Master's thesis

NTNU
Norwegian University of Science and Technology
Faculty of Economics and Management
Dept. of Industrial Economics and Technology Management

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University spin-offs and corporate venture capital:

The balance of risks and resources, and its impact on university spin-offs

Master's thesis in NTNU School of Entrepreneurship
Supervisor: Puck Hegeman
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Abstract

University spin-offs (USOs) are new technology-based firms (NTBFs) initiated within an academic setting and are based on university research, resulting in a particular set of challenges. This study investigates the ability of corporate venture capital (CVC) to meet these challenges in equity investment alliances, by addressing the following three research questions: (1) How often do investment relationships between university spin-offs and corporate venture capitalists occur, and how are the investee and investor strategically linked?, (2) How is the balance of realized risks and resources in investment relationships between university spin-offs and their corporate venture capital investors?, and (3) How does the balance of realized risks and resources impact the outcome of the USOs?

To accomplish this, a qualitative multiple-case study method was adopted, combined with descriptive statistics based on the FORNY database. We made a refined version of the FORNY-database containing 371 Norwegian USOs and described the occurrence of equity investment alliances of corporate venture capital. Semi-structured interviews were conducted with the CEOs of four USOs in such alliances. A cross-case analysis followed this. A resource dependence theory framework was tailored from literature to fit our purpose and applied to the analyses and discussion. This framework is fourfold, combining the resource needs of USOs, as well as the realized resources and risks from their investors, resulting in an outcome of cooperation and competition. Special focus was given to the four critical resources identified, i.e., financing, knowledge capital, social capital, and legitimacy.

Our analysis shows that 102 of the 371 Norwegian USOs in our database experienced CVC investments (27,5 %). Interestingly, 29,0 % of the investments took place without an apparent strategic fit. Furthermore, we find that USOs generally experience a balance between risks and resources in their equity investments alliances with corporate venture capitalists (CVCs), supporting the existence of the 'double-edged sword' of corporate venture capital. The most important obtained resources were knowledge of business and technology development and access to networks. The most important resource not obtained was sufficient financing. Our findings indicate that the balance of risks and resources leads to coopetitive outcomes, i.e., mixed competitive-cooperative outcomes. Quite interestingly, however, the USOs' perceptions of the alliances were mostly positive, thus, indicating a cooperative nature. Consequently, our study indicates the balance of realized risks and resources can lead to both coopetitive and cooperative outcomes.

Sammendrag

Universitets spin-offs (USOs) er nye teknologibaserte bedrifter (NTBFs) som initieres i en akademisk setting og er basert på universitetsforskning, noe som resulterer i et bestemt sett med utfordringer. Denne studien undersøker evnen bedrifts-venturekapital (CVC) har til å møte disse utfordringene i aksjeinvestering-allianser, ved å ta tak i følgende tre forskningsspørsmål: (1) Hvor ofte oppstår investeringsforhold mellom universitets spin-offs og bedrifts-venturekapitalister, og hvordan er investoren og det finansierte selskapet strategisk knyttet?, (2) Hvordan er balansen mellom realiserte risikoer og ressurser i investeringsforhold mellom universitets spin-offs og deres bedrifts-venturekapitalister?, og (3) Hvordan påvirker balansen mellom realiserte risikoer og ressurser utfallet av slike universitets spin-offs?

For å svare på dette ble det brukt en kvalitativ multi-case metode, kombinert med beskrivende statistikk basert på FORNY-databasen. Vi lagde en raffinert versjon av FORNY-databasen som inneholder 371 norske universitets-spin-offs, og beskrev forekomsten av aksjeinvestering-allianser med bedrifts-venturekapital. Semistrukturerte intervjuer ble gjennomført med administrerende direktører i fire universitetets spin-offs i slike allianser. Dette ble fulgt av en cross-case-analyse. Et ressursavhengighets-rammeverk ble skreddersydd fra eksisterende litteratur for å passe til vårt formål, og anvendt i analyser og diskusjon. Dette rammeverket er firedelt, og kombinerer ressursbehovene til universitets spin-offs, så vel som de realiserte ressursene og risikoene fra deres investorer, noe som resulterer i et resultat av samarbeid og konkurranse. Spesielt fokus ble gitt til de fire identifiserte kritiske ressursene, dvs. finansiering, kunnskapskapital, sosial kapital og legitimitet.

Analysen vår viser at 102 av de 371 norske universitets spin-offsene i databasen opplevde bedrifts-venturekapital investeringer, hvilket tilsvarer 27,5 %. Interessant nok skjedde 29,0 % av investeringene uten en tilsynelatende strategisk passform. Videre fant vi at universitets spin-offs opplever en balanse mellom risiko og ressurser i deres aksjeinvestering-allianser med bedrifts-venturekapitalister (CVCs), noe som støtter eksistensen av det 'tveeggede sverdet' til bedrifts-venturekapital. De viktigste mottatte ressursene var kunnskap om forretnings- og teknologiutvikling, og tilgang til nettverk. Den viktigste ressursen som ikke ble mottatt, var tilstrekkelig finansiering. Våre funn indikerer at balansen mellom risiko og ressurser fører til et blandet utfall av samarbeid og konkurranse for universitets spin-offs. Det var imidlertid ganske interessant at deres egen oppfatning av alliansene stort sett var positive, noe som indikerer et utfall av samarbeid. Følgelig indikerer vår studie at balansen mellom realiserte risikoer og ressurser kan argumenteres for å føre til både utfall med samarbeid og blandede utfall av samarbeid og konkurranse.

Preface

In 2015 we both started out as mechanical engineering students, in the same class, at NTNU Trondheim, Norway. Five years and two different paths later, we have once again come together as students, now doing research within innovation and entrepreneurship. During the last year, we conducted a term paper, a literature review, and this master's thesis together.

Being students studying innovation and entrepreneurship at a technological university, we are surrounded by young, innovation-minded people every day, and through the years, we have both developed a strong interest in innovation and entrepreneurship. Today Peter is studying industrial economy and technology management, mastering within innovation and entrepreneurship, while Per Christian is enrolled at the NTNU School of Entrepreneurship. In the future, we both want to work with start-up related activities, or if we are lucky, create our own place of employment.

Both of us possess a great interest in finance in general and financing solutions for startups in particular. Hence, we find this a very interesting field to study. With this master's thesis, we want to dive deeper into this field and become experts on the risks and rewards that are realized when university spin-offs (USOs) receive investments from Corporate venture capitalists (CVCs). As this is a field where more research is warranted, we really felt we were making a valuable contribution to existing literature, which has been a great motivational factor throughout the whole working process. At the same time, diving into a previously undescribed field of research has proven challenging, but overall it has been a truly rewarding experience.

This master's thesis is produced at the NTNU School of Entrepreneurship (NSE) at NTNU in Trondheim, although the Covid-19 pandemic constrained us to conduct most of the research from separate home offices. We would like to use this opportunity to thank all our interviewees, for taking their time and sharing their exciting experiences. We want to especially thank our supervisor Puck Hegeman, for her invaluable advice and contribution to this thesis, without her, we would have never managed to write this thesis, of which we are very proud.

Oslo, 2nd of July 2020

Per Christian Tandberg Wibe Due & Peter Andreas Prydz Gørbitz

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List of abbreviations

CVC	Corporate venture capital
CVCs	Corporate venture capitalists
USO	University spin-off
USOs	University spin-offs
VC	Venture capital
IVC	Independent venture capital
IVCs	Independent venture capitalists
ROI	Return on investment
NTBF	New technology-based firm
NTBFs	New technology-based firms

Chapter 1 | Introduction

The goal of this master thesis is to investigate the realized resources and risks that occur when corporate venture capital (CVC) is invested in university spin-offs (USOs). With this study, we aim to gather insight into the combination of USOs and CVC, as there is a gap in the existing literature on the intersection of the respective research streams. Some of our research is based on a pilot study done with regards to the aforementioned goal, and a thorough literature review, both conducted in the autumn of 2019. In total, this thesis consists of six different sections: introduction, theoretical framework and literature, research methodology, findings and analyses, discussion, and conclusion (Figure 1).

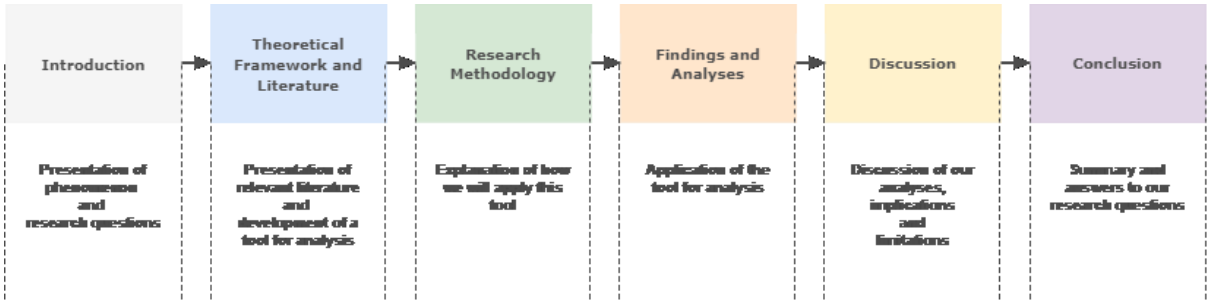

Figure 1: Structure of the thesis

1.1 Corporate Venture Capital

There exist two main types of venture capital (VC), the traditional independent venture capital (IVC) and corporate venture capital. Based on the work of Gompers and Lerner (2000), Dushnitsky and Lenox (2005a) formed the following definition of corporate venture capital: "Corporate venture capital is equity investment by incumbent firms in independent entrepreneurial ventures, i.e., relatively new, not-publicly-traded companies that are seeking capital to continue operation."

CVC differs from standard IVC funds, as they often have another set of objectives than their IVC-counterparts. Where IVC usually has a sole focus on the return on investment (ROI), CVC, in addition to the financial aspect, normally also has strategic objectives they want to fulfill on behalf of their parent company, through equity investment alliances with startups (Pahnke, Katila, & Eisenhardt, 2015; Paik & Woo, 2017; L. Wang, Zhou, An, & Yang, 2019). This often happens through the establishment of an independent CVC-unit (Napp, Minshall, & Probert, 2009). While the value-added of IVC has been studied extensively, there is significantly less research on the value-added provided by corporate venture capitalists (CVCs), (Gompers & Lerner, 2000; Maula, 2001; Maula, Autio, & Murray, 2005), even though as much as one-third of the US venture capital funding in the first quarter of 2014 was CVC (Pahnke et al., 2015).

1.2 University Spin-Offs

To understand university spin-offs, we must first understand the concept of new technology-based firms (NTBFs). NTBFs can be defined in a number of ways; however, we adopt a definition based on the works of Storey and Tether (1998), where an NTBF is defined as a newly started firm within its first five years of existence, that operates in new industries exploiting technological innovation. Storey and Tether (1998) further state; university spin-offs are a subgroup within the more encompassing term NTBFs, where what makes them different from the other NTBFs is that the USOs spin out of an academic institution (Philippe Mustar et al., 2006).

The different upbringing raises other problems for USOs than the NTBFs, not originating from an academic institution (Philippe Mustar et al., 2006). This was also underlined by (Rasmussen & Wright, 2015), who found that the transition from research to commercialization raises specific challenges for USOs. Therefore, existing knowledge on venture creation from other contexts, may have reduced transferability to the unique case of USOs.

Mathisen and Rasmussen (2019) found that a lot of different definitions of USOs exists, based on a wide array of partly implicit assumptions. They define USOs "as new ventures commercializing research results and scientific knowledge from universities and public research institutes." For the rest of this study, we will refer to NTBFs as being separate from USOs, i.e., the NTBFs who do not originate from universities or public research institutions (Figure 2).

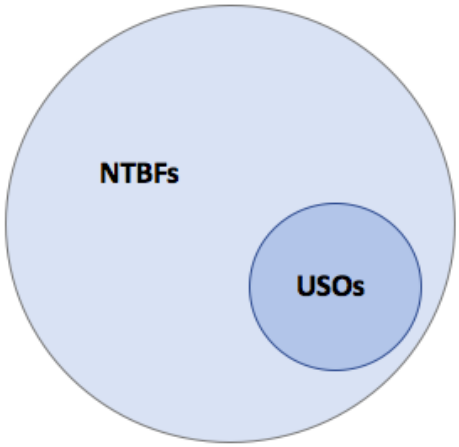

Figure 2: Illustrating how USOs are an enclosed group within NTBFs.

Markman, Siegel, and Wright (2008) state, along with Soetanto and van Geenhuizen (2015), that in recent years there has become a clear trend that research universities put more effort into technology commercialization, usually in the form of USOs. Such commercialization has gone on to become an integral part of many universities, especially in North America and Europe, following the Bayh–Dole Act of 1980 (Soetanto & van Geenhuizen, 2015; Wright, Lockett, Clarysse, & Binks, 2006).

1.3 The Strategic Alliance of the CVC-USO Dyad

Although strategic alliances can be classified in several ways, some broad, others narrow, it can generally be considered as a form of a cooperative arrangement between organizations (Das & Teng, 1998). These strategic alliances can take many different forms, depending on the chosen classification; however, as we want to look at the special case of equity investment, we have selected a narrower definition. Hence, strategic alliances are defined as only the deals where firms are, in a substantive manner, tied to each other, i.e., long-term interdependence, shared control and continued contributions by the parent firms (Das & Teng, 1998; Devlin & Bleackley, 1988; Yoshino & Rangan, 1995). This definition encompasses cooperative arrangement types like joint ventures, equity investments, joint R&D, and joint marketing (Das & Teng, 1998). Naturally, the strategic alliance in the scope of this master thesis is the CVC-USO dyad, where the form of cooperative arrangement is an equity investment.

1.4 How existing literature has not solved the problem

The existing literature indicates that both CVC and USOs are two concepts that are very relevant within the cross-section of corporate and academic entrepreneurship, as CVC, just like USOs, has experienced a steady increase in interest and magnitude in recent years (Chemmanur, Loutskina, & Tian, 2014; Paik & Woo, 2017; H. D. Park & Steensma, 2012). Still, as far as we have found through our extensive literature searches, no research has been conducted focusing on USOs as the receiving part of a CVC investment. Although it can be argued that some existing literature on CVC-investment in NTBFs has begun to cover parts of this topic, both Mustar et al. (2006) and Mathisen and Rasmussen (2019) found that USOs do indeed differ from NTBFs. For instance, Mathisen and Rasmussen (2019) state that the transition from being a research activity at a university to become a full-fledged business raises specific challenges for USOs.

Additionally, the articles covering VC investments in USOs do not cover the CVC investments, as it is shown in multiple studies that CVC differs from IVC (Chemmanur et al., 2014; Pahnke et al., 2015; L. Wang et al., 2019). Mathisen and Rasmussen (2019) also found that IVCs generally prefer to invest in NTBFs rather than USOs, partly because USOs tend to require a longer investment horizon. CVCs, however, normally allow a longer time horizon when they make investments in NTBFs (Chemmanur et al., 2014; Paik & Woo, 2017), findings that further strengthens our assumption of CVC investments in USOs as an interesting field of study. Mathisen and Rasmussen (2019) also found that USOs are well suited for studies that investigate how young ventures manage to connect with actors that can provide valuable resources for the venture, and even suggested this as a field for future research in their study from 2019: *"Due to their long and complex development paths involving many different actors, USOs constitute an excellent empirical context for studying the role of networking and alliances in new venture creation processes more generally."* Hence, we believe in having identified a gap in existing literature where further research is warranted (Table 1).

	IVC	CVC
NTBFs	Described in literature	Described in literature
USOs	Described in literature	Currently undescribed

Table 1: How existing literature cover CVC, IVC, NTBFs and USOs

Although several authors have focused on the value-adding mechanisms of CVC, Katila, Rosenberger, and Eisenhardt (2008) refer to the CVC-portfolio firm dyad as "sharks" and "swimmers", and how "sharks" incentives might lead to the misappropriation of the portfolio firms, or "swimmers" resources. CVCs can provide entrepreneurs with unique resources, i.e., financial, manufacturing, legitimacy, advice, and industry connections. However, the risk of misappropriation leads to the "sharks dilemma", where entrepreneurs need to choose between the benefits of these unique resources, and the accompanying risks, judged by their ability to protect themselves with tailored defense mechanisms (Katila et al., 2008).

USOs are usually resource-constrained and lack the entrepreneurial skills and experience necessary to predict resource needs to overcome liabilities, and ensure growth (Rasmussen, Mosey, & Wright, 2011; Rodeiro-Pazos, Fernández-López, Corsi, & Prencipe, 2018). Additionally, as they are sensitive to different market failures, especially in the early stage, they experience several hurdles to obtaining the necessary funding to sustain their growth strategies (P. Mustar, Wright, & Clarysse, 2008; Rasmussen & Wright, 2015; Rodeiro-Pazos et al., 2018; Sørheim, Widding, Oust, & Madsen, 2011). Academic entrepreneurs often tend to need critical management skills, capabilities, and industry experience, this is where access to venture capital can be pivotal for USOs, and close the so-called equity gap (Rasmussen & Sørheim, 2012; Wright et al., 2006), successfully commercialize the technology, and increase the USOs' growth (Rodeiro-Pazos et al., 2018).

1.5 Purpose

The overall purpose of this thesis is to address the previously undescribed research field, which is equity investment alliances between CVCs USOs. This is something we will investigate by looking at such strategic alliances, identifying the critical resource needs of USOs, and the main resources and risks of CVC, from existing literature, and compare this against our empirical results on such alliances. The aim is to get insight into the occurrence of this phenomenon, what risks and resources the USOs receive and experience, and how the balance of such risks and resources impacts the outcome of the USOs. To answer this, we have raised the three research questions below. Research question one will be answered quantitatively, while the rest will be answered based on our qualitative study.

1.5.1 Research Questions

RQ1: How often do investment relationships between university spin-offs and corporate venture capitalists occur, and how are the investees and investors strategically linked?
RQ2: How is the balance of realized risks and resources in investment relationships between university spin-offs and their corporate venture capital investors?
RQ3: How does the balance of realized risks and resources impact the outcome of the USOs?

1.5.2 Contribution

Independently, both CVC and USOs are covered extensively in existing literature, (Chemmanur et al., 2014; Mathisen & Rasmussen, 2019; Pahnke et al., 2015; L. Wang et al., 2019; Wright et al., 2006), but the unique and interesting case of these two concepts combined seems to remain relatively undescribed, based on what we found in our literature review. Hence, as more research is warranted, we will try to begin bridging this gap, while also adding implications to the broader NTBF literature.

First and foremost, we aim to produce a master thesis that can be valuable for USOs looking for CVC-investments, and possibly for these CVCs as well, helping them to maximize the potential of their portfolio company. As we know that there exist multiple similarities between USOs and NTBFs, we hope that our study also will be of great interest to the latter group. Additionally, we hope to create a study that will be of great interest to institutions like TTOs, who advise and work closely with both CVCs and especially USOs.

To the best of our knowledge, no existing studies have applied a resource dependence perspective on CVCs as resource providers to USOs. Nor have existing studies investigated whether the investment relationship is influenced by cooperation or competition and whether USOs actually get access to the resources they are so dependent on.

Chapter 2 | Theoretical Framework and Literature

In the following chapter, we will introduce the theoretical foundation of the analysis in this master thesis, and present the literature used to support it. We initiate this chapter by introducing the resource dependence theory concerning the resource needs of USOs. Then we proceed to outline the literature on the resource needs of USOs. Further, relevant literature found from our literature review elaborates on previous research done on the subject, as well as briefly outlining our key findings. This literature will cover the value-added contributions of CVCs, the concept of strategic fit, and the associated risks of CVC. Lastly, this will be summarized and presented in our theoretical framework.

2.1 Resource dependence theory

Organization and strategy research has investigated how firms acquire resources (Penrose, 2009; Thompson, 1967). Researchers have identified various solutions, amongst others acquiring another firm with the needed resources and acquiring the needed resources themselves through organic development. These solutions can respectively be either too expensive or too time-consuming for new firms; hence, a more accessible way for entrepreneurs to acquire resources is through inter-organizational relationships (Katila et al., 2008). However, when forming such relationships, entrepreneurs experience a fundamental tension between resource needs, and the danger of misappropriation of their own resources (Alvarez-Garrido & Dushnitsky, 2012; Colombo, Grilli, & Piva, 2006; De Clercq & Lehtonen, 2006; Diestre & Rajagopalan, 2012; Katila et al., 2008; X. Wang & Wan, 2013), as well as other risks such as impeded business development, growth and agility, and an asymmetric dependency (Clayton, Gambill, & Harned, 1999; Colombo et al., 2006; Diestre & Rajagopalan, 2012; Henderson, 2009; Paik & Woo, 2017; H. D. Park & Steensma, 2012, 2013). This tension forms an interesting predicament from a resource dependence perspective. Entrepreneur's dependence on others for acquiring the needed resources pushes them towards forming inter-organizational relationships (Emerson, 1962; Pfeffer & Salancik, 1978; Zaheer, McEvily, & Perrone, 1998), while concerns about misappropriation and other risks might push them away (Ahuja, 2000; Gulati & Singh, 1998; Katila & Mang, 2003; Katila et al., 2008).

Pfeffer and Salancik (1978) are viewed as the godfathers of resource dependence theory. They argue that firms' resource constraints create a dependence on external sources to acquire the necessary financial and physical resources, and information (Berg-Utby, Sørheim, & Widding, 2007). Pfeffer and Salancik (1978) further argue the ability to obtain and maintain these resources is the key to the survival of the organization. New ventures who do not possess, nor control the essential resources needed for survival and growth, face a great challenge in obtaining such resources (Berg-Utby et al., 2007). According to Dollinger (2008) and the resource dependence perspective, entrepreneurs take part in a process where they acquire and develop resources, and the nature of these resources widely determines the outcome of the new venture (Berg-Utby et al., 2007). This activity can be described as building 'knowledge reservoirs' (Berg-Utby et al., 2007; McGrath & Argote, 2004; Widding, 2005), which originates from resource theory, and is central to understand how entrepreneurial firms recognize and obtain resources to gain a competitive advantage (Berg-Utby et al., 2007; Chandler & Hanks, 1994; Stevenson & Gumpert, 1985).

Although the tension between cooperation and competition is often researched at tie formation (Das & Teng, 2000; Katila et al., 2008), this tension is on-going throughout the relationship (Brandenburger & Nalebuff, 2011; Santos & Eisenhardt, 2009). Whether these relationships consist of a cooperative nature, where the new firm gets access to needed resources, or a competitive nature where access is limited to non-existent, or a combination of both, referred to as *coopetition* (Brandenburger & Nalebuff, 1996), will arguably have to be investigated post-formation. Hence, the balance of resource dependency and resources provided is likely to be affected by this continued tension, and possibly entail various risks, during the relationship. Previous studies within resource dependence theory have mainly focused on two attributes of portfolio firm performance, namely social capital, and human capital, the latter being one of the main components of knowledge capital (Berg-Utby et al., 2007; Fredriksen, Olofsson, & Wahlbin, 1997; Fried & Hisrich, 1995; Gomez-Mejia, Balkin, & Welbourne, 1990; Landström, 1990; H. J. Sapienza, 1992; Sapienza, Manigart, & Vermier, 1996). Similarly, social capital and human capital are the most common theoretical perspectives used in USO development, growth, and performance research, addressing the challenges of venture creation in an academic setting, given the nature of USOs and their specific need for these resources (Mathisen & Rasmussen, 2019).

Focus on the post-investment contribution of venture capitalists is especially applicable for resource dependence theory (Berg-Utby et al., 2007; Pfeffer & Salancik, 1978). This perspective on VC research considers venture capitalists as resource providers of *smart capital*, contributing more than pure funding. Researchers often distinguish between two types of venture capitalists, namely independent venture capitalists and corporate venture capitalists. Both can be viewed as resource providers of smart capital, but they have different value-adding profiles. IVCs are generally more important contributors to business development and investor's outreach, while CVCs are usually more important contributors to technology development and especially legitimacy, although both investors can contribute in all areas (Bjørgum & Sørheim, 2015). Moreover, alliances with industry are very important for USOs to relieve some of their resource constraints and contribute other complementary assets; however, the formation and long-term consequences of such strategic alliances remain under-researched (Mathisen & Rasmussen, 2019), and as the venture's future is intrinsically tied to its industry partner, this could lead to potential conflicts. Based on the literature, we will focus our framework around four critical resources for USOs. One tangible resource; funding, and three intangible resources; social capital, knowledge capital, and legitimacy. These will be used to identify and explain the need for, and contribution of, the value-added services of CVCs to USOs.

2.2 Resource Needs of University Spin-offs

USOs are resource-constrained and need to acquire a certain set of critical resources (Rasmussen et al., 2011). A good way to acquire such resources is through inter-organizational relationships (Katila et al., 2008). Thus, it makes sense to apply a resource dependence perspective to investigate inter-organizational relationships' ability to fulfill USOs' needs. USOs, similar to other new ventures, depend on resources such as financing, physical assets, technological resources, knowledge capital, and organizational resources (Rasmussen & Wright, 2015). However, USO managers and founders' knowledge is usually more related to technology than to market and industry, possibly resulting in limiting exploration and business potential. While this technological expertise is well within reach

through their existing ties with universities, commercial expertise is often in shorter supply, hence interaction with industry is often crucial (Rasmussen & Wright, 2015).

USOs tend to have longer development paths and be more resource-dependent than other new ventures because of their needs for technological, market, and organizational development, which is not ideal for the investment objectives of IVCs. As a consequence, USOs appear as less attractive investment objectives for IVCs (Mathisen & Rasmussen, 2019; Rasmussen & Wright, 2015). However, the opposite may hold for CVCs, as they often have longer investment periods and invest for strategic reasons and could, therefore, be a more appropriate investor for USOs (Bjørgum & Sørheim, 2015; Chemmanur et al., 2014; Paik & Woo, 2017).

Previous studies of CVCs' value-added mechanisms to portfolio firms, find the majority lies within their valuable networks, and the not easily imitable, private knowledge and experience (Maula et al., 2005). This could support the appropriateness of CVC to meet the resource needs of USOs. CVCs are also found to improve portfolio firms' legitimacy towards external actors (Bjørgum & Sørheim, 2015), an important factor for new ventures, and especially important for USOs due to their novel and often unfamiliar innovations (Rasmussen & Wright, 2015). Social capital and networks are especially important for USOs, as relationships with the right actor can lead to acquiring the right resources and make them less likely to fail (Rasmussen & Wright, 2015). Further, USOs need to transform their compact academic networks towards a broader network of other stakeholders such as investors and industry actors, as these are critical determinants of USO development, growth, and performance (Mathisen & Rasmussen, 2019). Of all the needs of USOs, financing, knowledge capital, social capital, and legitimacy, are considered in the literature to be the most critical resource needs, thus, providing the focus of our framework.

The knowledge-based theory recognizes knowledge capital as the most strategically significant resource of a firm (Grant, 1996; Maula et al., 2005), and as we want to understand the nature of CVCs' support, we aim to investigate the value-added by CVC based on their knowledge. Knowledge is divided into 'information' and 'know-how', where information implies the knowledge of what something means, whilst know-how is the knowledge of how to do things (Kogut & Zander, 1992; Maula et al., 2005). Kogut and Zander (1992) further argue the main causes of sustainable competitive advantage and superior firm performance are heterogeneous knowledge bases, aiding and sustained by abilities unique between firms (Kogut & Zander, 1992; Maula et al., 2005).

The social capital theory has been used to explain the role of social capital on the creation of human capital (Coleman, 1988), but also on the economic performance of firms (Nahapiet & Ghoshal, 1998). Central to the theory is the proposition of networks of relationships being a resource in itself, providing 'the collectivity-owned capital', however, as there are numerous definitions of social capital, we chose the view of Nahapiet and Ghoshal (1998), *"the sum of the actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit."* We believe this definition is appropriate as we want to explore the different resources available to USOs through their CVCs.

Legitimacy is granted through reputation effects of a strategic alliance partner, i.e., when a passive contribution of value-added is made by the alliance partner simply by its affiliation to the new firm. In this way, the perception of the alliance partner's brand and

image offers a signaling effect on behalf of the new venture, strengthening its credibility and reputation towards other external stakeholders (Bjørgum & Sørheim, 2015). Legitimacy is key for entrepreneurial ventures when persuading new stakeholders to get involved, e.g., when trying to recruit top management, getting initial sales, attract other investors, and acquiring public market acceptance for a successful IPO (De Clercq & Lehtonen, 2006).

2.3 Value-added of Corporate Venture Capital

Maula (2001) identified three primary mechanisms through which CVC-investments add value to technology-based new firms, beyond the obvious financial benefits; resource acquisition, referring to the tangible resources the startup gets access to through the investor relationship; and knowledge acquisition, referring to the learning alliance benefits of access to the CVCs' information on salient technology, markets and competition; and lastly endorsement benefits referring to the added external legitimacy received from having reputational corporate investors (Maula, 2001). Some researchers suggest the key value-added mechanisms of CVCs' parent companies are knowledge-based learning benefits and endorsement benefits (Maula et al., 2005).

Similarly, Bjørgum and Sørheim (2015) identified four value-added contributions of investors to NTBFs in emerging industries: Business development refers to contributions regarding organizational development, business administration, and strategy; technology development referring to competencies and skills needed for quality controls, tests, and access to investors technology and physical facilities like labs, manufacturing, testing sites and equipment; investor's outreach referring to the investor's network of stakeholders, including investors, public agencies and industrial collaboration partners; lastly legitimacy referring to the reputational benefits received from partnering with an investor whose brand and image signals credibility to external stakeholders (Bjørgum & Sørheim, 2015).

Key findings from the literature review

Our literature review included some key findings that are relevant to this master's thesis. Firstly, it is evident that there exists a quite recently created body of literature on how CVC-investments affect NTBFs, as previous studies have investigated both the value-added and risks of this source of funding. Another interesting observation made through our literature review is the difference between the American and European venture capital markets, where the latter tends to be more immature (McNally, 1997). This is something that should be considered as the study takes place in Europe. We also found that most of the studies conducted within this field took place in the U.S.

2.3.1 Strategic fit and relationship

For the NTBFs to obtain maximum value through their alliances, they depend on their CVCs' incentives for providing this value. This incentive is influenced by several factors, amongst them are the strategic fit. The concept of strategic fit is used in many different forms throughout the existing literature. In this thesis, we will use strategic fit as a means for classifying investment relationships, which seems to be the most common interpretation of the concept within existing CVC-literature. Gompers and Lerner (2000) defined cases of

strategic fit, as the cases where there exists a relation between the line of business of the CVC-parent and the line of business of the portfolio firm. This relation can be direct, i.e., when both actors are operating in the same industry, or indirect, where the two parties' industries complement each other.

In general, the literature on CVC and strategic fit is positive to investments being made where such a fit is present. For instance, Maula (2001) states a strategic fit between the CVC-parent and the investee is a crucial success factor. This is supported by Gompers and Lerner (2000), who found that portfolio companies were most likely to be successful when there existed certain similarities in terms of both "knowledge fit" and strategic fit. Based on a present strategic fit, Bjørgum and Sørheim (2015) highlight the role of the CVC-investor in the relationships to portfolio firms in the following manner: *"This means that CVCs have an important role as an internal resource provider, especially when it comes to technology development, and can play a crucial role as external resource provider when there is a good 'fit' between the CVC-investor and the portfolio company."*

A good fit between the investor and investee is also discussed by Maula, Autio, and Murray (2003). They built and tested a model on how initial conditions affected the creation and leveraging of social capital in CVC-NTBF dyads. Maula et al. (2003) found that complementarities and ownership share are important aspects influencing social interaction and the subsequent knowledge acquisition of the NTBF. CVCs were found to contribute value-added benefits to NTBFs, derived from knowledge acquisition and enhanced learning possibilities (Maula et al., 2003). Additionally, Maula (2001) investigated the relationship between CVCs and their portfolio firms, from the viewpoint of the portfolio firms, with the goal of identifying the value-added by the CVCs. He found big differences in the value-added CVCs provided for their portfolio firms.

Sampson (2007) examined partner technological diversity and alliance organizational form and their impact on the innovative performance of firms. According to her, collaborative equity joint ventures are over 30 times more beneficial with a moderate technological diversity than bilateral contract collaboration, and 100 times more beneficial with high diversity (Sampson, 2007). While Dushnitsky and Shaver (2009), found the regime of intellectual property protection (IPP) affects the formation of CVC-NTBF investment relationships. Under a weak IPP regime, when both the NTBF and corporation targets the same industry, the relationship is less likely to form, however, under a strong IPP regime, industry overlap seems to increase the likelihood of an investment relationship (Dushnitsky & Shaver, 2009).

Weber and Weber (2011) found that an initial strategic fit of complementary core competencies was useful when accumulating social capital; however, this also entailed a possibly challenging dependence if one of the parties were to do a strategic reorientation. A reorientation done by the corporation is capable of substantially affecting the portfolio company, as the previously complementary competencies will instead turn social capital into social liabilities (Weber & Weber, 2011). L. Wang et al. (2019) found that technological fit between the investee company and the CVC-parent will promote the market value of the investee. Moreover, Weber and Weber (2010) also found that a good relational fit between organizations directly affects knowledge transfer, which in turn affects the organizational performance of the portfolio companies (Weber & Weber, 2010).

Another factor influencing resource-exchange is the relationship of the alliance. McNally (1995) proved that there exist differences between direct and indirect CVC. Direct CVC-financing has the potential to provide investees with both tangible and intangible non-financial value-added, but indirect CVC-financing does not usually provide the same amount of value-added (McNally, 1995). Direct CVC-financiers often have strategic intentions and maintain close contact with their investees. This is reflected in their financial and non-financial value-added, their more understanding and patient investment model, and high equity valuations (McNally, 1995). Further, McNally (1995) found that NTBFs gained non-financial value-added like market credibility, access to management and technical expertise, and marketing and distribution channels, suggesting the complementarity of CVC-investments to other more financially oriented investment types. Moreover, the same was not found to be equally true for indirect financing, as the CVC-investor's low degree of control and contact with the investee company reduced the frequency of the value-added contributions (McNally, 1995).

H. D. Park and Steensma (2012) found that CVC-funding was especially beneficial when the NTBFs needed specialized complementary assets, which we interpret as technology-related, as opposed to generic complementary assets. A close relationship between the CVC-investor and the new venture is especially beneficial to get access to these specialized complementary assets.

2.3.2 Financing

Katila et al. (2008) investigated the tension between cooperation and competition at tie-formation. They find that new firms enter relationships with CVCs when they get access to *"out-sized financial and manufacturing resources."* New firms enter these types of relationships when they can use defense mechanisms to defend themselves against misappropriation from the CVC-investor (Katila et al., 2008).

Colombo et al. (2006) aimed to highlight the obstacles and inducements NTBFs face when forming such alliances, according to firm-specific aspects and nature of the alliance. They find that exploitative commercial alliances with sponsoring firms, giving access to financial benefits, as well as specialized production, sales, and distribution services that are necessary in order to fully exploit the commercial potential of the technology, may have major positive effects on NTBF performance when the NTBF has a strong IP protection scheme (Colombo et al., 2006). Additionally, Katila et al. (2008) found that manufacturing resources are of greater importance for tie formation than marketing resources. New firms prefer these types of resources as they are expensive and slow to create, while the CVC-investor uses it to get an initial insight into the technology of the young firm.

Röhm, Köhn, Kuckertz, and Dehnen (2018) further categorized CVC into subgroups and studied the impact of CVC-type on startup valuation and confirmed that CVCs' characteristics and investment motivations affect the assigned startup valuations. CVCs with a strategic motivation were found to give lower valuations than their more analytic counterparts. However, strategically motivated CVCs are also expected to contribute with more complementary assets, capable of enabling more rapid scaling of investee firms. Hence, entrepreneurs need to evaluate the trade-offs between the unique value-added activities and the lower valuation from strategic CVCs (Röhm et al., 2018).

2.3.3 Knowledge capital

Napp et al. (2009) found two types of non-financial, strategic value-added support from CVC-investments, *company-related value*: comprising "management advice", "operational support" and "reputation", and *product-related value*: comprising "access to complementary technology", "leveraging own technology" and "access to markets". Further, *management advice* from the parent corporation can be in the form of influencing strategic implementation, assist on strategy, provide access to internal management expertise, often by serving as a sounding board (Napp et al., 2009). *Operational support* refers to help with operational planning, monitoring of performance, giving access to financial control systems, and to operational expertise (Napp et al., 2009).

Maula and Murray (2002) studied the impact of corporate venture capital on portfolio firm performance. They found that CVCs are attractive investors for NTBFs, as they can contribute intangible assets like industry experience and tangible assets like warehousing in distribution channels. Interestingly, their value-added contributions primarily come from the strategic assets they can provide to their portfolio firms, not the actual financing (Maula & Murray, 2002).

Alvarez-Garrido and Dushnitsky (2012) investigated the consequences of CVC-investments, and specifically whether strategic CVCs affect startups research productivity. According to Alvarez-Garrido and Dushnitsky (2012), CVC-funding significantly boosts publication outcomes, due to the greater incentives to advance basic research, and the parent corporations significantly increase startups' scientific discoveries by offering a large set of knowledge and resources. Additionally, these effects are strengthened by the relatedness of the parent corporation and the startup's industries because of the knowledge complementarities (Alvarez-Garrido & Dushnitsky, 2012).

Katila et al. (2008) found that access to manufacturing resources is often the most sought-after and critical resource for NTBFs. Therefore it is unsurprisingly also well-covered among researchers. Napp et al. (2009) found that CVCs aided NTBFs with technological development in two ways, namely access to complementary technology and leveraging their own technologies. *Access to complementary technology* refers to the provision of valuable support in R&D and valuable technology, *leveraging own technologies* refers to the increased use or implementation of the startup's technology by either providing access to production facilities or through implementation in the corporation's existing products (Napp et al., 2009).

The type of CVC-parent is also likely to affect the technology development of the NTBF. In order to understand CVC-activities variable performance, Zu Knyphausen-Aufseß (2005) analyzed the value-added, four types of CVCs give their investee startups, namely technology companies, non-technology companies, management consultants, and startups. He argues technology companies have considerable resources invested in R&D, giving them in-depth knowledge and expertise in the field of technology. Zu Knyphausen-Aufseß (2005) states that technology companies, therefore, are able to provide more resources for technology capability enhancement than other types of CVCs, as well as carrying out pre-clinical and clinical tests, production, and distribution. Zu Knyphausen-Aufseß (2005) also found that startup CVCs, i.e., start-ups with their own CVC-program,

can aid niche technology development in other ways than established technology companies, as they are not bound by old-fashioned technology paradigms.

2.3.4 Social capital

Weber and Weber (2011) investigated social capital and social liability emerging from network formation and evaluated their effect on inter-organizational knowledge creation and transfer. They found the CVC triad's social network underwent an especially enduring transition from the pre- to post-investment phase, resulting in new "network constellations," especially for the portfolio company (Weber & Weber, 2011). This transition resulted in deepened relationships and fulfillment of altered tasks, often causing an initially weak relational tie to turn into a strong one and increasing social capital (Weber & Weber, 2011).

More articles have touched upon the theme of social capital. According to Colombo et al. (2006), incumbent high-tech firms can use their brand, reputation, as well as other complementary specialized assets to convince other third partners to partner with them, hence further increasing the value-added assets available to NTBFs (Colombo et al., 2006). Further, Napp et al. (2009) state that *access to markets* is value-added support from CVC-investments, referring to the use of corporates existing marketing and distribution channels and access to extensive market knowledge, competition data, and research (Napp et al., 2009).

In the same avenue, De Clercq and Lehtonen (2006) identified several forms of non-financial value-added by CVC-parents, including access to distribution channels, R&D support and direct sales to the parent company, as well as their willingness to pay higher prices for equity shares (De Clercq & Lehtonen, 2006). L. Wang et al. (2019) found that CVC-parents provide complementary assets, mainly through the physical placement of technical or managerial personnel at the site, which was found to have a strong positive impact on the innovation output of the portfolio firms.

2.3.5 Legitimacy

Bjørgum and Sørheim (2015) defined the concept of legitimacy as "a passive contribution in which the perceptions of the investor's brand and image help strengthen the new venture's credibility and reputation to external stakeholders." This is a topic multiple researchers have investigated in quite similar manners.

Two of them are Maula and Murray (2002), who argue that the increased performance of CVC-backed firms might not necessarily come from material contributions, but rather the external *certification* or *signaling effect* CVCs add to their attractiveness and perceived market value. Several global fortune 500 companies also corroborate this effect, according to Maula and Murray (2002). A similar finding was done by Napp et al. (2009), who found a corresponding concept that he named *reputation*. *Reputation* can be provided by "corporate certification" and the credibility of the investing corporation, which, in turn, helps build a reliable image of the startup (Napp et al., 2009).

Following in the same avenue, Maula (2001) claims that endorsement benefits are probably the most essential value-added that entrepreneurs can obtain from corporate investors.

When start-ups are on the receiving end of an investment from an industry-leading corporation, it can improve both the visibility and credibility of the young venture, giving the rest of the world an indication that the product is indeed reliable. The endorsement benefits increase with the prominence of the investor. Hence, investor selection is very important (Maula, 2001). Additionally, Maula (2001) found that the younger the venture, the more it can possibly benefit from endorsement effects caused by prominent investors. A seemingly close relationship will also increase the legitimacy of the young venture (Maula, 2001). Further, Stuart, Hoang, and Hybels (1999) found that in addition to getting access to prominent affiliates' social capital, acquiring a prominent associate also provides young companies attention and recognition, often referred to as legitimacy. Additionally, the young company's newfound recognition may lead to acquiring other reputational exchange partners, which might create an advantageous cycle of new partner acquisition (Stuart et al., 1999).

The potential benefits and possibilities associated with legitimacy is seemingly also something that NTBFs are aware of. McNally (1997) looked at CVC in the light of closing the equity gap and inter-firm collaboration theory. He found that NTBFs search for CVC-financing due to various reasons, with one of them being that NTBFs hope that association with a big and important company will increase their own credibility. On the other hand, Tykvová and Walz (2007) found, being backed by a legitimate actor, the firm-specific volatility of the NTBF is reduced, but this value-add is not reflected in the IPO price, something that therefore causes these firms to overperform because of the valuable backing they have.

2.4 Risks of Corporate Venture Capital

Corporations do not only invest as a way to seek financial profit; in contrast to IVCs, they usually have strategic interests in new ventures (Dushnitsky & Lenox, 2005b; McNally, 1995). CVCs are not merely buying a share in the new venture, but they are exchanging their abundant resources, for more rare and promising innovations capable of accelerating their own technology development, provide a window to new technology and potential acquisitions, and even block competing innovations from entering the market (Dushnitsky & Lenox, 2005a; Katila et al., 2008; Wadhwa & Kotha, 2006). For corporations, investing in new ventures is often a complement to, if not even be a substitute for their own research and development (Mason & Rohner, 2002). Moreover, corporations are found to be more prone to forming and benefiting more from such relationships when the technology of the new venture is easily absorbable because it is closely related to its own (Gompers & Lerner, 2000), the industry has a weak patenting regime (Dushnitsky & Lenox, 2005b), and lastly when the technology is novel and significant (Katila et al., 2008; Stuart, 2000).

CVCs may, however, be less likely to be aligned with the new venture than IVCs, e.g., they sometimes do not take part in the board to represent the investment relationship, resulting in limited opportunities to align the interests of both actors. Some CVCs have expressed the reason for this being not wanting to conflict with corporate strategic interests with the fiduciary responsibilities to the new venture (Katila et al., 2008). Due to the misalignment of interests, CVCs might be less aligned with USO success than IVCs. Instead, they want to learn about the technology commercialized by the USO and may misappropriate this knowledge, thus creating a relationship plagued by competition and realized risk (Alvarez-Garrido & Dushnitsky, 2012; Colombo et al., 2006; De Clercq & Lehtonen, 2006; Diestre

& Rajagopalan, 2012; Katila et al., 2008; X. Wang & Wan, 2013). Moreover, CVCs' interest in the technology and intellectual property of new ventures for selfish gain, can be counter strategic to the new venture's interest (Doz, 1987; Katila et al., 2008; Santos & Eisenhardt, 2009). Moreover, this could be critical to new ventures, as their IP is easier for the corporation to appropriate than vice versa, while the new venture is bound and dependent on the tie until a liquidity event frees them (Katila et al., 2008). This poses an ongoing asymmetric risk to new ventures as they are reliant on their IP, but do not have the same time, money or legal resources necessary to protect them from the opportunistic behavior of CVCs, as established firms, during the relationship.

Several researchers have pointed out various risks of these kinds of investments. We will present our literature findings of this concept in the following section, and in our findings, there we will categorize them within Das and Teng (1998) two types of risks, namely *relational risk* and *performance risk*. Relational risk is about cooperative relationships, and the probability of the partner not acting in compliance with a cooperative spirit, e.g., when a partner decides to act opportunistically and thus with a competitive spirit. Performance risk, however, refers to the probability of not meeting the intended strategic goals set for the alliance, in spite of a cooperative spirit between the partners (Das & Teng, 1998). An example of the latter can be not meeting a strategic goal due to issues arising from an immature market.

Experienced risks can often be traced to either internal or external factors to the firm, i.e., sources of risks (Miller, 1992). Similarly, relational and performance risks can be traced to the internal firm to firm interaction and external firm to environment interaction, respectively (Figure 3). Hence, the two types of risk are separate, and thus, relational risk derives from damage obtained through suboptimal cooperation, while performance risk derives from failures due to firm incompetence and market uncertainty (Das & Teng, 1998). Nonetheless, sometimes performance risk may indirectly lead to relational risk, e.g., when failure to meet strategic goals leaves the investor ill-incentivized to further support the new venture, or, a high level of performance risk may cause a sense of crisis where hatchets are put aside and therefore lead to lower relational risk. Both risk types tend to be highly present in R&D alliances (Das & Teng, 1998; Osborn & Baughn, 1990). Consequently, although the two types of risks are independent and present at the same time, one might still indirectly influence the other. As we focus on the alliance between the USO and its CVC-investor, we argue only relational risks and indirectly influencing, or influenced, performance risks are relevant to the scope of our research.

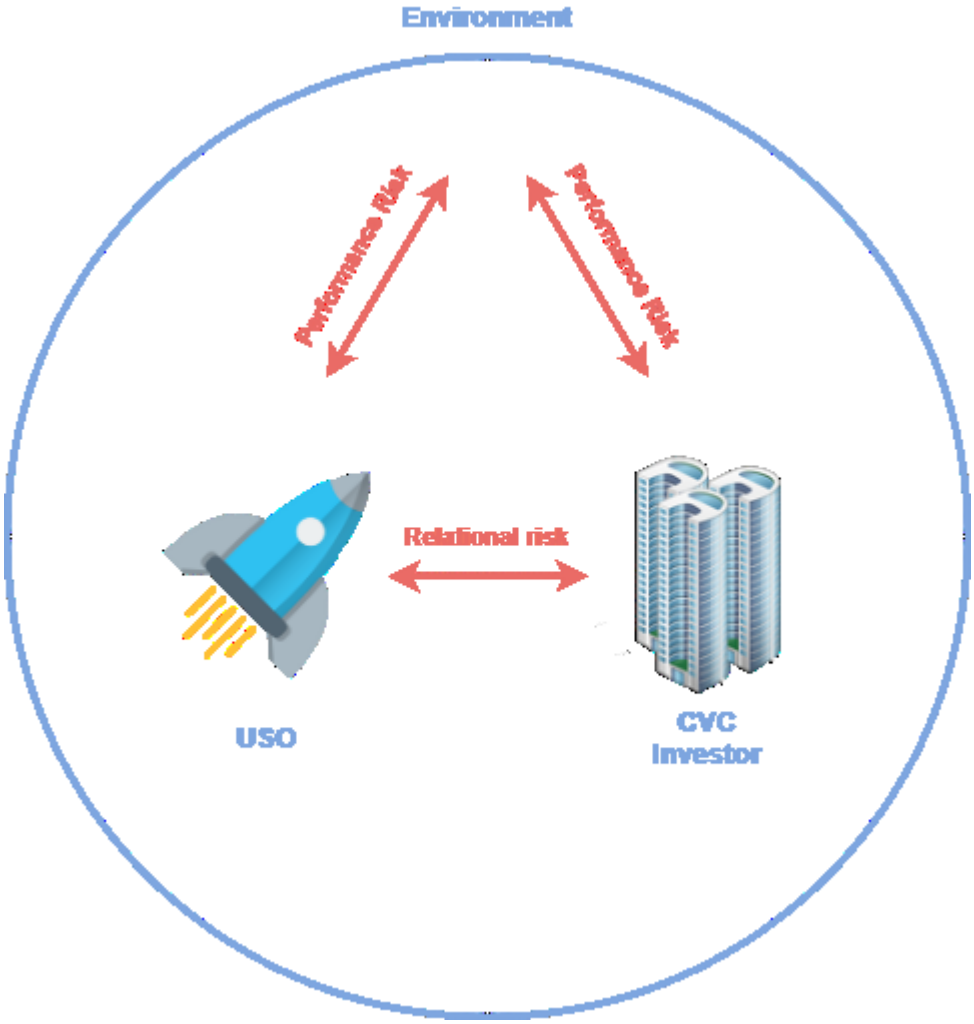

Figure 3: Illustrating the dynamics of risk exchange.

Key findings from the literature review

Some researchers mention the dilemma of choosing between the value-added benefits of CVC and the accompanying misappropriation risk (Diestre & Rajagopalan, 2012; Henderson, 2009; Katila et al., 2008; Maula, Autio, & Murray, 2009). However, what is interesting is how some researchers argue the risk of misappropriation is increased when both parties operate in the same industry (Alvarez-Garrido & Dushnitsky, 2012). We found this interesting, as the same industry operation is also likely to yield more relevant knowledge exchange for both parties.

When observing the various risks and resources of CVC-funding, it is difficult to decide the overall attractiveness of CVC. Although several researchers have identified numerous forms of value-added, how can it be worth the risks of misappropriation, negative effects on business development and growth, the loss of control and entrepreneurial agility, and not to mention the incurred dependency of the corporation being motivated and incentivized to aid the NTBF? The answer might lie in what Katila et al. (2008) refer to as the "*sharks dilemma*". As there simultaneously exists both unique value-added of CVCs

which NTBFs need, and significant risks of entering such an investment relationship, entrepreneurs need to balance out the risks with countermeasures limiting the danger, thus being able to sufficiently manage and keep the risks in check.

2.4.1 Relational and performance risks - from literature

Misappropriation

Katila et al. (2008) found that NTBFs are willing to form alliances with competitive CVCs; when the CVC-investor is in possession of important resources, the NTBF is not able to access in other ways. By conducting such a collaboration, the NTBF is exposing themselves to a number of risks, among others, is the danger of misappropriation by the CVC-investor. Colombo et al. (2006) also found alliances are prone to involve appropriability hazards, which could be destructive for the NTBF, as the main and often unique assets these firms possess is technological knowledge, the source of their competitive advantage. This reduces their potential value and inhibits future performance and the ability to attract new business partners (Diestre & Rajagopalan, 2012).

Similarly, De Clercq and Lehtonen (2006) and X. Wang and Wan (2013) identified the same potential pitfall with CVC-financing, and elaborates; the corporation might misappropriate the technology secrets and know-how of the new venture, and use this to create direct competition for the entrepreneurs. Additionally, if the corporation decides to acquire the venture, then this might entail the loss of operational control for the entrepreneurs, and consequently threaten the entrepreneurial culture (De Clercq & Lehtonen, 2006). Alvarez-Garrido and Dushnitsky (2012) acknowledge the same risk of the corporations having incentives to misappropriate the startup's technology and commercialize it themselves. They find the probability is increased by the same industry niche operation. The effects on innovation are, therefore, not unbiased of the parties' competition, also worsening the knowledge sharing dynamics (Alvarez-Garrido & Dushnitsky, 2012).

As previously mentioned, Katila et al. (2008) introduce the term *sharks dilemma*, where entrepreneurs need to choose between the unique value-added of CVC, and the accompanying risks, judged by their ability to protect themselves with tailored defense mechanisms. There exists a constant predicament between sharing sensitive and confidential information with the business units, and the startups' perceived risk of misappropriation (Henderson, 2009). In their paper, Maula et al. (2009) examine the trade-offs between social interaction with CVCs and safeguarding and the consequent effects on learning benefits and risks. They found that the difference between complementarity and relatedness should be considered by entrepreneurs, as it places great salience on trade-offs entrepreneurs need to manage to reduce incurred risks and realize potential benefits.

Furthermore, social interaction with CVCs was found to positively influence the realization of learning benefits inherent in complementary relationships. However, the lack of complementarity, i.e., substitution, was found to increase the use of safeguards, which in turn was found to negatively affect social interaction and hence, realized benefits (Maula et al., 2009). Diestre and Rajagopalan (2012) further examined how new biotechnology firms select their pharmaceutical R&D partners, based on the value-added and value-appropriation concerns Katila et al. (2008) mentions. They find, NTBFs with broad

applicability of their knowledge can experience greater risks of misappropriation when they partner with pharmaceutical companies with strong complementary skills. This possibly inhibits NTBFs with greater value-creation potential from fully exploiting their potential as the risk of misappropriation is too big for them to initiate collaboration.

A lot of relationships do not form because the corporation forces the disclosure of valuable inventions in order to invest, which the entrepreneur may be reluctant to do in fear of the more capable and inclined corporation, misappropriating the invention (Dushnitsky & Shaver, 2009). Further, this concern is either increased or decreased based on the IPP regime being weak or strong, respectively (Dushnitsky & Shaver, 2009). Dushnitsky and Lenox (2005b) argue CVCs are more likely to invest in industries where the intellectual property is weakly protected. J. H. Park and Bae (2018) further argue the parent firm of the CVC-investor's incentives to commit resources might diminish if the startup's patent stock hinders their ability to appropriate the created value.

Negative effects on business development

H. D. Park and Steensma (2013) argue, although CVCs can provide attractive resources to entrepreneurs, they still act with their own intentions, which might not always coincide with other investors' interests, nor necessarily maximize the new venture's market value. Furthermore, according to Diestre and Rajagopalan (2012), NTBFs who partner with the wrong corporations can experience collaboration risks, where the corporation might prefer to maximize learning from the NTBF, rather than actively contribute to alliance performance. H. D. Park and Steensma (2012) argues new ventures that only need access to generic complementary assets will have very limited benefits from forming equity ties with corporate investors. Such a tie formation may be a drawback for new ventures, as they potentially lose access to what would have been good resources for them on the open market. Further, sponsoring CVCs may be counterproductive to new alliance formation, as they might demand exclusivity rights or be pure substitutes to other alliance partners' specialized commercial assets. Or, they might increase the appropriability hazards perceived by other alliance partners (Colombo et al., 2006). Another way CVC might negatively affect business development is like De Clercq and Lehtonen (2006) identified, namely how the CVC-investor might give a low valuation of the startup in the seed financing stage, as the entrepreneur does not have much of a track record.

Paik and Woo (2017) investigated the effects of CVC ownership, founder incumbency, and CVC investor-founder interaction on VC-financed, technology-based entrepreneurial firms. They found a problem for NTBFs might be that CVCs are inducing the young venture to overinvest in R&D activities, which are valuable for the CVC-parent, even if the young venture ultimately fails. This is described as a *"fattening the cow"* problem by (Paik & Woo, 2017). They also found that overinvesting in technology is a common mistake done by technology-driven founders, instead of focusing on aspects like commercialization and professionalism, that would be more profitable for the venture. According to Clayton et al. (1999), excessive funding might lead to business development being kept in-house, hence missing out on several opportunities for early validation and possibly more economical external solutions and suppliers. Henderson (2009) found potential pitfalls and obstacles to CVC-programs. Firstly, the incompatibility when mixing objectives from different CVC-models is often not managed properly, which might lead to considerable managerial discontent and problems for the startup (Henderson, 2009). Secondly, business unit managers lack incentives to create fruitful relationships with the portfolio firms, as they do

not share in the potential profits like CVC unit-managers. Consequently, the portfolio firms are trapped in the middle of a tenuous relationship between the two unit managers (Henderson, 2009).

Dependency, vulnerability to change and unrealistic promises

Weber and Weber (2011) researched how an initial strategic fit of complementary core competencies entailed a possible dependence if one party were to do a strategic reorientation. A reorientation done by the corporation is capable of substantially affecting the portfolio company, as its no longer complementary competencies turn social capital into social liabilities (Weber & Weber, 2011). Stuart et al. (1999) point to how the contractual terms of alliances between a young biotech company and a larger incumbent may allow the corporation to abruptly, and without cause, terminate an agreement; hence, possible advantages from the alliance like milestones or royalties may not be guaranteed. Therefore, even though alliances can include access to substantial resources, the future financial risk of surrendering downstream positions and commercialization rights, more often than not, outweighs the current financial benefits. The exception being endorsement benefits from a distinguished strategic partner, which is undoubtedly positive, as the young company has survived their thorough due diligence. according to (Stuart et al., 1999).

This change in the nature of the alliance does not always happen abruptly, however. The restlessness and impatience of top corporate officers might lead to a fading commitment to the program, and worst case, shut down after only a couple of years, leaving the startup high and dry. Additionally, if the business units were to change their strategy, this would disrupt and negatively affect the startups' fit within the corporate environment (Henderson, 2009). Another risk of CVCs according to Zu Knyphausen-Aufseß (2005) is the failure to provide one of the most important forms of value-added, namely CVCs' social network, hence giving entrepreneurs an unrealistic expectation of getting access to these resources, while in reality, they are not able to deliver them due to a lack of incentives to collaborate. Moreover, corporations' capabilities are not easily transferred to startups, especially for technology, where this is done through a complex interactive learning process. It is also considerably easier for the incumbent to appropriate the startup's technology than for the startup to imitate the incumbent's organizational resources and capabilities (Zu Knyphausen-Aufseß, 2005).

Effects limiting growth

Clayton et al. (1999) discuss large corporation's "curse" of investing too much capital when trying to develop new businesses, and consequently, how they finance new ventures too generously. Although this can be advantageous when aiming to strengthen the core business in familiar and related markets, the opposite may be true in new business investments (Clayton et al., 1999). Firstly, an abundance of funding undermines the startups' necessary discipline to grow, which can lead to fatal mistakes as the managers might expand the product range too fast, spend too much on infrastructure and delay market introduction too long (Clayton et al., 1999). Instead, Clayton et al. (1999) argue corporations should ration their funding and focus on exploiting other resources like their network of potential business partners, brand marketing, and distribution channels. LiPuma (2006) investigated CVC's effect on portfolio firms' internationalization and found the involvement of CVCs may actually limit the international expansion of portfolio firms, potentially to the extent of being harmful to growth and success.

Controlling, relational misfit and impeded agility

One risk NTBFs can face when acquiring CVC is the risk of giving up control. De Clercq and Lehtonen (2006) discussed some key issues entrepreneurs need to be wary of when dealing with different VC types in different investment stages. One issue is the time-consuming process of finding, negotiating, and closing new investment deals, and the subsequent reporting and governance requirements that follow. Especially in the startup financing, and expansion financing stage, Clayton et al. (1999) argue CVCs might even take control of the venture's strategy. Later, Sampson (2007) identified how hierarchical organization might increase information flow between CVCs and portfolio firms, which also add transaction costs resulting in slower responsiveness and decision making. The latter potentially being a higher cost than benefit. According to Clayton et al. (1999) corporations who insist on involving themselves in everyday decisions and judge the venture's financial performance as part of the core business, not only impedes the agility of the ventures but might also drive the entrepreneurs out of the venture and kill it before having a chance of success (Clayton et al., 1999). Startup agility may be further decreased by an abundance of capital. As Clayton et al. (1999) argue, this might encourage acquiring excessive staff and facilities, which might incur a false comfort and impede the critical agility of startups.

Transaction costs are also increased by having too technologically diverse partners. Sampson (2007) argues that too diverse partners experience greater difficulties in transferring knowledge, due to a lack of knowledge overlap on how to exploit resources and knowledge. Hence, moderate technological diversity increases the ability to fully realize the collaborative benefits (Sampson, 2007). Further, Weber and Weber (2010) concludes portfolio companies' most important technology, and corporations' extensive suite of value-added resources, are not valuable and unlikely to improve innovation if they are not able to explore and exploit the complementary knowledge due to a relational misfit. Zu Knyphausen-Aufseß (2005) elaborates on this and argues technology company CVCs can inhibit further development of startups' technology if they perceive the technology as having a "competence destroying character".

2.5 Theoretic framework summarized

Based on the aforementioned theory, we have shaped a theoretical framework for our master's thesis, as can be seen in Figure 4 below. Previously, we presented both the resource needs of USOs and the value-added contributions of CVCs, as well as the associated risks of such investment relationships. We identified financing, knowledge capital, social capital, and legitimacy, accessible through the equity investment alliance, as the most critical resources for USOs. These are resource needs well-suited for the value-added contributions of CVCs, according to existing literature. We argue the true nature of the strategic alliance, whether it is a relationship influenced by cooperation, competition, or coopetition, shows only in a post-investment phase. This should result in an outcome for the USO influenced by (a) Realized resources - received funding, knowledge capital, social capital, legitimacy, and (b) Realized risks - experienced relational risk and performance risk.

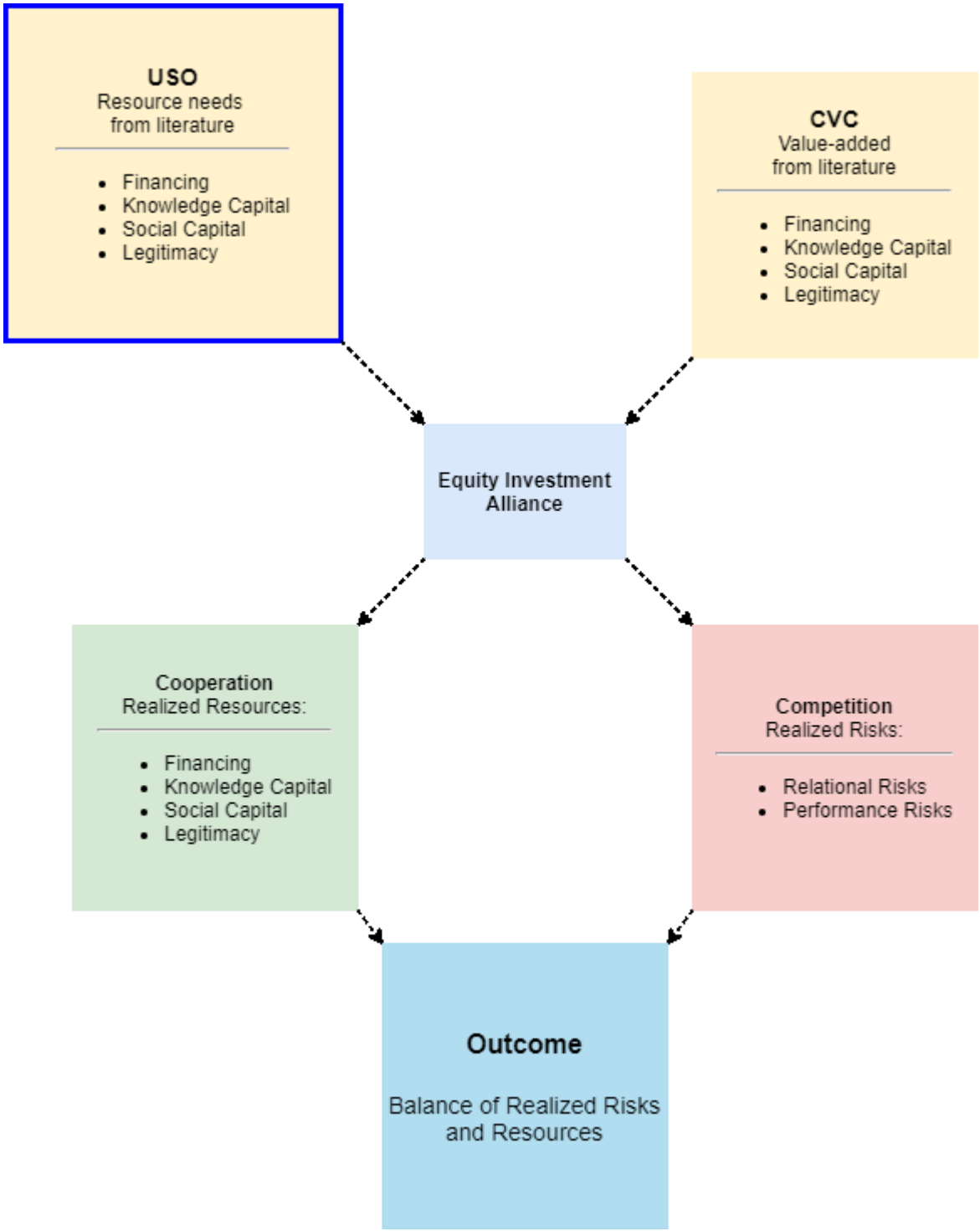

Figure 4: Showing our theoretic framework summarized in a model of the alliance seen from the USO's perspective

Chapter 3 | Research Methodology

In this master thesis, we have adopted a qualitative research methodology, while we also provide descriptive statistics prior to our qualitative findings. The latter process is done in accordance with our RQ1, to see how often CVC-investments in USOs actually happen and have a better idea of the type of relationships that are formed. In this chapter, we introduce and go through the methods used for both descriptive statistics and qualitative research. This includes topics such as research design, data collection, and data analysis. Drawing on our research questions, presented in section 1.6, the part of the descriptive statistics will mostly be related to RQ1: *How often do investment relationships between university spin-offs and corporate venture capitalists occur, and how are the investees and investors strategically linked?* On the other hand, the qualitative part is more related to our second and third research questions; RQ2: *How is the balance of realized risks and resources in an investment relationship between a university spin-off and its corporate venture capital investor?,* and RQ3: *How does the balance of realized risks and resources impact the outcome of the USOs?* Where all these questions aim to aid our overall purpose of addressing the previously undescribed research field, which is equity investment alliances between CVCs and USOs. At the end of this section, we also provide some brief reflections with regards to our research methods, including how the COVID-19 pandemic affected our research.

3.1 Descriptive statistics part

Our descriptive statistics part mainly concerns the refinement of a database called FORNY, which we got access to through our supervisor. Then we used our refined database, of which we will describe the refinement process shortly, to extract statistical data to be used in our thesis. In this regard, it should be noted that we had to sign an NDA to get access to this database. Hence, the database is not publicly available.

The FORNY database contains data about 371 Norwegian USOs. It was created as a part of the FORNY program, a program that aims to help research-based Norwegian firms in the commercializing process (Fosse, 2020). The data in the database has been compiled by reading the annual reports of the companies available through brreg.no, supplied with secondary information from TTOs, media archives, websites, and other sources.

3.1.1 Refinement of the database - Phase 1

As the FORNY database consists of all USOs in Norway between 1998 and 2012, we want to identify how many of these USOs received CVC-investments, to be able to answer our first research question. Therefore, we had to refine the FORNY database to a version consisting only of the USOs that received investments of CVC, while we also wanted to add relevant information such as the outcome of the USO, and the industry of both the USO and their investor. We also added a column of the number of years the various investments lasted - according to the FORNY database.

The first phase of our database refinement consisted of picking out the USOs in the FORNY database that received funding from what was denoted as CVC in the database. After finishing this process, we had become familiar with the database and observed that there

existed a lot of other entries, in addition to the ones already classified as CVC, that did indeed seem like a form of CVC-investment in USOs. As a result of this observation, we reached out to Marius Tuft Mathisen, who was one of the main creators of the FORNY database. He agreed to our hypothesis and said that we should also consider the investments from companies classified as; *affiliated companies, other public companies, other public companies (large), and foreign companies.* After investigating a number of these cases, we found it reasonable to include the USOs that experienced such investments as well. This approach is aligned with our previously introduced definition of CVC by Dushnitsky and Lenox (2005a), which we adopted for this study: *"Corporate venture capital is equity investment by incumbent firms in independent entrepreneurial ventures, i.e., relatively new, not-publicly-traded companies that are seeking capital to continue operation."* Napp et al. (2009) stated that CVC-investments often happens through the establishment of an independent CVC-unit, but it is not a requirement for an investment to be classified as CVC.

3.1.2 Refinement of the database - Phase 2

After identifying USOs in accordance with what was described in the previous chapter, we defined some criteria for the investments, if they were to be kept in our refined database. After discussing with our supervisor, we chose to exclude investments made by holding companies, private persons, banks, and investments below 5.0 percent. For the latter criteria, it would be enough that the investment was 5.0 percent, or higher, at either the beginning or end of the investment period. The reason for putting up these criteria was that we wanted to establish a database consisting only of the USOs that have actually had the experience of dealing with real CVC-investments. We believe that firms with ownership of less than five percent will likely not invest much of their time and competence to aid the progress of the USOs, as their incentives are weak due to their small degree of monetary ownership. Further, private persons, holding companies and banks, will most of the time use these investments simply as a place to put their capital, rather than actively aiding the development of the companies where they have a shareholder post.

Through this selection process, we ended up with 102 USOs that received investments from one or more industrial investors. More on this will follow later in the method section.

3.1.3 Data collection

Collecting data for the refinement of our database was a process consisting of multiple steps. Firstly, we used the information already present in the database, such as organization number, investor, investor type, investment size, and investment time frame. To make it easy to conduct future searches in the original database, we also preserved the coded identification number from the FORNY database, for example, 00kognita.

From there on, we had to supply additional information manually from other sources, first and foremost, to find the outcome or current state of the USOs. This was done to identify who was likely to be good interview objects for our qualitative study. For this process, we used a combination of proff.no, the Brønnøysundregister (brreg.no), and regnskapstall.no, along with media archives, web pages, and other secondary sources. The Brønnøysundregister was also used to find the names of the companies from their organization number, found in the FORNY database. One aspect worth mentioning here is

that it occurred situations where the organization number was applied to another firm than the one in our database. This was a result of the USO folding many years ago, and the organization number had therefore become available again. In these cases, we had to supply the information from the Brønnøysundregister with additional information from regnskapstall.no. We also used various combinations of these above-mentioned sources to determine the core business of both the USOs and the investors, often aided by simply searching at Google. This was done to determine if it existed a strategic fit between the CVC-investor and the USO, or if such a fit was non-existent. The first concept is described in our theoretical chapter, while the latter classification was introduced by us, to collect those who did not have any evident strategic fit in their USO-CVC relationship. At this point, we managed to refine the database to a version in which we had all the necessary data to do the descriptive statistics we wanted, while also providing valuable information for our qualitative analysis.

3.1.4 Data analysis

Through the data analysis, in the part of the descriptive statistics of our thesis, we aim to answer the three questions, A B and C, that can be found below. With these three questions, we strive to answer our first research question (RQ 1): "How often do investment relationships between university spin-offs and corporate venture capitalists occur, and how are the investees and investors strategically linked?". With the first question, we look at the number of USOs that received CVC-investments, compared to the total amount of USOs present in the FORNY-database. With the second question, we want to find out how the Norwegian CVC-market is composed, with regards to independent CVC-units. Ultimately, with question C, we aim to identify the occurrence of a strategic fit between the investors and investees.

A. What is the percentage of Norwegian USOs in the original database that received CVC-funding, and how does this compare to international findings?
B. Among the investments found by A, how many are conducted through CVC-units that are decoupled from their parent company (i.e. independent CVC-units)?
C. Does there exist a strategic fit between the investor and the investee? Or is such a strategic link non-existent?

For question A the analysis will only consist of counting the USOs that received CVC-funding, dividing them with the total number of USOs in the database when we want to find the percentage. Here we will have to eliminate the multiple entries of the USOs that have experienced more than one investment in the database while also following the selection criteria that we proposed in "Refinement of the database - Phase 2". Question B will be closely related to question A, as we will observe which of the investments identified by question A that happened through independent CVC-units. This is also denoted in the database; hence it is a very simple counting process.

For question C, we have previously collected data about strategic fit, or its non-existence, between the USO and its CVC-investor. In the analysis of these numbers, we will see if we can extract any implications, or at least identify topics for discussion later in this study. As we are the first researchers in Norway to investigate this topic, it is important to point out that we do not want to conclude, but rather start to open up this field of research.

3.2 Qualitative part

In this section, we will describe the qualitative research methodology we have used for our master thesis, while the purpose of the study remains the same as described in chapter 1.

3.2.1 Research design

The limited amount of existing research about the CVC-investments in USOs points us towards conducting a qualitative study. Additionally, such an approach makes it easier to get a grip on subjective and individual experiences and social processes in the firm (Flick, 2015), which makes this method best suited to answer our RQ 2. Here, the case study presented itself as a superior option. Such case studies can be a profitable way to conduct qualitative studies, as it enables the researcher to get a grip on the less explicit types of information that can occur (Yin, 2009).

Selection of interviewees

Eisenhardt (1989) points at case selection as an important part of theory building. As previously mentioned, we have used the FORNY database to identify receivers of CVC-investment from independent CVC-units among Norwegian USOs. This amounted to a total of 28 USOs. These USOs are a subgroup of the total of 102 USOs we found that experienced CVC-investments. What makes these 28 USOs stand out is that they all received investments from CVC-units that were separated from their mother company in an independent unit.

From there, we went through these 28 USOs in a very detailed manner, to see how they are doing today, who is involved, and so on. Initially, we sought to interview those of the 28 USOs that were still operative in 2020, as we deemed it easier to get in touch with these firms. This proved to be an inaccurate assumption, as some of the firms that were still alive had very little, or zero, activity within the firm, while others, which closed down their company, seemed to be able to provide us the necessary information. Therefore, we did widen our scope to include both USOs that went bankrupt or closed down, and those that achieved a successful merger or exit. In retrospect, this was probably beneficial for our thesis, as we avoided potential bias by looking at only one outcome of CVC-investment in USOs. Among the USOs, we ended up interviewing one who had experienced a big exit, and one is still operating independently, while two shut down some years ago because they did not manage to deliver the product they wanted to. Here it is important to point out that neither of the latter two went bankrupt, but rather made the conscious choice of closing down before things had become too complicated. To get in touch with the USOs, we initially sent out an email requesting an interview. As this provided zero responses, we had to change our approach, and instead opted for telephone calls, which proved to be significantly more effective. More information about the contact with the interviewees will follow in section 3.2.2, while a presentation of the interviewed USOs will be given below.

USO A:

This USO operated within a highly technological industry with what was, at the time, a very advanced product. The market they tried to enter was young and immature, with only a few other players, who did not possess as advanced technology as USO A. Parts of their product was also based on highly advanced, but immature, technology, which later became

cheaper and better, and knowledge has become more available. The team consisted of researchers, where some had previous experiences from working within the startup ecosystem, although our interpretation is that they had not actually taken part in the day-to-day operations in an actual startup before. The CEO, whom we interviewed, had many years of experience within research, and research-based business development, in big international companies. This person did also have some direct startup-experience, from being a board member in a number of startups in the 1990s.

Industry	Biotechnology
Starting year	2005
Number of CVCs	2
Investor industry CVC1	Biotechnology
Strategic fit CVC1	Yes
Size of investment CVC1	28,5 % (start) - 31,3 % (end)
Length of investment CVC1	7 years
Investor industry CVC2	Biotechnology
Strategic fit CVC2	Yes
Size of investment CVC2	24,0 %
Length of investment CVC2	1 year
Other investors	The associated TTO was the biggest owner throughout the USO's lifetime, with CVC1 being the second biggest investor, since they made their investment in the company. The USO also experienced investments from a venture capital firm in its early days, while the CEO has been a relatively big stakeholder from the founding of the company.
Outcome of USO	Discontinued in 2014 by mutual consent between USO and investors, as they were not able to successfully commercialize the technology.
Role of interviewee	CEO

Table 2: Case description of USO A

USO B:

USO B has been working with a high-technological product since it began back in 2005. They entered a new market, which they basically created themselves, trying to disrupt an area that had seen very limited innovation for the past 60 years. Therefore, it is hardly surprising that their market was and still is quite immature. This, for instance, caused them

to be reliant on a few other actors for their technology development. We have limited information on the startup experience of the founding team, at the time of the CVC-investments we investigate, but their current team is composed mostly of people with good industrial experience, but limited startup experience. This is also true for the CEO we interviewed, who has multiple relevant experiences from the same industry but did seemingly not possess prior, relevant, startup experience.

Industry	Electronics
Starting year	2005
Number of CVCs	2
Investor industry CVC1	Electronics
Strategic fit CVC1	Yes
Size of investment CVC1	26,9 % (start) - 34,5 % (most recent value)
Length of investment CVC1	10 years (ongoing)
Investor industry CVC2	Oil & Gas
Strategic fit CVC2	Non-existent
Size of investment CVC2	18,7 % (start) - 17,1 % (most recent value)
Length of investment CVC2	10 years (ongoing)
Other investors	Through their first years of existence, the shareholders were a TTO and an IVC-investor. This TTO has kept significant ownership throughout the whole period, while the IVC has been replaced by institutional seed capital, a different institutional venture capital firm, and CVC. In the most recent years of our database, the two CVCs, described above by us, have been the biggest owners.
Outcome of USO	Operating in 2020 as an independent company, but still a relatively small company of around 10 employees.
Role of interviewee	CEO

Table 3: Case description of USO B

USO C:

The market USO C entered, did exist prior to the USO, albeit in other forms. Where the service USO C offered was previously built into existing products, they managed to show that their independent product was a much better innovation and a necessity within their industry. Hence, their market was ready, and they managed to get a sort of first-mover advantage by combining existing solutions in the market, into a better one, with broader applications. The original team consisted mostly of highly qualified researchers, with what

we find to be limited startup experience. The interviewed CEO came in some years after the company was founded, with past business development experience within the same industry. The number of employees in the USO quickly increased, and when the CVCs successfully exited in 2014, they had around 80 employees.

Industry	Marine technology
Starting year	2002
Number of CVCs	2
Investor industry CVC1	Oil & Gas
Strategic fit CVC1	Yes
Size of investment CVC1	37,0 % (start) - 39,2 % (end)
Length of investment CVC1	9 years (successful exit)
Investor industry CVC2	Shipping
Strategic fit CVC2	Yes
Size of investment CVC2	16,0 % (start) - 14,8 % (end)
Length of investment CVC2	7 years (successful exit)
Other investors during CVC-investments	In their first two years, the owners were only the four researchers that founded the company, plus two persons who aided the USO at a very early stage. When the two CVCs entered, in 2005 and 2008, the aforementioned six persons kept some shares, but their ownership percentage was naturally reduced in both financing rounds.
Outcome of USO	The USO experienced a highly successful exit to a big, reputable actor within the industry in 2014.
Role of interviewee	CEO

Table 4: Case description of USO C

USO D:

USO D operated in a new market, which they basically created themselves. With groundbreaking technology, they had no existing suppliers or markets to rely on; hence they had to create everything themselves. The team was mostly composed of researchers, with great competency within the given technology, but limitations with regards to industry expertise, marketing, and business development. Additionally, they also got some help from a few serial entrepreneurs, brought in as surrogate entrepreneurs. The interviewed, previous CEO of the USO, had a few years of experience from working at a TTO at one of Norway's leading universities. Through this work, the person worked with several USOs,

although not as a member of the entrepreneurial team. Even though the team consisted of multiple highly skilled researchers, the sheer complexity of the technology led to several complications for the USO.

Industry	Biotechnology
Starting year	2008
Number of CVCs	2
Investor industry CVC1	Energy production
Strategic fit CVC1	No
Size of investment CVC1	20,0 % (start) - 23,5 % (end)
Length of investment CVC1	5 years
Investor industry CVC2	Renovation
Strategic fit CVC2	Yes
Size of investment CVC2	10,0 % (start) - 11,8 % (end)
Length of investment CVC2	5 years
Other investors during CVC-investment	Initially, the shares were divided between the associated TTO and the founders of the USO. These shareholders went on to reduce their ownership, to give place to institutional seed capital, institutional venture capital, and the two CVCs. CVC1 was their biggest owner, along with the IVC investor, with the two possessing an equal number of shares.
Outcome of USO	Discontinued in 2014
Role of interviewee	CEO

Table 5: Case description of USO D

3.2.2 Data collection

We conducted our case study interviews on an individual level with the selected interview-objects. The interviews were done in a semi-structural way, to make sure we did not narrow down our scope too much. With this semi-structural approach, the interview objects get the chance to direct the interview to possibly new directions and depth, and can also reveal new information (Flick, 2015). Before conducting the interviews, we established a basic outline for the interviews that we would bring to the sessions, based on the research questions we proposed in chapter one of this study. This outline was made to help us get efficient progress in the interview-settings, while at the same time ensuring that we

covered the relevant topics. From the aforementioned interview guide, these were some of the most important topics that we wanted to cover:

- What kind of resources, in addition to financial resources, did they get access to through the CVC-investment?
- Were they aware of any potential risks from forming the partnership prior to the investment being made?
- Overall, was the relationship mostly positive or mostly negative?

Initial contact with the interviewees happened through telephone calls, where we would determine if the person possessed the right knowledge to be a good interview object. Then we proceeded by sending an informational letter to the participants through email, where they could read general information about the master thesis, i.e., purpose, etc., while it also included details about how their privacy would be handled. This informational letter can be found in the appendices at the end of this study.

During the interviews, we used audio-recording with our mobile devices, which enabled us to participate more actively in the conversation than if we made all our notes directly on paper. Still, we also both brought along a notebook to be able to capture things that were not necessarily recorded on tape. With this combination, we could build a potentially beneficial overlap connecting data from both the transcriptions and our own analysis during the interview (Eisenhardt, 1989). Given that all our interview-objects were Norwegian, we made a conscious choice of conducting the interviews in Norwegian, to allow them to express themselves as fluently as possible in what was their mother tongue. As previously mentioned, all the interviews will be audio-recorded. Then we would go on to transcribe them in Norwegian, using the transcription program oTranscribe, before eventually translating to English for use in this study. All quotes that can be read later in this study are therefore translated from Norwegian to English.

3.2.3 Data analysis

The data was analyzed by using our selected framework based on the resource dependence theory. The resource dependence perspective illuminates the preconditions of alliance formation and the ongoing tension between cooperation and competition for both parties. As the USO is arguably the one taking the greater risk in such alliances, it will be applied to the USO's perspective. Resource dependence theory has been used to effectively analyze the outcome of strategic alliances (Berg-Utby et al., 2007), as it allows focus on the expectations and post-investment perceptions of USOs seeking value-added assets from CVCs. This leads to an outcome balanced by realized resources and risks. Consequently, a model explaining the equity investment alliance from the USO's perspective was assembled, illustrated in
Figure 4 (chapter 2), which will be used to analyze the data. The model will be used to identify the resource needs of USOs, the resources provided, and risks experienced from their relationship with CVCs, and categorize them within the selected framework. These components will be used as metrics to describe the outcome and provide a basis for reasoning and reflection on the balance of the outcome.

3.3 Reflection on method

Before finishing this chapter, we find it appropriate to reflect on our research method, especially as Yin (2009) states that it exists many possible limitations when one conducts a case study for research purposes. In chapter five, we will talk more about the general limitations of our study, while in this part, we will focus on the limitations associated with our research method. We will start this section out by conducting a structured reflection in accordance with the four criteria for qualitative research proposed by Lincoln and Guba (1985); credibility, dependability, transferability, and confirmability. Then we will proceed to more open reflection, where we will discuss various factors that might affect our research.

Credibility

Credibility describes the correspondence between the views of the interviewees, and the researchers' representation of the same topics (Halldórsson & Aastrup, 2003). Misunderstandings of the topic at hand might occur during interview sessions, or the researcher and the respondent might interpret various terms used in the interview-setting differently. In addition to this, asking leading questions might provoke another response than if the questions were neutral.

To increase the credibility of our study, we sent the transcribed interviews back to the respondents for verification. In such a situation, it is important to bear in mind that the respondents might alter their opinions retrospectively, but this did not happen with any of our conducted interviews. Further, the credibility is also increased when one conducts a multiple case study (Eisenhardt, 1989), as we have done in this master thesis.

Transferability

The concept of transferability concerns how the findings from a study can be generalized across different contexts. Still, Halldórsson and Aastrup (2003) state that true generalization is impossible. Hence, the transferability will always depend on the context and the cross-contextual understanding of those who try to conduct such transfers. This also implies that the degree of transferability between two different contexts is dependent on the similarities between them. For instance, our research is relatively transferable to NTBFs, as NTBFs and USOs have many similarities. This is something we will describe further when we discuss the implications of our results in chapter five.

To make the transferability of our study as good as possible, we have tried to give thorough descriptions of the context we operate in so that the reader can get a straightforward understanding, and possibly find similarities with other contexts.

Dependability

This criteria refers to the consistency of the findings in the study and to which degree another group of researchers could repeat the same process and get identical results (Halldórsson & Aastrup, 2003). To increase the dependability of our study as much as possible, we have thoroughly described our research method earlier in this chapter. We argue this lays a good foundation for conducting an identical research project, although it would require the researcher(s) to have access to the FORNY-database.

To provide consistent findings, we tried to conduct the interviews in a similar matter by following the same outline for each interview.

Confirmability

Confirmability is about the objectivity of the conducted study. This implies that the findings should be an actual representation of the study's results, not to be affected by the personal biases of the researchers (Halldórsson & Aastrup, 2003). In order to address this challenge in the best possible manner, we have tried to base all conclusions and proposals on the results of the interviews. Still, there will always be some degree of subjectivity in social science research.

The authors of this paper hold no personal stake in neither USOs nor CVCs. Still, as USOs were the ones we interviewed, it might have given a slight bias towards their perspective.

Other factors affecting our research method

First of all, we believe the age of the original FORNY-database could be somewhat problematic. As this database ended in 2012, all of its data is already eight years or older. This might not be of significant importance, but as this is a field that is developing quickly, newer data could possibly provide different results, thus, somewhat limiting the reliability of our study.

A potential source for bias could be the fact that we only interviewed the CEOs of the different firms. On the one hand, we found this to be positive, as these are the ones who probably possess the most accurate information on every aspect of the USO. On the other hand, we might have received different answers if we interviewed, for instance, only CFOs or CTOs. Moreover, we find the fact that we spoke to USOs with different outcomes to be a positive thing, as this likely helped us reduce the bias in this respect. Out of 4 interviewees, one was a woman, hence representing 25 %. This is not too far away from the average number of female entrepreneurs in Norway, found to be 30 percent by Innovation Norway (NTB, 2019).

Although our descriptive statistics do not meet the reliability of a thorough quantitative analysis, we believe it has substantial value, as no such research on CVC-investments in USOs seems to have previously been done. More about this will follow in the later sections. Further, we argue classifying the various investment relationships in terms of strategic fit is a process that would be hard to identically replicate, as we potentially interpret the information we consume in different ways, and possibly discover various contextual information, upon which we make our implications.

Another factor outside of our control was the COVID-19 pandemic that hit Norway, and the rest of the world, in the spring of 2020. Early reports by Dagenborg (2020), indicated that the field of entrepreneurship was one of the sectors that were affected most severely by the repercussions caused by COVID-19. Further, the pandemic hit at the same time that we started to search for interviewees, and the uncertainty of the situation created additional work for a lot of our possible interviewees. This caused some of the interviews we had already agreed upon to be postponed or canceled, as the entrepreneurs understandably wanted to use all their available time to try to save their companies. When searching for new interviewees, the situation caused by COVID-19 was constantly making things more difficult than what we believe to be *the norm*. For instance, it was far easier to reserve people for interviews when we conducted our term paper in the autumn of 2019. Our initial plan also included conducting the interviews face-to-face, something that we had to change because of the regulations following the virus. That being said, we do not believe that our final product would be better in terms of quality, but it may have been slightly easier to arrive there.

Chapter 4 | Findings and Analyses

This chapter presents our findings from both our descriptive statistical analysis and qualitative research. In the statistical section, we have looked at the percentage of CVC-investments, within a larger dataset of investments in Norwegian USOs, and how different types of strategic fit is distributed. Whereas in the qualitative section, we start by giving a brief reminder of the theoretical framework presented in chapter two (Figure 5). Next, we extract the data from our conducted case interviews and categorize these findings in accordance with the framework. Lastly, we present the general outcomes based on the identified needs, realized resources, and realized risks from all interviews, compared to the interesting perceptions of the USOs.

4.1 Descriptive statistics

Extracting the data from our refined database, of which the development was thoroughly described in chapter three, we found 102 different USOs that received a total of 145 CVC-investments. The total number of USOs in the FORNY-database was 371.

This gives us the following distribution of USOs with CVC-investments (green) vs. USOs without it (red), where we found that 27,5 % of the USOs present in the database had experienced CVC-investments (Table 6).

	With CVC-investor(s)	Without CVC-investor(s)
Number of USOs	102	269
Percentage of all USOs	27,5 %	72,5 %

Table 6: Distribution of CVC-investments in Norwegian USOs

This is in line with existing findings within the field. Alvarez-Garrido and Dushnitsky (2016) found that one-third of 545 investigated biotechnology ventures experienced CVC-investments. Moreover, Pahnke et al. (2015) stated that one-third of the US venture capital market of the year 2014 was found to be CVC. While Katila et al. (2008) also found a somewhat comparable number, as they state that 25 % of entrepreneurial firms with professional investments have one or more corporate investors.

Of the aforementioned 145 CVC-investments in USOs, 32 of them came from independent CVC-units, received by a total of 28 USOs. Hence, 22,1 % of the CVC-investments happened through independent units, while 77,9 % did not.

4.1.1 Strategic fit

Following the recipe from our methods section, we classify the strategic fit of the various CVC-investments as either non-existent or existing. Strategic fit is defined by Gompers and Lerner (2000) as the cases where there exists a relation between the line of business within the CVC-parent and the portfolio firm. Ultimately, some of the CVC-investments are also made without any present strategic fit between the investing firm and the investee.

The distribution of the varying strategic fit can be found in Table 7 below. As we observe, investments with strategic fit occur most frequently, while there is also a substantial amount that seemingly happens without an apparent strategic fit.

Strategic fit?	Non-existent	Existent
Number of investments	42	103
Percentage of all CVC-investments	29,0%	71,0%

Table 7: Distribution of CVC-investments within different groups of strategic fit

To show how we classified various cases of strategic fit, we will provide some examples from our refined database, highlighting how strategic fit is present, or non-existent, in various investments.

Non-existent strategic fit examples

A good example of a CVC-investment in a USO, without any evident strategic fit, occurred when the CVC-investor TV2 Invest owned 14.0% in the USO Ortodent. While Ortodent is a tooth-health start-up, TV2 is one of the leading media actors in Norway, both on television and the internet. The motivation behind this investment is hard to identify without knowing the specific case, but giving the lack of any strategic fit, it could be that this is mainly a case of targeting financial return.

Another different example is USO Urological, which produced a new urinary catheter for elderly persons. This USO received a substantial amount of funding from the CVC-unit J.B. Ugland. Of which the mother company is mainly focusing on agriculture and shipping. Still, there is a link between the two actors, as both the USO and the CVC-investor were located in the relatively small city of Grimstad in Norway. This type of local involvement/responsibility might also be the motivation behind other CVC-investments where a strategic fit seems non-existent.

Strategic fit example

An example of a direct strategic fit can be found in the investments made by Oldermann Havbruk in the USO named Nordlandskjell AS. Where both the involved parties were cultivating mussels for export. An article on E24.no from 2006 states that Oldermann Havbruk had 100% of the market for export of Norwegian mussels (Moy, 2006), while Nordlandskjell was also operating with the goal of providing ecological mussels to the European market. Hence it seems very reasonable to classify this as a form of strategic fit.

4.2 Findings from case interviews

The data extracted from the interviews are analyzed and presented in accordance with our theoretical framework and divided into four sections; pre-formation resource needs realized resources and risks through the strategic alliance, and finally, the post-formation outcome. First, we identify resource needs experienced by the USOs prior to alliance formation and categorize them into types of need, namely financing, knowledge capital, social capital, and legitimacy. Second, we highlight the realized resources mentioned, and similarly, categorize these into types of resources. Third, we highlight the realized risks mentioned and categorize them into the affected resource group. Lastly, we look at the overall experiences of the alliances and analyze how the outcomes are balanced by realized resources and realized risks. Below is a slightly modified version of our framework (Figure 5), representing the process of our analysis. Selected quotes of special importance will be presented in-text to emphasize interesting findings and make the presentation easier to follow.

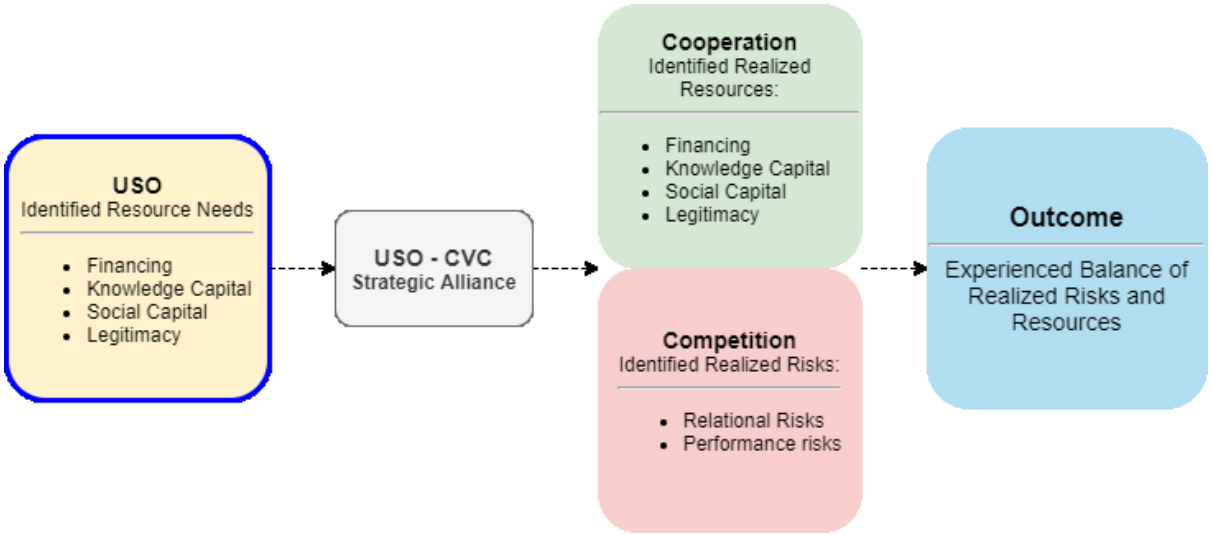

Figure 5: Application of the tool for analysis

4.2.1 Resources Needed

As we described in section 2.2 Resource Needs of University Spin-offs, USOs often require more resources than NTBFs not originating from Universities. In this section, we will present our findings from the cases in regard to their declared resource needs. In accordance with our theoretical framework, the needs presented are the needs the USOs experienced prior to forming the relationship with their CVCs. These needs are classified as financing, knowledge capital, social capital, and legitimacy.

Financing

As expected, financing is one of the core motivations, and probably the most important, when USOs receive investments from CVCs. Even though the CVC-investor might show limited interest in the USO, the financing in itself is something that cannot be taken away from the relationship. One of the USOs highlighted the importance of financing in the following quote*;* when describing the biggest challenges for the USO at an early stage.

"figuring out how to raise money to hire the people you need and buy the equipment you should, it is in a way as simple and as banal as that." (USO D). USO A also made a somewhat similar claim, stating: *"We needed capital to move forward."* What is interesting is that this part, i.e., the need for the relationship, did not necessarily stop after the initial investment. As could be expected, multiple of our selected USOs regularly had to ask their investors for additional funding, as things proved to be more challenging, and costly, than what the USOs initially thought.

Further, USO B also showcased that the same needs can still be present even after an investment is made, as they described their current situation in the following manner, *"what I want more than anything else is a certain working capital that gives me the flexibility to try out things, hire people … which we feel we need to have and things like that, instead of sitting and focusing on cash flow all the time."*

Another topic that was mentioned with regards to the financial investment is the need to find the right owners who fit the risk profile of the USO. This was highlighted by USO D, who problematized the case that USOs are often born in the laboratory, with a challenging and resource-demanding road ahead, before eventually reaching the market, if the USO is successful, *"it's a long way from research to industrialization, and the risk is very, very high … both technically and market-wise, and I think that might be one of the basic, let's say problems with university startups."*

Knowledge capital

The founders of USOs are usually individuals with an excellent technical competency within the industry they operate in. Still, it has been found that what USOs possess in terms of advanced technological knowledge, they often lack in marketing and business knowledge (Rasmussen et al., 2011; Vohora, Wright, & Lockett, 2004). This was an issue that multiple of our case study USOs were aware of, and something they were eager to acquire through partnerships with established firms.

Hence it is not surprising that the need for knowledge capital was mentioned by all the case study USOs, with popular themes being business development and technology development. For instance, USO A stated that they thought of the lack of business development skills as a huge need for almost all USOs. This highlights the need of knowledge capital for many USOs, including USO A, who made the statement.

During our interview with USO D, their representative initially described their business development as good, but later went back to admit that they probably should have changed their business model. Then the person went on to express that an improved business model, with more pivoting, etc., could actually have altered the outcome of the USO. We interpret this as a clear need for knowledge capital that a better CVC-investor could have helped them out with.

Further, USO D also experienced a need for knowledge capital in the following way, "*The lack of industrial expertise was known to everyone so to speak …it was maybe the main weakness"*, highlighting how USOs could also need technological help from their investors, even though the USOs, in general, are deemed as knowledgeable on technology. In this regard, it is important to mention that the specific industrial expertise required in this case

was processing and manufacturing knowledge, a requirement familiar for all USOs producing a hardware product.

Social capital

With USOs often being small companies, with a limited number of employees, the literature indicates that young USOs often have shortcomings in terms of social capital. The specific need for a form of social capital was only mentioned once during our interviews, but looking at the interview findings of value-added from the CVCs, which we will do more thoroughly later in this chapter, it is evident that the value-add of social capital is something the USOs are indeed aware of.

A reason for the few mentions of it as a need, prior to forming the relationship, might be that it is difficult to foresee the potential networks of a future investor before one has formed a relationship with one, or more, investors. In the following quote, USO A highlighted how difficult it was to tap into the market before they got a reputable CVC-investor on board, *"The biggest challenge was the market access."* This could also be interpreted as a need for legitimacy, which we will talk more about shortly.

Further, USO B described a specific technological need for social capital, in a good way, *"The weakness here was that the technology was at a too early stage and depended on third-party hardware and software."* Where the reliance on the third-party operator was a challenge for the USO, hence, one could say that a lack of specific social capital hampered the development of the USO. Still, this could also be interpreted as a need for knowledge capital, as one could argue that the USO could have acquired the necessary competence themselves.

Legitimacy

The concept of legitimacy is well established within the literature on CVC, and our findings from the needs of the USO shows that this is also an effect the USOs want from their relationships with CVCs. Still, only one of our four interviewed USOs mentioned legitimacy as a need beforehand, while, as will be presented in section 4.2.2, all four spoke about it as a form of value-added the USOs received from their CVCs.

Still, USO A showed how being included in a reputable firm´s portfolio could be a need for USOs, "if we were to produce these antibodies … then it was very important to have a commercial company that could join us to such an antibody producer. Because then they would see that okay, here is an immediate market for our product, if we only make the components needed."

Further, USO A also stated that market acceptance and general recognition of their concept was something they really needed. This was a need they hoped to get covered through partnering with a reputable investor.

4.2.2 Realized resources

In the previous section, we described the various needs of our interviewed USOs prior to the CVC-investment. In this section, we will go on to describe the resources that the USOs actually realized through the partnership with the CVCs, while also making a brief

comparison of how these resources match the previously identified needs. As in the previous section, we will go through our findings in light of the four critical resources from our theoretical framework.

Realized financing resources

As we described in section 4.2.1 about resources needed, financing is likely the one commonality that will exist between every USO that receives CVC-funding, assuming that the CVC-investor actually makes some kind of monetary investment to receive shares in the USO. While financing was only mentioned by two of the USOs as a need, all four USOs described, not surprisingly, financing as a value-add they received from their CVCs.

USO C stated that the financial contributions from their CVC1 were the most important value-add the CVC-investor contributed to the relationship, *"The biggest advantage of getting a large industrial owner was first and foremost that they contributed capital at a time when it was important to scale up the company."* They also stated the following about their CVC2, *"from them; we only got cash and some good discussions in the boardroom."* Hence it is reasonable to say that their CVC2 acted more like a purely financial investor, as they were not equally involved in the development of the USO, as one would expect from a CVC.

The latter situation is also recognizable from USO B, who made the following statement about their CVC2 during the interview, *"in the relationship to our second CVC-investor, we are more on a general startup advice [type of alliance] and of course, funding when the need arises."* This describes a situation where their CVC2 is providing them financial resources when it is needed, but otherwise play a relatively passive role in the relationship. As we initially postulated, financing seems to be the only value-added that is present, at least to some degree, in all CVC-USO relationships, judging by the information from our cases. Still, as we will show later in the findings, there were also multiple challenges associated with the financing.

Realized knowledge capital resources

It is firmly established in the literature that NTBFs, and amongst them especially USOs, need assistance when it comes to business development and marketing (Rasmussen et al., 2011; Vohora et al., 2004). It has also been found in the existing literature that CVCs, compared to IVCs, are less equipped to provide assistance on *enterprise nurturing*, i.e., assistance with recruiting additional investors, recruiting key employees, advise on competition, and development of organizational resources, but possess more credibility, however, as advisors on the industry and commercial environment, termed *commerce building*, (Maula et al., 2005). The need for knowledge capital is something the USOs we interviewed were very much aware of themselves, as we described in 4.2.1; the need for knowledge capital was mentioned in all our four interviews. Luckily, from the perspective of the USOs, all four of them also received realized knowledge capital.

USO A described the contribution of their CVC1 in this simple, yet effective, manner: *"they contributed with the market understanding that was needed to get such a concept moving."* For USO C, a lot of the value-add in terms of knowledge capital happened through the board room, *"CVC1 had two representatives on the board who were very, very good. Especially one of them, he was a good discussion partner in the boardroom and lifted the*

company in that way with his experience." USO C also claimed that they developed a very good business model, which later gave them a good degree of financial freedom and solidity. This might be a result of realized knowledge capital through the boardroom, or other channels between the two parties. The contribution of board members was also highlighted in a similar manner from USO B. Further, USO C also received a form of knowledge capital from the same investor in another way, as they were forced to keep things in strict order as per the request of the owner. The USOs stated this enforcement as very beneficial for the development of their company; *"The good thing about CVC1 was that they forced us to keep things very organized in the proceedings, both in terms of reporting, in relation to governance protocols, in relation to financial reporting, etc. etc. which helped us a lot in the due diligence process [with other strategic partners]."*

While these three quotes are mostly concerned about business development, the USOs were also found to receive knowledge capital in regard to technology development. A good example of this is the following quote from USO B: *"they [CVC2] have been very good at putting their people at our disposal, both on technical expertise … knowledge and know-how about products, startups, and other general things".* USO A also underlined the importance of their CVC-investor, when asked about its importance regarding technology development, *"I would say that without CVC1, we would never have been able to start the company."*

Realized social capital resources

Social capital was only mentioned once as a need for the USO in the pre-investment phase. Still, our findings indicate that this is indeed an area where many CVCs can contribute. Various forms of benefits within this group were provided to the USOs, where the investor´s outreach proved to be the most significant one, being mentioned by three of the four USOs.

For instance, USO A made the following statement about getting access to the already existing network of their supplier. *"They had that market contact and those opportunities, and it was also very important having CVC1 in the dialogue with these other breeding companies in the Netherlands. We also got access to the commercial network that they had … and then they had a research network and international research network that we also became part of."* USO A also got access to social capital through their CVC1 in another way: *"It was a very good and close collaboration, there were regular meetings with them, and progress reports and they brought Person1 to us, and we needed Person1, and in general they did their utmost to contribute."* The latter quote highlights how CVCs can bring in persons from their existing networks that add value to the USO.

Further, USO B stated the following; *"Yes definitely, we have [gotten access to networks], perhaps mostly through CVC2"*. This could be interpreted a bit contradictory to what they said about the same CVC-investor previously. In 4.2.2, we presented a quote from the same USO about their same investor, stating: *"in the relationship to our second CVC-investor, we are more on general startup advice and of course funding when the need arises."* This discrepancy could be a result of the interviewee simply forgetting parts of the relationship, or one could argue that the access to networks is a part of the "general startup advice" that was mentioned in the first quote. USO D did also mention some sort of value-add from their CVC1 in terms of social capital, which happened through a kind of network that was very vaguely described.

Realized legitimacy

As we described in part 4.2.1, legitimacy is a value-added that is well documented in the current literature about CVC. All the four USOs we interviewed described some sort of value-add from their CVCs in terms of legitimacy. When asked if the CVC-investment gave the USO an increased amount of credibility, USO D answered eagerly, *"yes, yes, yes, clearly."* Further, USO C provided an interesting insight into how legitimacy might actually help the USO: *"being owned by a large industrial owner could make us appear as a more solid and credible company for other investors."*

Legitimacy from receiving investments from big companies can provide impact towards both producers and other companies, as showcased by the following quote from USO A: *it [the credibility] became much, much stronger both in dialogue with producers and other companies".*

Contrary to most of the existing literature, we also found some evidence that the legitimating effect of being backed by a reputable company could come with negative effects, a finding that we will discuss further later in this study.

4.2.3 Realized Relational Risks

As mentioned in chapter two, there are always two sides to a story, and according to the literature, USOs may experience several risks in their strategic alliances with CVCs. Our findings confirm this. In the following section, we will highlight the realized risks identified in the case interviews and categorize them into affected critical resource groups. The two main types of risk are adopted from Das and Teng (1998), namely relational and performance risk. The section is structured accordingly, starting with relational risk.

An interesting finding, with regards to both realized relational risks, and realized performance risks, is that when asked directly on the topic of realized risks from the CVC-partnership, none of our USOs remembered any such risks, at least not of an important character. Still, as the interviews proceeded, several risks did in fact become apparent.

Relational risk is about cooperative relationships, and the probability of the partner not acting in compliance with a cooperative spirit, e.g., when a partner decides to act opportunistically and thus with a competitive spirit. Realized relational risks can generally be traced to internal firm-to-firm interaction, thus, deriving from damage obtained through suboptimal cooperation between firms (Das & Teng, 1998), in this case, the USO and CVC-investor.

Relational risk regarding financing

Three of the interviewed USOs mentioned relational risks affecting their financing. All three cases experienced a lack of financing, as the investments made by their CVCs were not sufficient. From a resource dependence theory perspective, this is an interesting finding, as financing is obviously important for the USOs (Rasmussen & Wright, 2015), and one of the main reasons for forming the alliance. An example of this can be found in a quote from our interview with USO B, *"Funding with the owners today is not easily acquired and there can be quite heavy discussions. … it's never really been the big investments, like what I wanted, was an investment of up to [NOK] 30 million, but today it seems pretty unrealistic*

with those owners unless we come back with bigger market traction and maybe more market pull". These USOs seem to indicate that investment size, although potentially bigger than several other types of investors, still is not sufficient to support their ambitious technological development. But these findings also seem to suggest valid reasons for the CVCs to be skeptical, e.g., lacking market pull, and quite long and complex development paths. One USO did not receive sufficient funding for financing more technologically advanced equipment, which could have speeded up its development process. A couple of USOs express how negotiations for additional funding have turned quite heavy over the years, and how investors potentially seem to have lost some faith in the startup.

USO A expressed how their investor's board of directors started losing patience and their willingness to finance further development, *"So the risk was the more that they lost patience, and neither the CEO nor the research director did it, but it was actually more at the board level, that in a way they saw that large resources were required of the company, and then they got a dialogue with the CEO."* In this case, the CVC-investor's own board of directors put pressure on the CEO, resulting in a stop in the financing, and in turn, development. This shows the USOs' vulnerability to changes incurred by their investor or even the investor's shareholders. This finding is partly consistent with the findings of Henderson (2009), as the fading commitment of top corporate officers contributed to the shutdown of the USO.

Consistent with the findings of De Clercq and Lehtonen (2006), USO D expressed how finding, negotiating and closing the investment deal with their CVC-investor was a long and time-consuming process, *"the period from you had a term sheet from these investors until it was closing took half a year and it was actually stipulated that it would take a month … But of course, everything took longer than it should and so on, and so on, and lots of back and forth"*. Negotiating, and especially closing the deal, contributed to added transaction costs, which lead to a temporarily impeded agility and constrained liquidity, consistent with the findings of Sampson (2007).

USO B further expressed the risk of the owners losing patience and looking for a way out, possibly through an exit. If they get sold to another company, there is no insurance that this will be beneficial for the USO; hence, they may be vulnerable to that kind of abrupt change of ownership. *"When these [CVCs] have been with us for 8 and 9 years, you can imagine yourself, as we are not yet included in the product portfolio of any of them, then there is some wear and tear on these owners and they probably look at some EXIT opportunity … largely because they feel they have done their part of commercializing USO B as far as they are able."* This finding is partly aligned with that of Stuart et al. (1999).

Relational risk regarding knowledge capital

Three cases mentioned relational risks affecting knowledge capital. USO B expressed how a technological misfit with one of their CVCs made the collaboration less fruitful, as it turned out their technology was not easily compatible. *"There are some technical or physical constraints in the technology that they are using that makes our system not work optimally, and hence, they have lost a little interest in it, there is also the return of investment aspect."* When asked if they had gained access to knowledge capital, they replied, *"Technically not very much, I would say. … It might be that it is just not a good fit."* Further, with both of their investors, they experienced relational misfit situations

leaving the investor with a decreased interest in the project, higher transaction costs, and decreased knowledge transfer.

Both USO C and D experienced how their investor failed to contribute with expected resources. When asked if they had received any smart capital, USO C had experienced one of their CVCs not really contributing to technical testing, although they had access to ideal applicability of the technology, *"Nothing, neither contracts nor anything, in fact not on their own frontier. So, they [CVC2] have lots of ships, but they didn't test anything. So, it was probably just a financial investment."* hence leaving the USO with unfulfilled expectations. Similarly, USO D also expressed concerns about lacking technological help from their CVC-investor, in line with the findings of Zu Knyphausen-Aufseß (2005). In both cases, the investor either seemed to have a more financial interest in the investment from the beginning, or it ended up like one anyways.

Further, USO D indicated that when the CVC-investor does not really possess the technical knowledge needed, they miss out on resources they depended on for development, *"CVC1, even though they are, in a sense, a corporate investor, they did not represent the process industry … so that was another weakness that made us simply not make particularly good judgments [on technology development] … after all, they were industrial in the sense that they wanted to build local industry"*. With this lack of knowledge, they couldn't make the best decisions, and technological development was haltered, consistent with the findings of Weber and Weber (2010) and Sampson (2007). Moreover, this risk was worsened by a lack of social interaction, which is the means of transfer for knowledge capital (Maula et al., 2003).

USO B experienced low synergy effects due to a relational misfit with the business unit of its large corporate investor, *"we have been a technical, strategic company for CVC1 that might eventually fit into their product portfolio. That has not really happened … My understanding is that we have probably received money from the wrong place in CVC1, which means that we do not get attention from the place where we should have been. CVC1 is huge, you know … Had we been in the other department ... we would have had much greater synergy effects. … we miss out on both technical and commercial expertise there."* Their situation represents a good example of how benefits can be limited if the strategic fit of the two companies seems good, but in reality, the business unit they are linked to has a bad strategic fit, and consequently, this limits the exchange of resources (Sampson, 2007).

Another risk mentioned by USO B is the investor's board members' lack of knowledge and understanding, "If you are going to develop a company and the board does not understand what you are doing, how can they manage the company then?". As the board of directors does not fully understand their technology, this makes for suboptimal cooperation and a lot of time spent on explaining the same thing over and over again, adding to the previously mentioned transaction costs (Sampson, 2007).

Relational risk regarding social capital

Three USOs mentioned relational risks affecting social capital resources. USO B experienced difficulties in trying to collaborate on getting access to new customers, *"when you go in and try to establish cooperation towards customers, etc., it can very quickly get messed up … then you are so dependent on finding the right person who works as a*

preacher for you … who is like 'YES, we can do this' and since we have sort of been in the wrong place in CVC1, we have never really found that person either". Due to a relational misfit between the two actors, and a seeming lack of initiative within their CVC-investor, they did not gain access to the potential social capital that could have helped them reach new partners and customers. In USO C's case, they simply did not receive any access to their CVC-investor's social capital, even though their network would have been truly valuable. Both findings are consistent with those of Zu Knyphausen-Aufseß (2005).

Also consistent with the findings of Zu Knyphausen-Aufseß (2005), and resource dependence theory, failure to provide important resources, of which USOs depend, lead to a resource dependence being unfulfilled and USOs potentially having unrealistic expectations. Two of the USOs expressed how their expectations of realized resources proved unrealistic, even though they had been led to believe otherwise. USO B and C thought they would receive more synergy effects from their corporate investor, while in reality, this turned out to be quite limited, as USO C states, *"we probably thought that by having CVC1 on the owner side we should have easier access to CVC1 decision-makers through their technology investment unit, but they were very careful to do so, and we probably felt that they would rather not interfere too much in operational conditions"*.

An interesting finding, which could explain some of USO D's lacking realized resources, could be the identified lack of social interaction, which is necessary to transfer knowledge and social capital (Maula et al., 2003). *"... it might be we could have worked with them in a different way than through the boardroom, which became the main channel … which may not really be the best forum … if you just interact through the board room, then you might not get out the potential that really lies in having an industrial investor".* Although this was a risk in the sense of not gaining access to these critical resources, whose fault it was could arguably be shared between both actors. Still, this could indicate CVCs are not as involved with the venture as necessary, consistent with the findings of Bottazzi, Da Rin, and Hellmann (2007); Pahnke et al. (2015), who found IVCs contribute more than CVCs, as they get more actively involved in their portfolio firms.

Consistent with the findings of Sampson (2007), two of the USOs expressed how the CVC-investor had impeded their startup agility. USO B mentioned the increased transaction costs of information flow, which can slow responsiveness and decision-making (Sampson, 2007). *"... a very large apparatus needs to be started, and it requires a lot to maintain communication and projects, and; cash is king when you are small ... then you have to focus on activities that can generate money"*. In line with the findings of Clayton et al. (1999), USO C expressed how the investment relationship is significantly influenced by personal factors such as investors insisting on involving themselves too much and gets hung up on small, unimportant matters which further impedes their agility. *"there usually is some kind of board seminar ... where you can have a board member who suddenly gets hung up on typos and sentence structure, versus seeing the big picture, so it is incredibly person-depending whether it becomes a success or not. So, having a good board in a way, as CEO, or management, that is super important"*.

Finally, USO D mentioned a last relational risk influencing their business development, where the CVC-investor acts controlling and demands extensive reporting and governance requirements, *"I remember there was a lot of work with those board meetings because the reporting requirements were really heavy you see, there were none to make those reports, except me, they wanted a website, and there was kind of no limit to what they wanted."*

Consistent with the findings of De Clercq and Lehtonen (2006), this incurred a lot of added work to the USOs agenda, and being understaffed already, thus lacking human capital, this ended up being quite demanding for the USO.

Relational risk regarding legitimacy

An interesting finding is how USO B stated a negative relational impact on their legitimacy, *"when you sit there and monitor your cash flow and may have to ask creditors from time to time to postpone a payment ... they can easily go in and see that: 'OK, you are 35% owned by CVC1, but why don't you get any money from them?'"*. Even though literature says CVC should contribute to added legitimacy, this finding is contradicting. When the USO needed more money and had to ask other creditors, as their CVCs were reluctant to provide additional funding, they had already reached out with a weakened legitimacy as these creditors then wondered why their existing investor had not given them the money. However, as previously mentioned, USO B stated issues with financing due to in part lacking market pull, and a technology that proved less compatible with one of their CVC-investor's technology, which could indicate why the CVCs were hesitant in financing further.

4.2.4 Realized Performance Risks

Performance risk refers to the probability of not meeting the intended strategic goals set for the alliance, in spite of a cooperative spirit between the partners (Das & Teng, 1998). An example of the latter can be not meeting a strategic goal due to issues arising from an immature market. Experienced performance risks can be traced to external factors to the firm, i.e., firm to environment interaction, and derives from failures due to firm incompetence and market uncertainty (Das & Teng, 1998), in this case, the USO and other stakeholders. Hence, performance risks are not directly due to the relation to the CVC-investor; however, it might indirectly influence the realization of these performance risks and vice versa.

Performance risk regarding financing

USO A mentioned an interesting episode where performance risk affected financing, *"we couldn't make an investment case where any of the others [investors] went in and shared the risk with our CVC-investor … it's a good idea to sell such enthusiasm at a very early stage because then nobody starts to question it like, 'Yeah, but you've spent x millions on this already'."* They needed more investors to invest in order to spread the financial risk taken on by their CVC-investor; hence, they approached other investors. However, when doing so, they could not make a lucrative investor case, as they lacked technological credibility. These investors got doubts about the feasibility of the USO's technology when the technology was not successful after having spent a number of millions already. This performance risk led, in turn, to the CVC-investor, judging the project too risky and cutting its financing.

USO D mentioned an interesting example of how performance risk can indirectly lead to a relational risk evolving, *"the biogas market collapsed in Germany because there were some support schemes that went away, and then, of course, there was no more willing to invest from these investors, which was in a way what caused us to not go to round 3 and 4 you know, which we had put in the plan as needed."* In this case, the biogas market in Germany collapsed, taking support schemes the USO depended on with them, thus causing the

market to diminish, and consequently, the investor's willingness to invest as well, which could support the findings of Henderson (2009). According to the USO, this was the triggering factor causing them to miss out on the business-crucial investment round three and four, and eventually, they had to shut down the business.

USO D also mentioned two performance risks affecting financing and ownership, namely unrealistic promises or expectations, and controlling. Firstly, they had multiple types of investors on board, both financial and strategic, and they experienced dissonance between the different risk profiles they possessed and the time frame of the expected return on investment. This caused a split risk tolerance in the company's board of directors, causing a lower willingness to invest and contribute among all investors. Secondly, the investors eventually owned the majority of the shares in the company, significantly reducing the percentage of the founders' ownership, and their control of the company's future, consistent with the findings of Clayton et al. (1999).

Performance risk regarding knowledge capital

USO A and D experienced performance risks affecting technology development due to immature technology, as USO A states, *"the knowledge in genomics today is quite different from what it was at the time… both very much cheaper equipment and access to it, and competence around this, are two factors that could probably have gotten this concept to market easier."* In USO A's case, both the technology and the competence around it, was not good enough at the time, which led to issues, e.g., with their CVC-investor.

Similarly, with USO D, the technology development was not advanced enough at the time, which ended up being the final nail in the coffin for the company, *"to build a factory and to produce the product turned out not to be straight forward, it was in a way what finally broke the company, and the fact that it was difficult to reproduce the promising results we had had in the lab in an industrial scale … when you do not reach the targets you have set ... bells ring for, really all investors with sense and understanding, and then you become a little more skeptical to go into the next round, and then a few more bells ring ... if we had just done what we said we would, then maybe this would be a different story. But all these technical challenges appeared, which became very demanding."* When they struggled to meet their ambitious goals due to these technical difficulties, the investors consequently lost faith in the project. A similar fate was met by USO A, and with USO B, technology and market issues are still ongoing.

Performance risk regarding legitimacy

An interesting finding affecting legitimacy is the one mentioned by USO C, *"in the end there were some actors who could offer almost the same [solution], but not as good of course, because we were the best. And then we could get the question that it could perhaps be seen as anti-competitive because CVC1 was the owner"*. This finding indicated that the environment of competitors, and possibly other actors, perceived the USO as anti-competitive, which affected their legitimacy. The reason why they were perceived this way, however, was due to the sheer size of their CVC-investor's parent corporation and the subsequent market share that company possessed. Moreover, similar issues affected their credibility towards other stakeholders, *"one negative thing that sometimes came up when we tried to get in touch with other companies, e.g., oil companies, you could encounter questions like: 'CVC1? they are on the owner's side, is this completely aboveboard?'."* Thus,

having the CVC-investor on board seems to have further decreased its legitimacy in the market.

A distilled summary of the above findings is presented below (Table 8).

	Financing	Knowledge capital	Social capital	Legitimacy
USO A	Lack of financing - Need not met	Sufficient knowledge capital - Need met	Sufficient social capital - Need met	Both improved and decreased
USO B	Lack of financing - Need not met	Lack of knowledge capital - Need not met	Lack of social capital - Need not met	Both improved and decreased
USO C	Sufficient financing - Need met	Somewhat sufficient knowledge capital	Lack of social capital - Need not met	Both improved and decreased
USO D	Lack of financing - Need not met	Lack of knowledge capital - Need not met	Somewhat sufficient social capital	Improved legitimacy - Need met

Table 8: Summary of findings showing whether the USOs got their needs met, not met, or somewhere in between

4.2.5 Outcome

In our theoretic framework, we argued the true nature of the strategic alliance, whether it is a relationship influenced by cooperation and/or competition, shows only in a post-investment phase. This should result in an outcome for the USOs influenced by (a) Realized resources - access to funding, improved legitimacy, knowledge capital, social capital, of which they are dependent; and (b) Realized risks - experienced relational risk and performance risk, having negative effects on the outcome. Consequently, we have identified the resource needs of USOs, the resources provided, and risks experienced from their relationship with CVCs and categorized them within our resource dependence framework. In the following section, we have used these findings as metrics and analyzed these in relation to the USOs' own opinion, to describe the outcome of the USOs. First, a brief within-case analysis was done for each case, which can be found in the appendices, before a cross-case analysis was done.

Cross-case analysis

All cases mentioned both realized resources and realized risks; hence none of the alliances can be deemed strictly cooperative or strictly competitive. However, perceived by the USOs, there are mostly beneficial alliances. USO A and C were the cases we identified as the most cooperative, and thus best relations, while USO B seems to have the most realized risks, lastly, USO D seems to be somewhere in between, with a large number of needs and relatively lower number of realized resources.

Only one of the cases experienced more realized knowledge resources than realized risks, while three of them experienced significant issues with lacking knowledge, which contradicts with the pool of relevant knowledge possessed by CVCs (Alvarez-Garrido & Dushnitsky, 2012; Zu Knyphausen-Aufseß, 2005), but could be expected in cases with a bad strategic fit (Maula et al., 2003). Two of the cases experienced mostly benefits of social capital, while the other two experienced significantly more risks, thus it is reasonable to

say a lack of social capital was a significant issue. Legitimacy was mostly mentioned as beneficial by all cases, which is consistent with the value-added profile of CVCs (Bjørgum & Sørheim, 2015); however, it is interesting that three of the cases experienced risks affecting its legitimacy as we have not identified this risk from previous research on NTBFs.

Financing was the most critical resource insufficiency, as three cases experienced a severe lack of sufficient financing. Of the more general resource groups, a lack of help with business development was most apparent and mentioned in three of the cases, most prominent in USO B. This is interesting as business development is generally something USOs lack experience of (Mathisen & Rasmussen, 2019; Rasmussen & Wright, 2015), however, it is not supposed to be CVCs' main form of value-added (Bjørgum & Sørheim, 2015). Further, two of the cases mentioned a lack of technological development help, which is interesting, considering that it is supposed to be one of CVCs' most important forms of value-added (Bjørgum & Sørheim, 2015).

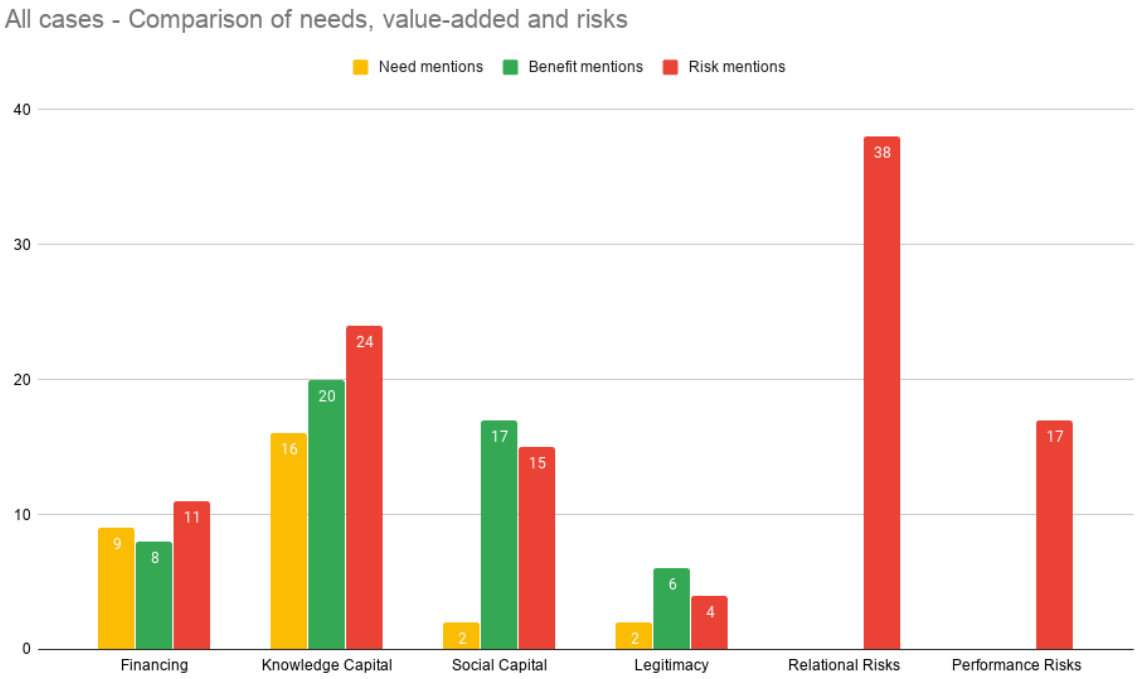

Figure 6: Showing comparison of all cases' mentions of needs, benefits, and risks

Across all cases, mentions of realized risks outweigh benefits in two out of four critical resources, and just a little advantage on social capital and legitimacy, as can be seen in Figure 6 above. This indicates mostly coopetitive, mixed relations. Knowledge capital seems to be the greatest area for improvement and the help that lacked the most overall, while financing was mentioned as the most serious issue. Overall, they mentioned the benefits of social capital more times than risks, but only slightly. Although the need for legitimacy was found to be mostly met, interesting issues of decreased legitimacy was also identified. Thus, the cases experienced both benefits and risks with all critical resource groups, where risks could be interpreted as more influential than benefits, hence, indicating coopetitive relationships. However, it is interesting that despite these findings, three of the cases perceived the alliances as most beneficial, and the last had a split opinion.

Would you have done anything differently regarding investors now, if you could start over?
"I think what our main challenge or the main lesson that I am left with was, is to bring in more investors and whether it is that they share the market or so, but they have a common interest in getting their own products in the market, we had, even though USO A and CVC1 had made less money together, sharing risk at such a stage is very important, and I think it is an underrated element in developing companies that one tries to divide risk quite early." (USO A)
"Oh yeah, if I could bring along the knowledge I have now five years back in time, I would have done quite a bit differently, I think. … I would have simply demanded a little more from the owners, asked for more money and been a little more assertive ... the need you have … you have to look at how it affects your burn rate and ... how long do you want security with that burn rate, and we were too careful regarding this I think." (USO B)
"No, not really, we were incredibly lucky. We managed to build a large technology company, went from 0 to 100 million in turnover in 10 years, we had good technology, good traction in the market, managed to do an exit three weeks before the oil price started to fall in 2014 … And we became part of a large international classification company, where the company really belonged, from day one really. So, it was a good story." (USO C)
"Then I think, I would not seek out venture capital, would not do it, would have sought, most probably something financial, but tried much harder to get an even bigger, even stronger investor with the industry relation. ... at a lower valuation." (USO D)

Table 9: Replies of all cases on whether they would change anything, regarding investors

Another interesting finding, seen in Table 9 above, is that even though all cases were influenced by a number of realized risks, none of the cases mentioned wanting to switch to another investor type, given a chance. Instead, they mentioned quite individual learning outcomes. USO B expressed doubts regarding financial investors, "*I have been wondering a lot about how this would have looked like with a regular VC for example, which only has a strategic financial goal with its investment, and nothing technological, that is a thought experiment I have done a number of times and, yeah, it looks different every time I think about it.*" While USO D specifically stated, in hindsight, they would not have approached IVCs again; instead, they would focus on getting a bigger industrial investor with more industry-specific knowledge, despite a potentially lower valuation. USO A, on the other hand, would have sought out more investors in order to divide the financial risk between multiple investors. USO C would not change a thing, which makes sense considering their success.

Chapter 5 | Discussion

In this chapter, we will discuss the findings from our study, presented in chapter 4, with the overall goal of answering our three research questions, repeated below for convenience. Firstly, we will discuss the descriptive statistics about the CVC-USO equity investment phenomenon and the occurrence of and motivation behind investments without a strategic fit.

Secondly, we will discuss the USOs' identification of their own needs, focusing on how some of their own limitations could lead them to sometimes choosing a suboptimal investor for themselves. In this section, we will also discuss why there were relatively few mentions of needs during our interviews, and why some of the needs never seem to stop.

Then we will proceed to the main part of our discussion, the qualitative part. We start this section out by presenting the findings that we find most interesting to discuss. These findings have been termed as key findings. Then we go on to discuss the balance of risks and resources connected to these key findings, combined with existing literature and our own reflections. Ultimately, we round off the discussion by looking at the overall balance between risks and resources in the USO-CVC relationships and try to understand and explain some of the underlying mechanisms.

Research Questions

RQ1: How often do investment relationships between university spin-offs and corporate venture capitalists occur, and how are the investees and investors strategically linked?
RQ2: How is the balance of realized risks and resources in investment relationships between university spin-offs and their corporate venture capital investors?
RQ3: How does the balance of realized risks and resources impact the outcome of the USOs?

5.1 Descriptive statistics

In the discussion of the findings from our descriptive statistics part, we will concentrate our focus on two specific topics. Firstly, we will look into the composition of the Norwegian CVC-market. Secondly, we will proceed to discuss our findings of the motivation behind investments where a strategic fit between USOs and their CVCs is seemingly not present.

5.1.1 The Norwegian CVC-market

Our findings showed that 27,5 % percent of investments in Norwegian USOs happen through some kind of CVC-investment, a number that is comparable to findings in other studies on CVC. This is interesting, as the studies were we found with comparable numbers (Alvarez-Garrido & Dushnitsky, 2016; Katila et al., 2008; Pahnke et al., 2015), are not from 2020, and they all originate from studies conducted in the U.S. Still, we believe they hold substantial value to make a comparison for the Norwegian market as of today,

especially since we know from McNally (1997) that the European venture capital market is relatively immature compared to the American one.

What we also found noteworthy, is that of these CVC-investments, only 22,1% happened through independent CVC-units. Given the focus these units are given in other research, it seems reasonable to assume that 22,1% is a fairly small number of independent CVC-units. Why is the Norwegian CVC-market organized in this way? One answer might be that the concept of venture capital is still a relatively young phenomenon in Norway, as we know this is the case in the rest of Europe (McNally, 1997). This seems to happen even though multiple big Norwegian companies have international departments that should give them insight into how, for example, the American CVC-market is working.

5.1.2 Investments without a strategic fit

McNally (1995) argues that corporate investors normally pursue something more than just financial return when they invest in young ventures, i.e., strategically oriented motivations. This could be access to windows on new technologies and products or establishing further business relationships (McNally, 1995). A very interesting finding from our statistics is, therefore, that as many as 29 % of CVC-investments in USOs seemingly happened without a strategic fit between the USO and their CVC-investor. During an interview, the representative from one of the USOs stated that they decided upon this investment because it was the investor, available to them, who could provide the biggest valuation, and thus, the biggest investment, even though there was no strategic fit between the two companies. The reasoning behind this decision was that at the time of the investment, cash was regarded as the most critical resource for the company.

In one of our cases, the motivation of the CVC-investor for the investment was that the CVC-investor, being a mature incumbent firm in their region, wanted to give something back to their local community. Because of this, their CVC1 had a strategy that said that they should aid young businesses in their region, regardless of the industry of the young company. This is a mechanism we believe exists in a lot of regions around Norway, especially in towns and small cities where there exists a big company that drives much of the local economy.[1] Such initiatives could be the reason behind many of the investments seemingly taking place without any kind of strategic fit. Taking this way of thinking one step further, we open up a new window of possible reasons for CVC-investments in general.

Moving away from the traditional stance that corporate investors always seek a future financial return and a strategic return in terms of technology access etc. (McNally, 1995), for instance, such investments might be made with reputational motives. Then, a big company within an industry like oil & gas can invest in a green start-up to seem environment-friendly, something we identified multiple occurrences of in the FORNY-database. From the same database, we have also observed that a big company within the industries of cars and weapons has made investments in multiple USOs within less climate- and human-hostile industries. Then it is, of course, another discussion whether these kinds of investments are done because the corporation actually cares about the environment, or if they simply do it to increase their goodwill. Of course, they can also be done based on

[1] Such companies are often described with the Norwegian word "Hjørnesteinsbedrifter", which translates to "cornerstone companies", as they are cornerstones to the local economy.

different motives, as our findings do not clarify this. The idea that CVC can be used to showcase social responsibility is supported by the work of McNally (1995).

Another example could be a CVC-investor, originating from an old-fashioned business, that supports a high technological and future-oriented start-up, which was the situation for one of our USO-CVC relations. One could also imagine a situation where a powerful person within the CVC-investor chooses to invest in the start-up of a friend, family member, or former companion. A thing that one should keep in mind is that even though a strategic fit does exist, one of the abovementioned, or similar, reasons might be the actual trigger of the investment. This is, in fact, something we know is happening. For our pilot study within this field, conducted in the autumn of 2019, we interviewed a CVC-investor that explained how they invested in a local USO. The CVC-investor and the USO did have a complementary strategic fit, but it was the geographical connection that really made the investment happen. Further, we would argue that this is likely an area where there exist big differences between CVCs and IVCs, where we argue the latter would not conduct these kinds of charity-oriented acts, as they simply have less incentive to do so, and an unfitting business model.

5.1.3 USOs identification of their own needs

Before we go on to discuss the USOs' realized risks and resources from the CVC-investments, we will briefly discuss our findings regarding the mentioned needs of the USOs. Our most interesting findings in this regard were that the USOs generally mentioned relatively few needs.

A possible reason for this is that the USOs weren't really aware of their actual needs, due to a lack of business knowledge and a lot of ambiguity and the numerous unknowns. It could also be that a lot of the needs were taken for granted by the USOs, to a degree where they thought of them as guaranteed to be met through any kind of a big investment. Hence, they did not think of it as a need, as it would most likely come along with the investment anyways. For instance, the need for legitimacy was barely mentioned, while in terms of benefits, legitimacy was mentioned by all USOs. A reason for this might be that the concept of legitimacy as a value-added from a significant corporation is so well-known within entrepreneurial spheres (McNally, 1997), that it is almost taken for granted.

On a more superior level, we believe that our findings indicate that the business inexperience of USO management might cause the USOs to not identify their resource needs properly. At worst, this could actually lead them to select the wrong investors. A good example of this is presented in our findings, where we found that one USO opted for the biggest financial investment, coming from an Investor where there was no strategic fit present between the two parties. This was a decision they later regretted due to the lack of aid on technological development from this very investor. Had the USO possessed a better picture of their needs prior to the investment, they might have chosen an investor who could offer far more to the USO in terms of technology development. This is in line with the findings of Katila et al. (2008), who stated that access to manufacturing resources often is the most sought-after and critical resource for NTBFs.

Before moving on from needs, however, we find it noteworthy that our findings indicate that some needs never stop, even after the relationship is created. As we found in our cases, at least three of our USOs were still in need of financing, even after the initial funding was made. Although it was not directly stated during the interviews, we also interpret that USOs constantly need new forms of knowledge capital, as new challenges arise while the company develops. This would likely be especially important if the team has limited start-up experience from before. Moreover, due to the novelty of research-based innovation, these USOs often try to commercialize the technology in new and immature markets, i.e., *technology push* cases. Common to technology push cases are meeting difficulties in convincing downstream actors, mostly customers, of the need for their technology (Lubik, Lim, Platts, & Minshall, 2012). The USOs expressed issues with their technology not being adopted due to their ambitious and innovative approach, as well as a lack of supporting upstream and downstream actors needed for operation. This could further add to the needs of USOs developing and growing along with the venture's development, as a lot of unknown unknowns are only unfolding as they go. A big industry partner such as a CVC-investor could help in this regard, but through our findings, we know this potential was not always realized.

5.2 The balance of realized risks and resources, and how it impacts the outcome of the USOs

As this discussion was described thoroughly at the beginning of this chapter, we will just do a brief repetition here. In this section, we will first present our key findings before we interpret the meaning, importance, and relevance of our results. Secondly, we will go on to discuss these key findings and the balance of risks and resources related to them. Ultimately, we sum up the overall balance between the realized risks and realized resources.

5.2.1 Key findings

Our results showed that there is indeed a balance between realized risks and realized resources for USOs when they receive investments from CVCs, as all USOs experienced both positive and negative aspects in such alliances.

One of the best examples of this particular balance can be found with regards to financing. Financing was identified as a cross-case benefit, identified by all four USOs, which should be no big surprise given that it is indeed the premise of such alliances. On the other hand, our results also show multiple risks associated with financing. Several of the USOs mentioned insufficient amounts of funding from their CVCs as something that severely hampered the development of their company, as they needed more cash in order to execute their plans more effectively. We also found a contradiction to the existing literature in the impatience shown by the CVC-investor in three of our four cases. These problems could be due to a number of reasons, which we will discuss shortly. In regard to financing, the one USO that actually had their financial needs met, was also the one who achieved the outcome generally deemed the most successful.

That there exists a balance between risks and resources can also be seen when we observe our findings of legitimating effects from the CVC-investments. All of our USOs received some kind of legitimacy from the partnership with their investor, which is in accordance with existing theory (Bjørgum & Sørheim, 2015; Stuart et al., 1999). Still, three of them also experienced that being thought of as related to a big company had a negative impact on legitimacy. To the best of our knowledge, no previous research has found CVCs to negatively impact NTBFs' legitimacy, but our findings seem to indicate the presence of this risk.

Two of our cases mentioned a lack of knowledge and understanding from their CVCs, consistent with the findings of Sampson (2007). This could be a result of a bad strategic fit, as the CVC-investor either did not possess the necessary knowledge or that the USO was placed within the wrong business unit of the investor. Moreover, the lack of strategic fit was also found to be harmful to technological development.

Interestingly, the USOs expressed zero fear of misappropriation from their CVCs, which we find quite surprising based on the extensive existing literature regarding this risk (Colombo et al., 2006; Dushnitsky & Shaver, 2009; Henderson, 2009; Katila et al., 2008). Even when asked directly, if they were worried about the CVC-investor misappropriating their technology, none of our interviewees could ever see that happening.

Further, our findings mostly show the USO-CVC relations to be good in terms of value-added of knowledge capital for the USOs, especially in terms of technology and business development. A couple of cases stand out, nonetheless. Some of the USOs experienced a great number of risks affecting business and technology development, which could be potentially problematic for research-heavy USOs lacking business development experience, and in need of technological development help (Mathisen & Rasmussen, 2019; Rasmussen & Wright, 2015).

Drawing on our findings section, we know that three of our four USOs received some sort of social capital, in the form of network access, from their CVCs. Hence they seemed to have avoided a risk of CVCs, according to Zu Knyphausen-Aufseß (2005), which is that the CVCs fail to provide one of the most important forms of value-added, namely the CVCs' social network, thus giving entrepreneurs an unrealistic expectation of getting access to these resources, while in reality, they are not able to deliver them due to a lack of incentives to collaborate. Several of the USOs, however, expressed a generally low amount of realized social capital resources.

Financing

Firstly, both our findings and our own interpretation indicate that the described lack of funding was a direct result of the USOs not reaching their milestones on schedule, if at all. After making a big initial investment, the CVCs were, understandably, more reluctant to provide additional funding to the USOs, especially when these USOs did not deliver as the investors had hoped. On the other hand, we have multiple findings where USOs put part of the blame for their slowed development on their CVCs. Such situations are likely to create a vicious circle where the USO does not have sufficient financing to make good progress, which again is likely to further reduce the CVCs' willingness to make additional investments in the USO. This might lead to both parties blaming the other one for the lack

of development within the USO, which, as a result, might lead to the relationship turning sour, and potentially shut down of the alliance.

We also find it likely that such patterns are responsible for some of the impatience shown by the investors. Multiple researchers, such as Bjørgum and Sørheim (2015); Chemmanur et al. (2014); Paik and Woo (2017), states the CVC-model allows for investments with a longer time horizon than their IVC-counterparts. Further, Chemmanur et al. (2014) and Paik and Woo (2017) states that one of the advantages of CVCs is that their investments can exceed the ten-year limit that is often imposed on IVCs. Yet, we found that some of the CVCs in our cases started to get impatient at a much earlier stage.

Further, our findings indicate that the CVC-investor's representatives closest to the USO are usually positive to further investments in the young venture, while the decision-makers in a boardroom far away are more skeptical. This could be seen as a result of basic psychology; people tend to like humans they interact with frequently (Berscheid & Regan, 2005), or that the CVC-investor's representatives take personal ownership in the USO's success, due to their close involvement. On the other hand, it could be a result of the representatives working closely with the USO actually developing a better understanding of the USOs' requirements and understanding of what it would take for the USO to ultimately succeed. Whatever motivation that lies behind the above-mentioned positivity of the representatives, we find it problematic that the financial decision-makers in the CVC-parent, usually have a limited understanding of the USOs. This supports the findings of Henderson (2009) and seems to indicate how vulnerable and dependent portfolio firms are, not only on their CVC-investor but also on the top corporate officers' decisions, who might indeed be quite distanced from the USO, in terms of knowledge and understanding.

Based on the discussions above, we find it reasonable to claim that our findings are somewhat contradictory to previous research, stating that CVCs have issues in over-financing their portfolio firms (Clayton et al., 1999), and together with other findings, this could indicate that CVCs are not in effect as deep-pocketed and willing to pay, as previous research suggests.

Still, there was an exception among our cases, as one USO claimed that they had zero financial issues with their CVCs. Interestingly, this was also the USO who claimed to have a very good business model, whereas the other USOs stated that they did indeed have room for business model improvement. The superior business model could be the explanation for the USOs' contrasting views on financing from their CVCs. This could again be a result of the better performing USO receiving more and better knowledge capital from their investors on how to develop an effective business model. Hence, one could potentially argue that USOs can also receive financial benefits through knowledge capital, in addition to the financing already provided. Where these borderlines between financial benefits and knowledge capital benefits should be put is not for us to say; instead, we would argue that in this specific case, there exists a sort of an intersection between the two concepts.

Consequently, there is no easy or obvious answer to this topic, as USOs normally want as much money as possible from their investors, while the investors want the USOs to grow as much as possible on the funds they have. What seems most important is to avoid negative spirals of mutual blaming between the CVC-investor and the USO, and ensuring that the USOs stay financially liquid, either by having an optimal business model or by receiving sufficient financing.

Legitimacy

As the positive effects of increased legitimacy have been discussed thoroughly before, this is not something we will focus on here, although we do acknowledge and believe in the concept.

Our findings of what we term "reversed legitimacy" seems to indicate that not only does the prominence of CVCs provide potential benefits of added legitimacy, but the same prominence may be perceived as an anti-competitive alliance, or a bad omen if the CVC-investor seemingly does not want to continue financing the venture sufficiently. Hence, one could argue that the USO might be wise to slightly diversify its investment-portfolio at a very early stage, if possible, instead of waiting until additional financing becomes necessary. This suggestion is strongly supported by the following quote from one of the USOs, which we also presented in our findings chapter: *"We couldn't make an investment case where any of the others [investors] went in and shared the risk with our CVC-investor … it's a good idea to sell such enthusiasm at a very early stage because then nobody starts to question it like, 'Yeah, but you've spent x millions on this already'."* Here the USO almost received what could be termed as an overdose of legitimacy, as they were backed by an industry-leading investor seemingly perfectly for them.

Further, we argue our findings on "reversed legitimacy" also suggest that both the USO and their CVC-investor should take notice of how their relationship is perceived towards other stakeholders, as giving the wrong impression could cause multiple difficulties for the USO.

The importance of strategic fit

As Weber and Weber (2010) found, portfolio companies' most important technology, and corporations' extensive suite of value-added resources, are not valuable and unlikely to improve innovation if they are not able to explore and exploit the complementary knowledge due to a relational misfit. Moreover, a CVC-investor can be a perfect strategic match, in theory; however, if the USO gets placed in the wrong business unit within that company, it might lose access to the potential available synergy effects, as was the case for one of our interviewed USOs. When trying to switch business units internally, they were met by bureaucracy and lacking assistance from the business unit managers. The bureaucracy of large corporations is well known (Sampson, 2007), but another reason for this could potentially be the lack of incentives for the business unit managers to aid the portfolio companies a create fruitful relationships, in contrast to generally high incentive plans for IVCs (Henderson, 2009).

The risk of the CVCs' lack of actual strategic fit and their loss of interest in the ventures, however, seems to be an even bigger problem than previously found, and possibly a bigger problem for USOs, than other NTBFs. It could be, that these USOs' lacking business experience made them unable to distinguish good strategic fit from bad, or that their judgment was clouded by their critical need for funding. Nevertheless, the lack of interest they sometimes experienced from their investors could be a possible cause for the lacking willingness to finance sufficiently, we just discussed thoroughly, and not providing other

invaluable resources unique to CVCs (Henderson, 2009; Weber & Weber, 2010; Zu Knyphausen-Aufseß, 2005).

Based on the fact that multiple USOs were hampered by the lacking contribution of their CVCs, we argue it would be positive for the outcome of the USO to get an investor with a good strategic fit so that the USO could realize the potential of the relationship. If the USO is going to utilize the potential knowledge capital resources from their CVC-investor to the max, they potentially need to provide access to their valuable intellectual property. This could lead to a greater risk of misappropriation.

Misappropriation risks

In general, alliances with CVCs are prone to involve appropriability hazards, potentially destructive for USOs, as the main and often unique asset they possess is technological knowledge, and CVCs often invest for a window on technology (Colombo et al., 2006; Katila et al., 2008). Other researchers found the same risk of CVC-alliances (Alvarez-Garrido & Dushnitsky, 2012; De Clercq & Lehtonen, 2006; Diestre & Rajagopalan, 2012; X. Wang & Wan, 2013), and the risk of misappropriation seems like one of the greatest risks from previous research. There might be several reasons for their calm attitude, among others their patent stocks protecting their IP, but from literature, we know that even patents are not equally effective in all industries (Dushnitsky & Shaver, 2009). To build on this, CVCs' incentives to commit their resources might diminish if the USOs' patent stock hinders their ability to appropriate the created value (J. H. Park & Bae, 2018). It is possible this contributed to the lack of realized resources experienced by some of the USOs.

Another reason for the USOs not being worried could be that the USOs are too naive and inexperienced business risk-wise to be aware of the risks. Moreover, several pointed out what a big breach of business ethics it would be; thus, they were not worried. Further, they pointed to how complementary business models of the CVCs would make it counterproductive to do so, and how the risk might be greater if there was a more direct strategic fit, which is supported by literature (Alvarez-Garrido & Dushnitsky, 2012). Still, none of the USOs seem to have been aware of any risks of CVC prior to alliance formation, although they experienced most of the risks identified in previous research. The fact that they experienced most of the previously identified risks but did not have any problems with misappropriation could suggest that misappropriation is not a big issue for USOs.

Knowledge capital

USO managers and founders' knowledge is usually more related to technology than business and industry, due to their research-based upbringing; thus, a critical resource for USOs is knowledge capital (Rasmussen & Wright, 2015). However, with their general need for knowledge capital, it is important from a resource dependence perspective that the USOs actually receive these knowledge resources. Previous research paints a picture of strong knowledge-bases of CVCs, with valuable, industry-specific, and complimentary information and know-how (Bjørgum & Sørheim, 2015). However, if these USOs are not able to appropriate this knowledge, or if these USOs do not even possess the needed knowledge, the USO might be left with a CVC-investor lacking a critical form of value-

added (Zu Knyphausen-Aufseß, 2005), thus not very distinguishable from a financial investor.

Access to social capital

Our findings on this topic are interesting, considering the previous research on social capital and USOs by Mathisen and Rasmussen (2019); Rasmussen and Wright (2015). One reason for the lack of access to social capital could, in some cases, be due to the lack of strategic fit, as an initial strategic fit has been found to ease the accumulation of social capital (Weber & Weber, 2011). Quite logically, getting access to a network would be of less value if the USO is not operating within the same industry as the network-provider. This particular situation occurred in one of our cases. Hence, one could argue that access to social capital is actually present, while it is not the right social capital for the specific USO.

5.2.2 The overall balance of risks and resources

Overall, although the USOs received several non-financial resources in addition to financing, our findings show that the USOs also experienced several risks through the alliance, and through cases of bad strategic fit. Thus, we argue our findings indicate USOs experience an outcome of coopetition, balancing significant resources and risks. However, three out of four USOs argued that their alliance was balanced in favor of a beneficial nature, despite the risks they had encountered, while the last USO had experienced a sort of equilibrium. Consequently, the USOs indicate that these alliances are mostly balanced by a cooperative nature, supporting previous research on the value-adding profiles of CVCs for NTBFs (Maula, 2001). The fact that our findings emphasize the presence of significant risks, thus, contradicting the opinions of the USOs, is very interesting.

There might be several reasons for our contradictory findings. Firstly, the USOs may simply not want to be too critical of their owners, as they have received several resources after all. Secondly, the USOs might feel like they *did* receive the critical resources they needed; thus, any lack of other resources was not a real issue. Thirdly, it could be their lack of business experience (Rasmussen & Wright, 2015), and the limited identified needs were closely related, indicating that they did not realize what resource needs they had. Thus, they might not have even been aware of the lacking contribution, hence, making them believe the alliances were optimal in that sense while they actually missed out on several resources. Nevertheless, it is very interesting why our findings should indicate one thing, while the USOs experienced another.

Moreover, one might think our findings should indicate that USOs should be wary of the associated risks of CVCs, and perhaps look for traditional IVCs instead, as these are supposed to be more inclined to contribute to their portfolio firms' success, and incur fewer risks (Bitler, Moskowitz, & Vissing-jørgensen, 2005; Gulati & Singh, 1998; Harry J. Sapienza, 1992). However, none of the USOs would have changed investor type if given the opportunity, only to more strategically aligned CVCs, and in fact, some explicitly mentioned how they would not have sought out traditional IVCs. This seems to indicate the USOs really are happy with their CVCs. Our findings indicate that the bigger problem may be which CVC-investor to get on board, as the strategic fit is of great importance.

Some USOs mentioned regretting choosing the bigger CVC-investor, over one with a better strategic fit, as it could have provided invaluable aid in technological development. Some of the USOs, however, seem to address the blame to themselves, e.g., their lack of demands to their investor and how they should have reached out more to their investor when they needed help. This might have contributed to their positive impression of their CVCs, as they possibly blame themselves for the unused potential.

5.3 Implications and Further Research

In the following section our implications will be presented. First, we will present the implications for university spin-offs and NTBFs, second, our implications for CVCs, and lastly, our implications for further research will be presented.

Implications for University Spin-offs and New Technology-based Firms

With this thesis, we believe we have made multiple discoveries that USOs should consider both before and during a relationship with CVCs. Overall, we argue USOs should be alert to the risks from CVC-investments in general, and not be blinded by their attractive valuations and value-added portfolios. During our interviews, when directly asked about the risks associated with the CVC-investment, the USOs were almost exclusively positive. However, as the interviews proceeded, they all mentioned experiencing risks from the alliance. Therefore, we advise USOs to face all aspects of the relation with healthy skepticism and be alert throughout the alliance.

Our results suggest that USOs should strive to obtain investors with whom they have a good strategic fit. This is in accordance with the existing theory presented by Maula (2001) and Gompers and Lerner (2000). Without a strategic fit, some of the benefits of having a CVC-investor might disappear, making them de facto a solely financial investor. Even though the financial terms of a non-strategic fit investment might be very good, our findings indicate that it might be better for the USO to opt for the best opportunity where a strategic fit is present.

Due to the complexity of university research, it usually takes some time before the investors fully understand what the USO is trying to create, something that we found could hamper the development of the USO. Hence, the USO should spend time giving its investors a thorough but straightforward understanding of their concept early on and keeping them updated as things develop. This might significantly lower transaction costs of repeated explanations of the technology. Here, they must demand the interest and participation of their investor, if these are too passive or lethargic. Otherwise, our findings show, aligned with transaction cost theory (Sampson, 2007), that this discrepancy could harm the relation and the motivation of both parties.

In further accordance with transaction cost theory, the USOs should also raise questions like; how is the future looking for the CVC-investor? Is it likely that they will sell their shares if our value increases? If the USO needs to regularly form new partnerships, this will likely hamper their development, and delay their process, in accordance with transaction cost theory (De Clercq & Lehtonen, 2006).

In contradiction to previous literature, we have found that being invested in by a big company might also cause challenges related to the legitimacy of the USO. For instance, being supported by one of the leading actors within an industry were found to potentially hamper collaboration with other firms. Therefore, both USOs and their CVCs should be highly aware of how their relations are portrayed towards the rest of the world, and especially within the industry in which they operate.

This "reversed legitimacy" effect also became evident when USOs wanted to diversify their investor-portfolios and/or raise additional funds, as other actors became skeptical as to why an industry-leading CVC-investor would not provide these funds, or on the other hand, be willing to sell some of their shares. This is an aspect USOs should consider carefully. One solution to this challenge was presented by one of the USOs, who proposed the idea of diversifying the investor portfolio at a very early stage, if possible.

Another factor we think USOs should be aware of, with regards to knowledge capital, is their board composition. Our findings highlighted how a positive and contributive board could add a lot of value to the company, while also showing how impatient boards can impose struggles on the young venture. With regards to outcome, it is interesting to observe that the currently most successful USO, is the one who had a nearly faultless experience throughout their whole relationship with their main CVC-investor. Whether a board is going to be "good" or "bad" is, of course, hard to judge beforehand for the USOs. Still, they should strive to obtain as much information as possible about how things are likely to be when a new board is established, even though we know from our own findings that it is often a discrepancy between the expectations and reality of what follows a CVC-investment

NTBFs and USOs share a lot of similarities, while also having some differences that slightly separates them from each other. Even though we have chosen to focus exclusively on the latter phenomenon throughout this thesis, we still argue the above-mentioned implications will also be valuable for NTBFs, as they face many of the same issues as USOs.

Implications for corporate venture capitalists

Although this thesis was focused on the perspective of USOs, we argue our findings also yield some implications for CVCs. These are implications that we find to be important for the development of the USOs, and therefore subsequently, their outcome. Given that CVCs often invest a considerable amount of money in USOs, it should also be in their fullest interest that these USOs actually succeed.

Existing literature suggests that CVCs often have a long-time frame on their investments in NTBFs; we believe that this is an approach that CVCs should strive to follow in practice. Given the impatience shown by CVCs in several cases, we recommend that such investors take a step back and fully acknowledge the development timeframe and risks of USOs. This could also serve as a valuable self-correction for the CVCs, clarifying their own expectations to the USO. From the interviews we conducted, our interpretation is that some CVCs have unrealistically high expectations for the USOs they have invested in, especially when looking at what the CVCs bring to the alliance themselves.

Moreover, we believe that it is better for both parties if CVCs choose a quality-over-quantity approach when it comes to investments in USOs. All our USOs expressed a lot of needs, especially in terms of knowledge capital. As we know from Maula et al. (2003), knowledge capital is best transferred through social interaction, and there exists a limit to how many USOs one CVC-investor can manage adequately. In this process, the CVC-investor should pay attention to the board-composition of the USO, as we found the contribution of board members to be important for the USOs. Aligned with previous research (Jensen & Thursby, 2001; Rasmussen & Sørheim, 2012; Shane, 2004), our findings also indicate that it is often expensive to develop a USO from research to a commercial business, a process that often requires multiple rounds of financing. This is something the CVCs should be aware of prior to the investment being made. Therefore, having fewer portfolio firms would likely free up monetary resources for the CVC-investor, which could enable them to back their carefully chosen USOs more sufficiently.

Implications for further research

Following our discussion, and the implications from our findings, a few areas for further research on USOs and CVCs reveal themselves. Firstly, the risk of misappropriation has been mentioned as one of the biggest risks. However, our findings did not show any sign of this risk. Our findings feature the risk of CVCs losing interest in the ventures, and investment alliances being formed without a good strategic fit, as bigger risks. It could be interesting to investigate what the biggest risks experienced by USOs are in Norway, compared to other countries, too see whether misappropriation is not the real issue for USOs, but perhaps something else. Or, it could be the lack of misappropriation is only present in Norway, thus suggesting different business cultures. As our research was mostly based on Norwegian CVCs as well, further research is needed to investigate potential differences in contributed resources and risks of other nationality CVCs. It could, however, be this is a special exception for USOs, while for NTBFs, the risk of misappropriation is still high. We argue this makes room for further research to investigate the differences in experienced risks for USOs and NTBFs in different countries.

Moreover, as our findings show, CVCs contribute both rare and valuable resources, and significant risks, it could be interesting to investigate further empirically whether this affects the outcome of USOs in quantitative studies. Further research could investigate the correlation between USOs who fold or go bankrupt, and who experienced significant risks of CVC. Other research could investigate how the outcome of USOs is influenced by different investor types and financing models, e.g., what is the optimal combination of IVC and CVC, as has been done for NTBFs. This could be done qualitatively by interviewing all three actors, or quantitatively, by looking at the correlation between investor type and outcome. Moreover, previous and current research on CVCs seems to be mostly conducted on independent CVC-units, sometimes called an external corporate venturing unit (Maula, 2001). Given our finding that these represent only around one-fifth of the CVC-investments, one could argue that the scope of future CVC-research should be broadened to also include other forms of CVC, such as the ones we have identified through the refinement of our database. Future studies could also take this into account, to compare the two forms of CVC, and their effects on their portfolio firms.

We found several cases of investment alliances taking place seemingly without a strategic fit, which we know from our findings and previous research could lead to limited

contribution from the CVC-investor. In some cases, this could be due to local involvement, e.g., aiding young and local, innovative companies, as a cornerstone company. Hence, one could research this by taking a quantitative approach and try to figure out the percentage of alliances based on local involvement versus other strategic means, and, e.g., compare the effects on performance or success.

Moreover, in this study, we applied a resource dependence theory framework; further research could apply other frameworks and look at the alliances from different perspectives in order to analyze them further. It could be interesting to also look at these from a transaction cost theory perspective, and from an agency theory perspective, in order to further investigate the risks of CVC, as well as applying a social network theory framework to investigate the actual networks of CVCs and what their portfolio firms are able to access.

5.4 Limitations

All research has inevitable limitations, and this is implicit with social sciences and qualitative research, ergo, this study makes no exception. In order to leave the reader with a credible impression of our research, we want to give a more accurate picture of the limitations of our study, and what our results cannot tell us.

The generalizability of this study is constrained by the limited number of cases, as well as the constrained geographical focus to Norway; however, this was done to fit the scope of a master's thesis.

The database used to answer RQ 1 contains investments that took part between 1998 and 2012; hence, our findings can give implications to the number of CVC-investments and strategic fit, but it goes without saying that these findings cannot reliably describe the present situation.

It is important to mention that as we wanted to correlate data from our database with our cases, we had to select alliances from over eight years back in time. For this exact reason, we wanted to select ongoing, or recently finished ventures, to ensure the CEOs had the best recollection as possible. However, due to COVID-19 and the numerous complications that followed, we were not able to solely recruit interviewees that satisfied all our initial criteria. Instead, we had to loosen up the criteria, resulting in a few slightly older alliances, and we were not able to interview CEOs who had been with the USOs from beginning to end. Thus, this inevitably had a limiting effect on the reliability of the information they provided due to recollection bias. Moreover, this is likely to have had an especially limiting effect on the recollected pre-formation needs of the USOs, as there were quite a few mentions of needs.

We argue in our theoretical framework, the alliances between USOs and CVCs result in outcomes balanced by both realized resources and realized risks. Our findings seem to support this, as all cases received both resources and risks in their alliances, indicating the existence of CVC-investments as a 'double-edged sword' (Hellmann, 2002; Maula & Murray, 2002). Some cases seem to have been influenced by risks more than others, where one especially seems to have been plagued by a considerable amount of relational risks. Further, this could partly be linked to the present situation of the USOs, although we cannot

say anything conclusive regarding the relationship between the outcome and the balance of risks and resources. Additionally, who is to say what risks or resources should count the most, the opinion of the USOs themselves could arguably be more important regarding the balance, than our identified balance from their mentions of resources and risks. Nevertheless, more cases are needed to provide more generalizable findings.

As we aimed to look at the alliances from the USO's perspective, we naturally only interviewed one side of the investment dyad, i.e., the USOs. However, this induces certain limitations to our study as our findings cannot say anything from the CVCs' perspectives, other than what is known from previous research, and this cannot be fully used to explain our results. The alliances could be perceived significantly differently by the respective CVCs; hence, the reliability of our findings is questioned by having interviewed only one side of the alliance. An example of a limitation to the reliability of our study could be the reason for CVCs not wanting to provide certain invaluable resources to their portfolio-firms, which could only be argued for by knowing the CVCs' perspectives. Another example could be the CVCs' reasons for entering alliances without a strategic fit.

Chapter 6 | Conclusion

The purpose of this study was to investigate the phenomenon of equity investment alliances between USOs and CVCs, to see what resources and risks USOs encounter. Some descriptive statistics of the phenomenon, together with multiple-case research design, was applied to a refined database of 159 such alliances, and interviews of four different USOs, in April and May of 2020. The study aimed to answer two following two research questions:

> **RQ1:** How often do investment relationships between university spin-offs and corporate venture capitalists occur, and how are the investees and investors strategically linked?
> **RQ2:** How is the balance of realized risks and resources in an investment relationship between a university spin-off and its corporate venture capital investor?
> **RQ3:** How does the balance of realized risks and resources impact the outcome of the USOs?

Relevant entries were extracted and refined into a new database, which was then analyzed. The interviews were transcribed, and the data were coded, analyzed, and discussed through the theoretical lens of resource dependence theory. This process illuminated certain findings, which will be presented in relation to our research questions below.

Research question 1: How often do investment relationships between university spin-offs and corporate venture capitalists occur, and how are the investees and investors linked? We found that 27,5 % of the 371 Norwegian USOs in our database experienced investments from one or more CVCs. This is a comparable number with what was found in the existing literature. Among the aforementioned investments, only 22,1 % happened through an independent CVC-unit, whereas the remaining 77,9 % happened directly, without such a unit. Further, the strategic fit is often one of the reasons why CVCs invest in USOs, as they search to acquire more than just a financial return on their investment (Gompers & Lerner, 2000; McNally, 1995). Still, we found that as many as 29,0 % of the alliances took place without an apparent strategic fit. Our findings indicate that some of the motivation behind such investments could be that CVCs want to show environmental or innovational responsibility, or that they simply want to support young local ventures.

Research question 2: How is the balance of realized risks and resources in an investment relationship between a university spin-off and its corporate venture capital investor? Our findings show that USOs experience a balance between risks and resources in their equity investment alliances with CVCs. Our findings are consistent with the work of Hellmann (2002) and Maula and Murray (2002), by confirming the existence of the double-edged sword of corporate venture capital. Moreover, the critical resource needs of USOs were only partly met. The most important resources that were obtained by the USOs through the relationship were knowledge of business and technology development, and access to networks. The most important resource that was not obtained was the lack of sufficient financing. The largest risks were relational risks, including impatience of the investor, loss of interest in the venture, and poor strategic fit. These findings are somewhat consistent with research on both benefits and risks of CVC, while at the same time slightly different than for other NTBFs, thus indicating potential differences in the balance of risks and resources for USOs. Nevertheless, research streams on both risks and rewards of corporate

venture capital are supported, as CVCs can be both advantageous and disadvantageous to USOs, indicating a mixed balance of realized risks and resources.

Research question 3: How does the balance of realized risks and resources impact the outcome of the USOs? By looking at our findings, one might argue the balance of significant realized risks and resources should indicate equity investment alliances between USOs and CVCs have coopetitive outcomes. Quite interestingly, however, their own perceptions of the alliances were mostly positive, and all four USOs included in this study claimed CVC was generally an appropriate type of investor, thus, indicating a cooperative nature. Consequently, our study indicates the balance of realized risks and resources can arguably lead to both coopetitive and cooperative outcomes.

References

Ahuja, G. (2000). Collaboration networks, structural holes, and innovation: A longitudinal study. *Administrative Science Quarterly, 45*(3), 425-455. doi:10.2307/2667105

Alvarez-Garrido, E., & Dushnitsky, G. (2012). *More than words: Is startup's propensity to patent and publish sensitive to investor characteristics?* Paper presented at the Academy of Management 2012 Annual Meeting, AOM 2012.

Alvarez-Garrido, E., & Dushnitsky, G. (2016). Are entrepreneurial venture's innovation rates sensitive to investor complementary assets? Comparing biotech ventures backed by corporate and independent VCs. *Strategic Management Journal, 37*(5), 819-834. doi:10.1002/smj.2359

Berg-Utby, T., Sørheim, R., & Widding, L. Ø. (2007). Venture capital funds: Do they meet the expectations of portfolio firms? *Venture Capital, 9*(1), 23-41. doi:10.1080/13691060600995998

Berscheid, E., & Regan, P. C. (2005). *The psychology of interpersonal relationships*. Upper Saddle River, N.J: Pearson Prentice Hall.

Bitler, M., Moskowitz, T. J., & Vissing-jørgensen, A. (2005). Testing Agency Theory with Entrepreneur Effort and Wealth. *Journal of Finance, 60*(2), 539-576. Retrieved from https://EconPapers.repec.org/RePEc:bla:jfinan:v:60:y:2005:i:2:p:539-576

Bjørgum, Ø., & Sørheim, R. (2015). The funding of new technology firms in a pre-commercial industry – the role of smart capital. *Technology Analysis and Strategic Management, 27*(3), 249-266. doi:10.1080/09537325.2014.971002

Bottazzi, L., Da Rin, M., & Hellmann, T. (2007). Who are the active investors? Evidence from Venture Capital. *IDEAS Working Paper Series from RePEc*.

Brandenburger, A. M., & Nalebuff, B. J. (1996). *Co-opetition*. Doubleday Publishing, New York: Currency.

Brandenburger, A. M., & Nalebuff, B. J. (2011). *Co-opetition*: Currency.

Chandler, G. N., & Hanks, S. H. (1994). Market attractiveness, resource-based capabilities, venture strategies, and venture performance. *Journal of Business Venturing, 9*(4), 331-349.

Chemmanur, T. J., Loutskina, E., & Tian, X. (2014). Corporate venture capital, value creation, and innovation. *Review of Financial Studies, 27*(8), 2434-2473. doi:10.1093/rfs/hhu033

Clayton, J., Gambill, B., & Harned, D. (1999). The curse of too much capital: Building new businesses in large corporations. *The McKinsey Quarterly*, 48-59.

Coleman, J. S. (1988). Social Capital in the Creation of Human Capital. *American Journal of Sociology, 94*, S95-S120. Retrieved from www.jstor.org/stable/2780243

Colombo, M. G., Grilli, L., & Piva, E. (2006). In search of complementary assets: The determinants of alliance formation of high-tech start-ups. *Research Policy, 35*(8 SPEC. ISS.), 1166-1199. doi:10.1016/j.respol.2006.09.002

Dagenborg, J. (2020). Thommessen: -Vi risikerer å miste en generasjon av gründerbedrifter. Retrieved from https://kommunikasjon.ntb.no/pressemelding/thommessen--vi-risikerer-a-miste-en-generasjon-av-grunderbedrifter?publisherId=11898808&releaseId=17882105

Das, T. K., & Teng, B.-S. (1998). Resource and risk management in the strategic alliance making process. *Journal of Management, 24*(1), 21-42. doi:https://doi.org/10.1016/S0149-2063(99)80052-X

Das, T. K., & Teng, B. S. (2000). Instabilities of strategic alliances. An internal tensions perspective. *Organization Science, 11*(1), 77-101. doi:10.1287/orsc.11.1.77.12570

De Clercq, D. F., Vance H., & Lehtonen, O. S., Harry J. (2006). An Entrepreneur's Guide to the Venture Capital Galaxy. *Academy of Management Perspectives, 20*(3), 90-112. doi:10.5465/AMP.2006.21903483

Devlin, G., & Bleackley, M. (1988). Strategic alliances—Guidelines for success. *Long Range Planning, 21*(5), 18-23. doi:https://doi.org/10.1016/0024-6301(88)90101-X

Diestre, L., & Rajagopalan, N. (2012). Are all 'sharks' dangerous? new biotechnology ventures and partner selection in R&D alliances. *Strategic Management Journal, 33*(10), 1115-1134. doi:10.1002/smj.1978
Dollinger, M. (2008). *Entrepreneurship*: Marsh Publications.
Doz, Y. L. (1987). Technology Partnerships between Larger and Smaller Firms: Some Critical Issues. *International Studies of Management & Organization, 17*(4), 31-57. doi:10.1080/00208825.1987.11656466
Dushnitsky, G., & Lenox, M. J. (2005a). When do incumbents learn from entrepreneurial ventures?: Corporate venture capital and investing firm innovation rates. *Research Policy, 34*(5), 615-639. doi:https://doi.org/10.1016/j.respol.2005.01.017
Dushnitsky, G., & Lenox, M. J. (2005b). When do firms undertake R&D by investing in new ventures? *Strategic Management Journal, 26*(10), 947-965. doi:10.1002/smj.488
Dushnitsky, G., & Shaver, J. M. (2009). Limitations to interorganizational knowledge acquisition: the paradox of corporate venture capital. *Strategic Management Journal, 30*(10), 1045-1064. doi:10.1002/smj.781
Eisenhardt, K. M. (1989). Building Theories from Case Study Research. *The Academy of Management Review, 14*(4), 532-550. doi:10.2307/258557
Emerson, R. M. (1962). POWER-DEPENDENCE RELATIONS. *American Sociological Review, 27*(1), 31-41. doi:10.2307/2089716
Flick, U. (2015). *Introducing research methodology : a beginner's guide to doing a research project* (2nd ed. ed.). Los Angeles, Calif: SAGE.
Fosse, E. (2020). FORNY2020 – Forskningsbasert nyskaping. Retrieved from https://www.forskningsradet.no/om-forskningsradet/programmer/forny2020/
Fredriksen, O., Olofsson, C., & Wahlbin, C. (1997). Are venture capitalists firefighters? A study of the influence and impact of venture capital firms. *Technovation, 17*(9), 503-511. doi:10.1016/s0166-4972(97)00030-8
Fried, V. H., & Hisrich, R. D. (1995). THE VENTURE CAPITALIST - A RELATIONSHIP INVESTOR. *California Management Review, 37*(2), 101-113. doi:10.2307/41165791
Gomez-Mejia, L. R., Balkin, D. B., & Welbourne, T. M. (1990). Influence of venture capitalists on high tech management. *The Journal of High Technology Management Research, 1*(1), 103-118. doi:https://doi.org/10.1016/1047-8310(90)90016-W
Gompers, P., & Lerner, J. (2000). The Determinants of Corporate Venture Capital Success: Organizational Structure, Incentives, and Complementarities. In *Concentrated Corporate Ownership* (pp. 17-54): National Bureau of Economic Research, Inc.
Grant, R. M. (1996). Toward a knowledge-based theory of the firm. *Strategic Management Journal, 17*(S2), 109-122. doi:10.1002/smj.4250171110
Gulati, R., & Singh, H. (1998). The architecture of cooperation: Managing coordination costs and appropriation concerns in strategic alliances. *Administrative Science Quarterly, 43*(4), 781-814. doi:10.2307/2393616
Halldórsson, Á., & Aastrup, J. (2003). Quality criteria for qualitative inquiries in logistics. *European Journal of Operational Research, 144*(2), 321-332. doi:10.1016/S0377-2217(02)00397-1
Hellmann, T. (2002). A theory of strategic venture investing. *Journal of Financial Economics, 64*(2), 285-314. doi:10.1016/S0304-405X(02)00078-8
Henderson, J. (2009). The role of corporate venture capital funds in financing biotechnology and healthcare: Differing approaches and performance consequences. *International Journal of Technoentrepreneurship, 2*(1), 29-44. doi:10.1504/IJTE.2009.027544
Jensen, R., & Thursby, M. (2001). Proofs and Prototypes for Sale: The Licensing of University Inventions. *The American Economic Review, 91*(1), 240-259. Retrieved from www.jstor.org/stable/2677907
Katila, R., & Mang, P. Y. (2003). Exploiting technological opportunities: the timing of collaborations. *Research Policy, 32*(2), 317-332. doi:10.1016/s0048-7333(02)00102-6

Katila, R., Rosenberger, J. D., & Eisenhardt, K. M. (2008). Swimming with sharks: Technology ventures, defense mechanisms and corporate relationships. *Administrative Science Quarterly, 53*(2), 295-332. doi:10.2189/asqu.53.2.295

Kogut, B., & Zander, U. (1992). Knowledge of the Firm, Combinative Capabilities, and the Replication of Technology. *Organization Science, 3*(3), 383-397. Retrieved from https://EconPapers.repec.org/RePEc:inm:ororsc:v:3:y:1992:i:3:p:383-397

Landström, H. (1990). Co-operation between venture capital companies and small firms. *Entrepreneurship & Regional Development, 2*(4), 345-362.

Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. Beverly Hills, Calif: Sage.

LiPuma, J. A. (2006). Independent venture capital, corporate venture capital, and the internationalisation intensity of technology-based portfolio firms. *International Entrepreneurship and Management Journal, 2*(2), 245-260. doi:10.1007/s11365-006-8687-x

Lubik, S., Lim, S., Platts, K., & Minshall, T. (2012). Market-pull and technology-push in manufacturing start-ups in emerging industries. *Journal of Manufacturing Technology Management, 24*(1), 10-27. doi:10.1108/17410381311287463

Markman, G. D., Siegel, D. S., & Wright, M. (2008). Research and technology commercialization. *Journal of Management Studies, 45*(8), 1401-1423. doi:10.1111/j.1467-6486.2008.00803.x

Mason, H., & Rohner, T. (2002). *The venture imperative: a new model for corporate innovation*: Harvard Business Press.

Mathisen, M. T., & Rasmussen, E. (2019). The development, growth, and performance of university spin-offs: a critical review. *Journal of Technology Transfer, 44*(6), 1891-1938. doi:10.1007/s10961-018-09714-9

Maula, M. (2001). *Corporate Venture Capital and the Value-Added for Technology-Based New Firms.*

Maula, M., Autio, E., & Murray, G. (2003). Prerequisites for the creation of social capital and subsequent knowledge acquisition in corporate venture capital. *Venture Capital, 5*(2), 117-134. doi:10.1080/1369106032000087275

Maula, M., Autio, E., & Murray, G. (2005). Corporate venture capitalists and independent venture capitalists: What do they know, who do they know and should entrepreneurs care? *Venture Capital, 7*(1), 3-21. doi:10.1080/1369106042000316332

Maula, M., Autio, E., & Murray, G. C. (2009). Corporate venture capital and the balance of risks and rewards for portfolio companies. *Journal of Business Venturing, 24*(3), 274-286. doi:10.1016/j.jbusvent.2008.10.012

Maula, M., & Murray, G. (2002). Corporate Venture Capital and the Creation of US Public Companies: The Impact of Sources of Venture Capital on the Performance of Portfolio Companies. In *Creating Value: Winners in the New Business Environment* (pp. 161-183).

McGrath, J. L., & Argote, L. (2004). Group Processes in Organizational Contexts. In *Applied social psychology.* (pp. 318-341). Malden: Blackwell Publishing.

McNally, K. (1995). Corporate venture capital: the financing of technology businesses. *International Journal of Entrepreneurial Behaviour & Research, 1*(3), 9-43. doi:10.1108/13552559510100648

McNally, K. (1997). *Corporate Venture Capital: Bridging the Equity Gap in the Small Business Sector*: Routledge.

Miller, K. D. (1992). A Framework for Integrated Risk Management in International Business. *Journal of International Business Studies, 23*(2), 311-331. Retrieved from www.jstor.org/stable/154903

Moy, R. (2006). Gjorde skjell til snadder. Retrieved from https://e24.no/naeringsliv/i/Jopv64/gjorde-skjell-til-snadder

Mustar, P., Renault, M., Colombo, M. G., Piva, E., Fontes, M., Lockett, A., . . . Moray, N. (2006). Conceptualising the heterogeneity of research-based spin-offs: A multi-dimensional taxonomy. *Research Policy, 35*(2), 289-308. doi:10.1016/j.respol.2005.11.001

Mustar, P., Wright, M., & Clarysse, B. (2008). University spin-off firms: Lessons from ten years of experience in Europe. *Science and Public Policy, 35*(2), 67-80. doi:10.3152/030234208X282862

Nahapiet, J., & Ghoshal, S. (1998). Social capital, intellectual capital, and the organizational advantage. *Academy of Management. The Academy of Management Review, 23*(2), 242-266.

Napp, J. J., Minshall, T., & Probert, D. (2009). *External corporate venture capital investment: Towards a framework for capturing and measuring strategic value.* Paper presented at the PICMET: Portland International Center for Management of Engineering and Technology, Proceedings.

NTB. (2019). Andelen kvinnelige gründere øker. Retrieved from https://enerwe.no/andelen-kvinnelige-grndere-oker/313500

Osborn, R. N., & Baughn, C. C. (1990). Forms of Interorganizational Governance for Multinational Alliances. *The Academy of Management Journal, 33*(3), 503-519. doi:10.2307/256578

Pahnke, E. C., Katila, R., & Eisenhardt, K. M. (2015). Who Takes You to the Dance? How Partners' Institutional Logics Influence Innovation in Young Firms. *Administrative Science Quarterly, 60*(4), 596-633. doi:10.1177/0001839215592913

Paik, Y., & Woo, H. (2017). The effects of corporate venture capital, founder incumbency, and their interaction on entrepreneurial firms' R & D investment strategies. *Organization Science, 28*(4), 670-689. doi:10.1287/orsc.2017.1133

Park, H. D., & Steensma, H. K. (2012). When does corporate venture capital add value for new ventures. *Strategic Management Journal, 33*(1), 1-22. doi:10.1002/smj.937

Park, H. D., & Steensma, H. K. (2013). The selection and nurturing effects of corporate investors on new venture innovativeness. *Strategic Entrepreneurship Journal, 7*(4), 311-330. doi:10.1002/sej.1165

Park, J. H., & Bae, Z. T. (2018). When are 'sharks' beneficial? Corporate venture capital investment and startup innovation performance. *Technology Analysis and Strategic Management, 30*(3), 324-336. doi:10.1080/09537325.2017.1310376

Penrose, E. T. (2009). *The theory of the growth of the firm*(4th ed. ed.).

Pfeffer, J., & Salancik, G. R. (1978). *The external control of organizations: a resource dependence perspective*: Harper & Row.

Rasmussen, E., Mosey, S., & Wright, M. (2011). The Evolution of Entrepreneurial Competencies: A Longitudinal Study of University Spin-Off Venture Emergence. *Journal of Management Studies, 48*(6), 1314-1345. doi:10.1111/j.1467-6486.2010.00995.x

Rasmussen, E., & Sørheim, R. (2012). How governments seek to bridge the financing gap for university spin-offs: proof-of-concept, pre-seed, and seed funding. *Technology Analysis & Strategic Management, 24*(7), 663-678. doi:10.1080/09537325.2012.705119

Rasmussen, E., & Wright, M. (2015). How can universities facilitate academic spin-offs? An entrepreneurial competency perspective. *The Journal of Technology Transfer, 40*(5), 782-799. doi:10.1007/s10961-014-9386-3

Rodeiro-Pazos, D., Fernández-López, S., Corsi, C., & Prencipe, A. (2018). The role of venture capitalist to enhance the growth of Spanish and Italian university spin-offs. *International Entrepreneurship and Management Journal, 14*(4), 1111-1130. doi:10.1007/s11365-017-0489-9

Röhm, P., Köhn, A., Kuckertz, A., & Dehnen, H. S. (2018). A world of difference? The impact of corporate venture capitalists' investment motivation on startup valuation. *Journal of Business Economics, 88*(3-4), 531-557. doi:10.1007/s11573-017-0857-5

Sampson, R. C. (2007). R&D Alliances and Firm Performance: The Impact of Technological Diversity and Alliance Organization on Innovation. *The Academy of Management Journal, 50*(2), 364-386. doi:10.5465/AMJ.2007.24634443

Santos, F. M., & Eisenhardt, K. M. (2009). Constructing markets and shaping boundaries: Entrepreneurial power in nascent fields. *Academy of Management Journal, 52*(4), 643-671.

Sapienza, H. J. (1992). WHEN DO VENTURE CAPITALISTS ADD VALUE. *Journal of Business Venturing, 7*(1), 9-27. doi:10.1016/0883-9026(92)90032-m
Sapienza, H. J., Manigart, S., & Vermier, W. (1996). Venture capitalist governance and value added in four countries. *Journal of Business Venturing, 11*(6), 439-469. doi:10.1016/s0883-9026(96)00052-3
Shane, S. (2004). Academic entrepreneurship: University spinoffs and wealth creation. *Academic Entrepreneurship: University Spinoffs and Wealth Creation*, 1-335. doi:10.4337/9781843769828.00001
Soetanto, D., & van Geenhuizen, M. (2015). Getting the right balance: University networks' influence on spin-offs' attraction of funding for innovation. *Technovation, 36-37*, 26-38. doi:10.1016/j.technovation.2014.10.008
Stevenson, H., & Gumpert, D. (1985). The heart of entrepreneurship.
Storey, D. J., & Tether, B. S. (1998). New technology-based firms in the European union: An introduction. *Research Policy, 26*(9), 933-946. doi:10.1016/S0048-7333(97)00052-8
Stuart, T. E. (2000). Interorganizational alliances and the performance of firms: a study of growth and innovation rates in a high-technology industry. *Strategic Management Journal, 21*(8), 791-811.
Stuart, T. E., Hoang, H., & Hybels, R. C. (1999). Interorganizational Endorsements and the Performance of Entrepreneurial Ventures. *Administrative Science Quarterly, 44*(2), 315-349. doi:10.2307/2666998
Sørheim, R., Widding, L. Ø., Oust, M., & Madsen, Ø. (2011). Funding of university spin-off companies: a conceptual approach to financing challenges. *Journal of Small Business and Enterprise Development, 18*(1), 58-73. doi:10.1108/14626001111106433
Thompson, J. D. (1967). *Organizations in action; social science bases of administrative theory*. New York: McGraw-Hill.
Tykvová, T., & Walz, U. (2007). How important is participation of different venture capitalists in German IPOs? *Global Finance Journal, 17*(3), 350-378. doi:10.1016/j.gfj.2006.05.008
Vohora, A., Wright, M., & Lockett, A. (2004). Critical junctures in the development of university high-tech spinout companies. *Research Policy, 33*(1), 147-175. Retrieved from https://EconPapers.repec.org/RePEc:eee:respol:v:33:y:2004:i:1:p:147-175
Wadhwa, A., & Kotha, S. (2006). Knowledge creation through external venturing: Evidence from the telecommunications equipment manufacturing industry. *Academy of Management Journal, 49*(4), 819-835.
Wang, L., Zhou, F., An, Y., & Yang, J. (2019). Corporate venture capital: technological innovation or value creation? A comparative study of CVC- and IVC-invested Chinese listed companies. *Asian Journal of Technology Innovation, 27*(3), 257-279. doi:10.1080/19761597.2019.1669470
Wang, X., & Wan, W. P. (2013). Explaining the Variance in Underpricing among Venture Capital-Backed IPOs: A Comparison Between Private and Corporate VC Firms. *Strategic Entrepreneurship Journal, 7*(4), 331-342. doi:10.1002/sej.1163
Weber, C., & Weber, B. (2010). Social Capital and Knowledge Relatedness as Promoters of Organizational Performance: An Explorative Study of Corporate Venture Capital Activity. *International Studies of Management & Organization, 40*(3), 23-49. Retrieved from www.jstor.org/stable/20798248
Weber, C., & Weber, B. (2011). Exploring the antecedents of social liabilities in CVC triads—A dynamic social network perspective. *Journal of Business Venturing, 26*(2), 255-272. doi:https://doi.org/10.1016/j.jbusvent.2009.07.004
Widding, L. Ø. (2005). Building entrepreneurial knowledge reservoirs. *Journal of Small Business and Enterprise Development*.
Wright, M., Lockett, A., Clarysse, B., & Binks, M. (2006). University spin-out companies and venture capital. *Research Policy, 35*(4), 481-501. doi:10.1016/j.respol.2006.01.005
Yin, R. K. (2009). *Case study research : design and methods* (4th ed. ed. Vol. vol. 5). Thousand Oaks, Calif: Sage.

Yoshino, M. Y., & Rangan, U. S. (1995). *Strategic Alliances: An Entrepreneurial Approach to Globalization*: Harvard Business School Press.
Zaheer, A., McEvily, B., & Perrone, V. (1998). Does trust matter? Exploring the effects of interorganizational and interpersonal trust on performance. *Organization Science, 9*(2), 141-159. doi:10.1287/orsc.9.2.141
Zu Knyphausen-Aufseß, D. (2005). Corporate Venture Capital: Who Adds Value? *Venture Capital, 7*(1), 23-49. doi:10.1080/1369106042000335610

Appendices

Appendix A1 - Interview Guide Master's Thesis

Introduction
start recording

- Introduce ourselves and say a little about us and the master thesis, give an introduction to what we want to look at so that the interview object might start thinking about relevant topics. Say that there are more general questions at first, to gain a broader understanding.
- Mention the information letter, about data processing and consent etc.

Questions:
remember follow-up questions

- Name of company/organization and position?
- Any previous experiences with start-ups?
- How long have you worked in the company?
- What is the current status?
- How many employees do/did you have?
- What is/was your role?
- How has the journey with the company been?

In the beginning

- What were the biggest challenges you experienced at the beginning of the venture?
    - and in the other stages of the business?
- What would you say were their strengths and weaknesses within the company at the beginning?
- What resources did you already possess, and which ones did you need the most at the beginning?
    - Did you get these, how?
- Would you say USOs have little business development knowledge?

CVC investment

- Did you receive investment from an industrial investor? One or more CVCs?
- How did you decide if you should be invested in and why?
- How did you get hold of the CVC-investor and subsequent investment, who got in touch?
    - Are/did you doing anything special to make you attractive to CVCs and other investors?
    - Did you know of any potential risks of CVC-investments?
        - How did you meet these, did you take any measures?
- How did/does the CVC-USO relationship look from your perspective?
    - How did you work with them?
    - What did you get from them?
    - Was there something you didn't get from them?
        - If so, did this affect you negatively?
- Did you want more than strictly financial resources out of such an investment?
    - What types?

More to the point

- Have you gained access to a kind of network through the investor(s)?
    - How has this affected you?
- Have you gained access to knowledge and know-how through the investor (s)?
    - How has this affected you?
- Did you experience any negative aspects or risks of receiving CVC-investments?
    - How has this affected you?
    - Did this affect technological development?
    - Business?
    - Network?
    - Credibility?
- Did you know about these / other risks before entering into the collaboration?
    - Did you take any measures to protect yourself from these? Which?
    - What made you still choose to enter into the collaboration?
- Did you get help with technological development? How?
    - What about business development? How?
    - How about getting more funding, getting in touch with partners/customers, etc.?
    - What about credibility?
- If you look at it overall, would you say the advantages or disadvantages weighed the most?
    - Why?

Other types of investor

- Have you received investments from other investors, IVCs/BAs, etc.?
    - If so, do you experience any differences between the investments and their respective contributions?
    - How have these helped you in relation to CVCs?
    - How have these, if relevant, affected you negatively?
- How important have these various investors been to you, in what way?
- Would you have done anything differently now after gaining some experience with such investors, if you could do it all over again?

Finishing remarks

- Is there anything else you want to tell us?
    - Any scenarios you feel are relevant?
- Anything else you think we should talk about?
- Anyone else we should talk to?
    - Contact Info?
- Say "thank you for the interview" and repeat info about data processing (e.g. recording of the interview, deleting the audio file after transcription, etc.) and consent, as well as making sure we can use everything we have recorded.

Appendix A2 - NSD approved information letter (in Norwegian)

Vil du delta i forskningsprosjektet,

University spin-offs and corporate venture capital:

The balance of risks and resources, and its impact on university spin-offs

Dette er et spørsmål til deg om å delta i et forskningsprosjekt hvor formålet er å undersøke hvordan investering av Corporate venture capital påvirker norske university spin-offs. I dette skrivet gir vi deg informasjon om målene for prosjektet og hva deltakelse vil innebære for deg.

Formål

Vi ønsker å undersøke hvilke utfordringer og fordeler som oppstår når corporate venture capital investeres i university spin-offs. Gjennom en litteraturstudie gjennomført høsten 2019 ble det identifisert et behov for mer forskning på dette temaet. Prosjektet er en del av en masteroppgave skrevet ved NTNU school of Entrepreneurship våren 2020. Innhentede opplysninger, da i anonymisert form, vil kun bli brukt i forbindelse med publisering av forskningsresultater, og ingen andre formål enn dette.

Hvem er ansvarlig for forskningsprosjektet?

Forskningsprosjekt gjennomføres som en del av en masteroppgave skrevet ved NTNU. Følgelig står NTNU som ansvarlig for prosjektet, via stipendiat og veileder Puck Hegeman, sammen med masterstudentene Per Christian Tandberg Wibe Due og Peter Andreas Prydz Gørbitz.

Hvorfor får du spørsmål om å delta?

Gjennom tilgang til FORNY-databasen, som inneholder informasjon om samtlige norske University spin-offs har vi identifisert en oppstartsbedrift du er (eller har vært) en del av, som et tilfelle vi ønsker å gå i dybden på. Dette går på parametere som geografisk lokasjon, utfall av oppstartsbedriften (konkurs/fusjon/fortsatt drift etc.) og bransje.
Totalt ønsker vi å gjennomføre 4-6 intervjuer fra forskjellige university spin-offs.
Dine svar og øvrige personlige opplysninger vil anonymiseres fullstendig i det som publiseres.

Hva skjer med opplysningene dine?

Intervjuene vil bli tatt opp med lydopptaker, for deretter å transkriberes i etterkant. Når intervjuet er ferdig transkribert vil det sendes tilbake til deg for en sitatsjekk. Deretter vil den opprinnelige lydfilen slettes, slik at du ikke kan identifiseres på noen som helst måte. Følgelig blir du altså anonymisert umiddelbart.
De anonymiserte dataene slettes når vår veileder er ferdig med sin PhD i desember 2021. I mellomtiden vil de lagres på vår OneDrive konto under NTNUs lisens.

Dine rettigheter

Så lenge du kan identifiseres i datamaterialet, har du rett til:

- innsyn i hvilke personopplysninger som er registrert om deg, og å få utlevert en kopi av opplysningene,
- å få rettet personopplysninger om deg,
- å få slettet personopplysninger om deg, og
- å sende klage til Datatilsynet om behandlingen av dine personopplysninger.

Hva gir oss rett til å behandle personopplysninger om deg?
Vi behandler opplysninger om deg basert på ditt samtykke.
På oppdrag fra NTNU NSD – Norsk senter for forskningsdata AS vurdert at behandlingen av personopplysninger i dette prosjektet er i samsvar med personvernregelverket.

Hvor kan jeg finne ut mer?
Hvis du har spørsmål til studien, eller ønsker å benytte deg av dine rettigheter, ta kontakt med:

- NTNU ved veileder Puck Hegeman *puck.hegeman@ntnu.no*, eller studenter: Per Christian Tandberg Wibe Due per.christian.wibe.due@gmail.com og Peter Andreas Prydz Gørbitz *pagoerbi@gmail.com*
- Personvernombud ved NTNU, Thomas Helgesen, thomas.helgesen@ntnu.no eller +47 93079038

Hvis du har spørsmål knyttet til NSD sin vurdering av prosjektet, kan du ta kontakt med:

- NSD – Norsk senter for forskningsdata AS på e post (personverntjenester@nsd.no) eller på telefon: 55 58 21 17.

Med vennlig hilsen,

Puck Hegeman (Forsker/veileder)	Peter Andreas Prydz Gørbitz & Per Christian Tandberg Wibe Due

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Samtykkeerklæring
Jeg har mottatt og forstått informasjon om prosjektet *[sett inn tittel]*, og har fått anledning til å stille spørsmål. Jeg samtykker til:

- ❑ å delta i personlig intervju

Jeg samtykker til at mine opplysninger behandles frem til prosjektet er avsluttet

---

(Signert av prosjektdeltaker, dato)

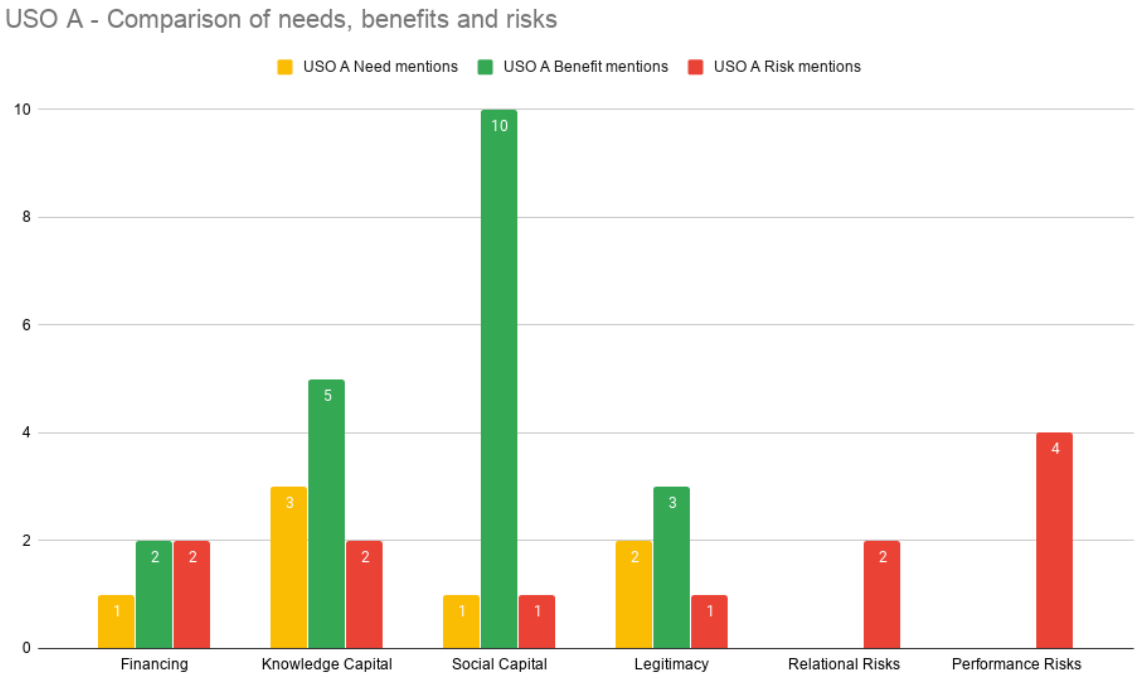
Appendix A3 - Table of mentions

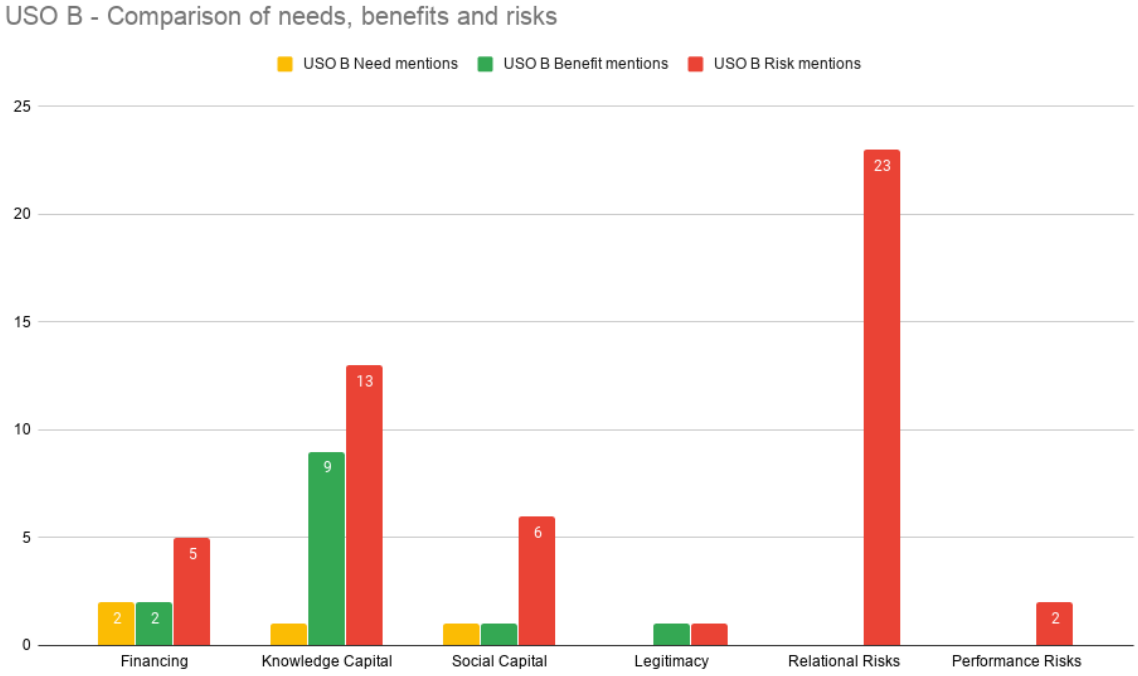
Resource determinants:	Cases mentioning needs and respective mentions	Cases mentioning value-added and respective mentions	Total mentions from all four cases
All types	A - 7 mentions B - 4 mentions C - 1 mentions D - 18 mentions	A - 18 mentions B - 12 mentions C - 9 mentions D - 9 mentions	30 + 48 78
Financing	A - 1 mentions B - 2 mentions D - 6 mentions	A - 2 mentions B - 2 mentions C - 3 mentions D - 1 mentions	9 + 8 17
Knowledge Capital	A - 3 mentions B - 1 mentions C - 1 mentions D - 11 mentions	A - 5 mentions B - 9 mentions C - 4 mentions D - 2 mentions	16 + 20 36
Social Capital	A - 1 mentions B - 1 mentions	A - 10 mentions B - 1 mentions C - 1 mentions D - 5 mentions	2 + 17 19
Legitimacy	A - 2 mentions	A - 3 mentions B - 1 mentions C - 1 mentions D - 1 mentions	2 + 6 8
Business Development	A - 1 mentions B - 1 mentions C - 1 mentions D - 5 mentions	A - 4 mentions B - 4 mentions C - 3 mentions D - 2 mentions	21
Technology Development	A - 2 mentions B - 1 mentions D - 8 mentions	A - 6 mentions B - 4 mentions C - 2 mentions D - 2 mentions	25
Investor's Outreach	A - 1 mentions	A - 7 mentions B - 1 mentions D - 3 mentions	12
Risk determinants:	Cases mentioning risk and respective mentions		Total mentions from all four cases
Relational Risks	A - 2 mentions B - 23 mentions C - 6 mentions		37

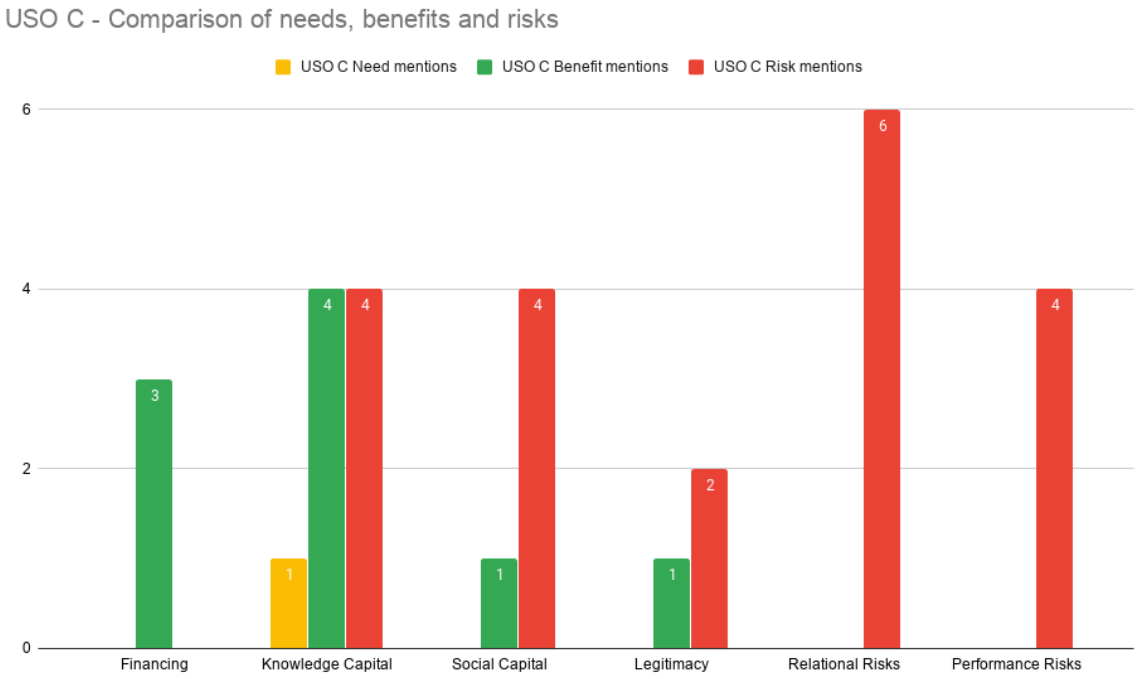
	D - 6 mentions	
Performance Risks	A - 4 mentions B - 2 mentions C - 4 mentions D - 7 mentions	17
Financing	A - 2 mentions B - 5 mentions D - 4 mentions	11
Knowledge capital	A - 2 mentions B - 13 mentions C - 4 mentions D - 5 mentions	24
Social capital	A - 1 mentions B - 6 mentions C - 4 mentions D - 4 mentions	15
Legitimacy	A - 1 mentions B - 1 mentions C - 2 mentions	4
Business Development	A - 1 mentions B - 18 mentions C - 7 mentions D - 4 mentions	30
Technology Development	A - 2 mentions B - 4 mentions C - 1 mentions D - 8 mentions	15
Controlling	D - 2 mentions	2
Effects limiting growth	C - 1 mentions	1
Immature market	A - 1 mentions B - 1 mentions	3
Immature technology	A - 2 mentions D - 4 mentions	6
Impeded agility	B - 5 mentions C - 1 mentions D - 1 mentions	7

Lack of financing	A - 1 mentions B - 4 mentions D - 1 mentions	6
Lack of knowledge	B - 1 mentions D - 1 mentions	2
Lack of legitimacy	A - 1 mentions B - 1 mentions	1
Lack of social capital	C - 1 mentions	1
Lack of social interaction	D - 1 mentions	1
Perceived as anti-competitive	C - 1 mentions	1
Relational misfit	B - 7 mentions	7
Technology push	C - 3 mentions	3
Transaction cost	B - 1 mentions C - 1 mentions	2
Unrealistic promises	B - 3 mentions C - 2 mentions D - 3 mentions	8
Vulnerability to change	A - 1 mentions B - 2 mentions D - 1 mentions	4

Appendix A4 - Case-specific comparisons of needs, benefits and risks






USO C - Comparison of needs, benefits and risks
USO C Need mentions
USO C Benefit mentions
USO C Risk mentions
6
4
2
0
3
1
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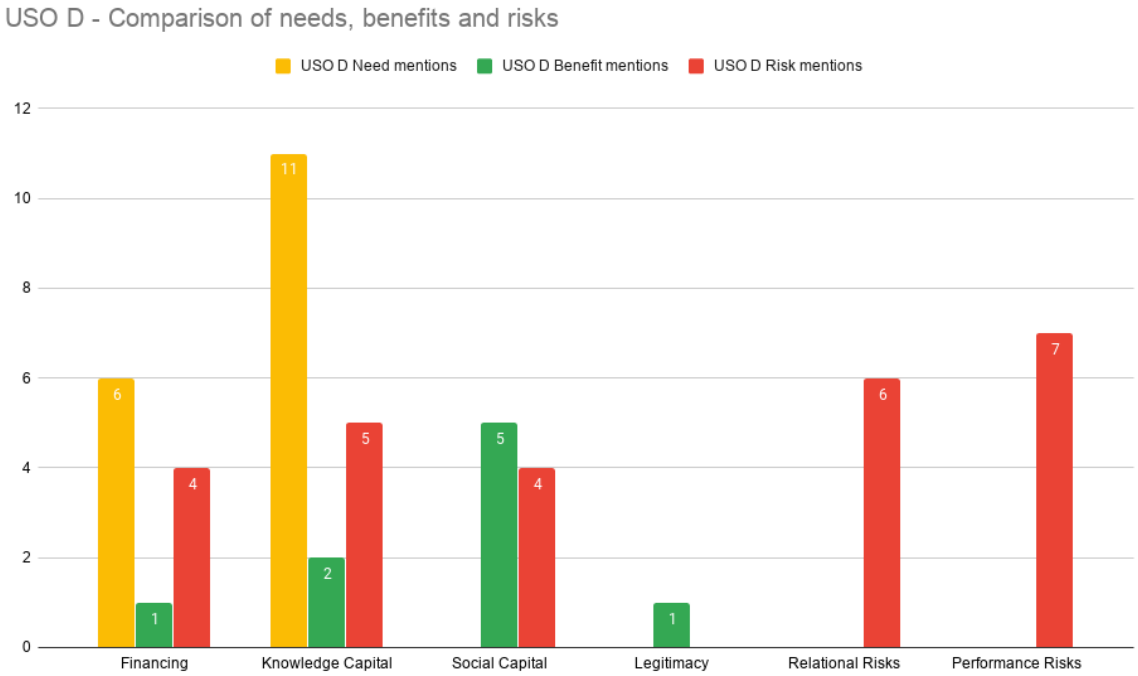
1
2
6
4
Financing
Knowledge Capital
Social Capital
Legitimacy
Relational Risks
Performance Risks


USO D - Comparison of needs, benefits and risks
USO D Need mentions
USO D Benefit mentions
USO D Risk mentions
12
10
8
6
4
2
0
6
1
4
11
2
5
5
4
1
6
7
Financing
Knowledge Capital
Social Capital
Legitimacy
Relational Risks
Performance Risks

Appendix A5 - Within-case analyses of the four alliances

USO A

Overall, USO A mentioned more realized resources than realized risks from its alliance with a CVC-investor, which seems to indicate the alliance was mostly influenced by a cooperative spirit. Moreover, the only area where risks were able to match resources was in the financing; hence this might indicate that the biggest problem they experienced was related to financing. Regarding knowledge and social capital, needs have been met by sufficient realized resources. Regarding legitimacy, however, they had an interesting realized risk, although potentially outweighed by realized resources. Regarding knowledge capital and social capital, they have received significantly more resources than risks, and with only a couple of experienced relational risks, this seems to indicate a good relation.

Overall, would you say the advantages or disadvantages weighed the heaviest having a CVC-investor?	**Characterized as cooperation, competition, or coopetition?**
"it [the venture] would never have come as far as it did if we had not had them, so that was absolutely necessary" (USO A)	Cooperation

As is apparent from the quote above, USO A perceived the alliance as absolutely necessary, thus indicating the alliance was mostly of a cooperative nature. There is no significant link between the strategic alliance and the discontinuation of the USO.

USO B

Overall and contrary to USO A, USO B mentioned a lot more realized risks than resources from the alliance with its two CVCs, which seems to indicate competitive behavior. For USO B, none of the realized resources seems to outweigh realized risks, with legitimacy as the resource in equilibrium. For USO B, knowledge capital was the biggest problem of the critical resources, followed by equal amounts of financing and social capital risks. What is interesting, however, is the large portion of knowledge capital risks, which by itself equals all mentioned resources. Furthermore, relational risks were mentioned 23 times, while resources were mentioned a total of 22 times, indicating that this alliance was influenced by a combination of competitive and cooperative spirit, thus labeled as coopetition.

Overall, would you say the advantages or disadvantages weighed the heaviest having a CVC-investor?	**Characterized as cooperation, competition, or coopetition?**
"There is no one answer, you have to look at this over time and then it has been very good to have them with us in periods, and then it has probably dabbled off a bit the last two years I think, where they have lost a little interest, and we became a little frustrated because they	Coopetition

were losing interest … but of course, it is interesting to have worked with CVC1 and CVC2 over such a long time, from an investment perspective." (USO B)

As stated by USO B above, *one* concluding answer could not be given, as they felt the alliance was influenced by both valuable resources, and negative risks. This had also changed over time, indicating that even the investment timeframe and risk tolerance of CVCs could be less tolerant than previous literature has found. We could not identify a significant link between the strategic alliances and ongoing operation of the USO.

USO C

Overall, USO C mentioned more or less the same amount of realized resources and realized risks from its alliance with its two CVCs, which seems to indicate the alliance was influenced by a coopetitive spirit. The critical resources where risks outweigh benefits are social capital and legitimacy, although not too significant. Contrary to USO A and B, USO C did not seem to have any issues with financing. However, they did experience a few realized risks affecting knowledge capital and social capital, which is interesting. With regards to the balance, realized resources seem to be more prominent than relational risks; hence, this seems to indicate a cooperative relation, with some competitive instances.

Overall, would you say the advantages or disadvantages weighed the heaviest having a CVC-investor?	**Characterized as cooperation, competition, or coopetition?**
"Mostly benefits, I would say, undoubtedly. They were very good owners and good people who sat on the board; for my part, I was very happy to have them as owners. They were also very supportive when we went into the due diligence period and backed it, so I'm happy with them as owners." (USO C)	Cooperation

As USO C states in the quote above, the outcome of the alliance seems to have been undoubtedly balanced in favor of realized resources, indicating an alliance of a cooperative nature. This might indicate a link between the strategic alliances and the successful acquisition of the USO.

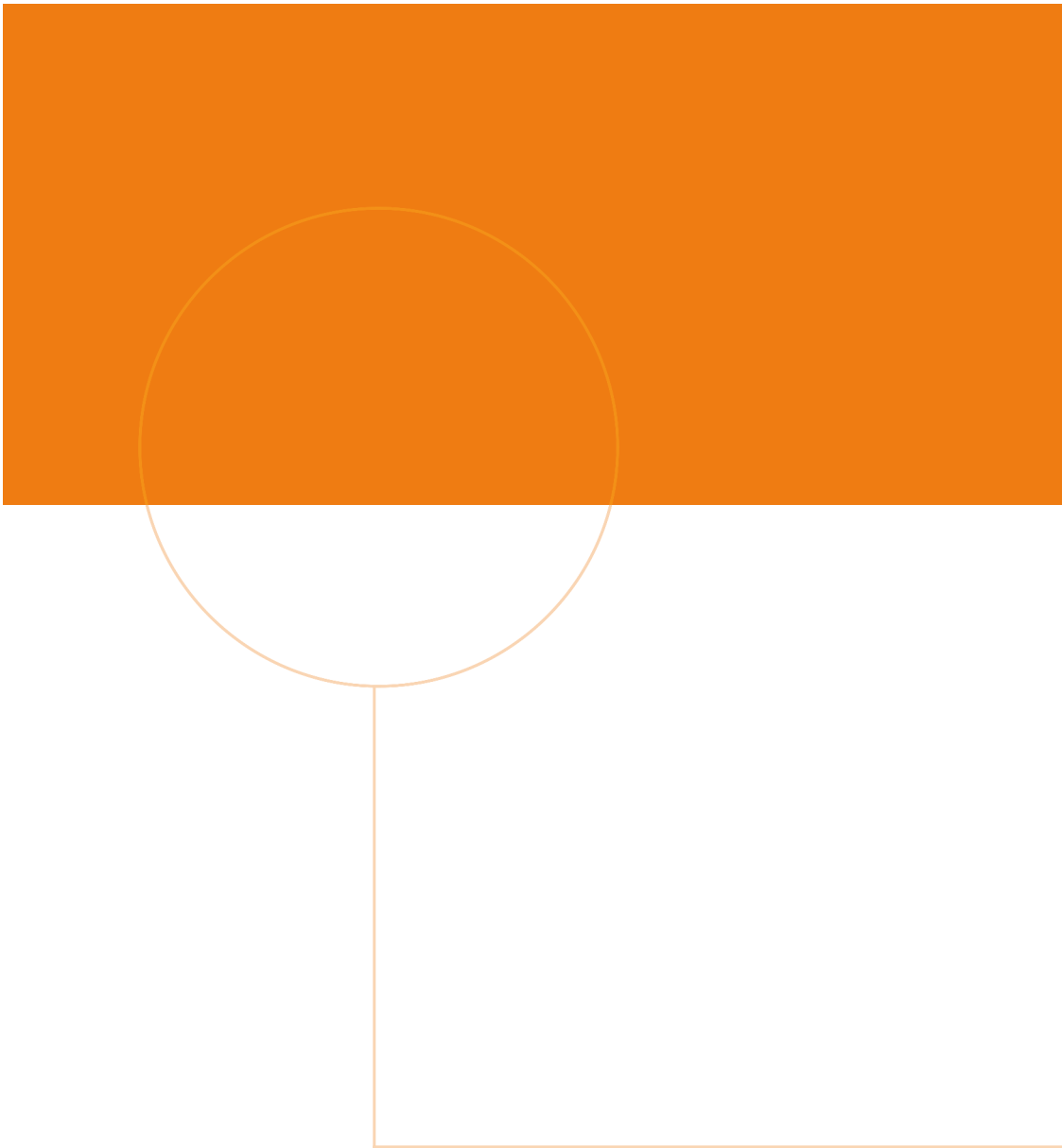
USO D

Overall, USO D mentioned more realized risks than realized resources from the alliance with its two CVCs; however, what is interesting is the number of needs mentioned, which is much higher compared to the other cases. These needs, in addition to the low mentions of respective resources, might indicate a lack of received critical resources, i.e., a risk in itself from a resource dependence perspective, with special regard to financing and knowledge capital. These findings might indicate that the alliance was influenced by both a cooperative and competitive spirit. Moreover, while social capital and legitimacy were positively balanced, both financing and knowledge capital seem to contain high amounts of risks and unfulfilled resource needs. Further, knowledge capital seems to have been

their biggest need, but possibly not sufficiently met. Hence, these findings seem to indicate a mixed relation, i.e., coopetition.

Overall, would you say the advantages or disadvantages weighed the heaviest having a CVC-investor?	**Characterized as cooperation, competition, or coopetition?**
"I would definitely say the benefits with those two [CVCs]" (USO D)	Cooperation

However, as can be seen in the quote above, USO D seems to perceive the alliance as a cooperative one, in spite of our identified needs and risks. In this case, we could not establish a strong link between the strategic alliances and the discontinuation of the USO.



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