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Exploring the Path Towards the Legitimacy Threshold

A Case Study of Norwegian New Technology Ventures in the Energy Sector

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Abstract

New ventures are viewed as legitimate if they gain enough legitimacy to cross the legitimacy threshold. Gaining legitimacy is accomplished by utilizing legitimation strategies to build a combination of different legitimacy sources. Although legitimacy has been researched by a number of scholars since Stinchcombe published his seminal paper in 1965, there still exist gaps in the literature that needs further research. By conducting a literature review on the topic, the authors found that Norwegian new technology ventures operating in the energy sector in Norway were an under-researched area. They also found that research predominantly investigates legitimacy strategies and legitimacy sources in an isolated manner. The authors of this thesis attempted to close the gap in legitimacy literature by setting the following purpose; *explore individual legitimation strategies used by Norwegian new technology ventures (NTVs) towards reaching the legitimacy threshold in the energy sector.*

Three research questions were formulated to guide the authors in answering the purpose. The authors chose a qualitative study and included nine Norwegian NTVs from the energy sector. Empirical data was collected by conducting semi-structured interviews with one of the founders from each venture. In order to guide the data collection and analysis, the authors also composed a theoretical framework based on the seminal work of Zimmerman and Zeitz (2002). The analysis is comprised of a Within-Case analysis, two Cross-Case analysis' to investigate RQ1 and RQ2, and finally a Cross-Case Across Industry analysis to answer RQ3.

The findings indicate that conformance and selection strategies remain important strategies also for Norwegian NTVs in the energy sector. This thesis found that creation and manipulation are relatively frequently used strategies, which may be due to the energy sector being prone to digitalization. In addition, the analysis shows that there might exist a baseline of legitimacy sources, which can be achieved by utilizing a conformance strategy. The authors also revealed an interdependency between the legitimacy sources and strategies, and suggest that legitimacy can be built both continuous and discontinuous.

Sammendrag

Nyetablerte selskaper betraktes som legitime dersom de opparbeider seg nok legitimitet til å krysse en legitimitetsgrense. Et nyetablert selskap danner legitimitet ved å benytte legitimitetsstrategier for å bygge en kombinasjon av ulike legitimitetskilder. Selv om legitimitet har blitt forsket på av flere forskere etter at Stinchcombe publiserte sin velkjente artikkel i 1965, eksisterer det fremdeles hull i legitimitets litteraturen vedrørende nyetablerte selskaper. Ved å gjennomføre en litteraturstudiet om emnet, oppdaget forfatterne at norske nyetablerte teknologiselskaper som opererer i energisektoren var et lite undersøkt område. Forfatterne fant også at forskningen frem til i dag i hovedsak har hatt et isolert søkelys på legitimitetsstrategier og legitimitetskilder. I hensikt av å tette hullet i litteraturen satt forfatterne av denne masteroppgaven følgende formål: utforske individuelle legitimitetsstrategier som brukes av norske nyetablerte teknologiselskaper mot å nå legitimitetsgrensen i energisektoren.

Tre forskningsspørsmål ble formulert for å veilede forfatterne i å besvare oppgavens formål. Forfatterne valgte å gjennomføre en kvalitativ studie og inkluderte ni norske nyetablerte teknologiselskaper fra energisektoren. Empiriske data ble samlet inn ved å gjennomføre halvstrukturert intervju med en av grunnleggerne fra hvert nyetablerte teknologiselskap. For å veilede datainnsamlingen og analysen, brukte også forfatterne et teoretisk rammeverk som er basert på Zimmerman og Zeitz sin artikkel fra 2002. Analysen består av en Within-Case analyse, to Kryss-Case analyser, for å svare på RQ1 og RQ2, og til slutt en Kryss-Case på tvers av industri analyse for å svare på RQ3.

Resultatene viser at conformance og selection er strategier som også er viktig for norske nyetablerte teknologiselskap. Denne oppgaven viser også at creation og manipulation strategier er ofte brukt, og at grunnen til det muligens er at energisektoren går gjennom en digitaliseringsprosess. I tillegg viser analysen at det kan finnes et minste grunnlag for av legitimitet, som kan oppnås ved bruk av conformance strategi. Forfatternes forskning avslørte at det muligens eksisterer en avhengighet mellom de ulike individuelle legitimitetsstrategiene, og foreslår at legitimitet kan bygges både kontinuerlig og diskontinuerlig.

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Glossary

Abbreviations	
AI	Artificial intelligence
AMS	Smart meters
B2B	Business-to-business
B2C	Business-to-consumer
EU	European Union
GDPR	General Data Protection Regulation
HSE	Health, safety, and environment
ILS	Individual legitimization strategies
IoT	Internet of things
ML	Machine learning
NDA	Non-disclosure agreement
NTV	New technology venture
O&G	Oil and gas
R&D	Research and development
TTO	Technology transfer office

Explanation of Terms	
CE-marking	A certification that signifies that products sold in the EEA have been assessed to meet high safety, health, and environmental protection requirements.
Defense industry	Refers to equipment and technology in the military industry.
Design thinking	To empathize with the users of the product, a process where you define your user's needs and problems.
Energy sector	In this thesis, the definition regards; utilities, and oil & gas.
External stakeholders	Individuals or groups outside a business that can affect a business.
FTP-server	File Transfer Protocol it's a way of transferring files between computers. A computer on the Internet that offers FTP access is said to be an FTP-server.
Grid equipment	Equipment used for inspection of powerlines.
Hard funding	Funding from e.g. business plan competition, investors, where the entity giving funding expects a return on their investment.
Incubator	A program designed to help new ventures increase their chances for success, in addition, many of the programs offers the office to their participants.
Industry 4.0	Is the name given for the current trend of automation and data exchange in manufacturing technologies.
Innovation Norway	State-owned company focusing on promoting nationwide industrial development with both focus on the business economy and Norway's national economy.
Lean startup	Is a method with the belief that new ventures (startups) should develop products based on investigation, experiments, test, and iterate while they develop the product.
Legitimacy threshold	When the NTV has reached the legitimacy threshold they have obtained a certain level of legitimacy and overcame the liability of newness. In this study, it is crossed when a paying customer is acquired
Legitimacy judgement	A new venture can get legitimacy judgments from external stakeholders before reaching the legitimacy threshold. E.g. of a legitimacy judgment is pilot-customers, financial support, or strategic alliances.
Legitimation process	How the venture works to get its first customer.
LinkedIn	A business and employment-oriented service, mainly used for professional networking, where you also can find information about businesses.

New technology venture	An operating new venture that develops a highly technological product/service and this technology plays an essential role in its value creation.
Off-the-shelf technology	Existing products combined to deliver a new product.
Oil & gas industry	Is defined as companies operating in up-, mid-, and downstream, and suppliers to these domains.
Pilot customer	A customer in a research and development project with a new venture where they are paying for the research and development project.
Proff.no	A website that provides an overview of registered companies' economy, official roles, shareholders, and location.
Research Council of Norway	The Norwegian government agency is responsible for awarding grants for research as well as promoting research and science.
Runway	Dividing the current cash position by the current monthly cash burn rate. The sum indicates how many months the business will run before it is out of cash.
Skype	Is a telecommunication application that specializes in providing video chat and voice calls between smart devices through the internet.
Smart money	Refers to transactions or investments made by expert investors who have a comprehensive understanding of the entity he/she invests in.
Soft funding	Funding from e.g. a business plan competition or investors, where they do not expect any return from the capital they provide in funding.
Technology push	When research and development in new technology drive the development of a new product. There might not be an apparent need for the product, or the users may not be aware they need it
Two-factor authentication	Provides a way of double-checking that you are the person you are claiming to be when you log on to your online accounts.
Utilities industry	Is defined as power distributors, transmission operators, power plant, grid operators, and suppliers to these institutions.
Product-market fit	Is the degree to which a product satisfies strong market demand.

1. Introduction

Liability of newness is the hypothesis, developed by Stinchcombe in 1965, stating that new ventures face higher mortality rates than established firms (Brüderl & Schüssler, 1990; Stinchcombe, 1965). Stinchcombe's (1965) hypothesis has been further investigated by several scholars to determine its viability, which has resulted in strong empirical evidence that the influences of newness on mortality rates of new ventures does, in fact, exist (Wiklund, Baker & Shepherd, 2010). Stinchcombe's (1965) theory held even when the effects of organizational size and other factors were included (Carroll, 1983; Carroll & Delacroix, 1982; Carroll & Hannan, 1989; Carroll & Huo, 1986; Freeman, Carroll & Hannan, 1983; Hannan & Freeman, 1984; Yang & Aldrich, 2017). Scholars have identified opportunities, behaviors, and strategies, that act as mitigating factors to this liability (Wiklund et al., 2010).

One frequently discussed dimension of liability of newness is a new venture's lack of legitimacy (Stinchcombe, 1965). In other words, building legitimacy provides a means to overcome the liability of newness (Singh, Tucker & House, 1986; Wiklund et al., 2010; Zimmerman & Zeitz, 2002). Singh et al. (1986) results suggest that any actions that lead to new ventures becoming externally legitimated can significantly alter the liability of newness. Zimmerman and Zeitz's seminal paper *Beyond Survival: Achieving New Venture Growth by Building Legitimacy* from 2002 focus on three main domains; the legitimacy threshold, legitimization strategies, and sources to legitimacy.

Several researchers emphasize that to accomplish other firm forming actions, establishing legitimacy in a firm's early stage is critical (Delmar & Shane, 2004; Middleton, 2012; Tornikoski & Newbert, 2007; Zimmerman & Zeitz, 2002). Zimmerman and Zeitz (2002, p. 414) state that legitimacy is an essential resource to new ventures at least as necessary as other resources, such as investments, customer goodwill, and networks, allows ventures to access additional resources needed to survive and grow. Legitimacy, in the view of institutional theory, is a social judgment made by external stakeholders (Suchman, 1995; Zimmerman & Zeitz, 2002). In order for these stakeholders to give a new venture a legitimacy judgement, it has to gain a certain level of legitimacy (Peake & D'Souza, 2015; Zimmerman & Zeitz, 2002). Zimmerman and Zeitz (2002) were the first authors to conceptualize the term of the legitimacy threshold. Since they published their seminal paper in 2002 it has gained broad recognition in

the legitimation research and a range of scholars have discussed the phenomenon of how new ventures reach the legitimacy threshold in a business environment by building sources to legitimacy with the help of legitimation strategies (Bloodgood, Hornsby, Rutherford & McFarland, 2017; Fisher, Kotha & Lahiri, 2016; Kuratko, Fisher, Bloodgood, & Hornsby, 2017; McKnight & Zietsma, 2018; Nagy, Rutherford, Troung & Pollack, 2017; Rutherford & Buller, 2007; Rutherford, Tocher, Pollack & Coombes, 2016). However, there are still areas in the literature that remains under-researched. With legitimacy being such critical phenomena for new ventures, the authors chose to pursue a study with new venture legitimacy in focus.

1.1 The Legitimacy Judgement - From Existence to Survival

Zimmerman and Zeitz (2002) define crossing the legitimacy threshold as a new venture moving from a phase of existence to the stage of survival. Below the threshold the new venture is characterized as having low levels of legitimacy with a high probability of failure, above it, the venture has the opportunity to strategically enhance its legitimacy and thereby increase its access to resources needed to succeed (Zimmerman & Zeitz, 2002). Although Zimmerman and Zeitz (2002) define the term they highlight the difficulty of determining what the threshold constitutes, and states that it most likely is unique for every venture and that legitimacy indeed is a continuous variable. However, there exists a consensus among scholars that crossing the threshold requires new ventures to utilize legitimation strategies to obtain different sources of legitimacy (Kuratko et al., 2017; Rutherford & Buller, 2007).

Scholars have also indicated that several thresholds exist (Fisher et al., 2016). Financiers, customers and partnerships are mentioned as indicators of having crossed different thresholds (Karlsson & Middleton, 2015; Rutherford & Buller, 2007; Zimmerman & Zeitz, 2002). Wang, Song, and Zhao (2014) reference the acquisition of customers as the overall goal and a necessity for new venture survival. Thereby, the customer legitimacy threshold could be viewed as the most crucial one. The legitimacy thresholds are also, according to McKnight and Zietsma (2018), highly contextual and geographical location is mentioned as having an impact on the legitimacy of new ventures (Suchman, 1995). Scholars reference strategies new ventures can make use of in order to establish themselves in environments, including geographical locations. Such strategies will aid the new venture in garnering legitimacy judgments without making changes to the venture “as is” (Suchman, 1995, p. 589). Locating the venture in a geographical

location where organizations addresses the same norms and rules may provide the new venture with legitimacy all in itself (Zimmerman & Zeitz, 2002).

Prior research on new venture legitimacy has been conducted with new ventures residing in several locations, such as Asia, North America, and large parts of Europe (Brüderl & Schüssler, 1990; Deeds, Mang & Frandsen, 2004; Drori & Honig, 2013; Delmar & Shane, 2004; Karlsson & Middleton, 2015; McKnight & Zietsma, 2018; Rao, Chandy & Prabhu, 2008; Rutherford & Buller, 2007; Su, Peng, Zhang & Rong, 2015; Turcan & Fraser, 2016; Wang et al., 2014). Bjornali, Giones, and Billstrom (2017) studied how Norwegian cleantech firms build legitimacy. However, their focus was on signaling actions and not on legitimation strategies and sources to legitimacy. Although scholars are able to draw generalizations between the legitimation of new ventures from different geographical locations, the majority of them mention that it is uncertain whether or not it is plausible to generalize their findings beyond the new ventures included in these studies (Drori & Honig, 2013; Karlsson & Middleton, 2015; McKnight & Zietsma, 2018; Rao et al., 2008; Rutherford & Buller, 2007; Su et al., 2015; Wang et al., 2014). Rutherford and Buller's (2007) study imply that the industry in which the venture operates also can have an impact on how the venture reaches the legitimacy threshold. Because new ventures have to be viewed as a part of their greater ecosystem when building legitimacy (Deeds et al., 2004; Delmar & Shane, 2004; Kuratko et al., 2017; Li, Shen, Ma & Zhang, 2015; Rao, 2004; Rao et al., 2008; Su et al., 2015; Turcan, 2013; Turcan & Fraser, 2016), the industry the new venture operates in can affect the results of studies done on new venture legitimation. The scope of the studies conducted on legitimation strategies and sources have varied between industries such as cleantech, internet, jewelry, trade, design, manufacturing, IT, and service industries (Delmar & Shane, 2004; Karlsson & Middleton, 2015; McKnight & Zietzma, 2018; Su et al., 2015).

The literature review performed in preparation of writing this thesis showed that the energy sector is an under-researched area. In addition, the energy sector is changing rapidly due to digital transformation, which some refer to as the 4th industrial revolution (EY, 2016; Samoun, Holmås, Santamarta, Forbes, Clark & Hughes, 2019; Taylor, 2019). As a result of the 4th industrial revolution, entirely new marketplaces, ecosystems, and opportunities for innovative businesses with novel business models are emerging (International Business Machines, 2017, p. 6). The Future Economic Studio (2017) found that established firms are looking to outsource disruptive innovation to new ventures to ensure that they do not miss out on the 4th industrial

revolution. Thereby established firms are accelerating the introduction of new ventures in industries influenced by digitization, including the energy sector, making it an interesting sector to explore. Because new technology is a key part of the digital transformation the authors choose to continue the focus on new ventures whose value creation depends on developing highly technological solutions, hardware or software, and term such ventures as new technology ventures (NTVs).

Building the foundation for legitimacy judgements remains a task for the new venture. Scholars debate that the relationship between the legitimacy sources, and how they should combine them is mostly unknown and is an ongoing discussion (Payette, 2014; Suchman, 1995; Wang et al., 2014; Zimmerman & Zeitz, 2002). Which again raises the question of how the new ventures should utilize the legitimation strategies to gain these sources in order to reach the legitimacy threshold. In addition, in the literature review performed in preparation for this master thesis the authors found that, except from the studies conducted by Zimmerman and Zeitz (2002), Karlsson and Middleton (2015), Aldrich and Fiol (1994) and Kuratko et al. (2017), legitimation research predominantly investigates the strategies in an isolated manner. Exploring how new ventures utilize all forms of legitimation strategies to build the sources to legitimacy is crucial in order to understand how they move towards the legitimacy threshold.

As hinted to above, there remains a gap concerning exploring the use of legitimation strategies amongst Norwegian NTVs in the energy sector. In addition to being an under-researched environment, Norway is one of the largest energy exporters and producers in the world (IEA, w.y.; Norwegian Government, w.y.), which also made it interesting to explore legitimacy in the context of Norwegian NTVs in the energy sector. The authors have chosen to narrow the energy sector down to the utilities, and the oil & gas industry due to the fact that Norway's most prominent energy export comes from those two industries specifically (Energy Norway, w.y; 2016.; IEA, w.y.; NVE).

1.2 Purpose

In order to bridge the gap in the literature, the authors chose to pursue a study with the purpose of *exploring individual legitimation strategies used by Norwegian NTVs towards reaching the legitimacy threshold in the energy sector.*

By “exploring” the authors refers to investigating the individual legitimation strategies (ILS) by NTVs. An ILS is one legitimation strategy seen in the context of one source to legitimacy. The legitimacy threshold marks the point of a legitimacy judgement. The authors focus on the customer legitimacy threshold in this thesis, meaning that not having acquired a customer shows that the NTV is pre-threshold. “Towards reaching the legitimacy threshold”, refers to how the NTVs makes use of the ILS’s on their path towards the acquisition of a customer which remains a goal on the horizon for the NTVs. In order to meet the purpose of the assignment, the authors have formulated three research questions (RQs). Before elaborating on the RQs, a further introduction to legitimation strategies, legitimacy sources, and defining the legitimacy threshold is necessary.

1.2.1 Legitimation Strategies and Legitimacy Sources

Legitimacy is derived from several sources (Karlsson & Middleton, 2015, p. 471). Growth of the number of sources is not necessarily homogeneous, as it depends on what strategies the new venture deploys. The literature presents several sources and strategies and the authors have chosen to take base in Zimmerman and Zeitz’s paper from 2002 when it comes to terminology. An in-depth description of the sources and strategies presented by them is provided in Chapter 2. Because the strategies assist new ventures in building different sources of legitimacy, the authors choose to view the sources in the context of the strategies, similar to what Karlsson and Middleton (2015) did in their study, and what Zimmerman and Zeitz (2002) implied in their theoretical review.

One or more of the three sources to legitimacy need to be present in order to reach the legitimacy threshold (Aldrich & Fiol, 1994; Scott, 1995; Suchman, 1995; Zimmerman & Zeitz, 2002). The importance of the different sources relative to one another is an ongoing discussion in the literature (Payette 2014; Suchman, 1995; Zimmerman & Zeitz 2002). Suchman (1995), Zimmerman and Zeitz (2002), and Karlsson and Middleton (2015) suggests that focusing on one legitimacy source alone, without employing the other sources of legitimacy is insufficient.

1.2.2 Legitimacy Threshold

Scholars have attempted to quantify the legitimacy threshold through both qualitative and quantitative studies (Nagy et al., 2017; Rutherford & Buller, 2007; Rutherford et al., 2016). It is implied that several legitimacy thresholds exist, and that a legitimacy judgment can be

viewed as crossing one legitimacy threshold (Fisher et al., 2016, p. 384; McKnight & Zietsma, 2008). A legitimacy judgment can include having employees, partners, investors, or customers (Jawahar & McLaughlin, 2001). Wang et al. (2014) states that early customers are extremely important for mitigating liability of newness as customers are the lifeblood for new ventures. Having acquired a customer provides a signal to external stakeholders that the new venture has gotten an important legitimacy judgement (Karlsson & Middleton, 2015). The authors of this thesis focus on the customer legitimacy threshold.

1.3 Research Question

The authors do not intend to research the legitimacy threshold, per se. What is interesting, in terms of the purpose, is to get a broader understanding of how NTVs work towards the legitimacy threshold by exploring ILS. As described above, because sources and strategies are not isolated measures, the authors found it essential to view them in relation to each other in their study. The authors ask the following RQs to guide the thesis in the direction of answering the purpose of the thesis:

RQ1: How are ILS used by Norwegian NTVs, towards reaching the legitimacy threshold in the utilities industry?

RQ2: How are ILS used by Norwegian NTVs, towards reaching the legitimacy threshold in the oil & gas industry?

RQ3: How does the Norwegian NTVs' use of ILS compare across the industries oil & gas, and utilities?

Asking these questions will shed light on how NTVs have worked and works towards reaching the legitimacy threshold.

1.4 Contributions

There exists consensus among scholars that focusing on only one source/strategy is insufficient when attempting to move towards any legitimacy threshold (Payette, 2014; Karlsson & Middleton, 2015; Zimmerman & Zeitz, 2002). However, previous research has not viewed the different ILS's together to a sufficient degree (Payette, 2014). Thereby, providing NTVs with

a broader idea of how to use ILS in order to work towards reaching the legitimacy threshold remains essential. Conducting research in line with the purpose of the paper may provide recommendations as to how Norwegian NTVs in the energy sector may apply their focus in terms of different strategic decisions when attempting to move themselves towards the legitimacy threshold.

It is found that more than 90% of all start-ups fail (Startup Genome, 2011). Since legitimacy is essential to new venture survival and growth (Brown, 1998), it remains important to aid NTVs in gaining a greater understanding of how they successfully can reach the legitimacy threshold. This is especially important for NTVs in the energy sector now that NTVs are rapidly emerging in this sector as a result of Industry 4.0. Providing such insight might help reduce the failure rates, and might also be of benefit to the energy sector itself, as mentioned earlier; more established firms strategically look to NTVs for assistance when taking advantage of new technology (The Future Economy Studio, 2017).

As stated above, gaps in the literature regarding ILS's exist. With this master thesis, the authors can contribute with an additional stream of literature in these areas. Through conducting the research in this thesis new areas of research within legitimation of new ventures may also become evident, further helping to close the gaps that currently exist in the literature.

1.5 Structure of the Thesis

The introduction has emphasized the importance of obtaining legitimacy for NTVs and contributed to develop the purpose of this study. In Chapter 2, theory regarding new venture legitimacy is presented along with the theoretical framework used for analysing the data. Chapter 3 describes the methodical path the authors took in order to answer the RQs and to reach the purpose of the thesis. To answer the RQs presented in Chapter 1, the authors have chosen a qualitative, multiple case study approach. Nine Norwegian NTVs from the energy sector were included. Semi-structured interviews were performed with a co-founder of each NTV was conducted and used as the primary source of data. In Chapter 4, each NTV is presented, followed by a Within-Case analysis. Furthermore, two Cross-Case analyses are conducted, one for each industry. Lastly, a Cross-Case Across Industry analysis is performed. The research design was set up with the intent of answering the RQ's with both Cross-Case analysis' and the Cross-Case Across Industry analysis. In Chapter 5 the authors discuss their

findings and whether these findings are in line with extant research on legitimacy. In Chapter 6 the authors present the conclusion, followed by Chapter 7 which highlight limitations of the study. Finally, Chapter 8 presents implications of the study and recommendations for further research.

2. Theory

Within research on organizational legitimacy, two main domains have emerged, namely; strategic and institutional (Kaganer, Pawlowski & Willey-Patton, 2010). Strategic theorists adopt the perspective of organizational managers looking out; thereby, they depict legitimacy as resource ventures can extract from their environment (Suchman, 1995). Those who take the institutional approach, on the other hand, adopt the perspective of society looking in, thereby, they put more emphasis on the organization conforming with rules and norms of the surrounding environment (Elsbach, 1994, p. 59). The actual distinction between the two approaches is a matter of perspective.

A range of other scholars have attempted to define legitimacy. The differences between the definitions are slim; however, they all bring individual aspects into the description of the phenomena. In the attempt of establishing a framework for analysing organizational legitimacy, Dowling and Pfeffer (1975) discuss the definitions of legitimacy described by Parsons (1960) and Terreberry (1968). Parsons (1960), coming from the institutional perspective, described legitimacy as conforming with the goals of the environment the organization depends on. While Terreberry (1968) claims that legitimacy is assessed by the exchange of resources between organizations, and thereby leaning more towards the strategic perspective. Dowling and Pfeffer (1975), similarly to Parsons (1960), characterize legitimacy as congruence between the actions and behaviors of an organization with the social system it is a part of. Dowling and Pfeffer (1975) continue to describe legitimacy as a dynamic constraint that changes while the organization adapts to its environment, implying that the definition of legitimacy is adjusted along with the evolution of the organization.

Besides having one of the most cited definitions throughout literature by the following authors (Andersen & Rask, 2014; Díez-Martín, Prado-Román & Blanco-González, 2013; Johnson, Dowd & Ridgeway, 2006; Kaganer et al., 2010; Karlsson & Middleton, 2015; Turcan & Fraser, 2016; Wang et al., 2014; Zimmerman & Zeitz, 2002), Suchman (1995) seeks to integrate the two perspectives in one inclusive definition legitimacy. Which is important as real-world businesses face both strategic challenges and institutional pressures (Swidler, 1986), this is important. According to Suchman (1995, p. 574) legitimacy is “a generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions.” With this definition,

Suchman (1995) suggests that legitimacy is given as an overall evaluation, going beyond single events, but dependent on the past. It also implies that an organization builds the foundation on which it can be provided legitimacy, but ultimately, it is a judgment made by the stakeholders in its environment. Because, as Suchman (1995) explains, legitimacy is generated by the bystanders if they perceive the organization as operating in line with the shared beliefs of its environment. If the majority of the bystanders believe the venture is doing so, it is legitimate in the eyes of its environment (Suchman, 1995).

Before writing this master thesis, the authors completed a literature review where they investigated the research question: *What does the literature say about how new ventures gain legitimacy?* While conducting the research, three main topics appeared to be dominant; the legitimacy threshold, legitimation strategies, and legitimacy sources. For new ventures to be viewed as legitimate, they have to gain enough legitimacy in order to cross the legitimacy threshold, and gaining legitimacy is accomplished through utilizing legitimation strategies to build a combination of the different legitimacy sources. In the following subsections, the authors present the legitimacy sources and legitimation strategies found in the literature and the phenomena legitimacy threshold in greater detail.

2.1 Theoretical Framework

The theoretical framework represents the lens which the authors see the data through. The theoretical framework drawn from legitimation theory, and the authors have taken basis in what Zimmerman and Zeitz presented in their article from 2002. Sources to legitimacy are introduced first, followed by strategies, and lastly the legitimacy threshold is described.

2.1.1 Sources

Frequently discussed sources to legitimacy are; regulatory, normative and cognitive legitimacy (Aldrich & Fiol, 1994; Becker-Blease & Sohl, 2015; Delmar & Shane, 2004; Karlsson & Middleton, 2015; Khaire, 2010; Scott, 1995; Suchman, 1995; Turcan, 2013; Wang et al., 2014; Zimmerman & Zeitz, 2002). Although scholars have used slightly different terminology when naming the sources, the content of their descriptions of them is the same. Zimmerman and Zeitz (2002) present an additional source, namely, industry legitimacy. However, the authors have chosen to elude this term from the thesis because industry legitimacy is not affected by enacting legitimation strategies. One or more of the legitimacy sources need to be present in order to

reach the legitimacy threshold (Aldrich & Fiol, 1994; Scott, 1995; Suchman, 1995; Zimmerman & Zeitz, 2002).

Regulatory Legitimacy

Scott (1995) depicts regulatory legitimacy as being “derived from rules, regulations, and standards of recognized official entities, including governments, credentialing associations, and other organizations.” New ventures that demonstrate a willingness to play by the rules legally are perceived as more legitimate (Wang et al., 2014). Zimmerman and Zeitz (2002) explain that it is a way to show that the organization is a “good citizen.” Delmar and Shane (2004) suggest that regulatory adherence can indeed improve the company's legitimacy and survival.

Normative Legitimacy

A new venture builds normative legitimacy by complying with the norms and values of its social environment or network (Scott, 1995). Normative legitimacy refers to being consistent with societal values such as profitability, fairness in treating employees, and customers, and also using available funds profitably (Wang et al., 2014; Zimmerman & Zeitz, 2002, p. 419). Doing so will aid new ventures in demonstrating that they are appropriate and desirable (Suchman, 1995).

Endorsements and networks are two approaches to build normative legitimacy. Positive press coverage is an example of an endorsement; it gives an impression that the press believes in the venture and in that way the press' legitimacy rubs off on the venture (Zimmerman & Zeitz, 2002). A venture's network includes external entities such as other ventures and organizations. By engaging in networks, a venture will become associated with legitimate entities, contributing to the venture's normative legitimacy (Deeds et al., 1997; Dowling & Pfeffer, 1975; Timmons & Bygrave, 1986).

Cognitive Legitimacy

“Cognitive legitimation refers to the spread of knowledge about a new venture” (Aldrich & Fiol, 1994). Acquiring cognitive legitimacy depends partly on giving its surroundings an understanding of its existence (Aldrich & Fiol, 1994; Karlsson & Middleton, 2015; Suchman, 1995). Therefore, as a new venture deploying novel products, this source of legitimacy relies

on making the invention comprehensible for relevant stakeholders (Karlsson & Middleton, 2015).

Wang et al. (2014) state that ventures can reflect cognitive legitimacy through a qualified founding team or top management. For example, having high levels of cognitive legitimacy is typically present when the founding team is well educated and has industry and prior entrepreneurial experience (Deeds et al., 2004; Zimmerman & Zeitz, 2002). Building such a top management team indicates company value to stakeholders (i.e. investors and customers), thereby, increasing the new ventures cognitive legitimacy (Wang et al., 2014, p. 1062). In her study, Khaire (2010) propose that new ventures can build cognitive legitimacy by imitating structures and activities of incumbent firms in the industry, which concurs with the statement of Wang et al. (2014).

2.1.2 Strategies

Similarly, to the sources, the strategies have been assigned different titles throughout the literature, although the descriptions of them are the same. The authors have chosen to adopt Zimmerman and Zeitz's (2002) terminology of the legitimation strategies; conformance, (Aldrich & Fiol, 1994; Ashforth & Gibbs, 1990; DiMaggio & Powell, 1983; Hunt & Aldrich, 1996; Karlsson & Middleton, 2015; Scott, 1995; Stinchcombe, 1965; Suchman 1995; Su et al., 2015), selection (Karlsson & Middleton, 2015; Kuratko et al., 2017; Suchman, 1995; Zimmerman & Zeitz, 2002), manipulation (Bitektine, 2008; Drori & Honig, 2013; Karlsson & Middleton, 2015; Suchman, 1995) and creation (Kuratko et al., 2017; Zimmerman & Zeitz, 2002). All four strategies are used to build the different sources of legitimacy and are thereby coupled to each legitimacy source, meaning that there are twelve ILS (Karlsson & Middleton, 2015; Zimmerman & Zeitz, 2002). Below, the four main strategies are described.

Conformance

When a venture seeks to conform to the “rules” of its environment, the venture enacts conformance strategy (Suchman, 1995, p. 587). Conforming can be viewed as an appropriate strategy for new ventures entering industries with established norms and values because new ventures tend to have more limited resources than incumbent firms, hence less power to challenge the established (Aldrich & Fiol, 1994; Karlsson & Middleton, 2015; Stinchcombe,

1965; Zimmerman & Zeitz, 2002). Su et al. (2015) and Karlsson and Middleton (2015) referred to conformance as the least strategic demanding strategy a new venture can deploy.

Selection

Selection as a strategy reduces the need for conformance either by selecting an environment (e.g., industry, geographical location) that is more favorable to the venture (Suchman, 1995, p. 589, Zimmerman & Zeitz, 2002) or by selecting partial or symbolic compliance (Karlsson & Middleton, 2015, p. 472). Selection strategy can be viewed as choosing the path of less resistance. Kuratko et al. (2017, p. 127) state that “selection strategy is less costly and less risky than manipulation or creation strategies,” but costlier than conformance and therefore new ventures use the selection strategy only when it is necessary. Furthermore, they recommend new ventures launching radical new technology to use selection strategy to select an ecosystem where they create most value.

Manipulation

Manipulation strategy, as the term indicates, refers to manipulating the surrounding environment, in order to achieve “bases of support tailored to the ventures specific needs” (Suchman, 1995, p. 591). This strategy, however, it may be resource demanding, is valuable for new ventures who introduce novel products/services that are substantially different from prior practice (Suchman, 1995). For new ventures to manipulate industry standards is a costly affair, and given that new ventures are resource constrained, manipulation strategy is less common among them (Karlsson & Middleton, 2015, p. 473). Zimmerman and Zeitz (2002) and DiMaggio and Powel (1983) also discourage new ventures from using manipulation as a strategy because the strategy is viewed as resource intensive. On the other hand, Su et al. (2015) found that manipulation was the second most adopted strategy by new ventures.

Creation

Creation of the environment can be pursued when a new venture finds itself operating in a new industry or domain, where the basis from which they derive legitimacy is yet to be established. In such a case, the new venture has to act as a pioneer and create this foundation (Zimmerman & Zeitz, 2002, p. 425). Kuratko et al. (2017), who build on the ideas from Zimmerman and Zeitz’s legitimacy literature, suggest that new ventures who deploy new technology to establish new markets should focus on creation strategy. Kuratko et al. (2017) and Su et al. (2015) also

state that creation as a strategy is only employed when conformance, selection, and manipulation are unlikely to have an effect.

2.1.3 Connecting Sources and Strategies

As mentioned in Chapter 1, Zimmerman and Zeitz (2002) were, as far as the authors have found, the first to connect the sources and strategies in a deliberate way. The authors have, similarly to Karlsson and Middleton (2015), chosen to take base in this technique as a part of their theoretical framework. Table 2.1 below gives conceptual examples of the twelve ILS.

Individual Legitimation Strategies	Conceptual example
Regulatory-Conformance	Complying with laws and regulations set by the government such as accounting regulations, CE-marking and GDPR (General Data Protection Regulation).
Regulatory-Selection	Selecting a geographical location or industry based on the benefits the new venture can draw from less strict rules and regulations in that area or domain.
Regulatory-Manipulation	Lobbying for change in existing regulations in favor of the new venture.
Regulatory-Creation	Creating new laws and regulations in favor of the new venture.
Normative-Conformance	Treating employees fairly and using funds profitably. Giving away equity could be an example of deploying this ILS.
Normative-Selection	Choosing a domain that values what the new venture seeks to portray. For example, establishing partnerships with organizations having similar values.
Normative-Manipulation	Altering existing societal norms in an environment to better fit in.
Normative-Creation	Constructing new norms in the environment you operate in.
Cognitive-Conformance	Operating in line with established practices that are assumed to be correct such as having an experienced board of advisors.
Cognitive-Selection	Choosing environments that are accepting of the ideas and practices of the new venture, such as NTVs choosing to have offices in startup incubators.

Cognitive-Manipulation	Modifying the established practices in an environment such as adjusting existing workflow.
Cognitive-Creation	Creating entirely new ways of performing a traditional task such as replacing existing workflows.

Table 2.1: Conceptual Examples of Legitimation Strategies. (This framework is a modification and interpretation of the framework presented by Karlsson & Middleton and (2015) Zimmerman & Zeitz (2002)).

Utilizing the legitimacy terminology presented by Zimmerman and Zeitz (2002) is especially useful for analysing the legitimacy of new ventures. Because their terminology allows the researcher to focus on specific legitimacy sources and strategies to identify organizational characteristics that are contributing to legitimation success or failure (Payette, 2014). When the authors reference an ILS, for example Cognitive-Creation, they imply that the NTV utilizes creation strategy to build cognitive legitimacy.

2.1.4 Legitimacy Threshold

Several studies have attempted to empirically determine the threshold (McKnight & Zietsma, 2018; Nagy et al., 2017; Rutherford & Buller, 2007; Rutherford et al., 2016; Turcan & Fraser, 2016) and connect established theoretical models to the phenomena (Bloodgood et al., 2017; Fisher et al., 2016; Kuratko et al., 2017; Peake & D'Souza, 2015; Zimmerman & Zeitz, 2002). Rutherford and Buller (2007) build further on this notion of the threshold and depicts the pre-threshold period as an intense struggle of attaining legitimacy from stakeholders who are unwilling to give it. Scholars hint that there exist several thresholds, and Wang et al. (2014) indicate that attaining a paying customer is the most vital for a new venture. Based on this the authors view the customer threshold as the most difficult to reach, however, also the most important. The NTVs may have reached other threshold on their way to the customer threshold,

for example the investor threshold, and may reach additional thresholds after accomplishing to acquire a customer.

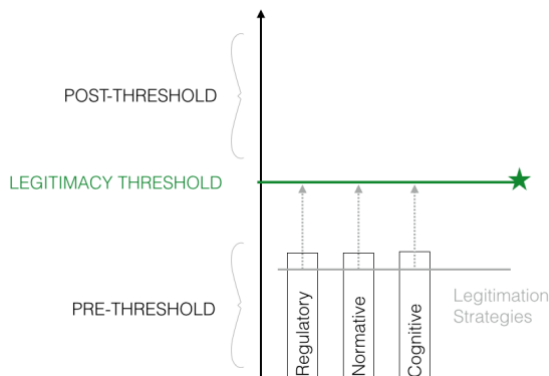


Figure 2.1: Legitimacy Threshold

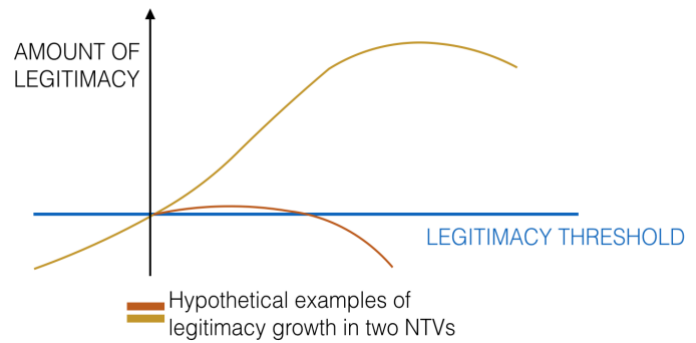


Figure 2.2: Example of Legitimacy growth

As illustrated in Figure 2.1, new ventures can utilize legitimization strategies to gain different sources of legitimacy, and thereby move towards the legitimacy threshold. The growth of sources is not necessarily homogeneous, as it depends on what ILS the new venture deploy. However, as mentioned, a certain amount of each source needs to be present in order to reach the legitimacy threshold. Figure 2.1 is a simplified illustration of how the legitimization strategies are used to build the legitimacy sources in order to reach the legitimacy threshold. It is more complicated to reach it than just adding a little to each bar graph. In reality, gaining legitimacy can be built, and it can be lost which Figure 2.2 attempts to illustrate.

2.2 Applied Theoretical Framework

The theoretical framework will be used to extract the relevant information from all the data collected through the case study. Figure 2.1 shows a green line and three dotted arrows. The green line represents the customer legitimacy threshold, and the dotted arrows are simplified illustrations of the twelve ILS's. Applying the theoretical framework will aid in uncovering the ILS's Norwegian NTVs have utilized in order to move towards the legitimacy threshold, which remains a goal on the horizon. Using the theoretical framework in this manner will aid the authors in answering the purpose of this study. Figure 2.1 and 2.2 are presented to conceptualize the theoretical framework. The thesis does not intend to quantify the findings in similar graphs.

3. Methodology

The research methodology, which describes how the authors have conducted their study towards answering the purpose of this paper, is presented in this chapter. A multiple, qualitative case study was used to explore ILS's used by Norwegian NTVs to move towards the legitimacy threshold. The main source of primary data is from semi-structured interviews with nine chosen Norwegian NTVs. The data analysis is comprised of a Within-Case analysis, a Cross-Case analysis of the oil & gas and one of the utilities. Finally, a Cross-Case across industries is performed. The theoretical framework was used to categorize and recognize the relevant data collected from the interviews and was utilized in the analyses to identify patterns among and across the NTVs. Lastly, the challenges and limitations of the chosen research methodology are discussed.

3.1 Research Design

For this study, the authors chose to perform a qualitative multiple case study. Choosing a multiple case study allowed the authors to draw analytic generalizations based on the findings because they could base it on findings from several NTVs (Yin, 2014). A case study in itself combines data collection methods such as archives, interviews, questionnaires, and observation (Eisenhardt, 1989); however, in this thesis, the focus is primarily on data collected from interviews. In general, a case study is appropriate when the RQs are about events outside the researcher's control (Yin, 2009, p. 13), which they are in this thesis.

Figure 3.1 shows an illustration of the author's research design. The authors began by collecting secondary data sources to get a better understanding of the energy sector, and the NTVs, depicted as step 1 in Figure 3.1. The next step, step 2 in Figure 3.1, was to interview informants from the nine NTVs, where five were from the utilities industry, and four from the oil & gas industry. Further, a Within-Case analysis, step 3 in Figure 3.1, was conducted for all nine cases. The authors then moved on to perform an industry-specific Cross-Case analysis, step 4 in Figure 3.1, by using the findings from the Within-Case analysis' in step 3. Lastly, a Cross-Case Across Industry analysis was performed, step 5 in Figure 3.1, to compare findings from step 4. This research design was chosen because it was necessary to get a comprehensive

understanding of each NTV separately (step 3), before answering RQ1 and RQ2 by analysing the NTVs in step 4. Lastly, step 5 allowed the authors to answer RQ3.

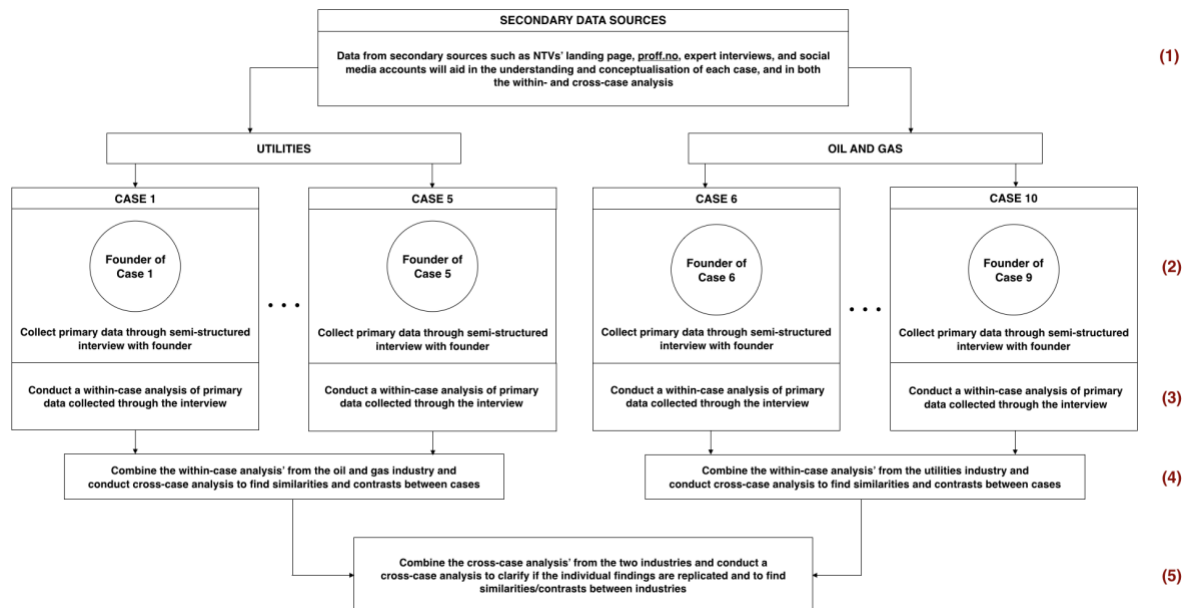


Figure 3.1: Overview of Research Design

3.1.1 Selection of Case Companies

According to Rowley (2002), the selection of relevant NTVs, in this case, NTVs, should be decided based on the research purpose, research questions, and the theoretical context. In addition, it is important to choose relevant subjects to acquire relevant data to the purpose of the study (Bryman, 2008); therefore, the authors have defined a set of selection criteria. The selection criteria helped secure the selection of NTVs that was relevant to answering the purpose.

To conduct the research in line with the purpose of the paper, the authors chose NTVs that not yet have crossed the legitimacy threshold, which the authors have defined as having a paying customer. However, having gotten some legitimacy judgment, for example, a paid pilot project/R&D-project with a potential customer, or secured investments (Karlsson & Middleton, 2015; Zimmerman & Zeitz, 2002), was set as a criteria. These criteria was important because it meant that the NTVs were already engaged in utilizing legitimization strategies, and have been successful in doing so.

For the reasons stated in Chapter 1.1 and 1.2, the authors chose to investigate Norwegian NTVs in the energy sector. Thereby, NTVs incorporated outside Norway, and NTVs operating outside

the energy sector became irrelevant for the study. Within this sector, consisting of coal, renewables, utilities, and oil & gas the authors chose to narrow the focus down to the two latter, the reasons for this decision was described in Chapter 1.1. The authors choose to focus on NTV's selling business-to-business (B2B) to ensure that the NTVs are compared on a common basis.

In addition to be an under-researched environment, choosing Norway facilitated for easy data collection. The authors define the utilities industry as power distributors, transmission operators, power plants, grid operators, and suppliers to these institutions. The oil & gas industry is defined as companies operating in up-, mid-, and downstream, and suppliers to these domains, which are termed service companies. Having founders still working at the NTV was also set as a criteria because the authors found it to be important to speak with persons having a key role in the legitimization of the NTV, since the NTV's establishment.

Criteria:
<ul style="list-style-type: none"> • Operating in oil & gas or utilities
<ul style="list-style-type: none"> • Incorporated in Norway
<ul style="list-style-type: none"> • One or more founders must still work in the NTV
<ul style="list-style-type: none"> • The NTV needs to sell their product/service B2B
<ul style="list-style-type: none"> • Must have gotten a legitimization judgement (e.g.; pilot-customers, strategic alliances, financial support, board, mentors)

Table 3.1: List of criteria for choosing the case objects

Finding case companies that fit all the criteria was challenging. The authors made use of their network in addition to online resources such as proff.no, landing pages of new venture incubators, and company landing pages, to locate relevant NTVs for the study. The authors selected nine NTVs to interview for the study. Since the NTVs would share sensitive information, the authors decided that they would treat the NTVs, and the information they shared, with anonymity. The authors value the anonymity of the NTVs, so they do not disclose the company names, nor information that would allow the reader of this thesis to identify the companies.

3.1.2 Introduction to NTVs

The case companies were all established within the last six years. Their geographical location varied between Oslo and Trondheim, with one having offices in both cities. The case companies all supply highly technical solutions to the energy sector, ranging from hardware to software. Most frequently among the case companies, the founding teams constituted of young entrepreneurs still in university or fresh out of university (1-3 years). Table 3.2 below summarizes the information the authors are allowed to share with the reader. To avoid confusion when referring to the different cases in Chapter 4, the authors gave each NTV a Company ID (Column 1 in Table 3.2), and gave the co-founders aliases (Column 4 in Table 3.2). The aliases are arbitrarily chosen and have no link to the founder's actual identity.

Company ID	Sector	Position	Alias	Technology
Case 1	Utilities	Co-Founder/CTO	Adam	Hardware/Software
Case 2	Utilities	Co-Founder/CEO	Ben	Hardware
Case 3	Utilities	Co-Founder/CEO	Carl	Hardware/Software
Case 4	Utilities	Co-Founder/CEO	Deb	Hardware
Case 5	Utilities	Co-Founder/CEO	Emma	Software
Case 6	O&G	Co-Founder/CEO	Frank	Hardware
Case 7	O&G	Co-Founder/CEO	Haley	Software
Case 8	O&G	Co-Founder/CTO	Ian	Hardware/Software
Case 9	O&G	Co-Founder/CEO	Jessie	Software

Table 3.2: Description of NTVs

3.2 Data Acquisition

Data needed to perform the analysis was collected through interviews with founders. Overview of the data acquisition is shown in Figure 3.4.

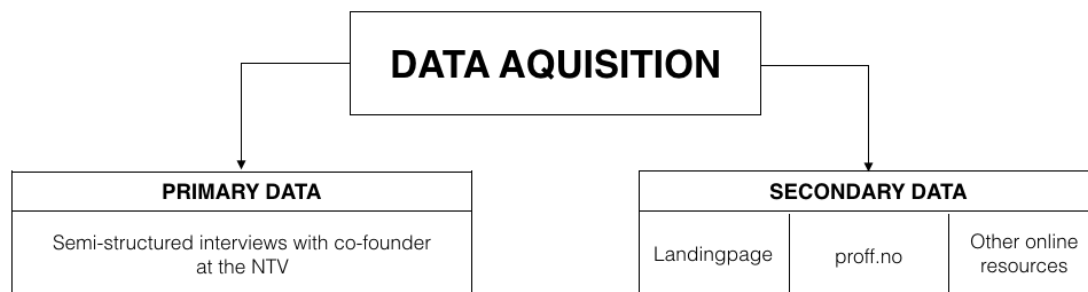


Figure 3.2: Data Acquisition

3.2.3 Secondary Data

To get a comprehensive understanding of the NTVs the authors gathered data from secondary data sources before conducting the interviews, portrayed as step 1 in the research design (see Figure 3.1). The site proff.no, the NTVs landing page, and LinkedIn were used to decide if the ventures meet the criteria of the study. These secondary sources left the authors more prepared when conducting the interview, for example, by being able to quickly dig into relevant questions for the study based on the case objects' response to other questions. Gathering secondary data help reveal knowledge gaps about the case companies (Crowther & Lancaster, 2009), and was used when building questions for the semi-structured interviews.

The authors read through industry-specific information from case reports, annual reports, and industry reports in order to understand the industry characteristics of utilities, and oil & gas. The authors had meetings with experts from the Department of Geoscience and Petroleum and Department of Electric Power Engineering, both located and a part of NTNU, to get a more in-depth insight into the industry. Two of the three authors work in the oil & gas industry, so the reason efforts were made to read up on industry characteristics was partly to give all three authors the same basis of understanding. The secondary data was not used in the analysis.

3.2.1 Interview Schedule

The nine case companies were first contacted through email, which contained practical information about the study, followed by a question if they wanted to participate. If the NTV was interested in participating in the study, the authors sent a follow-up email with a calendar invite to a time and date for the interview, and information about the responsibilities of participation. The authors were familiar with four of the NTVs prior to beginning on the thesis, through the university or their work. These four NTVs were first contacted through a phone call before the same follow-up email was sent. The interviews were conducted within the timeframe of four months January 2019 to April 2019.

3.2.2 Primary Data: Semi-Structured Interviews

Semi-structured interviews with a co-founder at each NTV, with a duration of 60 to 75 minutes are the primary sources of data used in this thesis. The authors debated whether or not there was a need for interviewing more than one founder from each NTV. Interviewing two or three could give more nuanced insight into which strategic steps the NTVs took towards reaching the legitimacy threshold. However, from personal experience as entrepreneurs, being part of new venture ecosystems and as students at NTNU School of Entrepreneurship, the authors have experienced that in early stage start-ups co-founders are generally aligned when it comes to strategic decisions in the venture. Therefore, the authors chose to interview one co-founder from each NTV. The authors chose to interview founders of the case companies, who had been at the venture since its inception, due to the higher probability of gathering more detailed data.

Type of Inquiry

Both the secondary data and the theoretical framework acted as guidelines for the semi-structured interviews. Although the questions in the interviews were based on the theoretical framework, they were formulated in an informal manner by leaving out legitimization terminology (Kvale & Brinkmann, 2009). Since the authors did not have insight into all the relevant information each case could provide, the interview protocol only contained an overview of the subjects of interest and suggestions to relevant questions (Kvale & Brinkmann, 2009). The authors performed semi-structured interviews with the NTVs because the purpose was to retrieve information about the informants' experience (Kvale & Brinkmann, 2009). The questions aimed to reveal what ILS the NTV deployed in the past, depicted as the red line in Figure 3.3, and what strategies they are currently focusing on using, the cross in Figure 3.3.

The line of questioning did not limit the founders from explaining what strategies they are going to pursue in the near future, the orange line in Figure 3.3.



Figure 3.3: Explanation of what point in time the authors ask questions from

Interviews with informants from the NTVs were designed to collect descriptions of events and activities associated with building legitimacy for their NTV. Since the authors partly focused on retrieving information about past events, the interviews focused on retrieving narratives from the informants to get detailed descriptions of their experience at that point in time. Narrative analysis was therefore chosen as a method, as it is used to gain contextual insights into the perspectives of the informants, help make implicit narratives gathered from the interviews explicit, and help ascribe patterns to events and information collected in the interviews (Mills, Durepos & Wiebe, 2010).

Case study protocol

The authors made a case study protocol to guide the data collection. The case study protocol included what the authors needed for the interviews (digital audio recorder), backup plans in the event rescheduling would be needed, and the interview guide. Thereby the authors took base in what Rowley (2002) advice a case study protocol should contain when setting it up. In this thesis, there were three researchers gathering information, which made the case study protocol increasingly important because it served as a communication tool (Rowley, 2002, p. 23). The data the authors gathered was organized and sorted in Microsoft Word before the authors used colour codes to segment the text based on the theoretical framework to gain insight into which legitimation strategies the case companies used to obtain sources of legitimacy.

Interview Guide

The interview guide (Appendix A) was divided into main topics; Background information, Regulatory-, Normative-, and Cognitive Legitimacy, beneath each topic, were suggested questions. Using the interview guide led the founders to give a brief company history (not general information found on for example the webpage and LinkedIn), and give insight into their technology, employees, partnerships, marketing activities, financial status, and more. The authors set it up like this to ensure that they would collect data relevant to answering the RQs,

and thereby the purpose of the study. The authors did not ask the informants the RQs directly but used the empirical data from the interviews to answer the RQs. The line of questioning was initiated with open-ended questions to facilitate answers with rich descriptions, and also to leave room for follow-up questions for further investigation. With this questioning the authors sometimes received an implicit message in return. To fully understand the implicit messages, the authors reformulated the implicit message into a more specific question in order to let the informant confirm or discard their statement (Kvale & Brinkmann, 2009).

Some of the founders the authors interviewed seemed uncomfortable in the interview setting, which led to short and non-descriptive answers. In these situations, the authors used the interview guide more actively to guide the conversation, and the need for follow-up questions to get more descriptions was important and frequently used. In interviews with the more extroverted founders, the answers to questions tended to be more descriptive and lengthier. The founders, in these interviews, took more initiative to tell stories, which in many cases lead to implicit messages the authors had to confirm and discard.

Avoiding Information Loss

Interviews with the NTVs took place at their offices, except for the one with Case 7 that took place over Skype. The authors were concerned that interviewing over Skype would impair the data collection. However, the authors were able to gather adequate amounts of empirical data from the Skype interview; a reason might be that this founder was very open and eager to share. The authors started every interview with a light conversation to help the interview object ease into the situation, in the hopes they would feel more comfortable to share their experiences. Having experience from NTVs within and outside the energy sector helped the authors build trust with the case objects, facilitating for easier data collection.

Also, to ensure that the founders would discuss matters of their company's strategy, the authors decided that all the data would be treated anonymously. Every one of the founder's states that the confidentiality regarding the information they shared made it easier for them to speak more freely because in order to answer some of the questions they had to share somewhat sensitive information. Before embarking on each interview, the authors also stated that they would explain the purpose of the study after the interview was conducted in order to avoid false positives during the interview. It was also important for the authors to express to the co-

founders that in the event they recalled more information or information they shared that they did not want to be included in the study, they should feel free to contact the authors.

Two of the co-authors was present during every interview. Kvale and Brinkmann (2009) state that taking notes while interviewing the informants can be distracting for both the informant and the interviewer. To avoid this and loss of information, the authors made audio recordings of the interviews. Having two of the authors present also ensured good flow in the interview, as they could take on different roles during the interviews. One focused on observation and asking follow-up questions (Eisenhardt & Bourgeois, 1988). The other was responsible for asking the interview questions (Eisenhardt & Bourgeois, 1988). Also, having two present ensured more inclusive findings because they naturally brought two perspectives, and could ask follow-up questions the other did not think of (Eisenhardt, 1989).

The interviews were transcribed from the audio recording made of each interview. If the collected data would be insufficient, the authors planned to schedule follow-up calls. Therefore, the authors ended each interview by asking if it was okay to contact the interviewee again if needed for the data collection purposes. All founders said that it would be okay for the authors to call them again if necessary. It was necessary to call up Case 5 and Case 9 due to lack of information about cognitive legitimacy, and uncertainty around their answers. The follow-up call addressed the missing information by reformulating their statements and asking more direct questions, still without using terminology from legitimation theory. The additional interviews with Case 5 and Case 9 lasted approximately 5 and 15 minutes, respectively, and were added to the transcriptions.

3.3 Data Analysis

Since data analysis is time-consuming, the authors analysed the data in parallel with data acquisition. In order to ensure that all three authors were on the same page in terms of what data had been collected, it was mandatory for the authors to listen to the recordings of the interviews they did not participate in. After the interviews were transcribed, and before the data analysis began, all three authors read through the transcriptions. Both the use of primary data and secondary data provided raw material necessary to analyse in order to address the initial propositions of the thesis (Yin 2009, p. 102). Since the data collected in this thesis is not amenable to numerical measurement, the authors chose to use a qualitative analysis (Crowther

& Lancaster, 2009). The theoretical framework helped the authors structure the data, discard irrelevant information, and analyse the collected data.

The data analysis process is illustrated in Figure 3.1 as step 3, 4, and 5, the following section will describe each step. The Cross-Case analysis helped the researchers see patterns in data they collected from each NTV, and if used right eliminates premature conclusions based on limited data sources in the Within-Case analysis (Eisenhardt, 1989).

3.3.1 Within-Case Analysis

The authors conducted a Within-Case analysis of each case included in this study (step 3 in Figure 3.1). The Within-Case analysis helped the authors boil down the amount of data to interesting patterns and attributes of each case (Eisenhardt, 1989; Mills et al., 2010). Through the Within-Case analysis, which is an in-depth exploration of a single case, the authors gained an extensive understanding of each stand-alone NTV in terms of the ILS's, which, in turn, accelerated the Cross-Case comparison (Eisenhardt, 1989; Mills et al., 2010, p. 970).

In this analysis, the authors utilized the theoretical framework to guide the uncovering of narratives that described the ILS's the NTV had deployed. The theoretical framework was then used to identify and organize critical events from the narratives. An example of a critical event could be a product test that convinced a stakeholder in the industry to become a pilot customer; the test would then be a sign of the NTV deploying Cognitive-Manipulation. Proceeding with this form of analysis helped gain a practical understanding of each case in relation to the use of ILS, which was the basis of the Cross-Case analysis'. At the end of the Within-Case-analysis, the authors present a table that sums up what ILS was used by all nine NTVs, to give the reader an overview.

3.3.2 Cross-Case Analysis

With the Cross-Case analysis, the authors wanted to identify whether-or-not patterns in what ILS the NTVs used, found in the Within-Case analysis, were replicated across several cases (Eisenhardt, 1991). Also, the two Cross-Case analyses enabled the authors to go beyond their initial impressions of the NTVs gathered in the Within-Case analysis (Eisenhardt, 1991).

The authors applied the theoretical framework to compare the findings from the Within-Case analysis in each of the industries, separately (step 4 in Figure 3.1). This revealed pattern of what legitimization strategies NTVs in the separate industries deployed in order to get closer to the legitimacy threshold, and in that way aided the authors in answering RQ1 and RQ2. The authors looked for common themes and contrast between the cases in each industry. For example, applying the theoretical framework in this part of the analysis might have shown that all of the NTVs in the utilities industry conformed to regulations set by the Norwegian government. In that event, the authors could suggest that Regulatory-Conformance is useful for Norwegian NTVs who try to move towards the legitimacy threshold in the utilities industry.

3.3.3 Cross-Case Across Industry analysis

Finally, a Cross-Case Across Industry analysis was performed by comparing findings from NTVs in the oil & gas, and utilities industry (step 5 in Figure 3.1). Here, the theoretical framework was used to identify emerging patterns in the energy sector, and to understand what was specific only for the individual industries. This part of the analysis answered RQ3. Findings in this part of the analysis might have revealed that legitimacy is valued differently in the two mentioned industries, utilities, and oil & gas, meaning that reaching the threshold in these two industries requires different strategies, or it might reveal the opposite. Drawing on the example from the paragraph above, this final Cross-Case analysis could reveal that conforming to regulations is valued by both industries.

3.4 Reflection on the Method

Research findings should be as trustworthy as possible. In qualitative studies, different aspects of trustworthiness have been described and determined by using three concepts; credibility, dependability, and transferability (Granheim & Lundman, 2004). Because the data in this thesis is based on events that occurred in the past, the authors do not include dependability as it takes into account the degree to which data change over the research period (Granheim & Lundman, 2004). The concepts are described and discussed separately below, but when determining the overall trustworthiness of the study, they should be viewed as interrelated. The authors will also discuss the reliability of the study and present its limitations.

3.4.1 Credibility

Credibility refers to confidence in how well the data and processes of analysis address the focus of the research (Polit & Hungler, 1999). The choice of participants in a case study, for example, can affect its credibility (Granheim & Lundman, 2004). Having informants with different perspectives can contribute to a richer understanding of the phenomena that is under study, and thereby increase its credibility (Granheim & Lundman, 2004). In this case study, the authors include co-founders who have experienced and been key persons in formulating the strategy of the NTVs. However, the authors only include the perspectives of one co-founder from each NTV. If the authors had conducted interviews with additional people from the founding team, the collected data might have been more nuanced. Also, including external stakeholders of the NTVs could be a measure to increase the study's credibility.

Credibility also relies on the researchers to not inadvertently or systematically exclude relevant, nor include irrelevant data in the analysis (Granheim & Lundman, 2004). Due to the lack of structure when using semi-structured interviews, the authors can affect the data that is collected. To reduce the risk of affecting the data, the authors tried to avoid leading or biased questions by having two of the authors presents. In that way, the authors could pay attention to how the other asked questions, or follow-up questions, and take notes of where in the interview such an event occurred. Also, to avoid loss of relevant data, the authors tested the interview guide on fellow students at the NTNU School of Entrepreneurship to ensure the quality of the questions and the setup.

The authors knew five of the co-founders prior to conducting the interviews. Which can have affected the data collection in these interviews in a positive way by making the interview objects comfortable and relaxed to share more detailed information. On the other hand, this could have had a constraining effect, if the co-founders felt uncomfortable sharing failures or obstacles the companies have faced, and thereby knowingly or unknowingly held back information. The authors did not experience that any information was held back and explained before the interviews started the importance of being as truthful as possible, and stressed the anonymity.

The amounts of data needed to answer the RQs credibly depends on the quality of the data the authors collect (Granheim & Lundman, 2004). To ensure high data quality, the authors focused

on re-formulating vague answers from the informants, to a specific question in order to let the informant confirm or discard their statement during the interviews. Audio recordings were also made of the interviews to ensure that the author's subjectivity did not cloud the data and to avoid wrongful interpretations of informants' statements.

The authors expressed to the co-founders that they should feel free to contact them if they recalled important information they forgot to mention in the interview, or if there was anything to add. However, none of the interviewed co-founders did. In order to increase the credibility of the study, the authors could have sent the co-founders a copy of their transcribed interview. That would have allowed them to confirm that the information they provided was correct, and it would have allowed them to add things they forgot to mention during the interview. The follow-up calls with Case 5 and Case 9 addressed the missing information by reformulating their statements and asking more direct questions, still without using terminology from legitimization theory. However, the founder then knew the purpose of the study and could thereby be inclined to give statements that were in favour of the authors.

It was found during the interview that Case 7 had crossed the customer legitimacy threshold. To reference Figure 3.3 above, Case 7 is positioned on the green arrow. Meaning that the NTV, in terms of the selection criteria, was not suitable for the thesis and its purpose. However, the founder of Case 7 provided interesting insight into the legitimization strategies the NTV has used, and what legitimacy sources they have built. The founder spoke not only about strategies they are currently making use of, but also strategies they have focused on since the incorporation of Case 7, for example Regulatory-Conformance and selection strategy. Due to such information the authors chose to include the NTV in the study. However, doing so pose a clear limitation of the thesis.

3.4.2 Transferability

Transferability relates to “the extent to which the findings can be transferred to other settings or groups” (Polit & Hungler, 1999, p. 717). Transferability, in other words, concerns if the findings from this study can be applicable in other studies of legitimacy. It is the reader who makes the transferability judgment, not the authors since they do not know if the findings are transferable to the reader's specific context (Granheim & Lundman, 2004). To facilitate transferability, the authors as researchers have, after the best of their ability, given in-depth descriptions of the study's context, and how they selected cases and other participants in the

study. Also, the authors have, as far as the confidentiality agreement allows, provided detailed descriptions of the cases characteristics, and how they performed the data collection and analysis (Granheim & Lundman, 2004). If the authors had not put themselves in a position where they were bound to treat the NTVs with the anonymity, the descriptions would have been more detailed.

3.4.3 Reliability

Within the field of qualitative studies, it is common to use the term reliability to ensure the quality of the study (Yin, 2009, p. 40). The test of reliability is passed if a later researcher can follow the same procedures as described by an earlier researcher and arrives at the same findings and conclusions (Yin, 2009, p.45). According to Johannesen and Tufte (2004), and Merriam (1988), it can be challenging to satisfy the requirements of reliability in qualitative studies, because the interviews do not follow the same strict order every time. However, by explaining how the data collection was conducted and how they analyzed it, the authors make it possible for later researchers to reconstruct the study, enhancing the reliability of the research. Attaching the interview guide (Appendix A) to the thesis also help facilitate for increased reliability. Again, if the authors were not bound by anonymity, the probability for later researchers to reach the same conclusions as this thesis would be higher as they would have more detailed information to go by.

Preparation in advance of the interviews by reading, for example, the companies' website, helped the authors optimize the time spent during interviews. Although the secondary data was not intended to impact the data collection or be included in the analysis, researching secondary data sources may have framed the analysis without the authors being aware of it. However, describing how that information may have affected the authors' perception of the NTVs or thought process when conducting the analysis is hard, and thereby may impact the transferability of the study.

The study explored NTVs incorporated in Norway. Oil & gas, and utilities companies in Norway are profoundly affected by industry-specific rules and regulations set by the Norwegian Government. Thereby, the findings in this study might not be transferable to NTVs incorporated outside Norway. Since the authors are solely focusing on the two industries

mentioned above, the findings might not be transferable to other industries within the energy sector either.

4. Data and Analysis

In order to answer the research purpose, the primary data had to be analysed in connection with the theoretical framework. First the Within-Case analysis is performed to gain familiarity with the NTVs included in the study, before moving on to the Cross-Case analysis' and the Cross-Case Across Industry analysis. To refresh your memory; Case 1-5 operates in the utilities industry, while Case 6-9 operate in the oil & gas industry.

4.1 Within-Case-Analysis

In this section, the authors present the NTVs and perform a Within-Case analysis to get familiar with the characteristics of each NTV.

4.1.1 Case 1

Case 1 attempts to disrupt the utilities industry by introducing a hardware component, with corresponding software, that will alleviate manual labour in the inspection of grid equipment placed in rural areas. Adam, CTO, and co-founder stated there exists no competitive solutions to their product in the utilities industry except the traditional method, which is to check it manually with a simple analogue tool. Adam explained how Case 1's potential customers are very excited about the product they develop as it will increase efficiency and reduce costs related to both manual labour and material waste.

Analysis of Case 1

Regulatory Legitimacy

According to Adam, Case 1 focus on following a baseline of rules and regulations such as the incorporation of the new venture and laws connected to accounting. Adam stated that beyond those conventional regulations, Case 1 has not identified that there exist many industry-specific regulations they must comply within the utilities industry. Adams descriptions indicate that Case 1 has focused, and currently focuses on using Regulatory-Conformance strategy.

Strict regulations in the emergency preparedness industry weighed heavily when Case 1 chose to pivot to the utilities industry in the early days of their existence. For instance, certification requirements are much more demanding in the emergency preparedness industry. Adam said that they wanted to avoid these regulations because it would mean a long road towards being

able to reach commercial sales. This was one of the main reasons Case 1 chose to approach a different market, namely the utilities industry, which means that Regulatory-Selection has played a key role in what market Case 1 is approaching today.

Normative Legitimacy

Case 1 focus on creating a fair and pleasant work environment for its employees. Adam emphasized the importance of having efficient employees, and that in his experience the employees will work most efficiently if they have a good working environment. Office hours are mentioned as an important measure for building a strong team. Adam explained they have had team problems in the past and having social events outside work have helped build stronger relationships between the team members and makes it fun to go to work. Case 1 also give away equity to their employees to give them a feeling of ownership and responsibility for progress. Based on these descriptions, it is reasonable to state that Case 1 actively employ Normative-Conformance. Another sign of Case 1 utilizing Normative-Conformance came forward when Adam explained that the team works closely with the workers who perform the tasks their product will help make more efficient. Part of the reason why they do it, Adam explained, is to get input on needed functionality in their product.

Adam said that as a result of experiencing difficulties in the emergency preparedness industry Case 1 started looking for new markets. After discussions with key people in the utilities industry, Case 1 experienced a pull for their technology from companies in this industry. Adam explained that it seemed they found a better product-market-fit. Adam and his Co-founder conducted a feasibility test to verify the value for their potential customer before they pivoted. Adam explained that companies operating in that market clearly stated that they wanted their product and that their statements played a big part of the reason they pivoted in the first place. In that way, Normative-Selection strategy played an important role in Case 1 pivoting to a new industry and was most definitely utilized by the NTV.

Cognitive Legitimacy

Case 1 has recruited two advisors with industry experience to their board, they are professors, one which has industry experience. Adam said that they did it to increase the NTVs credibility when entering meetings with industry professionals. Adam went on to explain that they met the advisors through the university they attend, and that they have been valuable because they counteract their inexperience (all team members are still in university). Although Case 1 has

started enhancing the level of industry experience, Adam said it is just the beginning and that they are currently looking to build an even stronger advisory board and team of employees. Through Adam's descriptions, it is evident that Case 1 indeed focuses on utilizing Cognitive-Conformance.

Although Case 1's founders attend one of the most prestigious Universities in Norway, the decision to have their offices located at the University was based on more than convenience. Having a presence at the University gives them easy access to knowledge through professors and to hire talented students. The office is also in close proximity to their pilot customer, which Adam stated as important for continuous product development. In that way, Case 1 has also carried out Cognitive-Selection strategy.

The need for Case 1's product in the industry is high, Adam said. There exist no competing products on the market, except from traditional tools such as a hammer, and the need for increased efficiency was prominent. Their technology will create entirely new workflows in the utilities industry. Adam explained in his interview how they put effort into including the workers who perform the tasks today in their product development. This, in Adam's perspective, has aided in making the workers more accepting of the new technology and understand how they can adapt their workflow to Case 1's technology. Based on this information, provided by Adam, it is clear that Case 1 has utilized Cognitive-Creation to create new workflows, and Cognitive-Manipulation to ease the implementation of these new workflows.

4.1.2 Case 2

Case 2 develops hardware, more specifically sensors, to enable more efficient use of energy. The market Case 2 operates in is a result of the smart metering systems (AMS). Case 2 has established well-founded relationships with important actors in the industry, which has helped them in acquiring their first pilot customer. The NTV has received hard- and soft-funding and have been a part of a soft-funding program. The authors met with the CEO and Co-founder, Ben.

Analysis of Case 2

Regulatory Legitimacy

Case 2 develops hardware that processes data from AMS monitors and through that handles large amounts of personal data, and due to this have to comply with GDPR. Ben explains how

the hardware is also subjected to strict laws and regulations through European regulations and as a result had to affix CE-marking to their hardware. Although getting CE-marking approval proved to be a lengthy and costly process, it gave Case 2 proof that their technology meets all standards which were key in acquiring the pilot customer, Ben said. Ben stressed the importance of CE-marking but also described the inconvenience it created for the company. Ben explained how they had to ensure that the product met the rules and regulations concerning the CE-marking, even when testing early prototypes with potential customers. Besides CE-marking, Case 2 has ensured it meets all basic regulatory requirements of a corporation. Through Ben's descriptions, Case 2 has a strong focus on conforming to rules and regulations, and thereby deploy the ILS Regulatory-Conformance.

Normative Legitimacy

Ben started out as the only employee at Case 2, and he described it as terrible to work alone. When Ben first found his co-founder, they did not implement any work-place rules, nor did they facilitate for work-life-balance. In the beginning, the team worked around the clock – they lived and breathed their company. After working intensely over time, barely having time for social activities, Ben and his co-founder understood that changes had to be made. Since then, they have actively adjusted their work methodology and made time for social activities. Thereby Case 2 utilizes Normative-Conformance to ensure a healthy and pleasant work environment.

Case 2 worked approximately a year and a half before fully understanding the customer demand for their product and how they could deliver value to potential customers. Ben described how they started out thinking they were going to sell their product B2C. After spending much time understanding the market and customer's pain, by working closely with potential customers and industry partners, they changed the initial problem and moved towards B2B. In the B2B market they could still provide value to the end user, they would be able to sell larger quantum of sensors and aid the electricity suppliers in gathering data more efficiently, all at the same time. Case 2 has used feedback from potential customers and partners directly into their product development, to ensure that they fill the gap they found in the B2B market, where their product was valued higher. Based on this information, they have utilized Normative-Selection. Using feedback from their potential customers is also another sign of Case 2 utilizing Normative-Conformance.

Cognitive Legitimacy

Case 2 has two angel investors, both of which are high up in the hierarchy in one of the large utilities companies in Norway. Ben explained how they wanted them to sit on their board in order to give the company the industry experience it needed. Ben said in the interview that Case 2 got in contact with their first investor through a soft funding program they participated in. This investor operated as a mentor for the start-up for six months during the program before he invested and entered the company as head of the board. Ben said that the investor was a good match for the team. The investor also engaged one of his colleagues to join as an additional investor, who eventually also entered the board of Case 2. Case 2 has thereby enacted Cognitive-Conformance as a strategy. The founder states that the investors have contributed with introductions to potential new customers and trust towards these potential customers by taking part in customer meetings. As the founder said, “when you go into a meeting, and there are twelve people there with over 25 years of experience each, it would be hard to seem trustworthy without any experienced people on your team helping you”. Another sign of Case 2 using Cognitive-Conformance became clear when Ben said that the team makes use of NDAs (non-disclosure agreement) in interactions with externals where they talk about their technology.

4.1.3 Case 3

Case 3 develops an autonomous vessels platform that enables customers to use autonomous vessels without having to own, operate, or train them. There are several potential markets for Case 3 to penetrate; however, they chose to begin with the utilities industry. They have had a long development phase which have required them to raise both hard- and soft-funding. Case 3 has hired experienced personnel to the team of employees. The authors spoke to the CEO and Co-founder, Carl.

Analysis of Case 3

Regulatory Legitimacy

Case 3 focuses on complying to basic government rules and regulations such as tax-reporting. Carl stated that if they do not follow such rules, they can, for example, be sanctioned with different types of fines by the government. Based on this, Case 3 utilizes Regulatory-Conformance strategy. Also, for them, it is important to follow the rules and regulations regarding hardware products in the utilities industry, information security standards, and HSE (Health, safety, and environment) standards especially. If they do not follow these rules and

regulations, they are not allowed to run the business, Carl explained. Case 3 will also have to establish new rules and regulations regarding autonomous vessels, as laws regarding such vessels do not exist in the utilities industry today. Carl emphasized that Case 3 is looking for the most efficient way of implementing these new regulations, but that they have not begun enforcing it yet. Although Case 3 is currently not invested in concrete actions to change regulations, such as lobbying, they are making use of Regulatory-Creation by investigating the possibilities of implementing these regulations. However, Case 3 is also investigating the laws in detail regarding drones, which could indicate that they are searching for ways to avoid having to use Regulatory-Creation all together.

Case 3 selected the utilities industry after conducting a feasibility test of different industries such as the healthcare and defense industry, partly to avoid strict laws and regulations. Carl stated that although the utilities industry is bound by strict laws and regulations, it is nothing compared to the industries mentioned above. Through these descriptions given by Carl, it is clear that Case 3 enacted Regulatory-Selection.

Normative Legitimacy

Carl describes how building a good company culture has become increasingly important to Case 3 as they have scaled in the number of employees and has an overall rapid growth. Carl elaborated further that although it can be challenging to focus on the existing employees when scaling the team, they cannot afford to let that impact their focus on creating unity in the team. Case 3 is also providing full-time employees with a competitive salary. Carl's descriptions indicate that Case 3 use Normative-Conformance. Another indication of Case 3 using Normative-Conformance came forward when Carl explained how it is normal for suppliers to the utilities industry to go beyond what is required in terms of security in testing. To be deemed as a serious actor in the industry, Carl informed that Case 3 conforms to this norm.

Case 3 works closely with key stakeholders and potential customers in the utilities industry to ensure they understand their needs and build that into their product. To build customer relationships and treat the customer in the best possible way is deemed important by Carl. The NTV has begun having monthly workshops with pilot customers to ensure that they obtain their interests and build tight relationships. Although they want to bring their solution, as they envision it, into the industry, Carl and the rest of his team understand the importance of bringing the pilot customer along for the journey. Hearing the pilot customer's thoughts on the design

and functionality has been important in the product development. These descriptions are also signs of Case 3 utilizing Normative-Conformance.

Before pivoting, Carl implied that they had trouble working tight with their potential customer. The reason for that was that Case 3 had trouble finding the correct market to target. After conducting an in-depth feasibility study of several potential industries, the team found that the utilities industry was the best place to start. Carl explained that in the utilities industry, they could create the most value with the least amount of adjustments to the technology. Carl explained that they have not met much resistance when introducing the solution to the market. Part of the reason for that is that Case 3's product creates much value to the potential customer, Carl said. For instance, they reduce noise compared to traditional methods, improve HSE, and improves data quality. Based on these descriptions, Case 3 utilized Normative-Selection.

Cognitive Legitimacy

Carl explained that Case 3 has scaled the team from four to twelve employees over the past six months. They saw the need to build a more qualified team with more industry experience and domain knowledge. Assembling an advisory board with an experience that is relevant to them, for example, serial entrepreneurs with experience from the utilities industry, has also been part of that strategy. Case 3 is also very conscious about what information they share, and with whom they share it. Carl said they utilize NDAs to ensure that key aspects of their technology are not spread freely. This shows that Case 3 adhere to a practice viewed as correct by, for example, investors because investors want the proprietary knowledge of a company, they invest in to stay in the company. This information, provided by Carl, is characterized as deploying Cognitive-Conformance strategy. Carl said in his interview, that Case 3 chose its current office location due to a community for hardware start-ups with incredible testing facilities. This indicates that Case 3 has enacted Cognitive-Selection strategy.

Case 3 is creating new ways to conduct traditional work by introducing autonomous vessel to perform inspection of the electrical grid. Carl explained that they had not met much resistance when implementing their product in the utilities industry, the reason for this can be that Case 3 creates a considerable value to the industry, as discussed under Normative-Conformance, and they share this information with potential customers. Carl does not emphasize the importance of Cognitive-Manipulation, but sharing information about the value of the product could

indicate the use of this ILS. By introducing new standards of operation Case 3 is most definitely using Cognitive-Creation as a strategy.

4.1.4 Case 4

Case 4 develops hardware and a method of production for generating power. The NTV has hired several employees with industry experience and have received large amounts of soft and hard funding. The authors interviewed the CEO and Co-founder of Case 4, Deb.

Analysis of Case 4

Regulatory Legitimacy

Case 4 has affixed certifications, such as CE-marking for its product. Deb explained that if they had not done that they would be in violation of both domestic and international laws. For instance, it could result in the government giving them sanctions, such as pulling their product off the market or take the product back from pilot customers. Deb said that putting the NTV in that position was unthinkable and out of the question. Also, Case 4 follows a range of “basic” governmental rules and regulations. Deb informed that if they do not follow such basic cooperation regulations, they would not be taken seriously as a company, both by employees and external stakeholders. Regulatory-Conformance is thereby a strategy actively used by Case 4.

The management team, Deb included, put great effort into finding out which markets were less defined by strict rules and regulations. Deb said that although the utilities industry is characterized by strict regulations, they are less strict compared to other industries they have investigated, for example, healthcare, aviation, and maritime. Through this work, Case 4 has utilized Regulatory-Selection as a strategy.

Normative Legitimacy

After having scaled the team with more than ten employees over the past year, Case 4 has increased its focus on building its company culture. Providing employees with free equipment, such as cell phones and computers, and social events are part of that effort. Deb stated that they have succeeded in building a good company culture that encourages employees to work hard, which indicates their focus on Normative-Conformance. Deb also said that they encourage employees to behave professionally in meetings with external stakeholders, and as a way of

ensuring that Deb and the management team has made professionalism into a requirement at the office as well.

Deb said Case 4 is performing what she described as technology push because their potential customers are not aware that they need the technology Case 4 is developing. Deb and the rest of the team are certain, after doing much research, that their technology can create significant value in several industries. However, Deb stated that they chose to target the utilities industry first partly since Case 4 found it easier to prove the value they create in this industry. Through these descriptions, the founder shows how Case 4 have used Normative-Selection strategy. Case 4 participated in an investor program where several of the investors showed interest to invest in the company. However, Deb explained that they chose not to take these investments because the investors did not have an adequate level of experience from the industry or from working with new ventures developing hardware. Choosing investors that to a greater extent would understand their technology, and thereby are more aligned with Case 4' mission is another indicator of Normative-Selection strategy.

After choosing to target the utilities industry, Case 4 has been granted several soft funding arrangements that they have been deemed unfit for earlier. Deb explained that in order to receive the grants, the soft-funding institution (i.e. Innovation Norway) required them to report progress in line with the milestones they set for the soft-funding project. Deb informed that one of the milestones Case 4 set up was pilot-customer interactions and that they eventually received the full grant. This indicates that Case 4 has had a considerable focus on following up pilot customers, and thereby another sign that the NTV used Normative-Conformance strategy.

Cognitive Legitimacy

The founders of Case 4 have recruited employees and investors with strong industry experience through the network they have established in the industry. After participating in the investor program, mentioned above, they understood what kind of investors they wanted, and have now engaged three investors to fund the NTV. According to Deb these investors check all the boxes in terms of for example industry experience. This shows Case 4's has a great deal of focus on Cognitive-Conformance strategy. Deb stated that they have made protocols for logging the product development process. She went on to explain that having all documentation in place aids in transparency with potential customers and is a common practice in Europe and the US, however not all producers of hardware, especially in Asia, does this to a sufficient degree Deb

explained. This also suggests that Case 4 utilizes Cognitive-Conformance strategy. Furthermore, Case 4 has patented its technology and the production method they have developed. Having secured proprietary knowledge in a company is viewed as a common practice in relation with investors, and thereby, another sign of Case 4 using Cognitive-Conformance strategy.

Case 4 has been given the opportunity to be a part of two incubators in Norway. Deb described it as important to be near potential customers in order to facilitate for building good customer relationships when choosing an office space. Also, Case 4 found it important to be near a University to have easy access to talent. The founder states that in this conservative industry, having domain knowledge is crucial to portray professionalism. Thereby Case 4 utilized Cognitive-Selection when deciding where to run their business from.

Case 4 has developed a new method of generating power. Case 4's technology will be implemented in machinery, and utilities companies have to adjust this machinery to fit with Case 4's technology. Through Deb's descriptions, Case 4 used Cognitive-Manipulation strategy because they use results from tests to convince potential customers that adjusting their machinery will be beneficial for them in the end.

4.1.5 Case 5

Case 5 develops software for the utilities industry with the intention of increasing the efficiency of the grid and is based on technology from a European research institution. The technology Case 5 develops fits in several industries; however early interest from a utilities company in Norway made them choose this industry. The company has one pilot customer, which happens to be one of the largest utilities companies in Norway. The authors interviewed Case 5's CEO, Emma.

Analysis of Case 5

Regulatory Legitimacy

Emma explained that Case 5 was incorporated in early 2018, and since then have followed laws and regulations corporations are subjected to by the government. To give examples, Case 5 has delivered tax reports and pay employer taxes. Beyond that, Emma stated that Case 5 is subjected to industry-specific laws and regulations. There are mainly two legislations they must stay in line with, one regarding the handling of personal data and the other regarding data

processing. The latter is related to the grid infrastructure, which makes it crucial for the team to ensure that Case 5's software is in line with the legislation. Emma went on to explain that they, for example, have bought computers for the sole purpose of handling grid sensitive data in the appropriate way, signed contracts with their pilot-customer and additional partners who require them to follow the requirements regarding data processing and IT-security. Case 5 has also set up strict IT-regulations internally. Administering personal data makes Case 5 obliged to comply with GDPR, and Emma explained that the measures they have taken so far, in terms of IT-security, assure that they follow the requirements of GDPR. These descriptions show how Case 5 focuses on complying with the regulations set by the industry and by the government, and thereby deploys Regulatory-Conformance as a strategy.

Normative Legitimacy

Three co-founders, including Emma, started Case 5. Since establishing the NTV, it has grown to eight employees. Emma explained that six employees in the company have shares, and starting this fall they start working full time. In addition to shares they will get paid a fixed salary per month. The remaining two team members are part-time employees, and have not been given shares in the company, however, they earn an hourly rate. Emma said that it is important for Case 5 to give employees compensation for the work they do either by paying them or giving away shares. In Emma's perspective that is a way of ensuring that their employees feel like they are treated fairly and that they feel the NTV acknowledges and appreciates the work they put down, which indicates that Case 5 utilizes Normative-Conformance strategy.

In addition, Emma described how Case 5 has frequent meetings with the pilot customer to ensure that their product development is in line with functionality and security the pilot customer requires. Which indicates that Case 5 is trying to build a strong relationship with its pilot customer by treating them with respect and adhering to their needs and is another clear sign of the NTV using Normative-Conformance. Case 5 has been granted soft funding through three government grants, with the Research Council of Norway and Innovation Norway being two of them. Emma emphasizes that Case 5 apply for the soft funding opportunities available in order to fund their expenses and to extend the runway of the company. This is another indicator of Case 5 utilizing Normative-Conformance.

Emma explained that Case 5 has, since the beginning, focused on acquiring partners, such as pilot customers, interest groups, and knowledge communities. Case 5 partnered up with a big utilities company early on, which Emma described as “having a trust-building effect” on the NTV. When selecting partners, they target those who align with the values Case 5 has, Emma said. For instance, Case 5 is invested in making the grid more energy efficient, and therefore want to be associated with partners who convey sustainability. Emma explained that they selected one of their current partners because this community is heavily invested in efficient use of energy. She went on to explain that researching before choosing who to partner with is important to Case 5. Through these descriptions, Case 5 use Normative-Selection as a strategy.

Cognitive Legitimacy

When hiring employees, Emma explained that the co-founders were focused on finding people with relevant experience. Developing software for the utilities industry requires electrical engineers and data scientists, and Case 5 targeted this experience by reaching out to their network and visiting technology-hubs at the university. Emma stated that the team consists of young entrepreneurs that are still students, so Case 5 has begun building its advisory board to mitigate the inexperience of the team. Emma described that through the feasibility study the team performed before establishing the company, Case 5 contacted several key persons in the industry and professors with domain knowledge in the technology the NTV is developing. Emma continued to explain that they are now contacting relevant people from the feasibility study who showed the most interest in order to establish a board of advisors. Having close cooperation with the pilot customer also gives the team access to industry experience, Emma stated. Case 5 has thereby enacted Cognitive-Conformance strategy and are currently also focusing on it.

Emma explained that by developing a software that provides access to information, the utilities industry has not priorly had access to, Case 5 is creating new tasks in the existing workflow. Emma explained that with the vision of how the software will end up down the line, they might even create new workflows altogether, which would indicate the use of Cognitive-Creation. However, what Case 5 is focusing on now is modifying the existing “best practice,” which means that Case 5 only enacts Cognitive-Manipulation. Emma stated that working closely with the pilot customer is also important in this aspect because it helps them understand what parts of the workflow they are adjusting, and she believes it will make it easier to implement it when the software is ready. This description is also a sign of Cognitive-Manipulation.

4.1.6 Case 6

Case 6 develops a hardware product that challenges the traditional way of handling environmental impacts from oil & gas production. Case 6's market is the oil & gas industry; more specifically, the service sector of it, and the NTV is currently operating in the US market. Case 6 presents a highly disruptive solution to a problem that has existed since oil & gas production began in the 70ies and has gotten investments from the research institution it originates from. The authors met with the CEO and Co-founder, Frank.

Analysis of Case 6

Regulatory Legitimacy

Frank said that Case 6 was established as a corporation, which indicates that the NTV follows the basic requirements of laws and regulations and thereby use Regulatory-Conformance as a strategy. When asked if there are specific rules Case 6 has to abide by, Frank explained that the regulations regarding environmental implications of oil & gas production in Norway, the European Union (EU) and Canada, does not fit with the solution they have. Although there are clear environmental benefits with the technology Case 6 delivers, Frank said that they cannot enter these markets due to their technology not complying with existing regulations. A potential customer from the US contacted Case 6 and showed interest in their product, after investigating the market, they found that the US market had regulations that fit and are beneficial to their product offering. Frank went on to explain that this made it natural for them to penetrate the US market first. Choosing to enter the US market due to more beneficial regulations is a clear indicator that Case 6 used Regulatory-Selection strategy.

There exist regulations as to how companies have to respond to environmental implications from oil & gas production today. However, the wording of current laws does not include Case 6's technology, meaning that Case 6 has to adjust these laws to make it possible for oil & gas companies to use their product as a potential solution. Frank explained that they plan to use the results from tests they perform with their US pilot customer to alter existing regulations in the European market, which is something they have started on already. In that way Case 6 is focusing on deploying Regulatory-Manipulation. Frank stressed that changing the regulations is a time-consuming process, and they are considering engaging partners to help them. Although it is time and resource consuming, Frank explained that Case 6 use time to manipulate the laws because they believe their solution provides significant environmental benefits.

Normative Legitimacy

When asked about their board of advisors Frank explained that there exists a conflict with what the board wants, and what the employees want. The employees originate from research and thereby feel obligated to make sure that the technology function as Case 6 promise it will. The board, which partly consist of investors, are eager to start scaling up sales and approach the market more aggressively. However, the team is working hard to find a balance between the two parties' interests, through for example having frequent meetings with the board, and now hiring an employee with a background from business, Frank stated. This shows that Case 6 is invested in treating their stakeholders fairly, which indeed is a professional norm, and thereby utilize Normative-Conformance strategy. Case 6 is currently applying for research grants from the government, which is a way of matching investor capital and thereby give the investors more value for their investment. This is a clear sign of profitable operations and by that another sign that Case 6 use Normative-Conformance.

In Norway, Case 6 has met resistance by potential customers and regulative entities, Frank described a feeling of being “worked against”. In addition to the rules and regulations being an obstacle, the willingness to pay is low in the shallow seas sub-market, which is the market Case 6 has been looking most into in Norway. Approaching the offshore market, which is comprised of more financially strong potential customers, would require Case 6 to adjust their solution to withstand rougher seas. Frank explained that the US market, on the other hand, has shown great appreciation for the product and technology Case 6 has developed as it is. The American pilot customer values their product because it frees them from using chemicals, which they are obliged to stay away from. Choosing to approach the US market, therefore, did not solely rely on beneficial regulations, but also on traversing to an environment that values their current product and where they have a higher level of product-market-fit. In that way Case 6 has deployed Normative-Selection strategy.

Cognitive Legitimacy

Frank states that Case 6 has patented their technology, which indicates that the NTV conforms with a practice that is assumed to be correct, and thereby indicates the use of Cognitive-Conformance. Further, Frank explained that Case 6's team is comprised of researchers who has in-depth experience with the technology they are developing. Frank explained that key persons from the investor and business people from the university TTO (technology transfer office) make up their advisory board. To complement the competence of the current team,

Frank said that they are in the process of hiring one engineer and a business developer. Building an advisory board and team with relevant competence is another sign of Case 6 utilizing Cognitive-Conformance. In addition, Frank told that Case 6 has partnered with other companies to help build the product. Case 6 has stood for all design and engineering specifications, but saw the need to team up with outside partners with complementary competence to bring their product to life, which is another indicator of Cognitive-Conformance.

Frank explained that the technology Case 6 is developing will change the way the oil & gas industry manage environmental impacts in upstream oil & gas. Introducing disruptive technology into the market has led to resistance from established actors in the industry, which Frank said is partly due to conservative mindsets. Frank went on to point out that Case 6 must change the way the traditional way of doing a task, which is hard because people in the industry tend to stick with the methods they know. These descriptions are strong indicators that Case 6 use Cognitive-Creation strategy because they are constructing new operating practices.

In order to facilitate for easier introduction of new workflows in the industry, Frank explained that Case 6 focuses on portraying the benefits of the technology through product testing. Frank told that they started out by performing many tests in laboratories in order to prove the capability of the technology. The laboratory results were promising and indicated that the technology works, and they moved on to performing a more real-life test. Frank continued to explain that Case 6 performed the first full-scale test last year with the American pilot customer. Two of the employees went to an industry-specific conference in California to present the results from the laboratory and full-scale tests to a broader audience of industry professionals in March. Frank said that results from the full-scale test spread in the industry, and Case 6 is now getting a lot of interest from Australia, Asia, and even Europe where the regulations are still not in Case 6's favour. The final verification to show that the technology works as it is planned to be performed with the American pilot customer over the summer this year (2019), Frank informed. These descriptions from Frank are clear indicators that Case 6 invest a lot of time and effort into using tests in order to enhance key stakeholders' knowledge about the product and thereby get closer to selling their product to potential customers. Which is an indicator that Case 6 use Cognitive-Manipulation strategy.

4.1.7 Case 7

Case 7 has developed a production optimization software for the upstream oil & gas industry. The authors interviewed the CEO, Haley, of Case 7. She stated that although they are now focusing on scaling sales, the team is still heavily invested in product development. Currently they are only based out of Norway, but they are looking to scale to Brazil. Case 7's technology is a product of research at the leading technology university in Norway. Through the interview, the authors revealed that Case 7 has a paying customer, which would indicate that they already have reached the legitimacy threshold. The implications of this are discussed in Chapter 3.4 in the Method part of this thesis.

Analysis of Case 7

Regulatory Legitimacy

Haley explained in her interview that as a spin-off from a university, Case 7 had to stay in line with university regulations when establishing the company, for example by bringing the TTO on as an owner in the NTV. Beyond that, Case 7 maintains within the regulations, corporations of their size have to follow, for example, by doing the company taxes. Case 7 is currently around ten people working at the company, however, Haley said, they are now in the process of almost doubling the number of employees. Haley continued to say that with today's situation, following the regulations is not a very complicated task, but growing the team means that they will have to hire people specifically to ensure that things are done right. For example, Case 7 does not have a CFO, but being a bigger company will require them to hire one, so that they assure the NTV stays within financial regulations. This statement underlines Case 7's willingness to conform to regulations. Although Haley explained that the reason for hiring a CFO also relied on the team using their time more productively, the descriptions stated above indicates the use of Regulatory-Conformance. Haley also stated that although they operate in an industry usually characterized by heavy regulations, they do not feel that pressure, mainly because their software does not pose any risk to human life or health.

Normative Legitimacy

Case 7 pays much attention to the people affiliated with the company. Management has set three key values for the company, which reflects culture building, as one of the values focuses on having fun at work. Haley described in her interview how Case 7 focuses on including both the board and key employees in important decisions the company makes. She highlights the importance of building a team culture and referenced sport to underline her point. This indicates

that they value their employees and the competence they have. Haley proclaimed that no employees have ever resigned from Case 7, which also goes to show that the work Haley and the management team put down to create a pleasant environment for their employees pays off.

When it comes to Case 7's customer, the team focuses on having close interactions to make iterations and identify use cases they can implement in the software. Haley explained that this is a way of ensuring that they rapidly create value for the customer. In order to facilitate this process, they build their work methodology around design thinking and lean start-up. Haley also stressed the importance of building relationships at multiple hierarchy levels at companies that are potential customer's, because the decision of buying a product seldom rely on one person, especially in large companies in the oil & gas industry. Working in this manner is beneficial for Case 7 by enabling them to speed up product development, but it also enables them to please the paying customer and the pilot customers. The points highlighted above are all signs of the utilization of Normative-Conformance.

Haley informed that Case 7 has not taken on external investors to fund the runway of the company. The NTV has been funded by pilot customer payments, soft-funding grants, and R&D projects since day one, and now they get recurrent revenue from the one customer they have acquired. Haley stated that her job as the CEO is to ensure that the company never runs out of money, in order to do so she pays attention to the NTVs expenses and makes sure that they use their funds smart. This provides a sign to external stakeholders, both partners, and potential customers, that Case 7 focuses on operating profitability, and is thereby another sign of Normative-Conformance. Case 7 is also invested in using Normative-Selection strategy. This was made clear through Haley's description of on what basis they chose their strategic partnerships. Case 7 has chosen partners who are invested in bringing technology that enables the oil & gas industry to reach a higher level of digitalization, which aligns with what Case 7 is trying to do with their technology.

Cognitive Legitimacy

Case 7 has established a board of advisors with relevant and complementary experience, by for example, including a previous cybernetics professor, and a previous CEO of a large oil & gas consultancy firm in Norway. Haley said it was important for them to think about bringing on advisors that would add value to the NTV. The same goes for what partners they include; the partners should elevate the NTV in some form or fashion, preferably bring capabilities to the

company does not already have, Haley, stated. She went on to inform that they are a niche company, so they focus on having expertise within that niche and not spend resources on acquiring competence that goes beyond that. The employees mostly have a background from cybernetics, with two even having a Ph.D. within this field, Haley said in her interview. Working closely with them, and Case 7's R&D (research and development) partners also help bring the desired competence to the NTV. Acquiring the relevant experience is a clear sign of Case 7 using Cognitive-Conformance strategy. Case 7 has also patented their technology, which is another sign of building cognitive legitimacy by utilizing conformance strategy.

Case 7 has a technology that is disrupting the workflow in how the industry uses software in production optimization. When asked how they worked towards acquiring customers, Haley informed that with some of them, Case 7 would provide free licenses of the software to demonstrate its functionality. The team also demonstrate the software at the industry-specific conferences and in customer meetings by referencing to the technological use-cases they have developed and deployed in companies. Convincing pilot customers by providing first-hand knowledge about the benefits of the product is a sign of Case 7 utilizing Cognitive-Manipulation strategy. Another sign of using this strategy appeared when Haley described how Case 7 focuses on portraying themselves as leading within the niche, they operate in.

4.1.8 Case 8

Case 8 develops an internet of things-service (IoT-service), consisting of sensors and corresponding operational software to optimize the logistics concerning delivery of gas for gas suppliers. Currently, Case 8 is a team of six full-time employees. Case 8 has eight pilot customers in four different countries and have received hard funding from one of Norway's most well-known incubators. The authors met the CTO and Co-founder, Ian.

Analysis of Case 8

Regulatory Legitimacy

Case 8's pilot customers, and the industry, in general, have strict requirements when it comes to safety. Ian stated that understanding the legislation concerning their product has been extremely important when designing the solution. To ensure that the design of the product is within the regulations, the team has engaged several external parties. Operating in four different countries, Norway and England included, makes it more challenging to ensure that Case 8's solution conforms to the regulations, Ian explained. Which is why the NTV has engaged

industry-specific organizations to help them follow the basic country-specific laws. Ian also informed that they focused on getting CE-marking approval because it was required by law that they affixed it for their solution, but also to assure potential customers that the solution is safe to use, both in Norway and the rest of the world. However, Ian explained that some certifications are country-specific, which the industry-specific organizations also have helped identify. These descriptions, provided by Ian, indicates that Case 8 utilizes Regulatory-Conformance to a large extent. Ian went on to inform that not following the laws and regulations required of their product by the industry is not an option because that could lead their product to be pulled off the market.

Normative Legitimacy

Ian explained in his interview that the team constitutes of six employees. Although all of them were not part of Case 8 from the very beginning, Ian described them all as co-founders of the NTV. Doing so is an indicator of an inclusive company culture that focuses on giving its employees a feeling of ownership, which again is a sign that Case 8 make use of Normative-Conformance as a strategy. When asked if Case 8 has any partner organizations, Ian explained that they work extremely close with their first pilot customer, and that the pilot customer has become a key partner in product development. Ian went on to explain that the goal is to eventually bring this pilot customer on as a paying customer, which increases the need for treating them well. Case 8 has gotten investments from a range of investors, and Ian informed that Case 8 has focused on involving the investors as mentors to the NTV. Case 8 meets with the mentors/investors two times a year, and beyond that has frequent contact with them. Ian made it clear that the team values the investor's opinions to help form the roadmap of the company. To ensure that every investor feels included and valued, each team member is responsible for one investor. The descriptions of how Case 7 focuses on including and keeping both pilot customers and investors in the loop, are also signs of the NTV using Normative-Conformance.

Cognitive Legitimacy

When asked about what policy Case 8 has regarding sharing information with externals, Ian said the team previously had not had a clear policy on where they draw the line. However, he continued to inform that they currently have patent-pending on the most critical parts of their technology. Also, they have been more strict when it comes to signing NDAs with external parties. Protecting the company secrets with contracts and patents is viewed as a common

practice in the industry, and thereby, Case 8 utilizes Cognitive-Conformance strategy. Ian also described during his interview how Case 8 focuses on connecting with mentors who have competence they lack in the team. For example, Ian explained, the NTV has reached out to investors and investment funds with resources, beyond cash, the team needs in order to succeed, and also those who have experience from the oil & gas industry. This goes to show that Case 8 targets “smart money” and complementing the experience of the operating team, which can be viewed as practices that are assumed to be correct, and thereby additional indicators of Cognitive-Conformance. The incubator where Case 8 has its office is also an investor in the NTV. The opportunity to sit in a community with other NTVs and also get a smart investment was part of the reason that Case 8 chose to run the business from exactly that location, and thereby is a sign of Cognitive-Selection.

With its technology Case 8 is manipulating the existing workflow regarding logistics of gas supply. Ian informed that this market, within the oil & gas industry, barely has seen any innovation, ever. However, since the customer segment Case 8 targets mostly compete on price and customer service, Case 8’s potential customers are very open to the change they bring. Cognitive-Manipulation is used by Case 8 in order to establish the new workflow into the market by proclaiming that they can indeed increase the competitiveness of their potential customers. Although Case 8 operates in a small market, the NTV has joined two industry-specific organizations to help spread knowledge about their product. Ian explained that the team does not focus on marketing per se, but find it important to show the technical benefits of their product. This is another sign of Case 8 using Cognitive-Manipulation.

4.1.9 Case 9

Case 9 develops software for analysing subsurface data. Case 9’s technology is proprietary and was developed by one of the founders. The technology fits into the construction and oil & gas industry, however the team focuses on penetrating the oil & gas industry. The NTV has received hard- and soft-funding and have completed four pilot projects. The authors interviewed the CEO and Co-founder, Jessie.

Analysis of Case 9

Regulatory Legitimacy

Jessie explained in her interview that as an incorporated venture, there are several basic regulations and laws they need to follow. The aspect she highlighted were taxes, more

specifically payroll taxes and company taxes. Jessie went on to explain that not abiding by the such laws would put the NTV at risk for fines and potential freezing of assets. With the software Case 9 develops, the team is handling customer's confidential data, worth several million kroners. Companies in the industry have set specific regulations regarding sharing such data, for example, that it can only be done through FTP-servers. Jessie explained that when working with oil & gas companies, they have no choice but to abide by these regulations, if they choose not to, they will not acquire any customers. Jessie said that Case 9 has taken different measures to ensure the security of customer proprietary data, for example, pushing the software and the data to the cloud and two-factor authentication. Based on the descriptions from Jessie's interview Case 9 pursue Regulatory-Conformance as a strategy.

Normative Legitimacy

When asked about the company culture, Jessie stated that in the beginning, the company scaled so fast that they forgot to celebrate the small victories - they just pushed on to the next goal. In that same period, they also recruited one business developer and three computer scientists to the team, Jessie informed. Hiring new employees made them aware of the fact that the team was not taking the time to get to know each other and were pushing too hard. Jessie explained that this realization was important to Case 9. After that they started to focus more on social events to increase the social bonds between employees in the company. For example, every second Thursdays they initiated what Jessie called "Beers & Programming" where the employees share a beer while programming or working with other tasks. Also, inspired by Google, Jessie, and the other co-founders implemented that the programmers can use Fridays to work on personal programming projects to allow them to evolve. Case 9 is running one R&D project with a Norwegian oil & gas company, to ensure that expectations are aligned, and to achieve the milestones set in the project, Jessie and the CTO meet with the oil company every two weeks. Jessie said that they focus on aligning expectations in order to increase the probability of success and a good relationship between them and the potential customer. Meetings with the investors are also held regularly to make sure that they are up to speed on the progress of Case 9. These descriptions from Jessie are signs of Normative-Conformance. When asked about how Case 9 is funded, Jessie explained that, in addition to hard funding, they are focusing on applying for different forms of government grants. They are thereby supercharging the investors investments, which is a sign of profitability and thereby another sign of Normative-Conformance.

Cognitive Legitimacy

Case 9 has had a huge focus on building a talented advisory board over the past year. Jessie informed that Case 9 has been fortunate to acquire three investors that also have taken on the position as their advisors. One of the investors has previously developed similar software for the oil & gas industry and sold it a few years ago for a large profit. This investor adds much knowledge to the product development part and also on how to approach customers in this industry. Another investor is the CEO in one of the most recognized software consultancy firms in Norway. Jessie explained that the intention behind involving him as an investor was to give the NTV credibility towards recruiting software developers. In addition to the investors, Case 9 has involved professors from one of the technical universities in Norway as academic advisors. These advisors possess domain knowledge within the field of geoscience, artificial intelligence (AI), and entrepreneurship. In terms of employees Case 9 has focused on bringing on talented data scientists because they want to be viewed as a technology company. Jessie informed that the majority of employees are now in fact data scientists. Jessie explained how Case 9 has looked into patenting the software, but that it is hard because of the source code changing so rapidly. To ensure that confidential information does not spread the NTV utilizes NDAs with externals and employees. Through these descriptions, Case 9 focuses on using Cognitive-Conformance as a strategy.

Jessie explained that Case 9 recently moved offices to Oslo. In that process, the team got interest from two different new venture incubators. Jessie said that one of the incubators was established recently, so it did not have any track record of being a good environment for NTVs. The other incubator, on the other hand, has been up and running for six years and has a strong set of mentors and advisors connected to it. Case 9 chose to sit at the incubator with the longest experience, because of the network of advisors and because it has a reputation for being a good environment for software NTVs. This suggests that Case 9 used Cognitive-Selection strategy.

With the technology they develop, Case 9 is altering existing workflows in oil & gas exploration. Jessie informed that their software will help bypass time consuming and none value creating tasks in the subsurface workflow. Because Case 9 is automating parts of the workflow of geoscientists, Jessie said the business development employees focus on convincing potential customers with results generated by their software. Starting out, Case 9 even offered free trials to show potential customers how the software works, and to reassure them that the software will not make the geoscientists jobs insignificant. Jessie said that they

also attend industry specific conferences, both domestically and internationally, to show the functionality of their software by presenting results their algorithms have produced. The descriptions in this paragraph are signs of Case 9 using Cognitive-Manipulation strategy.

4.1.10 Summary Within-Case Analysis

The authors have summarized the information from the Within-Case-analysis in Table 4.1. The table shows which of the strategies the NTVs use to build each of the four legitimization sources.

Strategies	Case 1	Case 2	Case 3	Case 4	Case 5	Case 6	Case 7	Case 8	Case 9
Regulatory-Conformance	X	X	X	X	X	X	X	X	X
Regulatory-Selection	X		X	X		X			
Regulatory-Manipulation						X			
Regulatory-Creation			X						
Normative-Conformance	X	X	X	X	X	X	X	X	X
Normative-Selection	X	X	X	X	X	X	X		
Normative-Manipulation									
Normative-Creation									
Cognitive-Conformance	X	X	X	X	X	X	X	X	X
Cognitive-Selection	X		X	X				X	X
Cognitive-Manipulation	X			X	X	X	X	X	X
Cognitive-Creation	X		X			X			

Table 4.1: Overview of which strategies the different cases use to obtain sources of legitimacy

4.2 Industry Specific Cross-Case Analysis

In the following section, findings that were identified in the Within-Case analysis are viewed in context of each of the two industries. Two industry specific Cross-Case analysis, utilities and oil & gas, are performed and the authors will present results which answer the following two research questions:

RQ1: How are ILS used by Norwegian NTVs, towards reaching the legitimacy threshold in the utilities industry?

RQ2: How are ILS used by Norwegian NTVs, towards reaching the legitimacy threshold in the oil & gas industry?

4.2.1 Utilities Industry

Conformance

Conformance strategy is used by all NTVs in the utilities industry to build the four legitimization sources. Scholars have found conformance to be the least costly strategy (Kuratko et al., 2017) and the easiest to implement (Zimmerman & Zeitz, 2002). The NTVs have focused on following government rules and regulation (regulatory legitimacy), fair treatment of employees (normative legitimacy), and building an experienced team (cognitive legitimacy).

Regulatory-Conformance

Case 1 through Case 5 are all incorporated companies, which, based on the Within-Case analysis, brings with it a set of government rules and regulations. Although taxes, in particular, was highlighted as an important aspect by Case 3, Case 4, and Case 5, the remaining two NTVs also pointed out that staying in line with corporate law was essential with various degrees of emphasis. Case 4, for example, accentuated that complying with such regulations is the basis for being taken seriously by stakeholders in the industry. Case 2, on the other hand, just said that they meet all regulations required of them as a company, without highlighting the value of doing so. Comparing statements from the founders of all five cases in the utilities industry, it appears that conforming to what the authors refer to as a baseline of government regulations is common for NTVs in the utilities industry.

When asked about industry-specific regulations Case 2 and Case 4, which both are hardware companies, put a lot of emphasis on affixing CE-marking for their product. The founders said that doing so is required by law when developing hardware and is an expectation from the industry. Ben, the founder of Case 2, mentioned that they even had to comply with CE-marking when testing early prototypes. Case 1 and Case 3 did not mention CE-marking, although they both are NTVs developing hardware. Carl, the CEO of Case 3, however, accentuated that there are several industry-specific regulations the NTV must comply with. The founder mentioned information security and HSE standards as examples, and that they have had to adjust the product to comply with these industry-specific regulations to be able to acquire pilot-customers. Case 1 differs from the remaining four NTVs in the utilities industry by not having

identified any industry-specific regulations yet. Case 1 is quite early stage in developing their hardware which may explain this. Interviewing Adam at a later stage, when they have come closer to a finished product, might reveal that CE-marking is important to Case 1 as well. Case 5 highlighted the importance of data security and has taken great measures to comply with its pilot customer's demands in terms of such regulations. Case 5 did not mention CE-marking at all, which is natural as it is a software company. Although industry-specific regulations were pointed out in a different degree of importance and terms of different regulations, it seems that following the regulations and legislation that applies to a specific NTV is important to reach the legitimacy threshold in the utilities industry. It is also indicated that the amount and types of regulations differ between hardware and software NTVs, and between hardware NTV's in terms of product readiness.

Normative-Conformance

The founders of all five NTVs in the utilities industry described actions that relate to the use of Normative-Conformance strategy. The founders of Case 3, Case 4, and Case 5 pointed out that building a company culture and a sense of team unity has become more important after scaling the team from the original founding team. The founders of Case 1 and Case 5 mentioned equity as an important measure towards creating a strong team because it gives the employees a feeling of ownership. Emma, CEO of Case 5, even said that shares help show that the founders appreciate the work of employees outside the founding team. Ben described how the two founders of Case 2 changed their work methodology in order to elevate their quality of life, both outside work and at work, which indicates that Case 2 has changed their strategy to focus more on Normative-Conformance.

Complying with customer needs and demands is also highlighted as an important aspect by the NTVs. The founder of Case 5 explained how the team has frequent meetings with the pilot customer to ensure that they create the needed functionality in the product, and to make the pilot customer feel included in the process. The founders of Case 1 and Case 3 also give similar statements related to including the pilot customer/customers in product development. Carl, the founder of Case 3, also bring forward that the team adhere to, and go beyond the rigorous security demands when testing their product, which, according to the founder, is viewed as a common norm in the utilities industry. The founder of Case 4 mentioned professionalism as an important aspect when interacting with external stakeholders in order to be taken seriously, and that the NTV has taken measures to ensure that all employees apply this when meeting with

either investors, partners, or pilot customers. Among the NTVs, aspects related to Normative-Conformance strategy is mentioned in relation to both external and internal stakeholders. Indicating that Normative-Conformance strategy is used by NTVs in the utilities industry to adhere to customer and investor demands (external), but also to the needs of employees (internal). Normative-Conformance comes forward as a commonly used strategy to move towards the legitimacy threshold in the utilities industry.

Cognitive-Conformance

Cognitive-Conformance strategy relates to an NTV gathering the desired and right competence for them to perform the tasks they need to succeed. In general, all the NTVs pursue this strategy in terms of employees but vary in terms of what external stakeholders they pursue to acquire relevant experience to their NTVs. Case 1 and Case 5 reached out through their network at the university to find advisors with the relevant academic and industrial background in order to mitigate the fact that all team members are students or fresh out of university. Case 5 also utilize its pilot customer to provide domain knowledge. Case 2 and Case 4 have engaged investors to elevate the team's level of experience.

Cognitive-Conformance also relates to complying with common practices and securing proprietary knowledge can be viewed as one such practice. In terms of proprietary knowledge, Case 2, Case 3, and Case 4 stands out. The interview with Case 3 revealed that the NTV focuses a lot on keeping confidential information inside the company and regulate this through the use of NDAs. Case 2 also makes use of NDAs to protect the aspects that differentiate the NTV from other actors in the industry, however, the founder did not mention anything about patenting the technology. A reason might be that Case 2's hardware is mainly put together by off-the-shelf components. The Co-founder of Case 4 explained that the NTV has patented the technology and the production method. Having secured proprietary knowledge in a company is viewed as a common practice in relation with investors because it gives the investor a form of certainty that other NTVs cannot enter the market with the same solution. Case 2, Case 3, and Case 4 develop hardware, so it would be reasonable to believe that Case 1, who also develops hardware, would focus on securing the proprietary knowledge. However, Case 1 is early stage in terms of product development, once the NTV reaches a higher level of technology readiness it might increase its focus on patenting the technology. Case 5 develops software, and Emma said that they, of course, do not spread knowledge about the company secrets regarding the technology, but that they do not have a clear plan for patenting their software

either. Although the NTVs differ in exactly how they secure knowledge of their technology and how they acquire relevant competencies to their teams, it is evident through the analysis of Cognitive-Conformance that using this strategy is common among NTVs in the utilities industry.

Selection

Selection strategy is a way of choosing the path of least resistance, either by selecting an environment that is more suitable for the NTV or selecting only partly compliance. Scholars have described Selection strategy as reducing the need for conformance (Zimmerman & Zeitz, 2002). The NTVs included in this thesis used Selection strategy to build different types of legitimacy sources.

Regulatory-Selection

Three of the NTVs included in this thesis from the utilities industry made use of Regulatory-Selection to acquire legitimacy. Case 1, Case 3, and Case 4 all have technologies that are suited for multiple industries but chose the utilities industry due to less strict regulations. Choosing utilities meant that they reduced the need for manipulating existing or creating new regulations for the product and/or service they provide to potential customers. Case 3 highlighted that even though the utilities industry, in itself, is characterized by strict regulations, the regulations are considerably less strict than what they experienced in the healthcare and defense industries. The three NTVs described that they had based their decision on in-depth research, which Case 1 and Case 3 termed as feasibility studies. The fact that three NTVs in this study chose the utilities industry in favour of other industries cannot be used as a basis for concluding that the utilities industry is not characterized by strict rules and regulations. However, based on the statements from the founders of Case 1, Case 3, and Case 4, it is less strict than the aviation, maritime, defense, and healthcare industries. The NTVs only discussed Regulatory-Selection in terms of choosing an industry, not in terms of determining which country to establish their business. Nor did any of the companies' state that they were looking to any specific international markets in the future.

Normative-Selection

Normative-Selection was used by all five NTVs. Normative-Selection was used in the form of approaching the industry where their product/service would be most valued, and where the product-market-fit was the greatest. However, Case 4 differs slightly from the approach of the

other four NTVs. The founder of Case 4 described how they are conducting what she termed as a technology push. Case 4 chose the utilities industry partly due to the understanding that they would create value there, without getting feedback from a broad audience of industry stakeholders that they would do so. Case 1, on the other hand, develops a product that key stakeholders in the utilities industry clearly have stated the need for. Based on this feedback, Case 1 knew that they will create value with their product in the utilities industry. In a way, Case 2 also stands out, they did not pivot from one industry to another, but from the business-to-consumer (B2C) to the B2B market within the utilities industry.

Case 4 also utilized Normative-Selection by choosing investors that would have a basis of understanding the value the NTV is trying to create, and the mission they are pursuing. Case 5 enacted the strategy in terms of choosing partners that align with the values the NTV is trying to portray to external stakeholders. What is clear from looking at the NTVs from the utilities industry in terms of Normative-Selection is that choosing a market or an industry that values your offering is common. Through interviews with the founders, potential successful ways of ensuring that you approach a segment where you create value to your customers is through feasibility studies, close interactions with potential customers and partners, and in terms of what Case 4 said, also a dose of gut-feeling. The term “successful” is used because the NTVs have been able to create a foothold in the industry, either by having a pilot-customer, securing investments, or soft-funding grants.

Cognitive-Selection

Cognitive-Selection is used by three of the NTVs, specifically Case1, Case 3, and Case 4. Case 1 and Case 4 highlighted that they chose their current office location to be close to both customers and talent for recruitment. Being near the university was also highlighted as important by Case 1 and Case 4 in regard to access to domain knowledge from professors. Case 3 chose the current office location because of it being a good community for hardware start-ups. Although not all the NTVs utilized Cognitive-Selection, it is, based on information gathered from the founders of Case 1, Case 3 and Case 4, reasonable to believe that choosing an environment where you have access to the right equipment and knowledge is typical in the utilities industry.

Manipulation

Manipulation as a strategy refers to adjusting the surrounding environment in order to garner support for your venture. Scholars have argued that this strategy is costly, and therefore, not suited for new ventures (Karlsson & Middleton, 2015; Suchman, 1995; Zimmerman & Zeitz, 2002). Manipulation strategy was only used to build one source of legitimacy by the NTVs in the utilities industry, namely cognitive legitimacy.

Cognitive-Manipulation

Case 1, Case 4, and Case 5 are establishing new workflows in their specific segment of the utilities industry, which is an indicator of them utilizing Cognitive-Manipulation. A common denominator between the three NTVs, besides adjusting the existing best practice, is that they all try to ease the implementation of their technology. Adam, the co-founder of Case 1, said that they collaborate with the workers who perform the task Case 1's technology will adjust. Case 4 utilizes results from tests to convince the pilot customers. The founder of Case 5 stated that creating a bond with the pilot customer, in general, is important to implement change. Based on these insights, one could say that by introducing disruptive technology into the utilities industry, Cognitive-Manipulation is necessary to focus on in order to convince the potential users of the technology to accept it. The best practice, based on what Case 1, Case 4, and Case 5 explained, would be to work closely with the users of the technology and ground the reasons for adopting the adjusted methods in results from testing the technology. Case 3 mentioned that they share information about the value their technology brings potential customers with these potential customers. However, the founder does not put enough emphasis on it for the authors to determine that the NTV actually utilizes the ILS. Although, in terms of what is stated above, that when implementing a disruptive technology making use of Cognitive-Manipulation is important, one could speculate that Case 3 most likely also utilize it.

Creation

Creation strategy must be pursued when the basis from which you can derive legitimacy is not yet established (Kuratko et al., 2017; Zimmerman & Zeitz, 2002). Among the NTVs in the utilities industry, Creation strategy is used to derive regulatory and cognitive legitimacy.

Regulatory-Creation

Case 3 is the only NTV amongst the NTVs from the utilities industry that utilizes Regulatory-Creation. Carl, the co-founder of Case 3, explained that parts of their operations fall in under existing legislation, however, there is no existing precedence regarding autonomous vessels in

the utilities industry. The NTV has not yet implemented any new laws in the industry. However, the team spends a lot of time investigating legislation that exists regarding aviation partly to figure out if they need to implement new laws and partly to determine how they could do it. Based on this, it could seem like Case 3 is trying to avoid using Regulatory-Creation if possible. To draw any conclusions on whether or not Regulatory-Creation is a preferable strategy to use in the utilities industry is difficult when only one NTV included from this industry make use of the strategy. That Case 3 is involved in using Regulatory-Creation could only indicate that their technology is highly disruptive. Especially since they also are one of only two NTVs utilizing creation strategy to build cognitive legitimacy.

Cognitive-Creation

Case 1 and Case 3 are the only two NTVs from the utilities industry that utilize Cognitive-Creation strategy. It is already mentioned that the founder of Case 3 indicated in his interview that Case 3 introduce a disruptive technology. With it, they are creating new workflows as they entirely replace the current practice of grid inspection. Similarly, Case 1 creates an entirely new practice as their toughest competitor is an analogue tool that has not seen any invention since the day the utilities industry started using it. However, there are employees set explicitly to the task Case 1 change completely, which might be the reason that Case 1 utilizes Cognitive-Manipulation together with Cognitive-Creation to ease the implementation of the new practice. Case 3 does not use Cognitive-Manipulation, or at least it did not come forward in the interview that they do, which could indicate that key stakeholders do not value the workflow Case 3 is replacing. If so, one could deduce that an NTV introducing disruptive technology to the utilities industry has to utilize Cognitive-Manipulation together with Cognitive-Creation if the workflow that is being replaced is valued and performed by someone that is valued as an employee. However, this may be farfetched as this statement is based on information gathered from only two NTVs.

4.2.3 Oil & Gas Industry

Conformance

Regulatory-Conformance

All the NTVs in the oil & gas industry utilize conformance strategy to follow a basic requirement of rules and regulations, and thereby build regulatory legitimacy. Case 6 through Case 9 all point out the importance of following the required regulations. Case 7 and Case 9

gave examples of such basic rules when they pointed out payroll taxes and company taxes. The within-case analysis suggest there exists a baseline of regulations NTVs in the oil & gas industry need to follow in order to move towards the threshold.

The founder of Case 8 inferred that the NTV made use of Regulatory-Conformance to ensure that their product follows the regulations by the countries they now have pilot customers in, both in terms of the baseline and certification requirements. Case 6 conform to the regulations in Norway in terms of the baseline but are hindered from entering the Norwegian market due to their product not complying with industry-specific European regulations regarding reducing environmental impacts from oil & gas production. However, Case 6's product complies with US legislation. Based on descriptions from Case 8 and Case 6, it seems like the oil & gas industry is subjected to both industry- and country-specific regulations Norwegian NTVs attempting to enter markets outside Norway may have to follow such country-specific legislation.

Case 8 has to follow strict requirements when it comes to the safety of their hardware because any failures to their technology could pose a risk to human life or health. To stay within those regulations, Case 8 has affixed CE-marking approval to ensure that their product is safe to use by their potential customers. Although Case 6 also produces hardware, Frank did not mention CE-marking. Case 8 has achieved paid pilot-customer projects, which Case 6 has not, which may indicate that Case 6 is at an earlier stage and might be the reason they have not begun thinking about CE-marking yet. Although Case 8 has focused on getting CE-marking for their product, the authors have little empirical foundations to conclude whether or not CE-marking is important for hardware companies in the oil & gas industry.

The founder of Case 9 stated that the NTV has to follow strict regulations regarding data security when working with pilot customers. While Case 8, needs to be compliant in terms of the safety of their products, Case 9 needs to be sure that they have security procedures in place in terms of handling customer data. The NTVs utilize conformance to build regulatory legitimacy to different degrees; however, all make use of Regulatory-Conformance which indicates that this ILS is commonly pursued in order to reach the legitimacy threshold in the oil & gas industry.

Normative-Conformance

All of the NTVs use conformance strategy to build normative legitimacy. Case 6 through Case 9 all mention working closely with external stakeholders, such as pilot customers, investors, and advisors, in some form, mainly to ensure that their needs are considered. For example, Case 8 have given each employee responsibility of following up investors. Case 7, Case 8, and Case 9 mention the importance of treating employees well and go to great lengths to do so. Based on the descriptions from all the NTVs included in the oil & gas industry, complying with both internal and external stakeholder demands, and treating them with respect, seems important.

According to Case 9, working closely with pilot customers also aid in building good relationships with potential customers. This is also described by the other founders, in one way or the other. Since the post-threshold is characterized as having acquired a paying customer, one could view Normative-Conformance as a very important source of legitimacy because it is directly linked to treating potential customers well. Building strong relationships with pilot customers from an early stage could aid oil & gas NTVs in getting closer to retaining them as paying customers and thereby reach the legitimacy threshold.

Operating profitably is also portrayed as important by the NTVs in the oil & gas industry. Case 6, Case 7, and Case 9 have all acquired government grants, partly to increase the runway of the company. Indicating that having focus on operating profitably is a common norm to follow in the oil & gas industry. Overall, building normative legitimacy through conformance strategy seems to be typical when approaching the legitimacy threshold in the oil & gas industry.

Cognitive-Conformance

Building cognitive legitimacy through attaining the relevant competence to your NTV seems to be common based on statements from all NTVs interviewed in this case. Relevant competence is not limited to the employees but also spans to advisors and investors. Although they all focus on retaining domain knowledge, the NTVs have different approaches. For example, Case 6 have key persons from the University TTO to make up their advisory board. While Case 9 has engaged an investor, who also functions as an advisor, that has experience from building and selling a geoscience software company. Having the correct competence related to the NTV seems to be a common focus in order to portray cognitive legitimacy towards the oil & gas industry in general, and towards potential employees. Further, building a company that possesses the competencies needed to develop the service or product that will

be sold to a potential customer could be viewed as the foundation for having anything to sell in the first place.

Case 6 and Case 7 have patented their technology, Case 8 has a patent-pending, and Case 9 has not patented at all. Case 7, Case 8, and Case 9 mention NDAs as a way of securing proprietary knowledge in the NTV. The NTVs in the oil & gas industry secure confidential information either by the use of NDAs or patents, showing that this is indeed a best practice in the industry. Thereby the use of Cognitive-Conformance is a commonly used strategy to reach the threshold. In the Within-Case analysis, using NDAs and filing for patents was mentioned as appropriate towards investors, but one could also view it as appropriate for acquiring customers. By securing that your NTV is the only actor utilizing a certain technology, the value proposition towards customers could become more convincing.

Selection

Regulatory-Selection

The only company that pursues selection strategy to build regulatory legitimacy is Case 6. As mentioned above, Case 6 has targeted the US market because the rules and regulations in Norway, the EU, and Canada do not support their solution. This underlines the authors' statement that regulations in the oil & gas industry are country specific. However, this is based on statements from one NTV, and may not be enough empirical foundation to conclude on.

Normative-Selection

Case 6 and Case 7 are the only NTVs in the oil & gas industry, from this thesis, that use selection strategy to build normative legitimacy. Case 6 also use selection strategy to target a market where their technology was more valued and where it had a higher level of product-market-fit. Case 7 on the other hand, use Normative-Selection to associate themselves with partners that have similar values and visions, such as bringing technology that enables the oil & gas industry to reach a higher level of digitalization, faster. Case 6 and Case 7 differs from the other two NTVs in the oil & gas industry by having technology that originates from research. This could have affected how these two NTVs use selection strategy to build normative legitimacy. On the other hand, Case 6's and Case 7's statements could just indicate that NTVs may focus on targeting markets and partners who show appreciation for their product because garnering legitimacy from them would be less resource demanding. Although the founders did not state it explicitly, Case 8 and Case 9 seems to have found markets and

partners that value their technology without considering other options. If so is true it would indicate that Case 8 and Case 9 garner normative legitimacy from their partners for the same reason as Case 6 and Case 7, and without taking resource demanding measures.

Cognitive-Selection

Both Case 8 and Case 9 use Cognitive-Selection strategy by choosing to be part of specific new venture incubators. In Case 8's situation, their incubator is also their investor. The founders of both Case 8 and Case 9 emphasize the importance of being a part of a community that gives them access to experienced mentors and advisors. In contrast to Case 8 and Case 9, Case 6 and Case 7 come from research, and therefore, selecting such environments may not have been prioritized.

It is important to note that Case 6 use all the selection strategies to build legitimacy sources. Case 6 and Case 7 are opposite of Case 8 and Case 9 regarding using selection strategy to build normative and cognitive legitimacy. Case 6's and Case 7's products originates from strong research institutions, meaning that the importance of selecting a community with strong competence within relevant fields may have been less pressing because they already are connected to such environments. The two NTVs use Normative-Selection in different ways, while Case 6 use it to select a market where the product is more valued, Case 7 use it to connect to partners who align with their values. As mentioned, Case 7 already has a customer, so the reason for this distinction in the use of Normative-Conformance may be due to differences in business matureness. One could mention technology matureness as well; however, based on the interview with the founder of Case 6 and Case 7, their technologies seem to be nearly fully developed. From what is mentioned above, one could see a correlation between using Cognitive-Selection and technology maturity in the oil & gas industry.

Manipulation

Regulatory-Manipulation

Case 6 is the only company that uses manipulation as a strategy to build regulatory legitimacy. The reason that the other NTVs do not have to use Regulatory-Manipulation strategy is that their technology is within the rules and regulations of the industry. Regulatory-Manipulation is a very resource demanding strategy to use, which NTVs generally lack. Case 6 has a prominent investor backing them, which may make it possible for the NTV to pursue Regulatory-Manipulation strategy. However, the founder of Case 6 stated that to manipulate

established regulations it is a tough process, but not doing it would mean that Case 6 drastically limited their market. Utilizing Regulatory-Manipulation in the oil & gas industry is indicated as an undesirable strategy if no other option is available to execute, which is consistent with research conducted on this strategy in other industries (Karlsson & Middleton, 2015; Su et al., 2015; Zimmerman & Zeitz, 2002).

Cognitive-Manipulation

All the NTVs make use of Cognitive-Manipulation strategy by focusing on enhancing key stakeholders' understanding of their product. Potential customers come forward as the most important stakeholders to convince. Using testing, as Case 6 does, demonstrations of use-cases, as Case 7 does, emphasize technical benefits, as Case 8 does, and free trials, like Case 9 did, are all examples of methods NTVs can pursue to convince the potential customer to take the next step to become a paying customer. Based on this, NTVs in the oil & gas industry may utilize manipulation strategy to build cognitive legitimacy. Although, it may seem trivial, making the potential customer understanding the product it is buying is key, and maybe even more important in the oil & gas industry where large sums are involved with every sale. Case 7 also mentioned that they must convince people at different hierarchy levels at the customer organization, meaning that Case 7 uses Cognitive-Manipulation towards several stakeholders in the same organization. Although Case 7 is a deviation from the other NTVs included in the thesis due to them having a paying customer, it is interesting to see that they use the strategy at multiple levels of hierarchy and might be an interesting finding to pursue in another study.

Creation

Cognitive-Creation

Case 6 is the only NTV using Cognitive-Creation strategy; in fact, the only NTV in the oil & gas industry using creation strategy at all. While Case 7, Case 8, and Case 9 are manipulating existing workflows, Case 6 has a unique technology that disrupts the way upstream oil & gas manage environmental impacts. Case 6's founder explained that they meet resistance because people in the industry tend to stick with methods they know; however, using creation strategy to completely alter the established best practice can give the NTV a long-term competitive advantage. Utilizing creation as a strategy is viewed as unconventional in the oil & gas industry. Through the interview with Frank, Co-founder of Case 6, it was clear that utilizing this strategy is time-consuming and resource demanding. Frank made it seem like they would avoid using it if they could, but that they firmly believe in the product and in the need for a better solution

to handle environmental impacts of oil & gas production. Based on the information gathered in relation to this strategy, one could argue that NTVs in the oil & gas industry avoid using it if they can. This is also consistent with extant legitimation theory (Karlsson & Middleton, 2015; Su et al., 2015; Zimmerman & Zeitz, 2002).

4.3 Cross-Case Across Industry analysis

In this section the authors perform a Cross-Case Across Industry analysis, with the intent of comparing how Norwegian NTVs in the two industries use ILS and thereby answering the following research question;

RQ3: How does the Norwegian NTVs' use of ILS compare across industries?

All the NTVs, both in utilities and oil & gas, pursue conformance as a strategy to build the three sources to legitimacy, and thereby stands out as the most frequently used strategy in the energy sector. Zimmerman and Zeitz (2002) state that new ventures generally have little power, so when operating in structures where scripts, rules, norms, values, and models are established to the point of being taken for granted, conformance is an appropriate strategy to pursue. As all the NTVs in this study makes use of conformance towards reaching the overall goal of acquiring a paying customer, one could infer that the energy sector is characterized by highly established scripts, rules, norms, values, and models. In addition, with exception from Case 7 and Case 6, the technologies the NTVs develop can all be characterized by a level of immaturity, which in turn can explain the focus on utilizing conformance strategy to achieve legitimacy (Ashforth & Gibbs, 1990; Karlsson & Middleton, 2015). In addition, in terms of Regulatory-Conformance there seems to exist a similarity between the NTVs developing hardware, as founders point out it as important to affix CE-marking and certifications for their products. This could suggest that utilizing Regulatory-Conformance, in terms of acquiring certifications, is important for NTVs producing hardware in the energy sector.

All the NTVs use selection strategy to build one of the sources to legitimacy. The NTVs included in the thesis are developing radical new technology, and the authors Kuratko et al. (2017) suggests that it is clever for such ventures to use selection strategy because it will ensure that they attain the most value within the entrepreneurial ecosystem. The founders state that they use this strategy to locate the NTV in a favorable environment, which scholars, such as

Suchman (1995), suggests selection strategy is appropriate for. Selection strategy is seen as a more strategic strategy compared to conformance strategy because to be able to select the most favorable environment founders need in-depth insight to the external environment and resources (Zimmerman & Zeitz, 2002). Although selection strategy was used by all the NTVs, in some form or fashion, the authors identified a key difference in how NTVs in the industries used the strategy to build regulatory legitimacy. NTVs in the utilities industry predominantly used it to select a less strict industry (the utilities industry), NTVs in the oil & gas industry, on the other hand, used it to select a more favorable geographical location in the same industry. Although there was only one NTV, more specifically Case 6, utilizing Regulatory-Selection in the oil & gas industry, this could still be presented as a potential interesting distinction between the two industries. Namely, that Regulatory-Selection strategy to select geographical locations might be more applicable to use for NTVs in the oil & gas industry.

For NTVs to pursue manipulation strategies can be difficult due to lack of resources (Zimmerman & Zeitz, 2002). Manipulations strategy is a more strategic strategy than conformance and selection strategies (Zimmerman & Zeitz, 2002), and is viewed as more fitting for established ventures with mature technologies (Ashford & Gibbs, 1990; Karlsson & Middleton, 2015). All over, none of the NTVs pursue manipulation strategy to build normative legitimacy, and only one uses it build regulatory legitimacy. These findings correspond with previous research that new ventures seldom use manipulation strategy. However, 7 out of 9 NTVs included in the study are actively utilizing manipulation as a strategy to build cognitive legitimacy. It is also found that Case 3 potentially is using it, without the authors being able to confirm it. This means that potentially all NTVs, except Case 2, utilizes Cognitive-Manipulation. The common denominator between these cases is the implementation of disruptive technologies. Su et al. (2015) ranked manipulation as the second most used strategy in their study, however, they added that it is only used when no other option is valid. Since the NTVs mentioned above are deploying disruptive technology there exist little foundation from which they can derive legitimacy. It therefore seems plausible that they have to adjust their environment to such a foundation that is specifically tailored to their disruptive products/services, which also coincides with previous research (Suchman, 1995; Zimmerman & Zeitz, 2002). Implying that NTVs introducing disruptive products or services to the energy sector could use manipulation strategy towards reaching the threshold in this sector.

Manipulation strategy to build regulatory legitimacy is, by some researchers, termed as impossible to utilize for a new venture. However, one NTV, namely Case 6, in the oil & gas industry, is utilizing this strategy. The founder stated that they are aware it is high risk, but also explain the potential high reward. Zimmerman and Zeitz (2002) state that a new venture needs a lot of capital and power to manipulate the environment significantly and that it could be hard for a single new venture without partnerships to succeed in using manipulation. Case 6 is collaborating with a large potential customer in the US to help perform the tests they need in order to lobby for legislative change, which corresponds with what Zimmerman and Zeitz (2002), and Suchman (1995) suggests. In some respect Case 6 is utilizing Cognitive-Manipulation strategy to push legislation through, as they use results from full-scale tests to push through new regulations in terms of minimizing environmental impacts of oil and gas production.

According to Kuratko et al. (2017) creation as a strategy is the costliest strategy to implement, because it requires making substantial changes within an existing ecosystem, or establishing an entirely new ecosystem. Nevertheless, creation strategy is used by three of the NTVs included in this study. Case 3 use creation to build both regulatory and cognitive legitimacy, and the remaining two, Case 1 and Case 6, utilize it to build cognitive legitimacy. All three of them are introducing novel technologies that disrupt their respective industries by replacing existing workflows. As a result of this Case 3 has to utilize Regulatory-Creation to pave the way for their product in the utilities market space. Scholars describe creation strategy as a last resort when conformance, selection, and manipulation strategies are unlikely to affect (Kuratko et al., 2017). This is also backed by the fact that the founder of Case 3 implied that the NTV is searching for ways to avoid having to deploy new regulations in the industry. To pursue creation as a strategy is an active choice by the NTV and is the most strategic strategy, and potentially the costliest (Zimmerman & Zeitz, 2002). However, the reason that the NTV's pursue creation is that they are more likely to gain a competitive edge (Su et al., 2015). Gaining a competitive advantage can be seen as a way for Case 1, Case 3, and Case 6 to actively pursue the path towards the legitimacy threshold in the energy sector.

The authors did not find any indication that the NTVs included in the study utilize Normative-Creation or Normative-Manipulation. The two ILS's refer to adjust or create norms and values in an environment, which can be viewed as very resource demanding, and may be the reason none of the NTVs make use of these strategies.

5. Discussion

As previously mentioned, legitimacy is important for new ventures to garner in order to mitigate the liability of newness, and thereby increase the chances of survival (Zimmerman & Zeitz, 2002). Therefore, the authors chose to pursue a study to explore ILSs used by NTVs towards reaching the legitimacy threshold in the energy sector. The authors have, through performing this study, provided an extra stream of literature and provided the literature with a deeper insight of how ILS's are utilized by Norwegian NTVs in the energy sector. In this chapter, the authors discuss key findings and how the findings can contribute to previous literature on legitimacy.

5.1 How are ILS's applied in the energy sector

5.1.1 Conformance

Conformance strategy, in all terms of building legitimacy sources, comes forward as important to implement in the energy sector. Which is in line with the recommendation provided by previous scholars (Aldrich & Fiol, 1994; Zimmerman & Zeitz, 2002). Several of the founders emphasize the importance of allocating their resources in a wise way which in the analysis was linked to conformance strategy. Thereby choosing to conform seems to be viewed as a way of using your funds smart because it is a less resource demanding strategy to use, which is in unison with what Stinchcombe (1965) state in his theoretical review and Karlsson et al. (2015) found in their qualitative study. The founders of the NTVs explained the difficulties of challenging the established in the energy sector, which coincides with extant literature on legitimacy regardless of country and industry (Karlsson & Middleton, 2015; Rutherford & Buller, 2007; Su et al., 2015). Conforming, in all respects of building legitimacy sources, if you can, could based on the above descriptions be viewed as an appropriate strategy to utilize in order to move towards the legitimacy threshold in the energy sector, as in the other industries and countries that have been studied in legitimation literature (Karlsson & Middleton, 2015; Kuratko et al., 2017; Zimmerman & Zeitz, 2002). Based on this, there could be grounds for generalizing that conformance is important for NTVs regardless of geographical location and industry.

However, conformance is also referred to as the least strategic strategy by scholars, perhaps because some institutional pressures can be so strong that not conforming to them is

unthinkable (Karlsson & Middleton, 2015; Su et al., 2015). Conformance can, based on this, be viewed as the basic expectations that external stakeholders have to NTVs and a strategy that has to be pursued to run a business. With this comes the baseline the authors referred to regarding Regulatory-Conformance, specifically in terms of taxes and incorporation. The Cross-Case analysis showed that all NTVs follow such a baseline because not doing so could imply that they would have no basis to garner legitimacy from. In addition, as mentioned in the Cross-Case Across Industry analysis, acquiring certifications for their product is found to be important for NTVs developing hardware. Thereby such certifications could be viewed as part of the regulatory legitimacy baseline for Norwegian NTVs developing hardware in the energy sector. The authors argue that there exists a regulatory legitimacy baseline in the energy sector and that following it is a minimum requirement to garner further legitimacy judgments.

The authors suggest that the baseline can also be viewed in terms of the other sources. For example, it would be unthinkable for the NTVs to not secure trade secrets (Cognitive-Conformance) and to not treat employees fairly (Normative-Conformance), because it could disrupt the NTV as a whole. However, not utilizing conformance to build cognitive legitimacy in terms of gathering relevant experience from external stakeholders might not be key for NTV survival. Suggesting that there exists a baseline of a legitimacy source, and that this baseline can be exceeded. Conformance strategy, in terms of the baseline, can also be tricky to measure with certainty. Admitting to not following regulations, treating employees unfairly, or not protecting trade secrets is unlikely for any founder or entrepreneur. Especially in the setting of this thesis, where the NTVs were found through the network of the authors, confessing to breaking the law, for example, could potentially harm their reputation. Regardless, the founders suggest that such a baseline of legitimacy, mentioned above, exist for Norwegians NTVs in the energy sector. However, in order to confirm it and potentially generalize the findings regarding the baseline, further research should be performed with new ventures from other geographical locations and industries.

5.1.2 Selection

Suchman (1995) explained in his theoretical review that selecting an environment includes choosing a geographical location. Amongst NTVs in the utilities industry Regulatory-Selection was used to select the utilities industry in favour of more regulation bound industries and are exclusively operating in Norway. The NTVs from the oil & gas industry, on the other hand, are

to a higher extent positioned in more countries than Norway. The authors also found that the NTVs do not use Regulatory-Selection to switch industry but rather to choose another geographical location within the oil & gas industry. This could indicate that it is easier for Norwegian NTVs in the oil & gas industry to select international markets, than it is for Norwegian NTVs in the utilities industry. Which would mean that NTVs in the oil & gas industry is more free to utilize selection strategy to choose a geographical location, and thereby there seems to exist a difference within the energy sector in terms of how selection strategy can be used to build regulatory legitimacy. It could also indicate that industry-specific regulations in the utilities industry are more country specific. It would be interesting to research NTVs in the energy sector outside Norway to figure out whether or not the characteristic mentioned above is generalizable. Perhaps, without having empirical evidence to back this statement, an NTV operating in the utilities industry in an EU member state could have a better chance of establishing beyond its country borders.

5.1.3 Manipulation

In the Cross-Case Across Industry analysis the authors found that the NTVs with a high level of technology disruptiveness in the energy sector, use manipulation strategy to build cognitive legitimacy. Suchman (1995) also referred to this in his seminal paper, when explaining that new ventures who substantially depart from prior practice might have to intervene actively in its environment to garner a foundation of support tailored to the needs of the venture. Manipulation in itself is referenced as a strategy that is unfavourable for NTVs to use by several scholars, because they usually lack the resources (Karlsson & Middleton, 2015; Suchman, 1995; Zimmerman & Zeitz, 2012). In the event that an NTV should find themselves using it, scholars recommended to team up with successful, well-established organizations (DiMaggio & Powell, 1983; Zimmerman & Zeitz, 2002), which is consistent with what the NTVs in this thesis have done. Getting investors and soft funding grants also come forward as potential ways to “fund” the use of manipulation strategies. Thereby, in order to reach the legitimacy threshold in the energy sector, Norwegian NTVs developing disruptive technologies could be advised to team up with such organizations, or potentially garner the funds, either through soft funding or hard funding, to cover the resource demanding use of Cognitive-Manipulation.

Case 6 is the only NTV in this study that is focusing on utilizing Regulatory-Manipulation strategy. And, as mentioned in the final Cross-Case analysis, the authors see a link between Case 6 using manipulation to build cognitive legitimacy, towards implementing the new

regulations in the utilities industry. This finding could indicate that when NTVs in the energy sector, or at least the utilities industry, attempt to manipulate regulations, using the strategy to also build cognitive legitimacy by spreading knowledge about the product or service might be favourable. The potential interdependency between the strategies also raises the question of whether or not the use of them should be implemented at different times related to each other. For example, utilizing Cognitive-Manipulation to spread knowledge about the disruptive technology, might help establish the legitimacy foundation needed in order to more easily modify regulations. However, in order to draw any conclusions on this further research needs to be performed.

5.1.4 Creation

This interdependency is also found in the analysis of Case 3 in terms of it utilizing both Cognitive- and Regulatory-Creation. As a result of introducing a new best practice in the utilities industry, the NTV has to create new regulations in the industry in order for their product to fit into the market. Fisher et al. (2016) argue that the audience of stakeholders change over time, and that the legitimacy judgment criteria change in line with the that. Hence, the different legitimacy thresholds emerge due to development of new legitimacy evaluation criteria (Fisher et al., 2016). However, Fisher et al. (2016) also state that new ventures can build up an inventory of legitimacy, which can help them garner legitimization judgements from future stakeholders. These statements from Fisher et al. (2016), could help explain the interdependency, or at least the implementation of ILS's at different times in the life cycle of the NTV. This also indicates the importance of NTVs building legitimacy early on in order to garner the legitimacy inventory needed to ensure a legitimacy judgement from potential customers in the future. The authors find it interesting for future research to investigate the interdependency in more depth, because it could provide useful recommendations as to when NTVs should implement the different ILS's.

Although extant research advise against utilizing manipulation and creation sources to garner any types of legitimization sources (Karlsson & Middleton, 2015; Payette, 2014; Zimmerman & Zeitz, 2002), Kuratko et al. (2017) and Su et al. (2015) mention it as plausible when the other strategies are insufficient. Several of the NTVs in this thesis do in fact make use of both strategies. Zimmerman and Zeitz (2002) address this in terms of a paradox for new ventures. Although new ventures, in this case Norwegian NTVs, can garner legitimacy most effortlessly by conforming to its social structure, such ventures often argue their right for existence with

the disruptive service/product they bring to the marketplace. The energy sector, as stated in the introduction, faces a shift in terms of the digital era. Digitalization is currently paving the way for new business models and practices which might make the energy sector more open to NTVs utilizing creation strategy, in fact also manipulation strategy to build both regulatory and cognitive legitimacy. Established firms are increasingly looking to rapidly moving externals, such as the NTVs in this study, to help bring innovative solutions into their business. Due to that, the sector, although it is characterized by highly established norms and practices, might be more open to disruptive technologies, such as the ones presented by the NTVs in the energy sector. Which in turn could aid in explaining the use of manipulation and creation, and how these strategies, in fact, can aid NTVs in this sector move towards the legitimacy threshold. The fact that the energy sector is going through disruption itself, might also indicate that the foundation to sufficiently build legitimacy does not exist, leaving the NTVs to resort to use creation and manipulation strategy. Su et al (2015) found in their study that manipulation and creation strategies are connected to industry matureness. Although the energy sector is highly established, the changes due to digitalization might counteract the matureness, and thereby help explain the findings above.

However, utilizing manipulation and creation strategies in terms of building normative legitimacy was not performed by any of the NTVs in the energy sector. Suggesting that the norms and values of the industry might remain unaffected by the drastic changes of digitalization. On the other hand, the authors, without having any empirical evidence backing the statement, speculate that as the digitalization reaches a firmer foot holding in the industry this might change.

5.1.5 ILS's - continuous or not?

As referred to in relation to the baseline, it seems unthinkable that an NTV would choose to stop treating their employees well, start sharing confidential information about proprietary technology or stop following the regulations set by its environment. Thereby, conformance seems to be a highly continuous strategy. Creation could also be linked to being important over time as utilizing it in the first place is a signal to externals that the NTV is highly disruptive, and changing the image of the NTV, by for example starting to introduce products based on trivial technology, seems unlikely. Manipulation could also be viewed as a continuous strategy, especially as it is linked to elevating externals' understanding of the product the NTVs

introduce. Manipulation strategy in terms of building cognitive legitimacy can also be linked to marketing, which indeed is a process NTVs, and corporations in general, need to engage in over time. Additionally, as mentioned in the introduction to the thesis, scholars do refer to several legitimacy thresholds and that these thresholds can be surpassed by gaining legitimacy judgements from new stakeholders (Peake & D'Souza, 2015; Suchman, 1995; Zimmerman & Zeitz, 2002). Which could be furthered to indicate that Norwegian NTVs in the energy sector need to use conformance, manipulation and creation over time to reach new legitimacy judgements, and in the end reach the customer legitimacy threshold. However, these indications are based on data gathered from the nine NTVs included in this thesis and might not be generalizable to other Norwegian NTVs in the energy sector or other NTVs in general.

Selection sticks out as a discontinuous strategy because once an NTV has selected an environment or domain the NTV is done using that strategy until the next time it needs to selection another environment or domain. Thereby, it would seem wise for an NTV to spend time to think through this distinct choice. Although NTVs can overturn a decision by utilizing selection strategy reversed, making the decision in the first place could send signals to external stakeholders that can impact the NTVs legitimacy judgement and potentially harm their path towards the legitimacy threshold. Zimmerman and Zeitz (2002) refer to legitimacy as a continuous variable ranging from high to low, and that new ventures can use the strategies to build the different sources in order to increase their amount of legitimacy. Although the legitimacy phenomenon in itself may be continuous, the authors suggest that it can be increased both discontinuously and continuously. Kuratko et al. (2017) state that selection can be a less costly strategy than conformance since the new venture can choose the environment the new venture want to conform too. The authors suggest that it may be less costly also because the NTV can choose to reverse the enactment of selection strategy, however, only in the event that it does not impact their legitimacy judgement in a negative way. However, these findings are based on interviews with nine Norwegian NTVs in the energy sector and may not be transferable to other industries or NTVs of other origin, nor generalizable to all Norwegian NTVs in the energy sector.

5.1.6 Mitigating the liability of newness

To overcome the liability of newness NTVs have to achieve legitimacy judgements from the environment to cross different legitimacy thresholds (Singh et al., 1986; Wiklund et al., 2010; Zimmerman & Zeitz, 2002). This thesis has investigated ILS's used by Norwegian NTVs in

the energy sector, and thereby highlighted potential ways to mitigate the effects of newness. Although the NTVs have gotten legitimacy judgements from several external stakeholders it remains uncertain if they indeed have overcome the liability of newness.

6. Conclusion

Legitimacy is viewed as an essential resource to new ventures (Zimmerman & Zeitz, 2002, p. 414), and the phenomenon has been investigated by multiple scholars across several industries and countries. However, the authors of this thesis found a gap in the legitimacy literature, and in the attempt of providing an extra stream of literature to close that gap they set the following purpose; *explore individual legitimation strategies used by NTVs towards reaching the legitimacy threshold in the energy sector*. Three research questions were formulated to guide the authors in answering the purpose. The authors also composed a theoretical framework based on the seminal work of Zimmerman and Zeitz (2002) to guide the data collection and analysis. Data for analysis was collected through semi-structured interviews with nine Norwegian NTVs from the energy sector. The analysis was comprised of a Within-Case analysis to gain familiarity with each NTV's characteristics, two Cross-Case analyses to investigate RQ1 and RQ2, and finally a Cross-Case Across Industry analysis to answer RQ3.

RQ1; How are ILS used by Norwegian NTVs, towards reaching the legitimacy threshold in the utilities industry?

RQ2; How are ILS used by Norwegian NTVs, towards reaching the legitimacy threshold in the oil & gas industry?

RQ3; How does the Norwegian NTVs' use of ILS compare across the industries oil & gas, and utilities?

By performing the analysis in line with these research questions the authors discovered several findings, some confirming findings from previous research and others inferring new facets of legitimacy theory. In both scenarios the authors of this thesis provide exiting legitimacy research with an additional stream of literature. Conformance and selection remain important strategies also for Norwegian NTVs in the energy sector, as prior scholars have determined them to be for new ventures across several industries and geographical locations. Suggesting that Norwegian NTVs in the energy sector could benefit from utilizing conformance and selection strategies to move towards the legitimacy threshold and mitigate the liability of newness in the energy sector. Creation and manipulation, which scholars most commonly advice new ventures against utilizing, were found as relatively frequently used strategies

among the NTVs included in this thesis. Potentially due to the energy sector being subjected to digitalization, and the degree of disruptiveness of their product/services. This finding is also in line with previous research, such as that of Su et al. (2015) and Kuratko et al. (2017).

The analysis also showed that there may exist a baseline of legitimacy sources and that this baseline reflects the minimum requirement from external stakeholders. This also relates to the continuous versus discontinuous aspect of legitimacy and how to build it, which is brought up by previous scholars such as Fisher et al. (2016). The authors suggest that creation, conformance and manipulation are continuous strategies, while selection is discontinuous. Legitimacy might be continuous, as is mentioned by for example Zimmerman et al. (2002), however, the authors suggest it can be built both continuous and discontinuous, depending on what strategy the NTVs use. Potential interconnections between the different strategies was also discovered, specifically in relation to Cognitive- and Regulatory-Creation, and Cognitive-Manipulation and Regulatory-Creation. Suggesting that the ILS's should be deployed in a specific order to ease the implementation of another ILS. However, the authors might not have a satisfactory amount of empirical evidence to state this with certainty, nor to give further indications to the order of implementation. As mentioned, the findings in this thesis is based on data collected from nine Norwegian NTVs in the energy sector, and in order to generalize the findings to other similar NTVs and increase the transferability of the findings to other industries and geographical locations, further research should be conducted. In addition, these results are from a qualitative study, and since legitimacy to a large extent is a subjective judgment, it could be beneficial to perform a study where perspectives from several stakeholders are included or a quantitative analysis in order to eliminate the subjectivity aspect from the data.

7. Limitations

The authors uncovered limitations related to the thesis and how it was conducted. In the following section the authors highlight the flaws of the thesis.

7.1 Rows vs. Columns

The authors compared the NTVs based on what ILS's they had used and thereby only looked at similarities based on the rows in *Table 4.1*. Thereby the authors failed in highlighting the differences and similarities of the NTVs as whole units to a satisfactory degree. To avoid this the authors should have analysed the NTVs based on a perspective of the columns in *Table 4.1*. When analysing the NTVs in the Cross-Case analysis the authors generally did not consider why NTVs do not utilize certain ILS's. As the purpose was to explore ILS's used by NTVs it could be viewed as in line with the purpose of the thesis, however, if it was discussed both ways it might have brought more substance to the analysis. In addition, the Cross-Case analysis was to a large extent performed with basis in the ILS's separately. In doing so the authors may have discluded the relationship between them, however, this was brought up in both the Cross-Case Across Industry analysis and discussion part of the paper as part of the findings.

7.2 Time aspect

Analysing the data showed that building legitimacy is highly time dependent and is indeed a process. The data was gathered with the perspective of exploring the ILS's used by the NTVs previously and currently and analysed accordingly. However, the narratives collected were not correlated to a timeline of when they were implemented and thereby the time aspect was not taken into account. Scholars argue that there exist multiple thresholds, or legitimacy judgements if you will, that NTVs have to cross in order to move towards the ultimate threshold of acquiring a paying customer. The NTVs had gotten different legitimacy judgements (investors, pilot customers, partners) prior to the study, and thereby could be viewed as having crossed different legitimacy thresholds. When selecting NTVs for the study the authors assumed that they were at the same development stage although they had gotten different legitimacy judgements. For example, while some of the NTVs had gotten investments, other had only been granted soft funding. Taking this into account when selecting NTVs, or at least when the analysis was performed, by for example having a timeline, might have given a more

uniform basis for analysis. It could also have provided a more in-depth insight into how Norwegian NTVs in the energy sector progresses towards the legitimacy threshold.

Qualitative studies pose an issue in itself as its form often attempts to make suggestions about the future based on past events. Although the authors in this study focused on retrieving narratives from the NTVs, remembering the past in detail is difficult and results in potential false or inconclusive statements. Karlsson and Middleton (2015) attempted to avoid such limitations by having their case objects writing a diary. Conducting the data collection in this manner, in addition to semi-structured interviews, could help more detailed information for analysis and may have revealed additional facets of Norwegian NTVs' use of ILS's.

Case 7 makes the analysis in this thesis even more complex. Due to the authors lack of insight into the NTV after the collection of secondary data, the authors did not know Case 7 had a customer before after the interview was conducted. The authors chose to include the NTV even though they had a paying customer because the founder gave a lot of insight into what strategies the NTV has used in the past and started using in the past but are currently also using. However, including Case 7 might have added a dimension which in turn made the basis for analysis even less uniform. Clearly, Case 7 has surpassed the legitimacy threshold the authors defined in this thesis as it has acquired a customer. As discussed above, including a timeline would have been helpful in the analysis to ensure that the ILS's used by Case 7 in the analysis was from prior to the NTV acquiring a customer.

7.3 Subjectivity

The information gathered from the founders is also highly subjective, and rather one dimensional. Data collected for analysis was only gathered from the founders of the NTVs perspective. Interviewing additional persons from the NTVs might have shed light on another ILS's the NTVs have deployed. In addition, including external stakeholders who have given the NTVs legitimacy judgements might have provided the findings with more validity. Also, by gathering statements from such stakeholders the authors might have been able to verify whether or not the Norwegian NTVs in the energy sector can use the findings of this study as recommendations in order to progress towards the legitimacy threshold.

8. Implications NTV managers and Future Research

Building legitimacy is important for a NTV's survival in their early years. Through exploring ILS's used by NTVs to reach the legitimacy threshold the authors also revealed how NTVs have utilized such strategies towards reaching the legitimacy threshold. Which again could be viewed as suggestions as to how other NTV managers can use legitimation strategies to build legitimacy in the energy sector towards reaching the goal of a paying customer. As mentioned, conformance seems to be an important strategy to pursue for NTVs in the energy sector. In terms of this strategy the authors uncovered a potential baseline, meaning that managers of NTVs should focus on garnering a certain level of all types of legitimacy in order to have a chance to progress towards the threshold. For hardware producing NTVs in the energy sector, seems to encounter a potential broader baseline in terms of Regulatory-Conformance, by having to acquire certifications for their product. However, to firmly conclude whether or not such a baseline exist further research should be conducted. Perhaps conducting a study specifically on conformance strategy that connects the use of ILS's to a timeline could reveal that the baseline characteristics, such as complying with tax regulation and securing trade secrets, in fact is in place prior to building higher levels of legitimacy with conformance strategy.

New ventures have commonly been recommended not to utilize creation and manipulation strategies. However, based on the findings in this thesis, NTVs in the Norwegian energy sector seem to be able to make use of such strategies and the reason might be that the industry as a whole is facing disruption due to digitalization. The analysis uncovered that the NTVs utilizing these strategies often had strong collaborations with pilot-customers or investors, which is also recommended by prior legitimacy research (Karlsson & Middleton, 2015; Rutherford & Buller, 2007). To generalize these findings, one should perform further studies. One possibility is to conduct the same type of study of the nine NTVs included in this thesis one or more years from now. That could aid in revealing whether the NTVs were successful in utilizing creation and manipulations strategies. If any of the NTVs fail during that time period, one could investigate the possibility of whether the use of creation and manipulation was part of the reason they failed.

The thesis also revealed that managers potentially should consider how the strategies relate to each other, specifically in terms of Cognitive- and Regulatory-Creation, and Cognitive-

Manipulation and Regulatory-Creation. The authors suggest that the ILS's can be deployed in a specific order to ease the implementation of another ILS. This is, however, based on empirical data collected from nine NTVs in a qualitative study which makes it uncertain if the finding is generalizable and transferable. Additionally, since the authors did not correlate the data to a timeline, giving recommendations based on the data collected in this thesis would be unwarranted. The authors suggest that further research investigate how the ILS's are connected to the time aspect, by connecting the use of ILS's to a timeline. Having done so might have revealed at what point in time the different legitimization strategies should be used, or put another way, when the NTVs should focus on building a certain type of legitimacy source, which could have great impact on their survival.

The purpose of this thesis was to explore legitimization strategies used by NTVs towards reaching the legitimacy threshold. However, as indicated above, exploring legitimization of new ventures by only including the viewpoint of the entrepreneur is one-dimensional. The authors suggest that future research should include the viewpoint of external stakeholders. For example, in this thesis the authors could have interviewed investors to understand what ILS's impacted their decision for investing in the NTV. In order to investigate the customer legitimacy threshold in greater detail one could also perform a study of NTVs having crossed that specific threshold. A way to perform such a study would be to gather data from both the founders of the NTV and from key persons at the customer. The intention of interviewing key persons at the customer company would be to understand what ILS's they appreciated and if they impacted their decision of buying the NTV's product. That would provide a broader basis for analysis, reduce the subjectivity in the study, and one would get a broader understanding of what actions performed by the NTV the customer actually valued. Such a study could provide more valid recommendations as to which ILS's NTVs in the energy sector should deploy in order to cross the threshold.

References

- Aldrich, H. & Fiol, C. (1994). Fools rush in - The institutional context of industry creation. *Academy Of Management Review*, 19(4), 645-670.
- Andersen, P. H. & Rask, M. (2014). Creating legitimacy across international contexts: The role of storytelling for international new ventures.(Report)(Author abstract). 12(4), 365. doi:10.1007/s10843-014-0134-4
- Ashforth, B.E. & Gibbs, B.W. (1990). The double-edge of organizational legitimation. *Organization Science*, 1(2), 177-194.
- Becker-Blease, J. & Sohl, R. (2015). New venture legitimacy: The conditions for angel investors. *Small Business Economics*, 45(4), 735-749.
- Bitektine, A. (2008). Legitimacy-Based Entry Deterrence in Inter-Population Competition. *Corporate Reputation Review*, 11(1), 73-93. 10.1057/crr.2008.5
- Bjornali, E. S., Giones, F. & Billstrom, A. (2017). Reveal or Conceal? Signaling Strategies for Building Legitimacy in Cleantech Firms. *Sustainability*, 9(10), 1815.
- Bloodgood, J., Hornsby, M., Rutherford, J. & McFarland, S. (2017). The role of network density and betweenness centrality in diffusing new venture legitimacy: An epidemiological approach. *International Entrepreneurship and Management Journal*, 13(2), 525-552. 10.1007/s11365-016-0412-9
- Brown, A. D. (1998). Narrative, Politics and Legitimacy in an IT Implementation. *Journal of Management Studies*, 35(1). 35-58. doi:10.1111/1467-6486.00083
- Brüderl, J. & Schüssler, R. (1990). Organizational Mortality: The Liabilities of Newness and Adolescence. *Administrative Science Quarterly*, 35(3), 530-547.
- Bryman, A. (2008). *Social research methods* (5th ed.). Oxford; Oxford University Press.
- Carroll, G. R. (1983). A stochastic model of organizational morality; Review and reanalysis. *Social Science Research*, 12(4). 303-329.
- Carroll, G.R. & Delacroix, J. (1982). Organizational Mortality in the Newspaper Industries in Argentina and Ireland: An Ecological Approach. *Administrative Science Quarterly*, 27, 169-198.
- Carroll, G. & Hannan, M. (1989). Density delay in the evolution of organizational populations: A model and five empirical tests. *Administrative Science Quarterly*, 34(Sep 89), 411-430.
- Carroll, G. & Huo, Y. (1986). Organizational Task and Institutional Environments in Ecological Perspective: Findings from the Local Newspaper Industry. *American Journal of Sociology*, 91(4), 838-873. 10.1086/228352

- Crowther, D. & Lancaster, G. (2009). *Research methods: a concise introduction to research in management and business consultancy* (2nd ed.). Amsterdam: Elsevier.
- Deeds, D., Mang, P. & Frandsen, M. (2004). The Influence of Firms' and Industries' Legitimacy on the Flow of Capital into High-Technology Ventures. *Strategic Organization*, 2(1), 9-34. 10.1177/1476127004040913
- Delmar, F. & Shane, S. (2004). Legitimizing first: Organizing activities and the survival of new ventures. *Journal of Business Venturing*, 19(3), 385-410. 10.1016/S0883-9026(03)00037-5
- Díez-Martín, F., Prado-Román, C. & Blanco-González, A. (2013). Beyond legitimacy: Legitimacy types and organizational success. *Management Decision*, 51(10), 1954-1969. 10.1108/MD-08-2012-0561
- DiMaggio, P.J. & Powell, W.W. (1983). The iron cage revisited: institutional isomorphism and collective rationality in organizational fields. *American Sociological Review*, 48(2), 147-160.
- Dowling, J. & Pfeffer, J. (1975). Organizational legitimacy: Social values organizational behavior. *Pacific sociological review*, 18(1), 122-136.
- Drori, I. & Honig, B. (2013). A Process Model of Internal and External Legitimacy. *Organization Studies*, 34(3), 345-376. 10.1177/0170840612467153
- Eisenhardt, K. M. (1989). Building theories from case study research. (Special Forum on Theory Building). *Academy of Management Review*, 14(4), 532. doi:10.5465/AMR.1989.4308385
- Eisenhardt, K. M. (1991). Better Stories and Better Constructs: The Case for Rigor and Comparative Logic. *The Academy of Management Review*, 16(3), 620-627.
- Eisenhardt, K. M. & Bourgeois, L. (1988). Politics of Strategic Decision Making in High-Velocity Environments: Toward a Midrange Theory. *The Academy of Management Journal*, 31(4), 737-770.
- Elsbach, K. (1994). Managing organizational legitimacy in the California cattle. *Administrative Science Quarterly*, 39(1), 57. doi:10.2307/2393494
- Energy Norway. (w.y.). About Energy Norway. Retrieved from <https://www.energinorge.no/om-oss/in-english/>
- EY. (2016). Future of Energy Series - Managing uncertainty in the energy sector. Retrieved from [https://www.ey.com/Publication/vwLUAssets/EY-five-key-trends-are-impacting-the-energy-industry-which-will-drive-significant/\\$FILE/EY-five-key-trends-are-impacting-the-energy-industry-which-will-drive-significant.pdf](https://www.ey.com/Publication/vwLUAssets/EY-five-key-trends-are-impacting-the-energy-industry-which-will-drive-significant/$FILE/EY-five-key-trends-are-impacting-the-energy-industry-which-will-drive-significant.pdf)

- Fisher, G., Kotha, S. & Lahiri, A. (2016). Changing with the Times: An Integrated View of Identity, Legitimacy, and New Venture Life Cycles. *Academy of Management. The Academy of Management Review*, 41(3). 383-409.
- Freeman, J., Carroll, G. R. & Hannan, M. T. (1983). The Liability of NEwness Age Dependence in Organizational Death Rates. *American Sociological Review*, 48(5), 692-710.
- Granheim, U. H. & Lundman, B. (2004). Qualitative Content Analysis in Nursing Research: Concepts, Procedures and Measures to Achieve Trustworthiness. *Nurse Education Today*, 24, 105-112. doi:10.1016/j.nedt.2003.10.001
- Hannan, M. T. & Freeman, J. (1984). Structural Inertia and Organizational Change. *American Sociological Review*, 49(2), 149-194. 10.2301/2095567
- Hunt, C.S. & Aldrich, H.E. (1996). Why Even Rodney Dangerfield has a Home Page: Legitimizing the World Wide Web as a Medium for Commercial Endeavors, Paper presented at the annual meeting of the Academy of Management, Cincinnati, OH.
- IEA. (w.y.). Global Engagement - Norway. Retrieved from <https://www.iea.org/countries/Norway/>
- International Business Machines. (2017). Digital Transformation in Energy and Utility Companies - A point of view prepared by IBM and SAP. Retrieved from: <https://www.ibm.com/downloads/cas/WRK68YGB>
- Jawahar, I., & McLaughlin, G. (2001). Toward a Descriptive Stakeholder Theory: An Organizational Life Cycle Approach. *The Academy of Management Review*, 26(3), 397-414.
- Johannessen, A., Kristoffersen, L. & Tufte, P. A. (2004). *Forskningsmetode for økonomisk administrative fag*. Oslo: Abstrakt forlag AS.
- Johnson, C., Dowd, T. J. & Ridgeway, C. L. (2006). Legitimacy as a Social Process. *Annual Review of Sociology*, 32(1), 53-78. doi:10.1146/annurev.soc.32.061604.123101
- Kaganer, E. A., Pawlowski, S. D. & Willey-Patton, S. (2010). Building Legitimacy for IT Innovations: The Case of Computerized Physician Order Entry Systems. *Journal of the Association for Information Systems*, 11(1)
- Karlsson, T. & Middleton, K. (2015). Strategies for Creating New Venture Legitimacy. *Industry and Higher Education*, 29(6), 469-479.
- Khaire, M. (2010). Young and No Money? Never Mind: The Material Impact of Social Resources on New Venture Growth. *Organization Science*, 21(1), 168-185. 10.1287/orsc.1090.0438
- Kuratko, D. F., Fisher, G., Bloodgood, J. M. & Hornsby, J. S. (2017). Erratum to "Legitimate to whom? The challenge of audience diversity and new venture legitimacy". *Journal of Business Venturing*, 32(1), 128-129. 10.1016/j.jbusvent.2016.11.003

- Kvale, S. & Brinkmann, S. (2009). *Det kvalitative forskningsintervju*. Oslo: Gyldendal Akademisk
- Li, X., Shen, J., Ma, W. & Zhang, W. (2015). The effect of business ties and government ties on new IT venture growth: an empirical examination in China. *Information Technology and Management*, 17(2), 245-261. 10.1007/s10799-015-0233-5
- Mcknight, B. & Zietsma, C. (2018). Finding the threshold: A configurational approach to optimal distinctiveness. *Journal of Business Venturing*, 33(4), 493-512. 10.1016/j.jbusvent.2018.03.004
- Merriam, S. B. (1988). *Case Study Research in Education: A Qualitative Approach*. San Francisco, California: Jossey-Bass Inc.
- Middleton, K. L. W. (2012). Becoming entrepreneurial: gaining legitimacy in the nascent phase. *Technology Management and Economics*, 19(4), 404-424. 10.1108/IJEBR-04-2012- 0049
- Mills, A. J, Durepos, G. & Wiebe, E. (2010). *Encyclopedia of Case Study Research*. Los Angeles, California: Sage Publications, Inc.
- Nagy, B., Rutherford, M., Truong, Y. & Pollack, J. (2017). Development of the legitimacy threshold scale. *Journal of Small Business Strategy*, 27(3), 50-58.
- Norwegian Government. (w.y.). Oil and Gas. Retrieved from: <https://www.regjeringen.no/en/topics/energy/oil-and-gas/id1003/>
- NVE. (June 3, 2016). Norway and the European power market. Retrieved from: <https://www.nve.no/energy-market-and-regulation/wholesale-market/norway-and-the-european-power-market/>
- Parsons, T. (1960). *Structure and process in Modern Societies*. New York: Free Press.
- Payette, J. (2014). Resolving Legitimacy Deficits in Technology Startups through Professional Services Practices. *Technology Innovation Management Review*, 4(6), 22-17.
- Peake, W. & D'Souza, D. (2015). Toward an integrative research framework for new venture legitimacy judgment formation. *Journal of Small Business Strategy*, 25(1), 82-104.
- Polit, D. & Hungler, B. (1999). Nursing Intervention for Management of Patients with Dyspnea at Emergency Units in Baghdad Hospitals. *American Journal of Nursing Research*, 2(3), 38-43. doi:10.12691/ajnr-2-3-2
- Rao, R., Chandy, R. & Prabhu, J. (2008). The Fruits of Legitimacy: Why Some New Ventures Gain More from Innovation than Others. *Journal of Marketing*, 72(4), 58-75.

- Rowley, J. (2002). Using case studies in research. *Management Research News*, 25(1), 16-27. doi:10.1108/01409170210782990
- Rutherford, M. & Buller, P. (2007). Searching for the Legitimacy Threshold. *Journal of Management Inquiry*, 16(1), 78-92. 10.1177/1056492606297546
- Rutherford, M., Tocher, N., Pollack, J. & Coombes, S. (2016). Proposing a Financial Legitimacy Threshold in Emerging Ventures: A Multi-Method Investigation. *Group & Organization Management*, 41(6), 751-785. 10.1177/1059601116669632
- Samoun, M-H, B., Holmås, H., Santamarta, S., Forbes, P., Clark, J. T. & Hughes, W. (March 12, 2019). Going Digital Is Hard for Oil and Gas Companies - but the Payoff Is worth It. Retrieved from: <https://www.bcg.com/publications/2019/digital-value-oil-gas.aspx>
- Scott, W. R. (1995). *Institutions and Organizations* (Foundations for organizational science). Thousand Oaks, California: Sage.
- Singh, J., Tucker, D. & House, R. (1986). Organizational Legitimacy and the Liability of Newness. *Administrative Science Quarterly*, 31(2), 171-193. 10.2307/2392787
- Startup Genome. (August 29, 2011). Startup Genome Report Extra on Premature Scaling - A deep dive into why most high growth startups fail. Retrieved from http://innovationfootprints.com/wp-content/uploads/2015/07/startup-genome-report-extra-on-premature-scaling.pdf?fbclid=IwAR1DuCMtXx3odlJgdTxl3A9gXWpKaq2ZULM6_di0ldWW1LilccihOy63DUU
- Stinchcombe, A. (1965). Organization-creating organizations. *Transaction*, 2(2), 34-35. 10.1007/BF03180801
- Su, X., Peng, H., Zhang, S. & Rong, Y. (2015). Unraveling legitimization strategies of Chinese Internet start-ups. *School of Management*, 9(2), 239-258. 10.1108/CMS-12-2014-0235
- Suchman, M. (1995). Managing legitimacy - Strategic and institutional approaches. *Academy Of Management Review*, 20(3), 571-610.
- Swidler, A. (1986). Culture in Action: Symbols and Strategies. *American Sociological Review*, 51(2), 273-286. doi:10.2307/2095521
- Taylor, T. (January 25, 2019). An Industry Rediscovered: Top 7 Oil & Gas Tech Startups to Watch in 2019. Retrieved from: <http://techgenix.com/oil-gas-tech-startups/>
- Terreberry, S. (1968). The Evolution of Organizational Environments. *Administrative Science Quarterly*, 12(4), 590-613.
- The Future Economic Studio. (June 22, 2017). Discover why your innovation strategy needs more autonomous teams. Retrieved from: <https://futureeconomystudio.com/tag/corporate-venture/>

- Timmons, J. & Bygrave, W. (1986). Venture Capital's Role in Financing Innovation for Economic Growth. *Journal of Business Venturing*, 1(2), 161.
- Tornikoski, E. T. & Newbert, S. L. (2007). Exploring the determinants of organizational emergence: A legitimacy perspective. *Journal of Business Venturing*, 22(2), 311-335. 10.1016/j.jbusvent.2005.12.003
- Turcan, R. V. (2013). International New Venture Legitimation: An Exploratory Study. *Administrative Sciences*, 3(4), 237-265. 10.3390/admsci3040237
- Turcan, R. & Fraser, N. (2016). An ethnographic study of new venture and new sector legitimation. *International Journal of Emerging Markets*, 11(1), 72-88. 10.1108/IJoEM-10-2012-0142
- Wang, T., Song, M. & Zhao, Y. L. (2014). Legitimacy and the Value of Early Customers. *Development & Management Association*, 31(5). 10.1111/jpim.12144
- Wiklund, J., Baker, T. & Shepherd D. (2010). The age-effect of financial indicators as buffers against the liability of newness. *Journal of Business Venturing*, 25(4), 423-437. 10.1016/j.jbusvent.2008.10.011
- Yang, T. & Aldrich, H. (2017). "The liability of newness" revisited: Theoretical restatement and empirical testing in emergent organizations. *Social Science Research*, 63(C), 36-53. 10.1016/j.ssresearch.2016.09.006
- Yin, R. K. (2009). *Case study research: Design and methods* (4th ed. vol. 5). Thousand Oaks, California: Sage.
- Yin, R. K. (2014). *Case study research: Design and methods* (5th ed.). Los Angeles, California: Sage.
- Zimmerman, M. & Zeitz, G. (2002). Beyond survival: Achieving new venture growth by building legitimacy. *Academy of Management. The Academy of Management Review*, 27(3), 414-431.

Appendix

Appendix A: Interview guide for case companies

The general information presented for the interviewees before the authors started recording: 5 minutes

1. Background information
 - a. Names and backgrounds
 - b. Master thesis background
 - i. The interview is conducted in conjunction with NTNU School of Entrepreneurship. We write about new ventures in the energy sector.
2. Practical information
 - a. Why this case company is of interest to the study
 - b. Who will be doing the interview and who will be observing
 - c. The authors ask for permission to record and transcribe
 - i. Why the authors need to record it and what it will be used for
 - d. Inform the interviewee that he/she can quit the interview at any given time
 - e. The interview will last approximately 60 minutes
 - f. Ask if they had any further questions

The following interview guide was used to interview nine Co-founders of the selected NTVs, and the nature of the interviews were semi-structured. The questions listed below were the basis for the interview, the authors did not always ask all of them. Additional questions were asked as a follow-up to the response of the interviewee.

Background Questions - 5 minutes

- Background: Age, position, working experience
- When did you start the new venture?
- Why did you start the new venture?
- Can you please give a short introduction to your venture?

Regulatory Legitimacy - 15 to 20 minutes

- What kind of regulations does your new venture has to follow?
- Are any of them specific to your industry, if so which and how/why?
- What are the consequences of not following these rules and regulations?
- How does the new ventures adapt to the rules and regulations?

Normative Legitimacy - 15 to 20 minutes

- How many are employed at your venture
 - How many of them are Co-founders?
- How do you and your venture recruit team members?
- How do you and your venture take care of existing employees?
- How do you and your venture build organizational culture?
- What kind of partnerships does the new venture have?
- How do you and you venture interact with investors, pilot-customers and the partners?
- How do you and your venture attempt to establish external stakeholders?
- Have you identified any industry norms, if so what are they and how do you attempt to follow them?

Cognitive Legitimacy - 15 to 20 minutes

- Does the new venture have an advisory board or mentors?
 - How was the process of recruiting them?
 - Is there a reason for you having an advisory board/mentors?
 - Why did you choose them?
- How are the advisors/mentors of help the new venture?
- Are you part of an office environment?
 - What was the reason behind choosing this environment?
- How do you spread knowledge about your product?
- How does your technology work and what value do it deliver?
- How does your technology affect the industry practises and workflows?