between the two of us, and regular discussion of the dataset and each our own interpretations was important to arrive at our final nodes. Whenever we had coded data using different nodes, we discussed the newly emerging concepts. Often, we had similar interpretation of the dataset, but had used synonymous phrasing. We believe this "back-and forward process" of developing nodes and analysing them makes the results more reliable, since both researchers were challenged about their coding and understanding of the data.

Representing and Visualising Data. The final phase of the spiral calls for researchers to represent the data as a packaging of what was discovered in text, table, or figure form (Creswell, 2013). Our empirical findings and discovery of themes and concepts are jointly presented in section 5 of this paper as a narrative following the developments in the market. However, a visualisation of common terms[4] and a graphic overview of developed nodes is useful to shed insight into the data analysis process:

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[4] See appendix 3 for word cloud generated by *NVivo*

Figure 6. Illustration of Top-Level Nodes and Sub-Themes
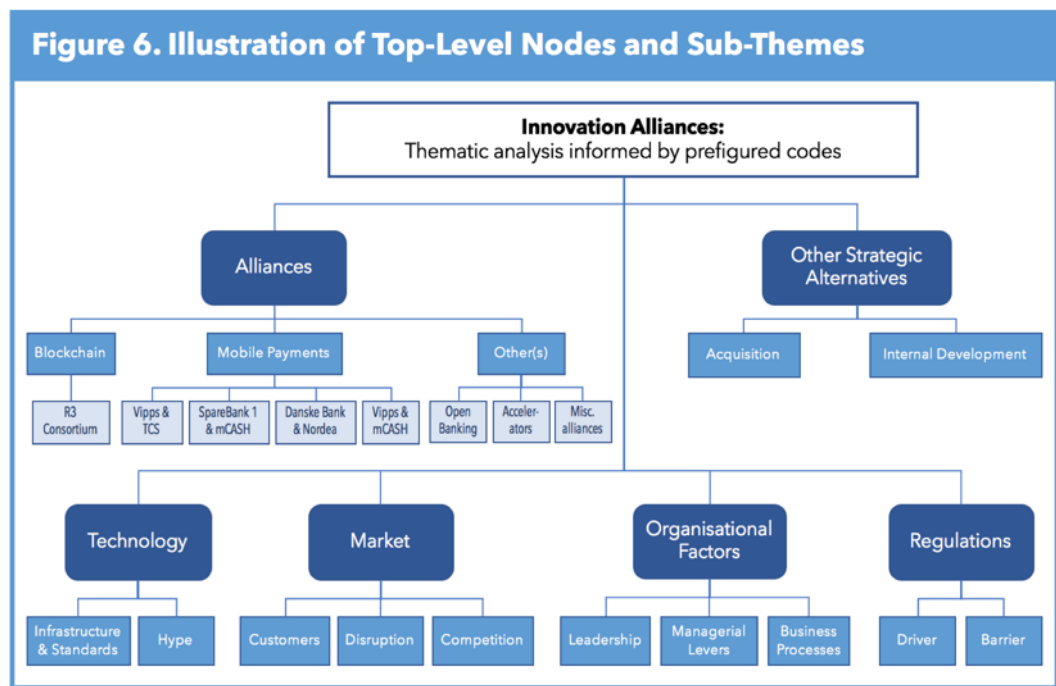
3.6 Ethical Considerations

Throughout our study, we have taken conscious steps to curtail the potential for unethical behaviour in our research design. Diener and Crandall (1978) identify four ethical considerations for researchers: harm to participants, lack of informed consent, invasion of privacy, and deception. To address these issues, we have provided all interviewees with a study information and consent form[5] and taken steps to protect the anonymity of respondents.

3.6.1 Study Information and Consent Form

We requested interviewee signatures to ensure a mutual understanding of the study's scope and rights of the respective parties. This was the medium through which interview recordings were requested. The form aimed to provide sufficient information without adversely influencing the interview.

3.6.2 Anonymity

When presenting our empirical findings, we refrain from attributing insights, quotations, or perspectives to individual interviewees or the organisations they represent. Instead, we present our timeline as informed by all interviewees and coalesce interviewee perspectives into convergent themes and concepts. For

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[5] See appendix 4 for the attached study information and consent form

quotations, we have confirmed their use with the respective parties and anonymised their source. In this manner, we have ensured that interviewees maintain anonymity as established in the study information and consent form.

3.7 Validity and Reliability

According to Yin (2014), conducting case studies is one of the most challenging research methods of all social science endeavours. In particular, it is challenging to justify inductive case research, which rests heavily on the researcher's ability to gain valuable insight into complex social processes that quantitative data cannot easily explain (Eisenhardt & Graebner, 2007). The academic community disagrees as to the importance of ascribing terms like reliability, replicability, and validity in qualitative research (Yin 1984; Stake 1995). Using the quantitative language of positivist research is incompatible with qualitative work; instead, using different terms for "validity" and "reliability" is a deliberate and liberating act that seeks to "*to remind ourselves of the issues and processes that must weave their way through and beyond our qualitative research to keep it and us honest and believable*" (Ely, Anzul, Freidman, Garner, & McCormack-Steinmetz, 1991, p. 95).

It is necessary to acknowledge the divergent perspective of qualitative research for legitimising the case study research method and measuring the extent to which its results can be relied upon.

3.7.1 Validity

Creswell (2013, pp. 249-250) identifies a multitude of perspectives on the importance and application of "validation" in qualitative research, which he concludes is "*an attempt to assess the 'accuracy' of findings, as best described by the researcher and the participants*." The author argues that, regardless of adopted criteria, researchers have several "validation strategies" at their disposal. The validation strategies employed in this study target the validation standards constructed by Eisner (1991), who discusses credibility rather than validation:

Structural Corroboration relates to the use of multiple sources of data to support or contradict interpretations**.** Yin (2014) argues that case study inquiries rely on multiple sources of data that must converge in a triangulating fashion. As concepts emerged from qualitative analysis, we cross-checked findings with news articles, studies, internal memos, and other relevant data. This triangulation is important to

increase the credibility of findings; as different sources of data inform one another, discrepancies are retired and reinforced concepts increase in theoretical strength (Creswell, 2013; Yin, 2014).

Consensual Validation seeks the opinions of competent others on conclusions and arguments drawn from the interpretation of data (Eisner, 1991). Throughout our research process, we sought the opinion of our peers, supervisor, and family on pivotal decisions and our primary conclusions. In addition, the gradual data collection process afforded the opportunity to test emerging findings with interviewees over a period of several months.

Referential Adequacy suggests the importance of criticism, and relies on separate analysis of one portion of data following preliminary findings (Lincoln & Guba, 1985). Although we did not consciously exclude a portion of data from analysis, we later drew on secondary data sources, as well as shorter interviews and discussions not transcribed or included in the primary data. In this way, we used complementary data to regularly test the validity of our findings. Furthermore, informants expressed an interest in reviewing our final report upon completion, further motivating us to accurately portray events and information.

3.7.2 Reliability

The lack of standardisation in semi-structured interviews may interfere with the reliability of our study (Saunders et al., 2009). However, the assumption underpinning non-standardised research methods is that the context is complex and dynamic. The strength of using semi-structured interviews is the flexibility to explore and uncover theory. Therefore, the reliability of our study comes down to our capabilities in terms of performing accurate qualitative data analysis on relevant concepts. In addition, our own interpretation might hamper the study's reliability as other researchers potentially could find different results based on the same study.

The case study design presents a challenge in the extensive demand on the researchers' intellect, ego, and emotions through a non-routinized data collection process (Yin, 2014). The interview guide merely served as starting point for creating a rich dialogue with the informants. The guide regularly changed throughout the data collection process, representing the continuous evolution of our questioning and indicating strong questioning abilities. These changes were a result of questions emerging from interviews, but also from the terminology, moods, and inferences we assimilated throughout the series of interviews. Furthermore, no

more than two interviews were conducted in a single day due to the depletion of analytical energy following a semi-structured interview process (Yin, 2014).

At each stage of our data collection, from preliminary research to primary interviews, we discussed amongst ourselves to form a strong grasp of the issues being studied. This aligned our interpretations of theoretical constructs and the boundaries of our case study, and was a clear advantage of being multiple researchers in a subjective data collection process (Gioia et al., 2013).

4. The Norwegian Financial Services Industry

Many academic research papers refrain from presenting the details of rich cases, instead treating the case as an additional argument for the theoretical contribution (Siggelkow, 2007). However, it is important to present the case in as much detail as possible since a sufficient degree of independent knowledge is necessary to persuade the reader of our particular interpretation (Das & Teng, 2000).

In the following section, we present the context of our case study in which we conducted interviews and collected secondary data. To show how the Norwegian financial services industry classifies as a highly dynamic environment, we preview fintech and regulatory changes that are upending the market.

4.1 Emergence of Fintech

The financial industry in Norway is increasingly characterised by financial technology developments that fragment the market and challenge the traditional business models of banks. Fintech is "a broad category that refers to the innovative use of technology in the design and delivery of financial services and products" (Blake, Hughes, & Vanham, 2016). The application of fintech innovations runs across multiple business areas including payments, lending, and investment management. Ranging from big data, artificial intelligence (AI), and mobile payments, banks are increasingly adopting new technology to tailor products to various customer needs (Blake et al., 2016).

Although London stands as the fintech capital of the world (Imbach, 2016; Lunn, 2015), the Nordic market has emerged with its own flourishing fintech scene. Sweden has taken the main stage, with startups like Tink (personal finance app), iZettle (card readers for small businesses), and the "unicorn"[6] Klarna (online purchasing) (Williams-Grut, 2015b). However, Norway features over 90 fintech companies as the Scandinavian countries band together with the goal of becoming a world leading fintech hub by 2020 (Hannestad, 2017).

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[6] A startup firm valued over $1 billion. Examples include *Uber*, *Airbnb*, and *Snap, Inc.*

Figure 7. Overview of Norwegian Fintech Players
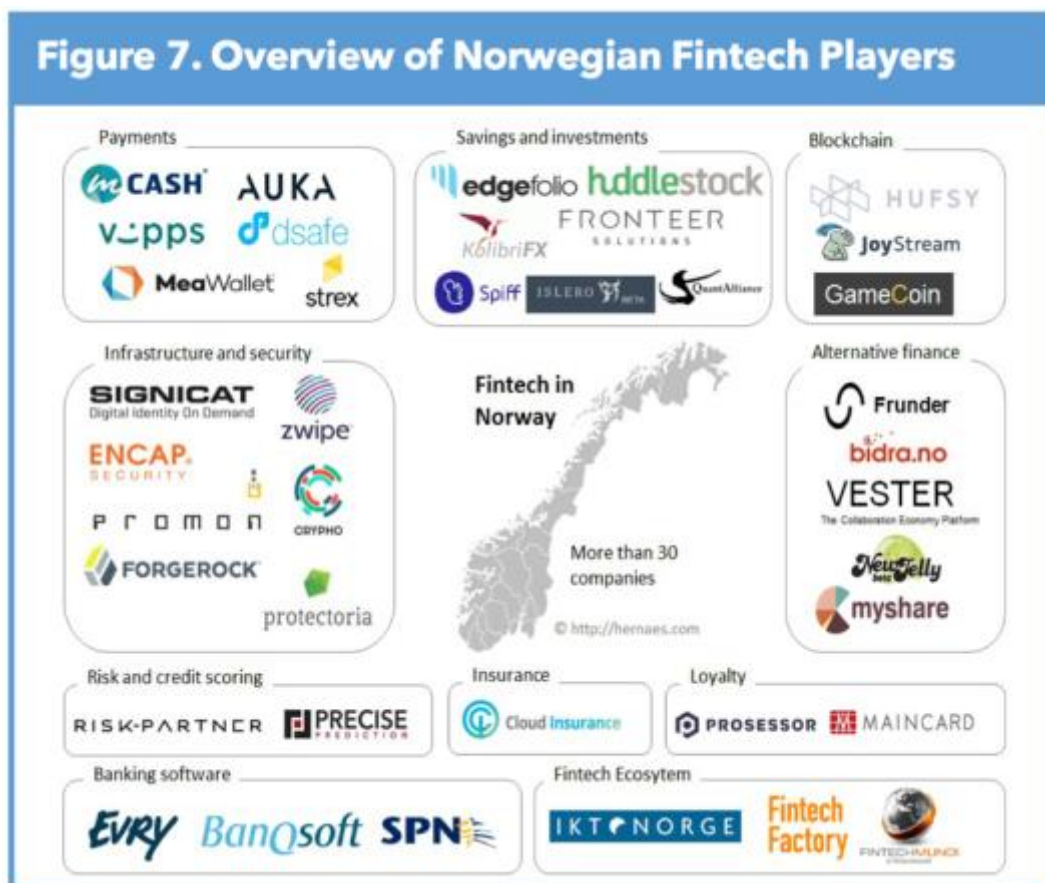
Source: Hærnes (2016)

Incumbent commercial banks naturally have a vested interest in these fintech developments. The largest banks in Norway by deposit market share are DNB (41%), Nordea (10%), Danske Bank (6%), SpareBank 1 SR-Bank (4%), and Sparebanken Vest (3%) (FinansNorge, 2016); the same ranking applies when measuring for gross lending volumes with DNB at 29% and Nordea at 12% (FinansNorge, 2015). These banks offer a myriad of financial services to personal and corporate customers, including deposits, savings, loans, and financial trading.

4.2 Regulatory Changes

In addition to the technological developments, the Norwegian financial services industry is challenged by changes in the regulatory environment. Regulation plays a critical role in financial services, affecting both the competitive and collaborative dynamics in the market. The following timeline illustrates the regulatory changes that have had far-reaching implications for the Norwegian and global banking industry:

Figure 8. Timeline of Regulatory Changes

High entry barriers	Facilitated increased competition in the EU financial markets by admitting non-banks	Higher capital requirements, as well as increased equity and risk assessment requirements	Open APIs will increase competition from non-banks
Financial markets shocked			
Reduced trust			

Financial Crisis 2007-2008 | *PSD1* 2009 | *Basel III* 2014 | *PSD2* 2015

Timeline of regulatory changes influencing financial services industry

The European Union introduced new regulations following the global financial crisis. In 2009, the EU implemented the first Payment Services Directive (PSD1) to increase competition and consumer choice in the financial market by allowing non-bankers to manage credit transfers, card payments, and mobile and online payments (Commission, 2017). Basel III is the centrepiece of EU regulatory reform, calling for banks to hold more capital and approach credit with regulated risk management models. Increased capital requirements pressure banks to urgently adapt their business models and innovate for new revenue possibilities (Nouy, 2016).

PSD2 is an EU regulation that requires banks open up their application programme interfaces, or APIs - the routines, protocols, and tools for building software applications (Hellström). The intention is to "make it easier to share customer transaction and account data (where the customer has given their consent) with Third Party Providers, including fintech and retail businesses, telecommunications providers, payments services, and financial account aggregators" (OpenBankProject, 2017). Essentially, startups and non-banks (i.e. Google and Amazon) will have access to bank data and will be able to capture niche segments in financial services.[7]

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[7] Although not a member of the EU, Norway is affected by the EU directive as a member of the European Free Trade Association (EFTA) and party to the Agreement on a European Economic Area (EEA)

5. Empirical Findings

The key findings of our case study are that the structured innovation alliances and *strategic alliance initiatives* identified in our study provide firms with relevant innovation outcomes and improve their organisational innovation processes. We find that firms employ such interorganisational innovation designs to deal with a highly dynamic business environment forged by technological and regulatory changes.

In the development of mobile payments and the evolution of the R3 blockchain consortium, we observe the unique ways that innovation alliances are formed by market forces, regulatory changes, and technological developments. These forces when combined drive the need to innovate and inform firms about specific innovation outcomes, leading to the formation of differently structured alliances. We also find that the firms in our study have introduced a form for open-closed innovation in what we term *strategic alliance initiatives*, which provide context for exploring non-specific innovation outcomes, identifying potential future alliances, and improving internal innovation processes.

Technological and regulatory changes have forged a highly dynamic business environment for banks and other financial institutions. As a result, we observe an increased number of innovation alliances being established to deal with these changes. In the following section, we present our results as a chronological description of significant alliance events. The established timeline is followed by a theoretical dissection of each alliance formed and the motivations for choosing among the four forms of alliance structures identified in the literature review: technology licenses, joint R&D, sourcing agreements, and joint ventures. We conclude by describing the emergence of *alliance initiatives* in our study as experimental constructs serving as a foundation for interfirm collaboration.

Throughout our results, we rely on the comments and insights provided by informants and secondary data to drive our reasoning. However, we highlight that the conclusions drawn on firm-level strategic decisions were not a result of confidential information from respective firm representatives. As described in our methods, we relied on several highly knowledgeable informants from different organisations who provided their perspectives on market developments. Our empirical findings are entirely a result of coalescing these perspectives for a shared understanding of decisions and their consequences. Any points of substantial

contention or debate among our interviewees does not appear in the consolidation of findings below, but rather in our *Discussion*.

Below, we describe the alliance developments and market dynamics in mobile payments and the R3 blockchain consortium. Throughout our findings, the effects of PSD2 regulation and changing consumer behaviour are specifically diagnosed; however, it is important to note that the effects cannot be isolated to particular alliances. Rather, the implementation of PSD2 and changing customer behaviour were underlying drivers for all the innovation alliances investigated in this study.

In our study, PSD2 was seen as a driver for innovation because of the future competition posed by non-financial actors. Interestingly, the banks in our study view PSD2 as a market opportunity rather than a threat. As PSD2 increases rivalry in the financial services industry, partnerships are expected to be of increased importance; the regulation presents both a challenge and partnership opportunity for banks to become more customer-centric (OpenBankProject, 2017). One informant said: *"It will be easier to enter alliances and partnerships which previously did not seem so relevant."*

> *"The customers behave and expect services that are different from before. They are impatient, they are empowered, they are knowledgeable."*
> - Casper Von Koskull, CEO Nordea (Koskull, 2017).

The change in customer behaviour and sophistication has had clear effects on the strategy of firms in our study. Informants expressed how social media and tech companies such as Facebook, Google, and Amazon have changed customer expectations of digital products and services. Banks must therefore strive to offer easy and user-friendly solutions for its customers to transfer money and pay for services as quickly as possible.

As financial services firms become increasingly digitalised, the speed at which their products are adopted, evaluated, and thrown away is quicker than ever. The barriers to product adoption that once assured customer loyalty are eroding, and firms are pressured to develop the *right* innovation outcome that effectively targets customer needs. Informants agreed that failing to meet customer expectations in a bad first impression will dissuade the customer from trying your solution again in the future, opting instead for an alternative.

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One informant identified a disparity between the notions held by banks and their customers: the bank consider the customer's primary bank the one in which they have their loan, whereas the customer considers their primary bank the one facilitating everyday payments. Recognising the importance of maintaining customer contact over time was a precursor to the development of mobile payment platforms in the Norwegian market.

5.1 The Development of Mobile Payment Platforms

The multiple forms of alliances established during the development of mobile payment platforms provide a strong setting for understanding the interconnection between innovation and alliance decisions. The following timeline illustrates the evolution of the Norwegian market for mobile payment platforms, which is reviewed in full detail below:

Figure 9. Timeline of Mobile Payment Developments in Norway
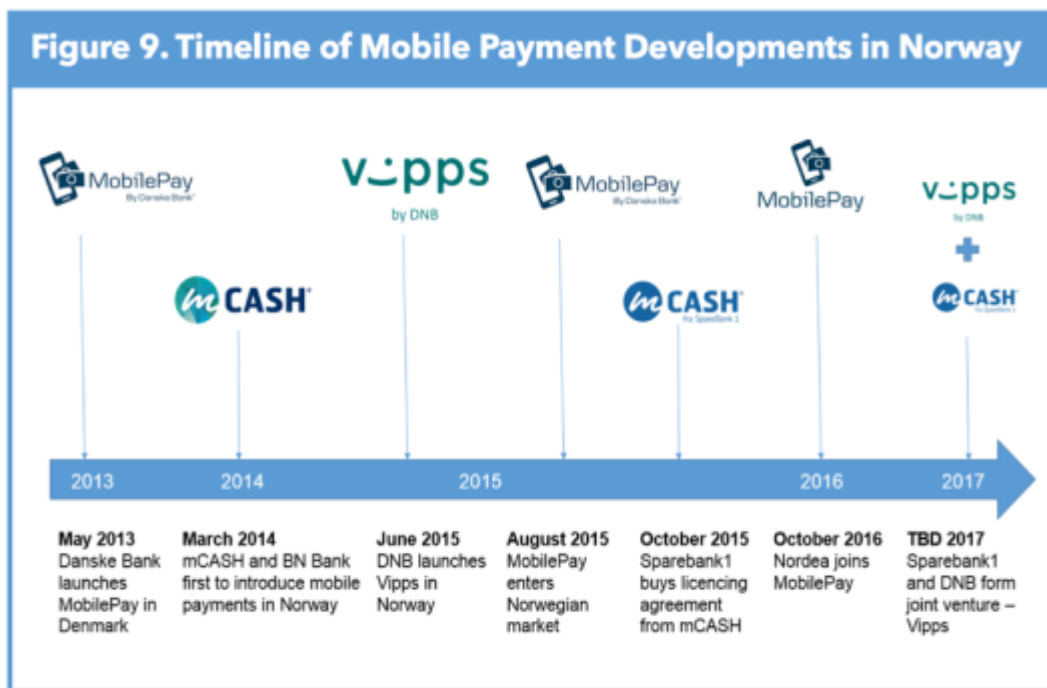
In 2013, more than 70 Danish financial institutions including Nordea Bank Denmark, Nykredit Bank and Jyske Bank formed a joint venture called *Swipp*, enabling their customers to pay and transfer money using their mobile phone (Swipp, 2017). However, development issues emerged as partners struggled to make joint decisions. In May 2013, Danske Bank launched *MobilePay* in Denmark "to address the need for very simple money transfers" (MobilePay, 2017b). The app reached 25,000 downloads on the first day and 500,000 downloads within the first

four months. As of 2016, more than 3.4 million Danes have downloaded the app (MobilePay, 2017b).

In Norway, the first company to present a mobile payment solution was the start-up mCASH (now Auka) together with BN Bank ASA in March of 2014 (BN Bank, 2014). Their solution targeted peer-to-peer (P2P), online and retail payments. Similarly, DNB observed the success of *MobilePay* in Denmark, and quickly realised that the Norwegian market could be the next target for *MobilePay*. Although DNB had been in contact with the existing *mCASH* solution, the bank instead started to develop its own mobile payment application in 2014 (Schmidt, 2016) together with the Indian company Tata Consulting Services (TCS).

DNB launched *Vipps* in June of 2015 with an intense marketing push nationwide that led to an unprecedented success in the market. Within two weeks, 140,000 had downloaded *Vipps*, and as of May 2017, that number has reached more than 2.5 million users, making *Vipps* by far the most dominant player in the Norwegian market (Strzelecki, 2017). As a comparison, *mCASH* had 40,000 downloads in its first six months (Schmidt, 2016), whereas *Vipps* had 700,000 downloads in its first six months (Strzelecki, 2017).

In August 2015, *MobilePay* entered the Norwegian market only three months after the launch of *Vipps* (Sikkeland, 2015). *MobilePay* offered free mobile payments and *Vipps* and *mCASH* quickly eliminated their transaction fees. In October 2015, Sparebank1 established a licensing agreements from the mCASH startup and moved to distribute the *mCASH* technology as their own mobile payment solution (Sagmoen & Wig, 2015).

One year later, in October 2016, the Nordic bank Nordea announced its decision to join a partnership on *MobilePay* in Denmark and Norway (Nordea, 2016a). At the same time, Danske Bank invited "*all interested Danish, Norwegian and Finnish banks to participate in the MobilePay partnership*" (Nordea, 2016a).

The banks continue to support their respective mobile payment platforms in the face of ever tougher competition. As an immediate consequence of PSD2 implementation, tech behemoths like Facebook and Google are expected to enable easy money transfers through added features in Facebook Messenger and the creation of a Google Wallet (Google Wallet, 2017; Newsroom, 2015).

The threat from powerful social media actors has prompted financial services firms to increase their collaboration efforts. Gjensidige Bank joined Danske Bank and Nordea in January 2017 to promote *MobilePay* (Gjensidige,

2017). In February 2017, *Vipps* and *mCASH* announced that they would join forces to create a new company under the name *Vipps* (Sagmoen & Wig, 2015). A total of 106 Norwegian banks will support the reigning mobile payment platform, with DNB as the 52% majority owner and the rest divided among the local savings banks (Sagmoen & Wig, 2015).

In the following section, we present a detailed analysis of the alliances identified in the above chronological description of events. For each alliance, we discuss the relevant market dynamics that pressured the focal firm to choose alliances instead of internal development or market transaction. We also investigate the company's motivations for choosing among the structural alternatives: sourcing agreement, technology licensing, joint venture, and joint R&D agreement.

5.1.1 Sourcing Agreement - DNB develops *Vipps* with Tata

> *"We knew that whoever took the leadership position in Norway would get a clear competitive advantage that would be difficult to recapture later on."*
>
> - CEO of Vipps Rune Garborg to *Kapital* (Schmidt, 2016, p. 50)

With *MobilePay* enjoying uncontested success in Denmark, DNB realised the threat to its market-leader position in Norway if *MobilePay* were to enter the Norwegian market. The threat of lost market share pressured DNB to place significant strategic importance on having its own mobile payment solution.

DNB was faced with a short time to market and had to look outside the company for a solution, as the resources for such a large and technical development process did not exist within the bank at the time. However, no commercial "out-of-the-box" solution existed in the market that would fit DNB's needs and existing infrastructure. The bank had to be involved in the co-creation of a final solution, which involved sewing together technological components that already existed in the company's infrastructure and product offering.

Interviewees noted that a sourcing agreement was preferred when it was strategically important to determine the specifications of the product and minimise time to market. DNB actively chose not to license the existing mobile payment technology from the Norwegian startup firm mCASH. Instead, the bank chose a

sourcing agreement for maximum control over the final product. DNB wanted to determine product specifications and actively participate in designing the product. However, it was argued that sourcing agreements require attention from the sourcing firm, which may incur administration costs as a result. Sourcing agreements are therefore more suitable for projects of a certain size and significance, further highlighting the strategic importance of control for DNB.

The bank experienced significant time pressures as the entry of *MobilePay* loomed on the horizon. Although licensing technology could have resulted in a speedier delivery of product (see below), the need for control and customisability, as well as the bank's pre-existing supplier relationship with Tata Consulting Services, eliminated the possibility of tech licensing or joint venture.

5.1.2 Technology License - SpareBank 1 agreement with *mCASH*

BN Bank, owned by the SpareBank 1 alliance/group, was licensed with the *mCASH* technology in March 2014 and was the first bank to distribute a mobile payment solution in the Norwegian market. However, as competitive pressures built, the SpareBank 1 group reacted by extending its technology license agreement to the entire bank alliance in October 2015. This meant the group of 16 independent local banks would collectively own the distribution rights to the *mCASH* app for the Norwegian market. The group also inherited the 100,000 users and 600 retail agreements already established by the app (SpareBank 1 Hedmark, 2015). The startup behind the mobile app changed its name from mCASH to Auka and began licensing its proprietary technology to a less crowded European market.

> *"We do not always need to develop all services ourselves, and we gladly cooperate with others or buy good solutions for specific purposes. To cooperate with innovative companies is the right way to renew the financial industry and confront the wave of digitalisation."*
>
> - Richard Heiberg, CEO of Sparebanken Hedmark (SpareBank 1 Hedmark, 2015)

Months after the DNB-TCS development had started, time was of the essence and in-house development was therefore ruled out. Interviewees identified that a technology licence was the preferred option when time was critical and it was more important to get *a* solution, rather than *the* solution. In other words, the time pressure was greater and the need for control was less important for SpareBank 1

than for DNB. Since mCASH/Auka had already developed the product, Sparebank1 could immediately launch the app after the contractual negotiations were finalised.

Our informants identified a potential disadvantage of choosing a technology licence agreement in that the licensee has limited control over decisions in the development process; the licensee will have to accept the solution/product/platform/technology provided by the licensor, having only minor influence on its design and specifications.
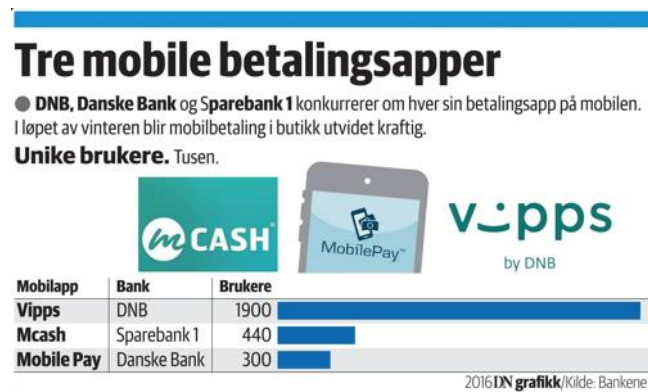
5.1.3 Joint Venture - Nordea joins Danske Bank for *MobilePay*

In October 2016, Danske Bank decided to spin off *MobilePay* as its own company, inviting all Nordic banks to join forces and create a common Nordic infrastructure for mobile payments (MobilePay, 2017a). In 2015, the financial magazine *Kapital* reported that Nordea's Director of Communications, Christian Steffensen, alluded in an email to the introduction of an additional mobile payment platform in Norway (Schmidt, 2016). However, in October 2016, Nordea dropped its development of *Swipp* with 900,000 users and became the first to announce its partnership with Danske Bank's *MobilePay*, which boasted 3 million users in the Danish market (Frandsen, 2016). A new distribution company for *MobilePay* will be created in Denmark and Norway, with Danske Bank and Nordea as the two main shareholders (Ekeseth, 2016b).

In a Nordea press release, Tonny Thierry Andersen, a member of Danske Bank's Executive Board, and Peter Lybecker, CEO of Nordea Bank Denmark, emphasised the importance of joining forces *"to remain ahead of the increasingly competitive game. New mobile payment solutions are gaining ground very quickly, and new international players regularly appear in the market, also in the Nordic countries"* (Nordea, 2016a).

The JV was formed with the intention to *"make MobilePay the most innovative, efficient and customer friendly mobile payment platform for consumers and retailers in the Nordics"* (Ekeseth, 2016b). Nordea chose to form a joint venture with *MobilePay* due to the perceived urgency of participating in the market for mobile payments and the development issues surrounding the solution *Swipp*. Both Nordea and Danske Bank operate and hold strong positions in the Nordic markets and share a common interest in developing a mobile payment solution across borders. Other alliance structures such as sourcing agreement or technology licence would have been too time-consuming and resource demanding.

The joint venture formation meant that three distinct solutions had developed in the market with different distributors and competition by number of users (Ekeseth, 2016a):

5.1.4 Joint Venture - DNB and SpareBank 1 combine platforms

The competition further intensified following Nordea's decision to enter a partnership agreement with Danske Bank for *MobilePay*. Consequently, the banks behind *Vipps* and *mCASH* merged their platforms to form a joint venture in February of 2017 (Hoemsnes, Trumpy, & Eriksen, 2017). The new company is expected to be established in the fall of 2017, with DNB holding 52% of the shares, the SpareBank 1 alliance with 25%, the independent savings banks at 12%, the Eika alliance with 10%, and Sparebanken Møre with 1% (Sagmoen & Wig, 2015).

CEO of Sparebanken Vest, Jan Erik Kjerpeseth, expressed in an interview how Nordea's decision to enter a partnership with *MobilePay* worked as a catalyst for the agreement between *Vipps* and *mCASH*. Kjerpeseth highlights that SpareBank 1 discussed the possibility of joining *MobilePay,* but said, "*I think many banks understood that mobile payments would have to happen through one big Norwegian cooperation, making Vipps the only right [choice to make]*" (Hoemsnes et al., 2017). This argument ties back to the threat posed by PSD2, as one large Norwegian solution may be more likely to withstand international competition from actors such as AliPay and Facebook.

DNB and SpareBank 1 each had different motivations for forming the joint venture. Whereas DNB wanted to increase its already leading market position and access the vast distribution channels afforded by the SpareBank 1 alliance, *mCASH* perceived this as an opportunity to grow and benefit from network externalities (i.e. the increased value of having more users on a shared platform). The consolidation by way of joint venture leaves the Norwegian market with two competing solutions: *MobilePay* supported by Nordea and Danske Bank, and *Vipps* supported by DNB and the local savings banks in Norway (Weldeghebriel, 2017).

The aspect of trust and organisational fit further influenced the decision to form a joint venture. As one informant said, "*You have to trust the ones you are forming partnerships with because all partnerships are about giving something and receiving something in return*." DNB and SpareBank 1 had recently worked together on the project *Valyou* with Telenor, Norway's largest telecom company. *Valyou* was a mobile wallet, like that of Apple Pay, allowing customers to pay in retail stores using NFC technology (Near-Field Communication).

Valyou was launched in November 2014, but less than a year later was dropped due to little traction amongst customers and few in-store terminals allowing for NFC payments (Armstrong, 2015). In an interview with E24, Chief of Communication in Telenor Digital, Atle Lessum, said: "*there aren't enough banks joining the cooperation, and the other telecom actors have not joined either*" (Armstrong, 2015). Despite the project's failure, the relationship developed between DNB and SpareBank 1 through *Valyou* further supported the formation of a mobile payment joint venture.

In sum, we can see that the organisational strategy and innovation processes are determined by market forces, technology, and regulation. The decision among structural alternatives is to some extent dependent on timing and previously existing market dynamics, however, we can also see that the firm's requirement for control and speed heavily influence their decision. By presenting the market developments chronologically, we have analysed the evolving market forces while also identifying each strategic alliance decision in isolation.

5.2 Blockchain and the R3 Consortium

The other fintech investigated in this study is blockchain technology. Since this paper is oriented towards the strategic implications of innovation on alliances, we only introduce the basic concept of blockchain. For a more comprehensive explanation of the technology and its application, please see appendix 5-7.

> ## What is Blockchain?
>
> Although it is most recognised for its use in cryptocurrencies like *bitcoin*, blockchain technology is a distributed database system that uses the power of many to transfer goods and services between users in a secure and expedient manner. The technology facilitates trust between users by rewarding third-parties that authenticate and store transactions in an immutable chain of transaction blocks (Tapscott & Tapscott, 2016a).
>
> Traditionally, this trust facilitation role has been held by financial services institutions. Proponents of the technology claimed that the social role of banks had therefore effectively been automated by a network protocol and that blockchain would ultimately replace banks, auditors, and other financial services firms (Ito, Narula, & Ali, 2017).

The financial services industry was quick to react to this technology and in 2015, nine of the world's largest banks teamed up with technology company R3 to form a blockchain consortium (Williams-Grut, 2015a). As of today, 80 of the world's largest financial institutions are members of R3 (Williams-Grut, 2015a), including Barclays, BBVA, Bank of Australia, Credit Suisse, Bank of America, and Royal Bank of Scotland.

The purpose of this consortium was to form a better understanding of the blockchain technology and its implications for banking processes. By devoting organisational resources, R3 and its members have developed an open source distributed ledger platform called Corda, which is designed to "record, manage and automate legal agreements between businesses" (Williams-Grut, 2015a). As of today, three of the major banks in Norway are involved with the R3 consortium and have been involved in collaborations for the Nordic banking market.

5.2.1 Joint R&D Agreements to study blockchain application

In this section, we investigate R3 as a network of financial institutions with the purpose of joint R&D. The formation of the R3 consortium and joining by banks in the Norwegian market occurred as blockchain approached the peak of Gartner's hype cycle (Stamford, 2016). At the onset of our research project, blockchain technologies dominated most conversations about fintech and the extensive

publicity was a driving force for the intense and rapid investment in blockchain by Norwegian banks.

Based on our interviews, firms enter R&D agreements to pool resources and share risk to remain on the forefront of new technologies. The pursuit of an unknown innovation outcome and the innovation process involving high uncertainty was a concept repeated throughout our case.

The banks investigated here have spent considerable amounts of time and resources mapping out the various use cases for blockchain; however, business applications are still lacking as exploration continues. One of our interviewees noted how "*blockchain is maybe a technology still looking for a problem to solve.*" Due to the high uncertainty of possible blockchain applications, the R3 consortium serves to reduce the risk of participating firms. Innovation and experimentation is a resource demanding process, and our informants expressed that costs associated with R&D agreements were considered relatively low compared to other investments; the anticipated benefits from engaging in R&D agreements were thought to outshine those of internal development. Pooling resources was seen as less costly compared to stand-alone operations; however, interviewees emphasised that firms should not invest in these types of partnerships unless they are prepared to commit sufficient resources.

Another major motivation for banks to join an R&D network is related to the technological characteristics of blockchain. When developing and investing resources in technologies with infrastructural characteristics, the establishment of commonly agreed standards and protocols are essential. The informants discussing blockchain agreed that "*you won't succeed with blockchain alone.*"

Because blockchain is a digital ledger distributed on a network, our interviewees emphasised the importance of achieving a critical mass of participating actors: "*the value of a network does not rely on the network itself or the technology, it derives its value from its participants.*" One of the major advantages of blockchain is the network sharing information, which also means that the success of R3 projects will depend on the number of actors participating in the network. Therefore, a joint R&D with multiple collaborating partners was advantageous for reaping network effects and harnessing sources of input.

The R3 consortium experiments with blockchain technology to arrive at business applications that participating members consider viable for reducing costs or increasing revenue. One such identified application was for an industry-wide

compliance process termed Know Your Customer (KYC), which identifies and verifies the identity of bank customers. Under Norwegian law, banks are required to establish KYC business processes to monitor transactions, identify politically exposed persons, and evaluate the risk of each customer's propensity to commit money laundering, terrorist finance, or identity theft (PwC, 2017b).

These KYC processes are resource-intensive and involve a rigorous onboarding process for every new customer, regardless of whether another bank has already completed the necessary checks. The process of changing banks is often enforced by law to be straightforward and expeditious (Finans Norge, 2010); (Pilcher, 2016). As a result, competition in the market can precipitate a large number of customers switching from one bank to another, or having multiple accounts with different banks (Aamodt-Hansen, 2015). This, in turn, requires multiple KYC processes for an individual customer.

To ease the burden of Anti-Money Laundering (AML) compliance costs, Nordic members of R3 joined forces in an interorganisational project called *Heatwave*. This joint R&D agreement experimented with using a distributed shared ledger (blockchain) to store KYC verification data for individual customers. When a customer switched or opened accounts with another bank, the customer would share his/her KYC information from the old bank. In this way, the onboarding process would only need to be completed once per customer and the industry as a whole could cut costs. The joint R&D project resulted in a pilot product with interfaces for banks and customers (Ramvi, 2016); however, progress has since halted due to banks having different standards in their KYC business processes.

The *Heatwave* project was an interorganisational effort to develop an identified solution to reduce compliance expenses on the background of blockchain technology. Although the infrastructural differences among banks complicated the outcome, the resulting pilot was comparable to alliance expectations. It is also interesting to note how the R&D collaboration was made possible by the firms participating in the R3 network, which served as a platform for identifying both the KYC application and joint R&D partners.

Interviewees expressed a continued desire to explore blockchain applications in the Norwegian financial services industry; however, there was a distinct shift from the earlier notion of blockchain as a cure-all for financial services (Tapscott & Tapscott, 2016b). In the end of 2016, several large institutions left the R3 consortium, including Goldman Sachs, Morgan Stanley, Santander, and the

National Australian Bank (Martin, 2016). There has been a lack of substantive blockchain solutions generated from the consortium, and R3 has presented non-blockchain technologies under the guise of a blockchain consortium (Young, 2017). This has led some to report that the blockchain consortium has been less successful than expected, suggesting instead to form smaller consortia of developers (Buntinx, 2017). This further highlights the role of the R3 consortium as a network in which actors can form joint R&D agreements.

5.3 Open-Closed Innovation Initiatives in the Sector

Throughout our study, we also identified other instances of cooperation and partnerships. We identified what we refer to as *strategic alliance initiatives*, which are experimental forms of partnerships formed with innovation as the main objective. We found these initiatives to be (unconsciously) inspired by an open innovation approach, emphasising flexibility, openness and loosely bound partnership agreements (Fasnacht, 2009). The *alliance initiatives* mainly targeted startup companies, enabling incumbent banks to access new ideas, improve their rate of organisational learning and adopt new ways of working.

We identified that startups are motivated to attend alliance initiatives to access customer data, distribution channels, and expertise about banking and compliance. From our interviews, we identified that alliance initiatives were set up by banks to fill gaps in their product portfolio, speed up internal product development and enable banks to launch new products faster. In sum, banks establish alliance initiatives to improve their innovation capabilities, advance their understanding of market opportunities, and realise important criteria for partnerships with startups.

5.3.1 Open Banking

The coming implementation of PSD2 has prompted the introduction of *open banking*, which is defined as "*the democratization of access to data previously exclusively owned by legacy financial institutions*" (Kocianski, 2017). Open banking practices are expected to have a significant impact on fintech startups, since access to data and systems of banks allows for the development of more personalised products (ibid.). However, legacy financial institutions also expect to benefit from this initiative. One informant remarked how open banking is "*an important way to understand the needs and requirements of developers and fintech*

companies, but is also an important way to validate and receive feedback [on new solutions]."

Based on our interviews, we identified that banks strive to go beyond compliance by increasingly competing to offer the most attractive development portal. Several informants likened the platforms for open APIs to the mobile App Store, since banks want the best developers to work on their platform.

In March 2017, Nordea was the first actor in the Nordic market to present its Open Banking Platform targeting "*external developers, innovative third parties and fintechs*" (Turunen, 2017). After launching the development portal more than 600 parties signed up for the pilot project, where developers are provided with mock data, systems, and tools for developing solutions relevant for banking. During and immediately following the pilot, Nordea will evaluate participating actors to identify potential partnerships that can produce value-adding solutions to the bank's portfolio.

A similar project is in the works for DNB, which in the spring of 2016 challenged students at the Norwegian University of Science and Technology (NTNU) to come up with ideas in their *Digital Challenge* competition. The contest crowdsourcing approach can be useful for generating high-value solutions to complex or novel innovation problems, and is a popular and straightforward open innovation tactic (Boudreau & Lakhani, 2013). The bank's *Digital Challenge* brought about the *FinTech Platform*, which seeks to "*establish an ecosystem for cooperation between DNB and external companies, primarily start-up companies."* (Fantoft, 2017). The initiative accommodates the introduction of PSD2 to create a closed-open innovation initiative for identifying potential alliance partners.

5.3.2 Accelerator Programs

DNB NXT Accelerator Programme. DNB's crowdsourcing contest also generated the startup accelerator programme *DNB NXT* (Finextra, 2017). On the 1st of March 2017, the bank launched *DNB NXT* in cooperation with *StartupLab* (Fantoft, 2017), the largest incubator for technology startups in Norway (Innovasjon Norge, 2017). The *NXT* accelerator aims to facilitate meetings between investors and entrepreneurs where DNB's brand, capital, and expertise in banking services will serve as valuable resources for start-up firms (Fantoft, 2017). Halvor Lande, Head of Digitalisation and Business Development, is quoted in DNB's 2016 annual report as having said:

> *"This is the first in a long series of cooperation projects we will have with large and medium-sized technology companies, both nationally and internationally. Even though we are more than 10 000 employees in DNB, we are still too small to be able to stay one step ahead in all the areas necessary to ensure that we maintain the required pace of innovation."*
> (Fantoft, 2017).

Nordea Startup Accelerators. Nordea has hosted its own 12-week startup accelerator programmes in the Swedish and Finnish headquarters (Nordea, 2016b), as well as a shorter week-long accelerator programme in the Norwegian headquarters. The startup accelerators in 2015 and 2016 had lasted for shorter periods of time and followed a fixed programme of workshops, talks, and pitches. However, in 2017 Nordea established a longer-term accelerator solution to maintain communication with fintech startups. The bank established a collaboration agreement with *TheFactory*, which conducts a 12-week accelerator programme for fintech and insurtech startups in search of venture capital and mentorship. *TheFactory* also hosts an incubator for more developed startups: a collaborative community that brings together investors, mentors, and startups.

The collaboration with *TheFactory* represents a shift towards a more sustainable ecosystem of continuous involvement and collaboration. Nordea employees are encouraged to mentor startups in the accelerator and longer-term incubator space. In this way, the bank discourages a silo mentality in favour of involving all relevant parties across the organisation in the alliance initiative.

These startup accelerators serve to form a symbiotic relationship between established financial services firms and the startup community for *open-closed* innovation. Accelerator programs were viewed by informants as important initiatives for establishing dialog with startups. Informants emphasised that this dialogue can be a precursor to more formalised alliance structures.

The established firms provide startups with mentorship and education related to business development, regulation, and compliance. By screening programme participants and selectively choosing the startups with which to collaborate, the firms can target specific niches, business ideas and technologies; however, many accelerator programs are established without explicitly stating a desired technological output or innovation outcome. Our interview subjects also viewed accelerator programs as resource-intensive projects that failed to promise explicit innovation outcomes. Informants highlighted the lacking maturity of

participating startups and the resulting high uncertainty as risk costs associated with these innovation alliance initiatives.

5.3.3 Approaching Open Innovation

Whether consciously or not, the Norwegian banks in our study seem to be moving towards open innovation practices, which entails a new mind-set of openness, flexibility and customer integration and occurs when solutions to address clients' need are evolving openly (Fasnacht, 2009). One of the main principles of open innovation is the need for close cooperation with external parties. Our informants often expressed the axiom that their organisation alone would not be responsible for the development of all relevant products and solutions, recognising the need to involve other qualified individuals and firms.

However, other than the initiative by Nordea termed *"Open Banking"*, we did not discuss the term *open innovation* with any of our informants. This leads us to believe that the observed shift towards open innovation is occurring independently of open innovation literature. Therefore, financial services firms may do well to investigate relevant authors and theories for how to implement open innovation in their organisation. For example, Fasnacht (2009) extends the work of Chesbrough and West (2006) on open innovation to the financial services industry. The author uses case studies to investigate the ways in which open innovation practices can best be implemented in an organisation, and presents a table[8] illustrating the differences between closed and open innovation mind-sets (Fasnacht, 2009, p. 100).

5.4 Summary of the Results

In the previous sections, we have explained how and why firms employ alliances to innovate in a rapidly changing financial industry. By investigating the dynamic environment for mobile payments and blockchain technology we have elaborated on the four structural alternatives: Technology Licence, Joint R&D, Sourcing Agreement and Joint Venture. We have also identified open-closed innovation initiatives such as open banking and accelerator programmes, which provide contexts for identifying possible innovations and potential alliances. The

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[8] See appendix 8 for a table contrasting closed and open innovation

formally structured alliances and the strategic alliance initiatives together form a basis for interorganisational innovation, although the motivations and considerations differ among these alliance alternatives.

In the following table, we summarise our findings on the motivation and important considerations for each alliance structure:

Table 5. Summary of findings on strategic alliance structures		
Structure	**Appropriate when:**	**Important considerations:**
Technology Licence	Starting development from scratch is too time-consuming and requires too many resources Time to market is critical and getting *a* solution is more important than getting *the* solution; low need for control	Firm has little impact on the specifications of the licensed product / platform / technology
Joint R&D Agreements	High uncertainty surrounds the technology/innovation and its application in the market The innovation outcome depends on interacting with other actors, like in a network The need for control is low and sharing costs is prioritised over reducing time to market	Outcome depends on alliance members actively committing enough resources to the project Can be time consuming as partners must agree on the desired innovation outcome
Sourcing Agreement	A short time to market is critical In house resources constrain the development process Projects are of a certain size The aspect of control is important	May entail substantial firm resources to follow and influence the development process
Joint Venture	Compromising speed and control is necessary to capture other benefits in the market, such as increased presence and distribution power or access to technology	Organisational and relational fit is important and should ideally exist prior to the joint venture
Strategic Alliance Initiatives	The firm recognises the need to innovate but cannot yet identify the innovation outcome; exploratory innovation via collaboration	Possibility of no palpable results Requires investments in coordinating the initiative

Throughout the interviews, we identified some recurring themes in relation to the structural alternatives of alliances. Based on our results, we observed that formal strategic alliance structures differed based on the participating firms' need for control and speed in the innovation process. DNB prioritised control over speed when it sourced a customisable mobile payment platform from TCS, rather than licensing the existing mCASH technology. However, when a quick time to market was more strategically important than control over the outcome, SpareBank 1 licensed the *mCASH* solution.

Similarly, we observed how a compromise in control was justified by the increased presence and distribution channels afforded by the Nordea/Danske Bank and *mCASH/Vipps* joint ventures. Joining an established product/solution in a joint venture was a speedy way of entering the market; however, the JV structure does require a significant investment of time and resources to finalise the creation of a separate entity.

In the R3 consortium, neither control nor speed was deemed particularly important for securing competitive advantage. This was both due to the nature of blockchain technology, which is contingent on network effects, as well as the high uncertainty of deriving profits from its application in the market. The joint R&D network saw limited progress in the years since its development, and the control over innovation outcomes such as *Heatwave* was shared somewhat equally between participating firms.

In sum, we identified a trade-off between speed and control when establishing innovation alliances, as illustrated in the following matrix:

Figure 10. The Control/Speed Matrix of Innovation Alliances
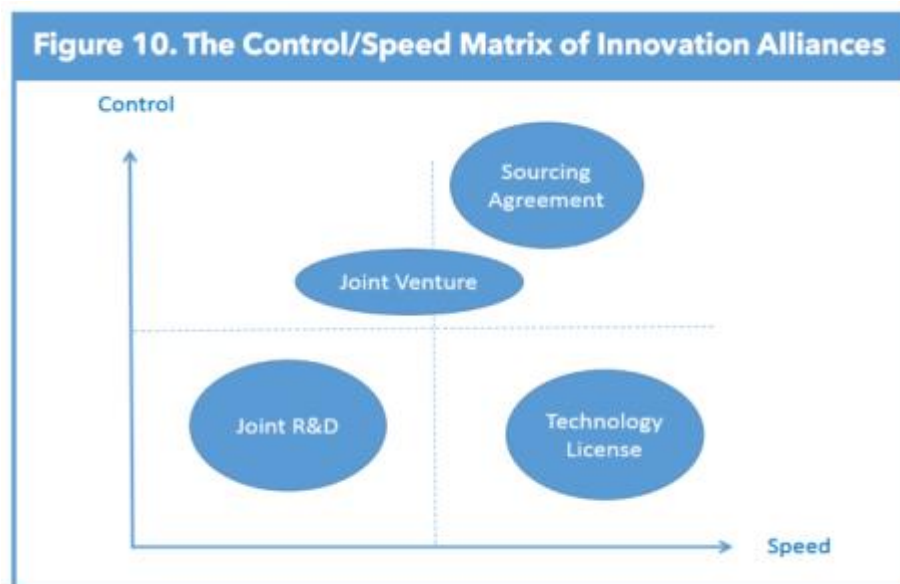
This matrix can be used by firms to make decisions about alliance structures given a determined need for control and speed of the innovation outcome. Although the model above indicates a static relationship between the four alliance structures, our empirical findings clearly indicate a dynamic link among each of the structural alternatives. As alliances evolve over time, an organisation's need for control/speed is likely to change. A shift in the axes combined with a market opportunity may precipitate a firm, or even the alliance itself, to change alliance structures. We observed this in the partnership between DNB/*Vipps* and the SpareBank 1 alliance. The market opportunity of more widespread distribution of the *Vipps* brand and user network meant that the *Vipps* mobile payment platform changed from a *Sourcing Agreement* to a *Joint Venture.* DNB was willing to relinquish control for increased competitiveness, and speed was no longer a primary factor.

This matrix can be used for firms to decide on a formal alliance structure given a preference for control/speed and an identified innovation outcome. However, firms must often innovate for highly uncertain innovation outcomes and the matrix does not consider the dynamic aspect of alliances. The matrix also fails to incorporate the strategic alliance initiatives such as those that we identified in our study. Therefore, we present in the following section a conceptual model that seeks to provide a holistic understanding of innovation alliances.

6. Discussion

In this section, we propose a framework for interorganisational innovation to answer the research question: **how and why companies employ strategic alliances for innovating in highly dynamic environments.**

Understanding innovation is central to understanding competitive advantage and firm performance. (1990) notes how "*companies achieve competitive advantage through acts of innovation.*" Many academic researchers have established a strongly positive link between firm performance and innovation, despite using different measurements for both innovation and performance (Calantone, Cavusgil, & Zhao, 2002; Crossan & Apaydin, 2010; Das & Teng, 2000; Klomp & Van Leeuwen, 2001).

The Norwegian financial industry has a long history of consolidation through mergers and acquisitions of local banks. In 1960, there were 665 commercial and savings banks operating in the Norwegian market (SSB, 1994) (SSB, 1994). As of 2016, the number of commercial, savings, and foreign bank branches in Norway has dropped 313% to a total of 161 institutions (TheBanks.eu, 2017).

Our case study revealed how market power consolidation is no longer occurring through mergers and acquisitions as much as through strategic alliances. This trend of consolidation was juxtaposed to a shared concern for market fragmentation. As one interview subject remarked, "*It will be a Kodak moment, the day tech companies launch their solutions and take small pieces of [the market] ... We are no longer necessary.*"

The drive to innovate for continued firm performance leads to alliances as one of three strategic options for organisational innovation - *market*, *hierarchy*, and *hybrid* from TCE (Williamson, 1991). Recognising the reasons for and ways in which firms can employ alliances to innovate in rapidly changing environments is therefore crucial for understanding competitive advantage.

6.1 Introducing our Conceptual Model of Innovation Alliances

Based on literature and our empirical findings, we suggest a model illustrating how determinants of innovation affect the innovation itself and thereby the decision to establish an innovation alliance. Our proposed model depicts how determinants of innovation force firms to allocate resources between exploitation
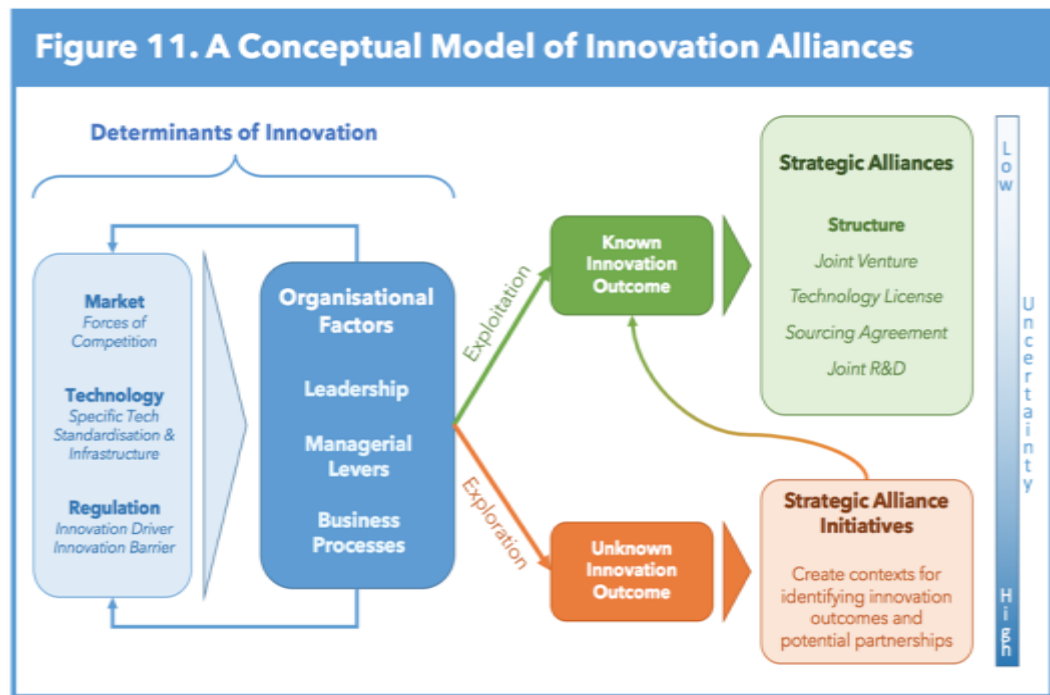
of *known* innovation outcomes and exploration of *unknown* innovation outcomes. The alliance possibilities will either be formal structures (Joint Ventures, Technology Licenses, Sourcing Agreements, or Joint R&D agreements), or what we have termed *strategic alliance initiatives:* organisational contexts for identifying innovation outcomes and potential partnerships. These initiatives serve to foster strategic alliance formations for *unknown* innovation outcomes and to inform the firm of *known* innovation outcomes as they appear in these contexts.

Although the terms *known* and *unknown* are definitive in nature, we employ the terms to mean whether the firm has a pre-existing understanding of the desired outcome of innovation. If the firm can identify the form (product/service/process/business model) and nature (technology/features/serviced platform) of the innovation outcome, as well as its intended market and timeframe for development, the innovation outcome can be said to be *known*. Although the actual innovation outcome may vary, the organisation has an idea about *what* they are going to innovate. Resources are allocated to exploit and combine innovations that already exists.

However, as uncertainty around innovation increases, the innovation outcome becomes unknown. The *unknown* innovation outcome can be understood as pure exploration. Organisations are increasingly concerned with exploring new ideas without knowing exactly where the innovation is going to take place or what the outcome will be. This split echoes the vocabulary of March (1991, p. 71), who characterised exploration as "*search, variation, risk taking, experimentation, play, flexibility, discovery, innovation*" and exploitation as "*refinement, choice, production, efficiency, selection, implementation, execution*"; however, an apparent difference is our use of *innovation* as an overarching term.

Our model informs that of Crossan and Apaydin (2010) since we argue that innovation as an outcome is not only a result of, but that it also influences innovation as a process. Organisational factors, the market, regulation, and technology all serve to determine the nature of innovation, at which point the decision to employ particular alliance structures or initiatives can be made.

Figure 11. A Conceptual Model of Innovation Alliances

It is important that we distinguish between our concepts of *known* and *unknown* innovation outcomes and the theory of disruptive and sustaining innovation. Christensen (2002) theory binds together the uncertainty and market implications of innovation outcomes. Instead, we propose that innovation outcomes be characterised solely by their uncertainty: the extent to which the next viable innovation outcome can be predicted with a fair level of accuracy. In this way, firms can make strategic decisions based on what they know as opposed to what they do not know.

Our research reflected much of the exploration-exploitation tension of innovation literature; however, the ties to firm strategic action provided valuable insight into how alliances, not disruption, could be the answer to innovation. In the following section, we explain our conceptual model to elucidate the link between the internal and external determinants of innovation and the extent to which an innovation outcome is *known*.

6.2 Determinants of *Known* and *Unknown* Innovation Outcomes

Because of regulatory changes, increased competition, and technological developments, banks are forced to "innovate or die." Casper Von Koskull (CEO of Nordea) says: "*We don't need banks, but we do need banking.*"(Koskull, 2017). Financial services firms therefore must revisit their leadership, managerial levers, and business processes to enhance its firm strategy for innovation. However, firms do not operate in isolation, but rather exist within a business ecosystem. "*A business*

ecosystem refers to the network comprising a focal firm, its suppliers, its complementor firms, and customers" (Weiller & Neely, 2013, p. 2).

In this ecosystem, there are interdependencies between the firm and its environment. In our model, we have identified how the competition within a market, available technology, and regulations drive firms to innovate for performance. The firm's actions in the market, in turn, contribute to create the competitive landscape in which the firm operates. This two-way relationship between an organisation and external determinants of innovation is an important premise for our study on interorganisational alliance formations. In the following sections, we describe how the determinants of innovation generate innovation outcomes that are either *known* or *unknown* to the organisation.

6.2.1 Market

As described in our empirical findings, the innovation process of firms is in part determined by the forces of competition. A change in any of the five forces – rivalry among existing competitors, the threat of new entrants, bargaining power of suppliers, bargaining power of buyers, or threat of substitutes (Porter, 2008) – will pressure firms to increase its competitive performance through innovation.

> *"Innovation grows out of pressure and challenges"*
>
> - Porter (1990)

Firms facing competitive pressures will need to present a new product or service to secure future profits for the firm and ensure its continued performance. The competitive pressures in the Norwegian financial services industry were primarily driven by incumbent banks (rivalry) and startups (threat of new entrants).

In the development of mobile payment platforms, we observed how the threat of Danske Bank's *MobilePay* entering the Norwegian market pressured DNB to develop their own mobile payment solution. After DNB launched *Vipps,* competition intensified as other players reacted by establishing various forms of strategic alliances for their own innovations. The underpinning threat of substitute products or services was the existing dominant payment solution of cards and online account transfers. Debit and credit cards are used for 75% of all payments in Norway (Norges Bank, 2016) and promoting the use of mobile payment platforms

for retail payments is viewed as an uphill battle. Nevertheless, Norwegian banks were quick to join the harsh competition under the threat of *MobilePay* entering the market.

Another force driving the active competition in the market is the increasing bargaining power of buyers. The expectations and demands of bank customers have increased significantly due to the plethora of high-technology platforms to which they are exposed: smartphones, social media, and self-driving cars to name a few. Our informants expressed how these increasingly sophisticated customers demand immediate and engaging technological solutions. Correspondingly, the firms in our study had a clear focus on reducing the number of clicks in digital solutions and designing sleek and intuitive products; creating an optimal user-experience and value for customers was often heralded as the number one strategic goal of innovation.

We identified that financial services firms are adapting a design thinking approach to cater products and services to customer expectations and customer needs. Customers are in a prime position to combine their experiences with other products and services that hold value to them and for which they are willing to pay. Customers are consequently increasingly included in the innovation process through crowdsourcing and surveying, as their input serves to reduce uncertainty about innovation outcomes. One interviewee echoed, "*... we should start to listen more to what the customers want, rather than what we want to sell them.*" As customers and financial services firms meet as negotiating social actors, knowledge of which innovation outcomes could be profitable enters the strategic decision-making process.

High competition pressures firms to innovate for profitable solutions. The actions of competitors may steer innovation focus towards specific innovation outcomes, such as in the development of mobile payments. Customer demands also constrain the variation of innovative solutions, as standards from other industries and customer expectations determine the viable possibilities. The competitive forces therefore help to identify *known* innovation outcomes for firms, as market actors move to secure their positions and map out recently identified domains of innovation, all the while informed by a progressively vocal consumer base.

6.2.2 Regulation

Porter (1990) argues that governments cannot create competitive industries. However, Porter (1990) points to the indirect role of government as a catalyst for encouraging firms to increase their competitive performance despite the inherent difficulty involved. The growing burden of domestic and international regulation is considered one of the biggest challenges facing banks in the coming years (Fasnacht, 2009). Yet, in line with Porter's arguments, we observed in our case study that regulation acts as both a driver and barrier for innovation. Indeed, we observed in our study how the governmental regulations combined with competitive forces in the market worked to accelerate the pace of innovation.

The banks' development of mobile payment platforms and creation of *open banking* and *accelerator* programmes was a direct response to PSD2 and the consequent threat of new entrants. In this way, the regulatory threat of increased competition spurred innovation for both *known* and *unknown* innovation outcomes. Although regulations affect the forces of competition, this is only one way in which regulation influences the innovation process of organisations.

Throughout the study, we identified that regulation determines the innovation outcome by defining the rules of the game. Existing rules and regulations determine the boundaries for *known* innovation by explicitly stating what is allowed. The firm's innovation process therefore benefits from regulatory constraints to derive *known* innovation outcomes from the adjacent possible. One informant argued how the fundamental job in fintech is to understand regulations to ensure an expedient time to market, "*Those able to understand [existing] regulations and take them into account to find good solutions, they will be the winners.*"

Informants discussed how financial service firms are a pillar in society with an inherent social responsibility to external stakeholders; misconduct and failure to comply with regulations can have disastrous economic consequences. Thus, the regulatory pressures were primarily viewed as drivers for innovation as they place the boundaries on possible innovation outcomes. However, interviews also revealed that regulation can be a barrier to the innovation process itself. Informants expressed that regulation may hamper exploration of new products, services, and business models. Existing regulation was often perceived to be outdated, preventing startups from entering the market and exploring new business models and technology. In this view, existing regulations drive exploitation of *known*

innovation outcomes, but hinder the exploration of the *unknown*, favouring instead incumbent actors in the market.

In our study, we discovered a recent trend of implementing *regulatory sandboxes,* which are programmes designed for firms and startups to experiment with products and business models under regulatory supervision. This allows for firms in the fintech space to explore new business applications in a live environment alongside regulators, who in turn learn the best way to regulate emerging technologies, business models, and markets (Cummings, 2017). Several informants stressed how *regulatory sandboxes* are a solution to the regulatory prejudice against exploration. While firms access the freedom to innovate for uncertain innovation outcomes, regulatory authorities access updated information on which to base their laws and regulations. Thus, the barrier role of regulation on innovation can potentially be mediated by these *regulatory sandboxes*.

6.2.3 Technology

The amount of experimentation and analysis surrounding a technology will determine the extent to which an innovation outcome can be *known*. As firms investigate and theoretically test business applications of a technology, they eventually arrive at a reduced portfolio of innovation possibilities that are viable given the regulatory and competitive environment. Existing technology thereby determines the boundaries of *known* innovation outcomes – the width of the adjacent possible. The *MobilePay* application in Denmark precipitated banks in Norway to innovate for similar innovation outcomes (*Vipps* and *mCASH*). DNB recognised that this *known* innovation outcome of a mobile payments app could be created with components existing in the bank, as the fundamental technology was already in place. The innovation process is evidently reliant on the pre-existing technology available to the firm.

The R3 consortium was formed to further investigate useful business applications for blockchain technology. The technology served as the motivation for banks to explore highly uncertain (*unknown*) innovation possibilities. However, one of our interviewees noted that, "*If you start out with [a] technology and look for an application, it is not given that that will give the best results.*" The criticism of the consortium was made following the departure of several members and amidst an increasingly sceptical opinion of blockchain's potential (Redman, 2016; Stafford & Murphy, 2016). We observed that the benefit of the R3 consortium was its role

as a network, allowing member firms to initiate innovation projects for specific (*known*) outcomes. The implication being that joint R&D networks and alliances are better suited for exploiting technologies for an identifiable and *known* innovation outcome, rather than for exploring peripheral possibilities. This is consistent with our model, which would characterise the R3 consortium closer to a *strategic alliance initiative* rather than a formal alliance structure.

Throughout our study, we recognised from academic literature how technological standardisation and innovation influence each other (Endre, 2009). More specifically, we found that standardisation mediates the effect of technology on innovation, limiting the number of possible *known* innovation outcomes (David & Greenstein, 1990). Informants agreed that standardisation was often a necessary precursor to innovating for competitive advantage, especially when the innovation process required collaboration. According to our interviewees, technical solutions need to be integrable and "*speaking the same language.*"

As a result, we often encountered the adage "*collaborate to compete*" in our interviews. The banks expressed a shared understanding that when common platforms are developed collectively, banks collaborate to later compete on the platform with different products, brands, and services. The national payments infrastructure system *BankAxept* is an example of this "*collaborate to compete*" approach (BankAxept, 2017); the payments solution was created in the 1990s by Norwegian banks to operate with a more cost-effective payments system than VISA or MasterCard (Dinero, 2016). Establishing common ground rules simplifies the process of conducting transactions and exchanging information, enabling the financial services firms to compete on a shared platform.

Furthermore, we discovered that *unknown* innovation outcomes should be explored with a thorough understanding of standards in the industry, as well as those standards established in other industries. In the *Heatwave* project, we observed how the development of blockchain solutions depended on standardising business processes and infrastructural technologies. Similarly, the development of mobile payment platforms was contingent on the smartphone and its standards for mobile apps. In this way, the exploration of new and uncertain innovations is informed by existing technological standards, which reduce uncertainty and steer exploration towards identifiable (*known*) innovation outcomes.

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6.2.4 Organisational Factors

Firms innovate to increase their performance in the market by cutting costs and generating revenues (Davila, Epstein, & Shelton, 2006). In line with March (1991), we recognised that only the exploitation of *known* innovation outcomes promises to increase profitability in an immediate timeframe, whereas the exploration of *unknown* innovation outcomes is necessary for securing profitability in the future. However, we also observed how the organisational factors of *leadership*, *managerial levers*, and *business processes* served to preserve the balance between the exploration and exploitation. In the following section, we describe how the firms in our study organised themselves to explore for exploitation. These organisations innovated to simultaneously exploit *known* innovation outcomes and explore *unknown* innovation outcomes, which in turn yielded additional *known* innovation outcomes.

Leadership. The top management's ability and motivation to innovate determines the innovation process and outcome by creating the organisational conditions in which innovation occurs (Crossan & Apaydin, 2010). Following upper echelon theory (Hambrick & Mason, 1984), the behaviour of management can be explained as a result of their experiences, personalities, and values. Mumford and Licuanan (2004, p. 164) highlight how "*the ability of leaders to encourage creativity and innovation was dependent not only on the situation at hand but also on certain characteristics of the leader.*" For example, when managing innovation, leaders should possess substantial technical and professional expertise and creative thinking skills (Mumford & Licuanan, 2004) to transmit legitimacy and reduce uncertainty surrounding *unknown* innovation outcomes.

Throughout our study, we identified the significance that commitment and attention from top managers had on both exploratory and exploitative innovation processes. Informants emphasised the importance of having a motivated and engaging top management team when innovating. For instance, the CEO in one of the companies studied was particularly active and engaging in the process of developing the mobile payment solution. This commitment from the CEO motivated staff to accept the *known* innovation outcome and work diligently to ensure the innovation's success in the market. In one interview, we were told how: "*[attention from top management] means that you have the right of way on all roads*

where you previously had a conflict in priorities. It's like driving with sirens and a police escort. Of course you'll get ahead of the traffic."

Organisational leadership in innovation was therefore found to be central for maintaining innovation balance and creating organisational push, as controlled through managerial levers.

Managerial Levers. According to Crossan and Apaydin (2010), *managerial levers* is "a *meta-construct consolidating firm-level variables supporting innovation*" (p.1171). There are five managerial levers: missions, goals, & strategy, structure and systems, resource allocation, organisational learning and knowledge managements tools, and organisational culture.

A firm should establish an explicit innovation strategy to align innovation goals with the firm's strategic objectives (Crossan & Apaydin, 2010; Miller & Friesen, 1982). DNB has issued its mission to be a "*technology company with a banking license*" (Bjerke, 2017; Fantoft, 2017) clearly communicating the new strategic direction. Similarly, Nordea has announced a new purpose and values to reflect the rapidly changing financial services landscape: "*Together we lead the way enabling dreams and everyday aspirations for a greater good*" (Manner, 2017). The implementation of innovation-focused strategies is important to prompt exploration and exploitation innovations.

To remain innovative, financial services firms are increasingly allocating resources to the exploration of new technologies, innovations and opportunities. One informant said, *"I hope that within one year we will be using 50/50 [on exploration and exploitation] and maybe in three years, 30% of our resources will be allocated to improve the existing and 70% will be spent on finding what is new and innovative, and what is going to generate new business opportunities and cash flow. If we don't do this, [the bank] is dead."*

March (1991, p. 71) argues that firms engaging in exploration at the expense of exploitation risk to "*suffer the costs of experimentation without gaining many of its benefits.*" Firms cannot generate profit from underdeveloped ideas, and must also allocate resources towards existing products and services.

The allocation of resources will determine the firm's structures and systems, which coordinate and create fit between organisational design and type of innovation (Crossan & Apaydin, 2010). Certain firms in our study have formed innovation-focused departments for which the primary objective is exploring and

developing new solutions for the bank, both internally but also with external partners. These firms emphasised the need to create units solely focusing on innovation activities. One interview subject stressed that employees running the daily operations of the bank cannot also be expected to explore and think of new opportunities. The same interviewee pointed to the difficulty of simultaneously pursuing exploration and exploitation: "[i]*t is difficult to share focus between today's business models and trying to come up with the new ones.*"

We found that banks have been inspired by the quick, flexible and risk tolerant mentality of startups for innovation. However, there seems to be a mismatch between the traditional role and culture of risk averse banks with the new trial and error approach. The risk averse mentality of banks can obstruct active exploration of new possibilities and alliances, just as March (1991) argued in his seminal paper. In our interviews, the culture of banks was identified as impeding exploratory organisational learning: "*Taking risk in a bank has always been under controlled conditions. Big risks are traditionally not allowed.*" However, interviewees also stressed that changes in their organisational culture prompted an increase in exploratory innovation.

Business Processes. The managerial levers discussed above directly affect innovation process through the firm's *business processes*, which include initiation & decision making, portfolio management, development and implementation, project management, and commercialisation (Crossan & Apaydin, 2010). Essentially, these processes are established to facilitate the transition between exploration and final commercialisation of a *known* innovation outcome.

As a qualitative case study, our research aimed to uncover the decision-making process of strategic actors in the case. Although we identified notable differences in personal characteristics, our informants agreed that incumbent banks need updated processes to innovate effectively. Informants argued how the cumbersome, bureaucratic processes of banks limit their ability to innovate, a process which requires speed and flexibility. One manager said, "*Our systems and processes are so heavy and focused towards quality assurance that they kill the speed and hinder the experimental mindset needed for innovation. The fully blown processes can take months, and in that time a startup can be reborn several times.*" Informants expressed how business processes should be designed as modules that

surround an innovation-focused organisational culture. In this way, the business processes were direct results of the managerial levers and firm leadership.

Following the discussion points presented in the above section, we therefore conclude that leaders must effectively use the managerial levers to organise their companies around innovation, thereby establishing a profitable balance between exploration and exploitation.

6.3 Innovation Outcomes and Strategic Alliance Decisions

In the above section, we have explored the ways in which the market, technology, regulations, and firm jointly determine the extent to which an innovation outcome is *known*. We now turn our attention to the right-hand side of our conceptual model, which relates to formal alliance structures and strategic alliance initiatives. An important aspect of innovation is the ability to identify *known* innovation outcomes in the market. Throughout our interviews it became evident that banks are forming partnerships to increase their organisational knowledge about innovation processes and outcomes. When discussing partnerships, one informant said the following: "*...our employees learn how it is to work within those types of environments* [startups]. *And learn how to recognise and identify opportunities.*" The interviewee emphasised that for the bank to increase its organisational learning it would have to learn which questions to ask, learn from its previous experiences, and acknowledge its own strengths and weaknesses; only then would the bank be able to maintain an efficient innovation balance through alliances.

Our proposition is that based on whether the organisation is exploring unknown innovation or exploiting what is already known, the firm actively makes strategic choices on *how* to realise that innovation, and this can lead to an innovation alliance. The drivers for strategic alliances will vary with the innovation and result in different types of alliance structures and initiatives. In our model, we also apply uncertainty to measure both the innovation itself and the strategic alliance structures.

If the innovation outcome is *known*, the firm can choose to establish an alliance, whose formal structure (JV, Tech License, Sourcing Agreement, or Joint R&D) will depend on market considerations and the firm's desired control and speed of the innovation outcome. However, if the innovation outcome is *unknown*,

the firm can choose to establish a *strategic alliance initiative*, such as collaborating with startup incubators or establishing an open-closed innovation process. The purpose of these initiatives is for incumbent firms to glean information about innovation developments and be able to identify *known* innovation outcomes as they materialise. The *strategic alliance initiatives* also provide a context for identifying further potential partnerships and collaboration possibilities with startups and other relevant parties.

Empirical evidence suggests that *strategic alliance initiatives* can also be used for other organisational goals, such as tackling social and political issues in the triple bottom-line. In May of 2017, Morgan Stanley announced its technology incubator programme: the Morgan Stanley Multicultural Innovation Lab (McLannahan, 2017). This programme works like the incubators discussed in our findings (bank provides venture capital and support); however, the programme exclusively allows startups with a non-white or female founder, co-founder, or Chief Technology Officer. While the principal aim of such a programme is innovation, the criteria addresses a persistent problem of "*overwhelmingly male and pale*" actors in the financial services industry (ibid.).

In conclusion, we have observed how internal and external factors jointly determine the extent to which an innovation outcome is *known* to the firm. To balance between the exploitation of *known* innovation outcomes and exploration of *unknown* innovation outcomes, firms can employ strategic alliances two ways:

1) The firm forms a formal alliance structure to innovate and exploit an identifiable (*known)* outcome with collaborating partners. The decision between different alliance structures is informed by the firm's need for control/speed of the outcome.

2) The firm establishes *strategic alliance initiatives* for an open-closed innovation process that seeks to explore *unknown* innovation outcomes and identify the potential for more formal alliance structures.

7. Concluding Remarks

In the following section, we summarise our findings and identify the implications for managers. Then, we address the limitations of our study and provide suggestions for further research.

7.1 Conclusion

The goal of this research project was to answer how and why companies employ strategic alliances in highly dynamic environments through our case study of the Norwegian financials service industry and the alliance activity from 2014 to 2017. Our empirical results and review of relevant literature resulted in a matrix of alliance structure decisions, which illustrates how firms establish different alliance structures depending on its need for control and speed of the innovation outcome.

We found that a firm would employ these structured alliances for *known* innovation outcomes that could be identified and exploited through innovation. However, we also found that open banking, accelerators, and incubator programmes with startups served as platforms for initiating collaborative innovation for *unknown* innovation outcomes. This discovery resulted in our conceptual model of interorganisational innovation. When combined with our chronological description of events and explanation of the model, we present a holistic understanding of how and why strategic alliances can be employed by firms to innovate in a highly turbulent environment.

Innovation is a critical source of competitive advantage; therefore, defining innovation and understanding innovation outcomes is at the heart of business strategy. At the same time, alliances are increasing in propensity across all industries as firms progressively look to inter-firm agreements for solutions. Therefore, we anticipate that application of our model and extension of the concepts in this thesis will increasingly impact the strategic decision making process of firms, as well as the continued research on innovation.

7.2 Managerial Implications

As mentioned in our discussion of organisational factors, managers play an important role in determining the extent to which the company is capable of initiating and entering valuable innovation alliances. The leadership's effect on managerial levers and business processes is critical for the firm's ability to balance

between exploratory and exploitative innovation processes. Our results provide a decision-making matrix that, in conjunction with market developments, informs managers on the formal structure of an alliance given their needs for control and speed of the innovation outcome.

We also introduce the concept of *strategic alliance initiatives* and discuss how open-closed innovation can be used by firms to explore *unknown* innovation territory without the associated high costs of development. Such collaborative innovation initiatives are useful for managers making innovation decisions in highly turbulent and uncertain business environments.

A primary contribution of this master thesis is the argument against the "*disrupt or be disrupted*" maxim steering much of managerial strategy. We instead present a conceptual model that prescribes strategic actions based on the extent of innovation uncertainty. In our model, we argue that managers must balance the resource allocation between exploration of new possibilities and exploitation of known certainties, in line with March (1991). Whereas profit can only be generated from *known i*nnovations, future cash flow depends on exploration of *unknown* innovation. By recognising the two different forms for strategic alliances at the firm's disposal (formal structures and initiatives), the manager is in a better position to identify an optimal balance between exploration and exploitation.

An additional observation made in this thesis was the barrier that outdated internal systems and structures posed on the exploration of *unknown* innovation outcomes. We therefore recognise that, beyond effectively employing strategic alliances, managers must also allocate time and resources to upgrade its internal processes for future innovation projects. This sustaining innovation is necessary to ensure that the firm can innovate for new products, services, processes, and business models, either alone or in collaboration with others.

7.3 Limitations

Beyond the cognitive and resource limitations of performing a case study for a master thesis research project, there are some limitations that need to be considered. The first limitation is that our case study only investigated select alliances in one single industry, which may limit the generalisability of our findings to other instances of strategic alliances. The alliances included in our study were also at different stages, as some had been fully implemented while others are still being formalised.

Another limitation is the researcher bias from collecting data used for analysis through semi-structured in-depth interviews. To focus on specific aspects that we wished to investigate, we fully introduced the research project and provided the interviewee with our working research question. However, this may also have had the negative effect of framing our interview subjects' mind-set.

Differing perceptions of "*strategic alliances*" may have affected the interpretation of questions by different interview candidates. For instance, informants often used similar terms like "*collaboration*" and "*partnership*" (*Norwegian: samarbeid og partnerskap*) to describe specific alliance structures. The number of informants was sufficiently high for a variety of responses and sources, which seemed to indicate that any lock-in effects were temporary.

7.4 Suggestions for Further Research

We suggest that further research test the link between innovation alliances and performance in the case studied. The relationship between innovation and performance has been rigorously tested in other studies; however, a study of innovation alliance performance can further shed light on the optimal balance between exploratory and exploitative innovation alliance forms. Once PSD2 is implemented and the market develops sufficiently, we suggest further research to conduct a quantitative study to link the firms' investments in innovation alliances to various performance measures (share price, R/E, revenue, profit, etc.).

Throughout the study, we found evidence of decision making being unduly affected by the "*hype*" surrounding a specific technology or innovation. While our model provides a tool for making more objective strategic decisions about alliances, it would be worthwhile to study the disproportionate role that market hype plays in strategic decision making and precious resource allocation. Research to address this topic can compare the blockchain hype and subsequent decision making to the "*buzz*" currently surrounding artificial intelligence and big data innovation projects. In September 2016, the tech giants Facebook, Amazon, Alphabet, IBM, and Microsoft formed the *Partnership on AI* consortium to "*study and formulate best practices on AI technologies, to advance the public's understanding of AI, and to serve as an open platform for discussion and engagement about AI and its influences on people and society*" (Mannes, 2016; Partnership on AI, 2017). It would be worthwhile for further research to attempt to understand the role that *hype* plays in making strategic decisions, such as forming the AI or blockchain consortia.
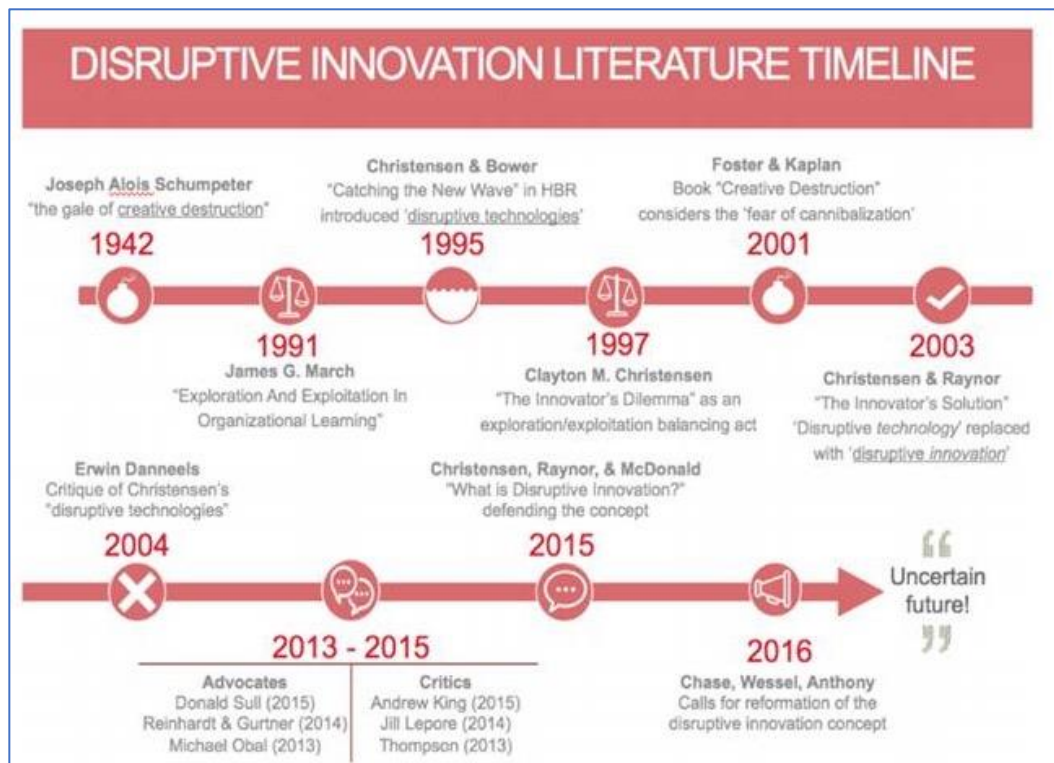
Appendix

Appendix 1. Clayton Christensen's disruptive innovation model
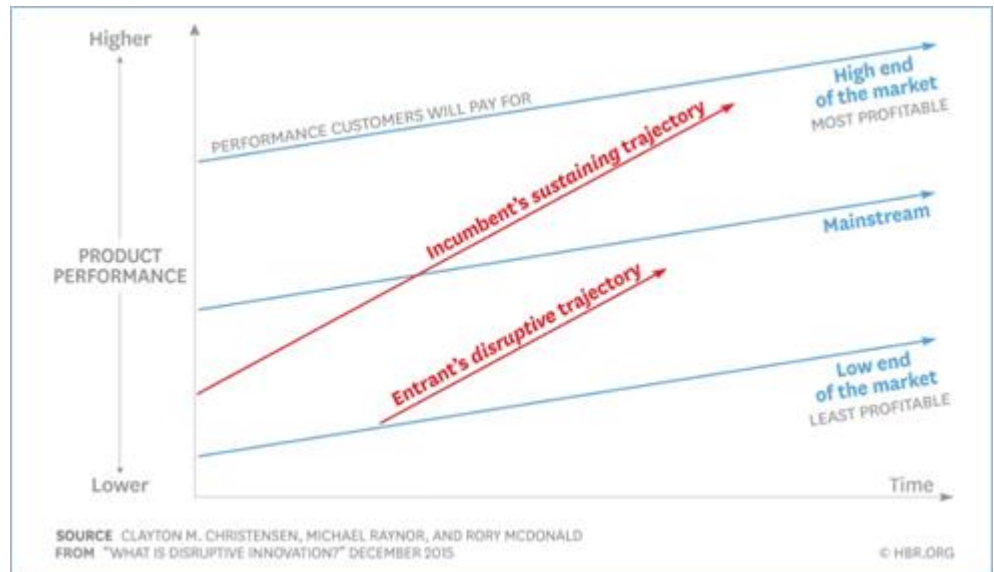
Source: "What is Disruptive Innovation?" (Christensen, Raynor, & McDonald, 2015a)

Appendix 2. The Evolution of Disruptive Innovation Literature

Source: Andersen, Shakil, and Hummelvoll (2016)

Appendix 3. NVivo word cloud of references

Source: *Researchers 2017*

Appendix 4. Study Information Consent Form

Study Information and Consent Form

Innovation Alliances:
A Case Study of the Norwegian Financial Services Industry

In this Study, we investigate how the Norwegian financial services industry is adapting to and developing new technologies. We focus on the recent developments in mobile payment platforms (MPPs) and blockchain to answer the following research question:

How can firms employ strategic alliances in different stages of technology evolution to cope with disruptive innovation and regulatory changes? *

By investigating the strategic decision making that led to the development of and battle between Vipps, mCASH and Mobile Pay in the Norwegian market, we aim to gain a deeper understanding of how banks should govern their activities to stay innovative.

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Request for informed Consent:

- I have been given the opportunity to ask questions about the Study and any questions have been answered to my satisfaction
- I understand that my participation in the Study is voluntary
- I understand that taking part in the Study will involve me being interviewed and I agree to this interview being audio-recorded
- I understand that my personal details such as name and employer address will not be revealed to people outside the Study
- I understand that my words may be quoted in publications, reports, web pages, and other research outputs, but data collected about me during the Study will be anonymized before it is submitted for publication
- I understand that I can withdraw from the Study at any time and I will not be asked any question about why I no longer want to take part
- I understand that if I withdraw from the Study my data will not be used

Name of Participant: _____ Signature: _____ Date: _____

Name of Researcher: Kevin Aksel Andersen Signature: _____ Date: _____

Name of Researcher: Kristina Lund Leivestad Signature: _____ Date: _____

*Research question evolved as is common with qualitative research methods. Research question:

How and why do companies employ strategic alliances for innovating in rapidly changing environments?

Source: Researchers 2017

Appendix 5. Descriptive Explanation of Blockchain Technology

> *"The technology most likely to change the next decade of business is not the social web, big data, the cloud, robotics, or even artificial intelligence. It's the blockchain, the technology behind digital currencies like Bitcoin."*
>
> - Don Tapscott and Alex Tapscott (2016a)

On the 31st of October 2008, a mailing list comprising of several hundred cryptography experts and enthusiasts receives an email from someone calling himself Satoshi Nakamoto. *"I've been working on a new electronic cashs system that's fully peer-to-peer, with no trusted third party,"* Nakamoto writes (Vigna & Casey, 2015). The work he is referring to is a nine-page white paper describing a currency system he calls bitcoin.

In short, bitcoin is an electronic payment system based on cryptographic codes instead of a centralised, trusted party such as a financial institution. This system enables two parties to transact directly with each each other without the need for a trusted third party (Nakamoto, 2008). After the financial crisis of 2007-2008, more and more people realised the enormous power of the the financial industry, and digital currency emerged as a "*covert post–financial crisis protest against the global banking system*" (Plansky, O'Donnell, & Richards, 2016).

 Bitcoin was developed to reduce the dependency on financial institutions and centralised authorities. By eliminating powerful middlemen, and transferring the centralised system into a decentralised one, the economy could work more efficiently as fees and transaction costs are avoided. Bitcoin urged transparency by providing a more open economic and political system that was previously hidden within impenetrable centralised institutions (Vigna & Casey, 2015).

Blockchain, most known as the technology enabling the Bitcoin cryptocurrency, is a protocol allowing computers to communicate together and is built upon a public ledger system. The global distributed ledger can be visualised as a database running on millions of computers, peer to peer (Church, 2017). The system is open to anyone and can be used to exchange goods and services. In addition, blockchain can be applied to register votes from elections and it can enforce contracts, called smart-contracts. By eliminating mediating institutions, transaction costs are heavily reduced, and time and costs are cut from the transactions, enabling trades in real time.

In the blockchain system, trust is ensured by clever code and advanced mathematics and cryptography (Tapscott & Tapscott, 2016a). Blockchain is based

upon software algorithms that verify transactions through consensus of computers, a concept called proof of work. The proof of work makes the system resistant to fraud, political control, tampering and solves the problem of double spending, which is the principal idea that once you spend currency once, you should not be able to spend that same currency again somewhere else.

Blockchain is acknowledged for protecting the identity of the users, which in many ways has made bitcoins ideal for criminals exchanging money and services. Each user is given a hash, which comprise of random numbers and letters. All the transactions in the blockchain are open to public and can be view in real time, but only the hash and the amount of bitcoin are displayed. Blockchain uses something called asymmetric, or public key encryption to create digital signatures. Contrary to symmetric encryption, in which the encryption and decryption is performed using the same key, public key encryption implies that two different keys are used to encrypt and decrypt; one public and one private key.

To illustrate with an example: Rob wants to send a treasure to Juliet, and he only wants her to open the treasure. If Rob uses a symmetric encryption, he would lock the treasure with a key, and Juliet would open the treasure with a copy of the same key. The problem with symmetric encryption is finding a secure way to exchange keys without others snatching the key.

On the other hand, if Rob uses asymmetric encryption (like the blockchain), two different keys are used to lock and unlock the treasure. Each person (computer in the bitcoin system) knows its own *private key* and holds a *public key* used to access or communicate with the system. In the Rob and Juliet example, Rob will lock (encrypt) the treasure with Juliet's public key, and then Juliet will unlock (decrypt) the treasure with her unique private key. The keys are paired and used together when encrypting and decrypting. The pair can only be used in combination with each other, which makes communication much safer compared to symmetric encryption. The pair of keys are tied exclusively to each other, meaning a public key and its corresponding private key are only related to one another and no other keys (Microsoft TechNet, 2005).

Bitcoin transactions consists of the public key of the sender, multiple public keys of the receiver, and the value transferred. After 10 minutes, the transaction will be written in a block of transactions limited to 1 megabyte. This new block is then linked to the block written immediately before it. In this manner, all written blocks are aligned in one continuous chain, giving the technology its name *blockchain*.

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Appendix 6. Illustrated Explanation of Blockchain Components
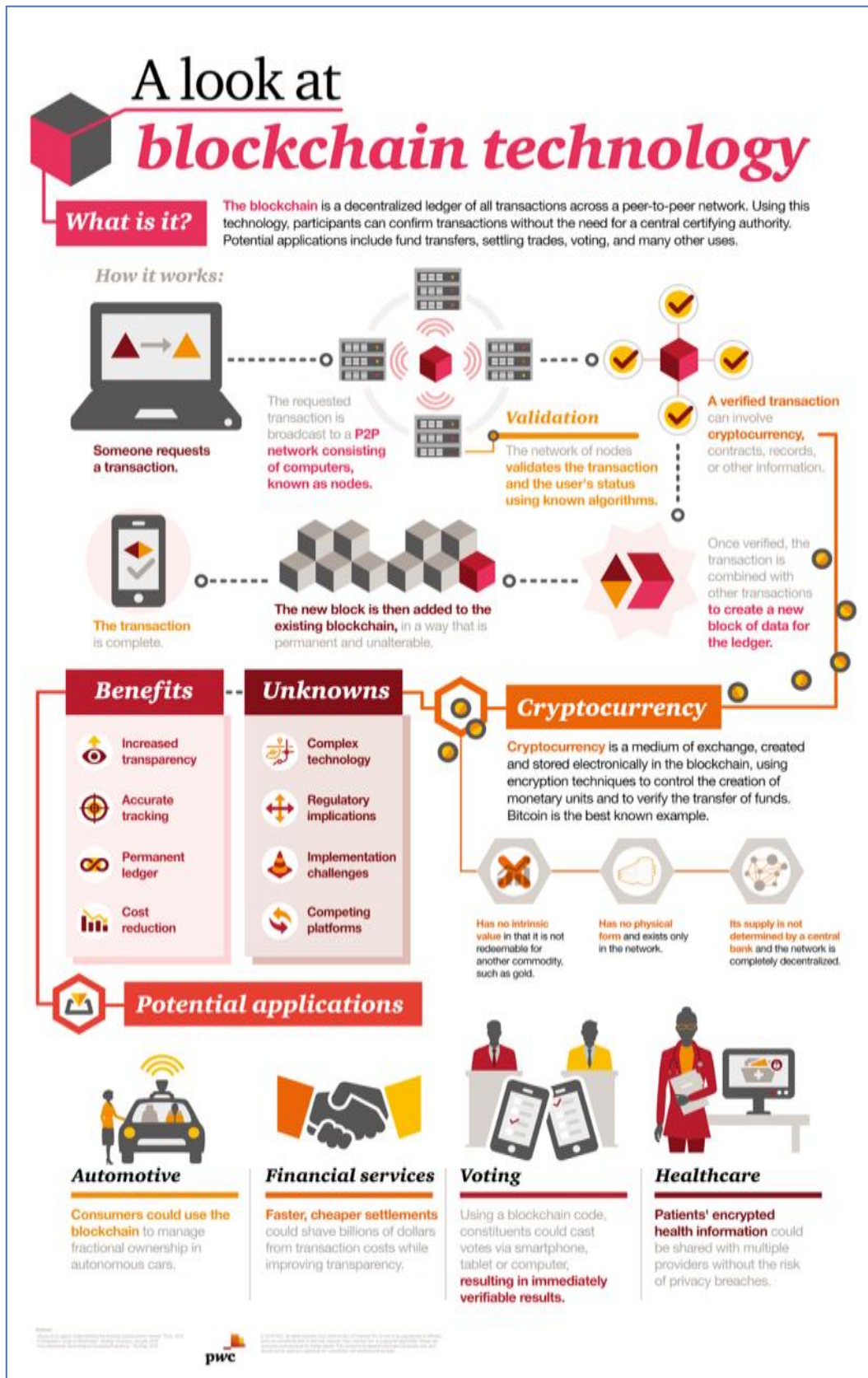
Appendix 7. List of Blockchain Technology Applications

Web 3.0

The blockchain gives internet users the ability to create value and authenticate digital information. What new business applications will result?

Smart contracts

Distributed ledgers enable the coding of simple contracts that will execute when specified conditions are met.

The sharing economy

By enabling peer-to-peer payments, the blockchain opens the door to direct interaction between parties — a truly decentralized sharing economy results.

Crowd funding

Blockchains take this interest to the next level, potentially creating crowd-sourced venture capital funds.

Governance

By making the results fully transparent and publically accessible, distributed database technology could bring full transparency to elections or any other kind of poll taking.

Supply chain auditing

Distributed ledgers provide an easy way to certify that the backstories of the things we buy are genuine. Transparency comes with blockchain-based timestamping of a date and location — on ethical diamonds, for instance — that corresponds to a product number.

File storage

Decentralizing file storage on the internet brings clear benefits. Distributing data throughout the network protects files from getting hacked or lost.

Prediction markets

Prediction markets that pay out according to event outcomes are already active. Blockchains are a "wisdom of the crowd" technology that will no doubt find other applications in the years to come.

Protection of intellectual property

Smart contracts can protect copyright and automate the sale of creative works online, eliminating the risk of file copying and redistribution.

Internet of Things (IoT)

Smart contracts make the automation of remote systems management possible. A combination of software, sensors, and the network facilitates an exchange of data between objects and mechanisms.

NeighbourhoodMicrogrids

Blockchain technology enables the buying and selling of the renewable energy generated by neighbourhoodmicrogrids.

Identity management

Distributed ledgers offer enhanced methods for proving who you are, along with the possibility to digitize personal documents. Having a secure identity will also be important for online interactions — for instance, in the sharing economy.

AML and KYC

Anti-money laundering (AML) and know your customer (KYC) practices have a strong potential for being adapted to the blockchain. Currently, financial institutions must perform a labour intensive multi-step process for each new customer. KYC costs could be reduced through cross-institution client verification, and at the same time increase monitoring and analysis effectiveness.

Data management

In the future, users will have the ability to manage and sell the data their online activity generates. Because it can be easily distributed in small fractional amounts, Bitcoin — or something like it.

Land title registration

AsPublicly-accessible ledgers, blockchains can make all kinds of record-keeping more efficient. Property titles are a case in point. They tend to be susceptible to fraud, as well as costly and labour intensive to administer.

Stock trading

When executed peer-to-peer, trade confirmations become almost instantaneous. This means intermediaries — such as the clearing house, auditors and custodians — get removed from the process.

Blockgeeks

Source: http://blockgeeks.com/guides/what-is-blockchain-technology/

(Rosic, 2016)

Appendix 8. Contrasting Principles of Open and Closed Innovation

Closed innovation principles	Open innovation principles
- The smart people in our field work for us	- Not all the smart people work for us - We need to work with smart people inside and outside our company
- To profit from R&D, we must discover it, develop it, and ship it ourselves	- External R&D can create significant value - Internal R&D is needed to claim some portion of that value - Generation of additional revenues from selling research outputs to other firms
- If we discover it ourselves, we will get it to the market first - The company that gets an innovation to the market will win - If we create the most and the best ideas in the industry, we will win	- We do not have to originate the research to profit from it - Building a better business model is better than getting to the market first - If we make the best use of internal and external ideas, we will win - We are seeking constantly knowledge from others
- We sell only proprietary products and services - A solution excludes external value-adding processes - Customers are hardly integrated into the innovation process - We should control our intellectual property, so that our competitors do not profit from our ideas	- Open architecture is part of our strategic thinking - Cross-border processes contribute to our client value proposition - We invite the customer into the innovation process as a partner and co-producer - We should profit from others' use of our intellectual property, and we should buy others' intellectual property whenever it advances our own business model
- Little collaboration activities such as joint ventures and strategic alliances	- Network of collaboration partners from development to distribution. We believe that relationship capital contributes significantly to the firm's business value

Source: Fasnacht (2009, p. 100)

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