# The perceptions of the relationship with venture capitalists by managers of university spin-out firms in the Life Science industry in the UK and Germany

**Lutz Alexander Brusche**

**Submitted in accordance with the requirements for the degree of Doctor of Philosophy**

**The University of Leeds**

**Business School**

**February 2018**

The candidate confirms that the work submitted is his own and that appropriate credit has been given where reference has been made to the work of others.

# Abstract

This study examines the relationship between managers of University Spin-Out firms (USOs) and Venture Capital investors (VCs) in the Life Science industries in Germany and the UK. Much extant research has focused upon the perceptions of VCs, rather than the ones of USOs and has largely ignored their perceptions on conflicts and VCs' value-adding activities over time and in multi-party relationships.

To address these gaps, this study collected data from in total 24 managers of USOs in the UK and Germany via semi-structured in-depth interviews. The data was analysed by the use of the Gioia method (Gioia, Corley and Hamilton, 2013), involving several stages of coding and iterations between stages. The study makes three main findings. First, it found that time has an impact on how positive the relationship with VCs is perceived by the participants, which changes with the national context. Second, it found that conflicts occur mostly in multi-party scenarios, within several dimensions and involve various resolution strategies. Third, it found three forms of value-adding activities to be particularly appreciated, which are strategic advice, financial support and the provision of networks for further fundraising. Another form of involvement by VCs, operational support, was perceived ambiguously.

This thesis contributes to the field of VC research by developing a conceptual framework on USOs' perceptions on VCs' value-adding activities and conflicts with them for future studies, which incorporates the concept of multi-party conflicts and changing perceptions over time. The conceptual framework is built upon the findings of this study and previous works by several other authors in the field. Second, it introduces a new theory to the field of VC research, namely social dilemma theory, which is seen to hold the explanatory power for the phenomenon of cooperation as the dominant conflict resolution strategy in multi-party conflicts.

**Table of contents**

# Table of figures

# Table of tables

# 1 Introduction

Within the literature on VC there is substantial data showing VCs are actively involved in their portfolio firms (Gorman and Sahlman, 1989; MacMillan, Kulow and Khoylian, 1989; Lerner, 1995; Sapienza, Manigart and Vermeir, 1996; Fried, Bruton and Hisrich, 1998; Fernhaber and McDougall-Covin, 2009). However, it is observed that forms of value-adding activities differ widely between different entrepreneurial populations, countries and who is asked about them (Large and Muegge, 2008), with the voices of the entrepreneurs heard less than the voices of VCs (Zheng, 2011). Therefore, a gap exists in respect to asking the entrepreneurs about their perceptions of their relationships with VCs and the value they add to their portfolio firms. Furthermore, VCs occasionally experience conflicts with their portfolio firms (Hellmann and Puri, 2002; Higashide and Birley, 2002; Parhankangas and Landström, 2006; Yitshaki, 2008; Collewaert, 2012; Zou et al., 2016) and such conflicts are not always prevented by using selective ex-ante measures such as contracts (Drover, Wood and Payne, 2014; Burchardt et al., 2016) or trustworthiness (Maxwell and Lévesque, 2014). While theoretical work on investor-investee conflicts has traditionally regarded such conflicts as dyadic, between a single VC and a single entrepreneur (Busenitz et al., 1997; Cable and Shane, 1997; Arthurs and Busenitz, 2003; De Clercq and Sapienza, 2006; Fassin and Drover, 2017), some empirical research shows that VCs often invest in the form of syndicates (Cumming, 2006; Manigart et al., 2006; Jääskeläinen, 2012; Cumming and Dai, 2013; Van de Vrande and Vanhaverbeke, 2013; Hopp and Lukas, 2014). Therefore, it is likely that conflicts will occur in multi-party scenarios too, and yet multi-party conflicts are an under-researched aspect in the VC literature. Investments in the form of syndicates are particularly high when the sums required are also high (Lawton, 2016) which particularly applies to the Life Science industry (Association of the British Pharmaceutical Industry, 2012). In 2014, 30.59% of VC investment in Europe was invested in the Life Science industry (OECD, 2015), which is a particularly high percentage, considering that there are only 68 Life Science companies in the UK, and only 167 firms in Germany (Invest Europe Research, 2016). Hence a lot of capital is concentrated in a few firms.

Many Life Science firms originate from universities in the form of USOs. In recent years, USOs have become an increasingly popular way of commercialising academic research (Hewitt-Dundas, 2015), and the second biggest source of funding for these USOs are VCs

(see Figure 1). The survival rates of USOs have, however, been low and a gap in the existing research exists on how relationships with VCs are perceived by USOs. This gap also spans USOs in the Life Science industry where it stands to believe as argued above that more syndication will take place while the presence of multiple VCs has been largely ignored before.

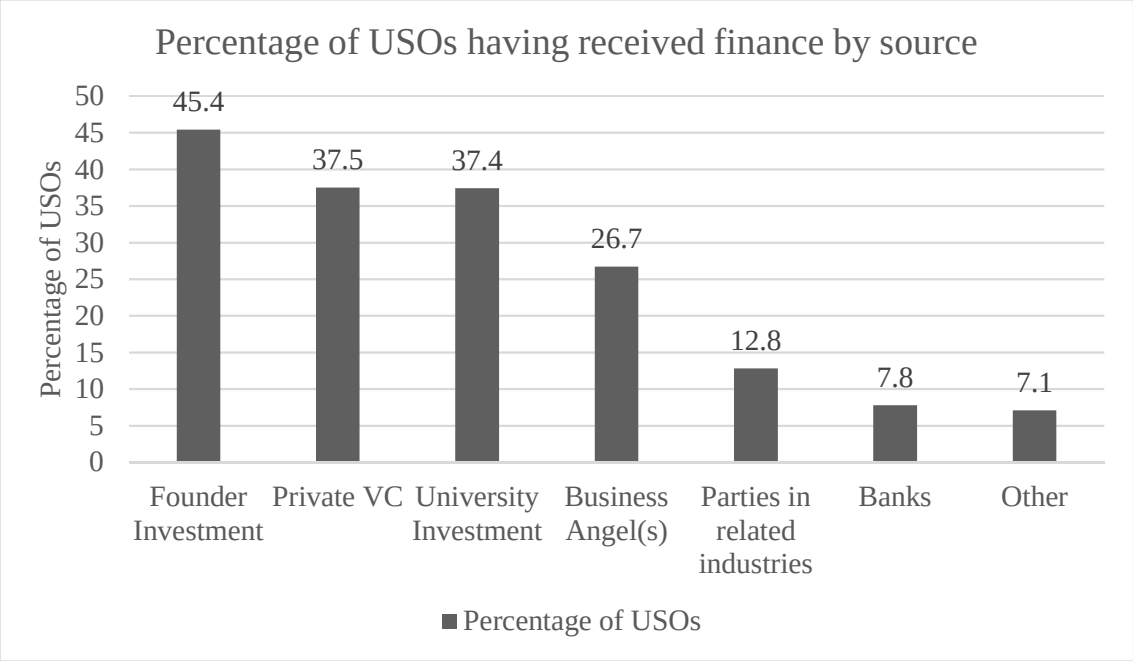


**Figure 1 Percentage of USOs having received finance by source**

Source: Hewitt-Dundas, (2015, p. 32)

Therefore, this thesis addresses four gaps in the literature: the general lack of VC research focused on entrepreneurs; the general lack of research on entrepreneurs' perceptions of conflicts with VCs; the lack of research specifically on USO relationships with VCs; and the lack of a theoretical approach that accounts for the presence of multiple investors in one portfolio firm. These gaps are important to address due to the large sums required in the Life Science industry and the increased possibility of conflicts in multi-party scenarios. Also, studying value-adding activities and conflicts from an angle that so far has been mostly ignored -the USOs' management- can deliver fruitful insights and see existing knowledge in a new light.

In the next section, the research questions are outlined and several definitions are provided. This is followed by a review of the literature on VC's value-adding activities, conflicts between VCs and portfolio firms and the impact of time on relationships. The

next chapter outlines the methodology, along with its underlying ontology and epistemology, and describes how participants were identified and how the data was analysed, relying on the Gioia method (Gioia, Corley and Hamilton, 2013), which involved several stages of coding and iterations between the stages. After that, the results of the analysis are presented in the findings chapter, focusing on the three key findings, namely the impact of time on the relationship, conflicts between VCs and CEOs as perceived by the participants and how the CEOs perceived value-adding activities by the VCs. This is followed by a discussion of the findings, focusing on the contributions to the literature on VC research that this study makes. Finally, the conclusion draws the contributions together and stresses the limitations coming from a qualitative study with a limited dataset.

## 1.1 Research questions

To gain a deeper understanding of the relationships between VCs and USOs, from the perspective of their managers, the following research questions have been posed:

1. What do the managers of USOs in the Life Science industry perceive to be added-value from their VC and what conflicts occur with them?
    i. How does time relate to the perceptions of added value and conflicts?
2. How are the perceived conflicts between Life Science USOs' managers and their VCs resolved?
3. Do the perceptions of added-values and conflicts differ between Germany and the UK?

## 1.2 Definitions

To ensure clarity and definition of terminology, this section defines the terms (1) venture capital, (2) university spin-out firm, (3) managers, CEOs and entrepreneurs, (4) Life Science industry, (5) conflicts, (6) social dilemma theory, (7) difference between venture capitalists and business angels and (8) multi-party scenarios.

### 1.2.1 Venture capital

> "Venture capitalists raise money from external investors (mainly from banks, insurance companies, pension funds and corporations) and provide capital to private firms in order to support their development and innovation process (Bertoni and Tykvova 2012). Venture capitalists provide both capital and managerial assistance to their investee companies and usually retain various control rights over their portfolio companies in order to shape their governance and maximize their value added …." (Zambelli 2014, p. 501)

There are different types of VC, the ones that focus on early-stage companies as well as those focused on growth investments and management buy-outs. The definition of VC for this thesis, is a 'narrow' and 'classical' definition (Manigart, 2013). VC is defined as investment for young and early-stage, growth-oriented companies with an academic background. The other forms of VC, such as mezzanine and late-stage investments (Zambelli, 2014) and management buy-outs (Wright, Pruthi and Lockett, 2005) are excluded from this research project.

### 1.2.2 University spin-out firms

For this thesis, USOs are defined as firms that either (1) originate from universities or (2) were set up by the use of formal intellectual property from universities, or (3) rely on informal intellectual property from universities such as former faculty members, who set up a firm.

This definition combines Wright et al.'s (2007) definitions of USOs and university start-ups. Wright et al. defined USOs as firms that are dependent on intellectual property from universities. University start-ups are defined by Wright et al. (2007) as ventures that use an individual's intellectual property, such as former faculty members. Both types are referred to when referring to USOs.

### 1.2.3 Managers, CEOs and entrepreneurs

The definition of managers used in this thesis is a very wide one, including the terms 'CEOs' and 'entrepreneurs'. According to the Oxford Dictionary, a managers is "a person responsible for controlling or administering an organization or group of staff" (Oxford Dictionary, 2016b). This definition overlaps with the definition of a CEO, who is "a chief executive officer, the highest-ranking person in a company or other institution, ultimately responsible for taking managerial decisions" (Oxford Dictionary, 2016a). Therefore, the terms managers and CEOs are used interchangeably in the thesis and both are used simply to vary the linguistic style.

An entrepreneur is an individual who creates innovation and amasses necessary resources to transform the innovation into a firm (Venkataraman, 1997). Therefore, entrepreneurs are seen to turn into managers after the act of setting up the firm. Second, a great amount of the academic literature uses the term 'entrepreneur' as an umbrella term for managers of young firms and individuals who are about to set up a firm or set up a firm at the point of the data collection. Therefore, a lot of research articles use the term entrepreneur and it would be a misrepresentation of their work to change the term. Third, for this thesis, USOs are defined as firms that rely on individual faculty members who set up a firm with their informal intellectual property. This act is seen to represent entrepreneurial behaviour, hence the boundary of the term manager/CEO spans entrepreneurs too.

When referring to managers, CEOs or entrepreneurs in the following, the terms are used interchangeably.

### 1.2.4 The Life Science industry

An industry-led definition was chosen and every USO that was labelled a Life Science firm or healthcare firm by their funding VC was included. Also, every interview was started by asking the participants what industry they identify with. Only firms that considered themselves to be bio-tech or healthcare firms were included. Since it was believed that people who established USOs in the Life Science industry and people whose job it was to evaluate deals and seal deals in the end know best which industry they operate in, no pre-defined definition was chosen.

### 1.2.5 Conflicts

The literature on conflicts in the field of VC research distinguishes between three types of conflicts. These are goal conflicts, task conflicts and relationship conflicts (Collewaert, 2009). Collewaert (2009) argues that task and relationship conflicts are perceived conflicts, subjectively felt by the participating parties, while goal conflicts are actual conflict. For this thesis, goal conflicts have been excluded from the study, since it is not the intention to study 'actual' conflicts, but the ones perceived by the CEOs of USOs. Conflicts therefore are defined as perceived incompatibilities (Jehn, 1995) between the CEOs of USOs and VCs.

### 1.2.6 Social dilemma theory

A social dilemma, in its original sense, is a situation in which voluntary contributions have to be made by individuals to sustain the public good. Once the public good is sustained, everybody can benefit from it, no matter the size of their contributions (Olson, 1965). The definition of a social dilemma then relies on two assumptions: First, that each individual can receive a higher pay-off by avoiding contribution of a fair share, no matter what the other individuals do. Secondly, all individuals benefit more, if everyone chooses to contribute (Dawes, 1980).

Social dilemma theory has been proposed by social psychologists but is also used frequently in game theory. However, while game theorists assume people are rational, the social psychologists also take into account that psychological factors play into decision making in social dilemmas (Zeng and Chen, 2003). The latter definition of human decision-making which in the context of VC is influenced by numerous heuristics, biases and psychological factors too (Brusche, 2016), is the one used in this thesis.

### 1.2.7 Difference between venture capital and business angels

Business angels are wealthy individuals while VC managers are employed at a VC firm, which usually manages a greater amount of capital than business angels have to invest (Blundel and Lockett, 2011). In addition, the investment processes differ between

business angels and VCs (Van Osnabrugge, 1998) and most notably business angels invest at a seed or even pre-seed stage, while VCs invest in an early stage and will stay with the portfolio firms for longer (Drover, Wood and Zacharakis, 2017; Fassin and Drover, 2017). This thesis' focus is on VCs, since they have the required sums to invest in the Life Sciences industry and meanwhile have long-lasting relationships with their portfolio firms until an exit can be realised.

### 1.2.8 Multi-party scenarios

The term 'multi-party' scenarios or conflicts used in this thesis refers to conflicts or scenarios involving more than two parties (Dawes, 1980). Every conflict or scenario with a number greater than two, hence three or four or five individuals, is a multi-party conflict/scenario.

# 2 Literature review

In this chapter the literature on VCs' value-adding activities to USOs, conflicts USOs have with VCs, and how time affects the relationship between VCs and USOs is reviewed. As the literature is very fragmented and incomplete[1] it was deemed appropriate to widen the scope to the broader field of VC research to examine VCs' value-adding activities in the general VC population, the influence of time on the VC-entrepreneur relationship and conflicts between VCs and entrepreneurs. The chapter starts with an explanation of the methodology for the review, then goes on to discuss the literature, and concludes with the introduction of an integrated, synergised, analytical research framework for the data analysis.

To gain a deeper understanding of the relationship between VCs and managers, several literature review questions are posed in the next section. The review questions are in line with the research questions and focus on the relationship between VCs and their portfolio firms, however, they are not specific to the case of USOs, since little research exists on managers of USOs, as is shown later in this chapter. Therefore, the review scope was

[1] For a review on the entrepreneurial finance literature in which Venture Capital research is located see Cumming and Johan (2017) who argue that the entire stream of literature is very fragmented and siloed.

widened to the general field of VC research, to draw on the insights from the field that shares many characteristics with VCs specialising on high-tech firms such as USOs.

This chapter situates the review in the wider field of VC research, to which this thesis adds knowledge, before considering the literature on VCs' value-adding activities and highlights how the findings differ according to the studied perspectives, contexts and populations. It goes on to show that time has an influence on the relationship between VCs and entrepreneurs, and then focuses on the literature on conflicts between VCs and entrepreneurs. Throughout the review, several typologies and frameworks are discussed, and an integrated, analytical research framework, which combines the strands of inquiry on value-adding activities, time, and conflicts, is introduced to guide the subsequent data analysis.

## 2.1 Literature review methodology

This literature review follows the principles of a traditional narrative literature review, since the reviewed literature is composed of a variety of methodological approaches and contains various contradictory findings. It builds a comprehensive database of evidence (Baumeister and Leary, 1997) like 'pieces of a mosaic' (Becker, 1970) with the intention to develop 'real insights' (Jones and Gatrell, 2014) and "draw out the contributions of a range of studies towards a cumulative understanding" (Taylor and Spicer 2007, p. 326).

To ensure the process of judgement and compiling this literature review is as transparent as possible, the review questions, the used search terms and reasons for excluding certain papers are stated in the following. The review questions were:

1. What are different value-adding activities by VCs?
2. Do the value-adding activities change over time and if so, how?
3. What is known about conflicts with VCs and in particular the nature, causes and resolution strategies of conflicts between VCs and CEOs?
4. Do conflicts between VCs and CEOs from their portfolio firms change over time?
5. What theories exist to explain multi-party conflicts between VCs and CEOs?

Reviewed papers were identified by the use of a keyword search in the databases Google Scholar, Web of Science and EBSCO Business Source Premier (see Table 1 below):

| **Keyword for literature search** | **Reason for choice** |
|---|---|
| Conflic* with venture capital* | This keyword was chosen to answer several of the review questions, namely the ones on conflict. |
| Life Sciences industry | This thesis focuses on USOs in the Life Science industry, which is an industry characterized by several, unique characteristics. Therefore, this keyword aimed to identify research papers on that industry. Many of the results however did not answer any of the review questions nor could they contribute anything relevant to the review. |
| Social dilemma theory | The review identified the social dilemma theory as a theory that could enrich the field of VC research and therefore relevant research on this theory was searched for. |
| University spin out* | This keyword had the same intention as the below but allowed for more search results. |
| University spin out firm | The focus of this thesis is on the relationship between VCs and USOs, hence this keyword generated results on USOs. However, the majority of the results discussed topics that could not answer the review questions. |
| Venture capital* | This thesis focuses on the relationship between VCs and USOs and VCs and the perception of their work are the prime focus. Therefore, this keyword was chosen to produce results on VC firms as well as the VC industry. Several of the results answered some of the review questions and therefore were included. |
| venture capital* AND added-value | Two of the review questions focus on value-adding activities by VCs. Therefore, this keyword was |

| | |
|---|---|
| | chosen to identify research on VCs and value-adding activities. Several results were relevant for the study. |
| venture capital* AND value add* AND temporal | Similar to the above logic, this keyword was included, to find research on VCs and value-adding activities over time. |
| venture capital* AND conflict* | This thesis focuses on VCs and conflicts with their portfolio firms in the form of USOs, which is why this keyword was chosen, so that research on VCs and conflicts could be identified. |
| venture capital* AND connect* AND entrepreneur* | This keyword was chosen to identify research focused on VCs and their engagement with entrepreneurs, since this thesis focuses on the relationship between VCs and entrepreneurs of USOs. |
| venture capital AND conflic* AND longitudinal | This keyword was used to identify studies on VCs and their portfolio firms from a time sensitive perspective. |
| venture capital AND conflic* AND temporal | This keyword was chosen for the same reason as above. |
| venture capital AND conflic* AND time | Similar to the above logic, this keyword placed particular emphasis on the effect of time on conflict relationships between VCs and USOs or portfolio firms in general. |
| venture capital* AND disput* | This keyword aimed at finding research on VCs and a synonym of conflict, to find studies that might not have been found with the above keywords. |
| venture capital* AND dyad | This keyword was chosen to identify studies on VCs and other parties acting in a dyad. The focus of this thesis is the relationship between VCs and USOs and the review questions for the literature review explicitly state that scenarios with multiple parties can arise, which is why this keyword was chosen to identify studies relevant for that review question. |

| | |
|---|---|
| venture capital* AND entrepren* AND team | Several studies acknowledge that entrepreneurs act in teams when setting up a firm, therefore this keyword was chosen to find studies on VCs and entrepreneurial teams to gain insights on the relationship between these two parties. |
| Venture capital* AND extra value | Similar to the above reasoning, this keyword was chosen to identify research on VCs and value-adding activities. |
| venture capital* AND high-tech firms | This thesis focuses on the relationship between VCs and USOs from the perspective of USOs. USOs per definition deal with high-tech and try to commercialise it. Therefore, this keyword was chosen to identify research on VCs and high-tech firms, which share many characteristics with USOs. |
| venture capital* AND invest* | This keyword was chosen to identify studies on one of the main activities by VCs, namely funding, to review relevant research on VCs' activities in regard to their portfolio firms. |
| venture capital* AND lifespan | Similar to the above logic, this keyword was included, to find research on VCs and the influence of time on them. |
| venture capital* AND longitudinal | This keyword was included, to find research on VCs and the influence of time on them or studies that used a longitudinal study design or a time-sensitive perspective. |
| Venture capital* AND multi-party conflict* | This keyword allowed to identify studies looking at conflicts between multiple VCs and/or multiple portfolio firms. This keyword helped to identify relevant research to answer the review questions. |
| venture capital* AND relation* | To identify research that focused on VCs and relationships they hold, with the intention to identify research that looked at their relationships with portfolio firms or USOs, this keyword was chosen. |

| | |
|---|---|
| Venture capital* AND value add* | Similar to the above reasoning, this keyword was chosen to identify research on VCs and value-adding activities. |
| venture capital* AND value add* AND time | This thesis aims to understand how time affects the relationship with VCs from a USO's perspective which is why this keyword was included, to find research on VCs and value-adding activities over time. |

**Table 1 Literature search keywords**

The selection criteria of which articles to include were several: In general, the papers deemed to be most relevant and highly cited, as well as published in highly-ranked journals, were chosen. Moreover, sources identified from the reference list of already obtained papers and books published on VC were included. In regard to literature on USOs, numerous studies that appeared in the search results were excluded since they did not answer any of the review questions and focused on topics that had no relationship with VCs and therefore added no knowledge for this review. In regard to the keyword "Life Science industry", many results were also excluded since they did not address the research questions in any way and focused on unrelated research questions or fields instead. Literature that referred to the Life Science industry in the context of VCs and/or USOs is mentioned in the following. Furthermore, the following chapter, which focuses on the empirical context, covers research on the Life Science industry and the industry context. In regard to keyword search results on "social dilemma theory", some articles were excluded since they did not add relevant knowledge in comparison to the studies already included. In regard to the literature on added value, there are several articles that are not included in this literature review, which do mention added-value. However, none of them introduced any new value-adding activities in comparison to the ones already included in this literature review.

Priority was given to empirical papers, since they strengthen the synergised typology, and the value-adding activities are grounded in empirical findings, as experienced by practitioners in the VC field. Since the focus of this literature review is the entrepreneurs' perceptions of their relationship with VC, less previous research with data purely from VCs is included. As will be shown, the majority of previous research collected data from VCs, meaning that entrepreneurs' views are under-represented.

There were several other over-arching reasons for excluding research papers. The main one being that (1) they did not add any other value-adding activities than the ones mentioned in Large and Muegge (2008), (2) the papers focused on the VC industry and the portfolio firms on a macro level rather than the entrepreneurs' firms, treating the individual firm as a 'black box', (3) the papers treated added-value as measurable by a higher price at the single moment of initial public offerings (IPOs) at the stock markets, without providing details on value-adding activities over time, (4) the papers studied issues comparable to the VC-entrepreneur relationship, papers studying the exact issue however were available too and therefore preferred over the ones from bordering fields.

## 2.2 Literature review

Before turning to the literature review's first question, a broad overview of the literature on USOs and VCs in the Life Science industry is presented, to situate the literature review within. As mentioned, several papers identified via the keyword search have no relevance for this topic and were excluded. Little research combines the three relevant areas of VC research, namely studies on the Life Science industry, VCs and USOs.

### 2.2.1 Introduction

As Mustar et al. (2006) note, the literature on USOs can be divided into four streams: policy-orientated research, resource based view research, research taking an institutional view, and research that studies spin-offs as a process. None of these streams however, focuses on the relationship with VCs. USOs are special in that they are "dependent upon licensing or assignment of [an] institution's intellectual property for initiation" (Hewitt-Dundas, 2015, p. 7) or are set up by former faculty using tacit knowledge (Wright et al., 2007). According to Vohora, Wright and Lockett (2004), USOs develop over five distinct, but non-linear phases. These are the research phase, the opportunity framing phase, the pre-organization phase, the re-orientation stage, and the sustainable returns phase. However, none of these explicitly state the presence of VCs and provide no insight on relationships with financiers. Other research notes that VC firms think that universities do not understand the VCs' requirements or how to present investor-ready proposals for

funding USOs. Therefore, few VC firms have links with universities and even fewer with more than one university. Also, many VC firms do not have sufficient human capital skills to screen and add value to potential USOs (Wright et al., 2007). This clearly indicates that little research in that particular field has taken place and that widening the scope to the general VC literature, on relationships with their portfolio firms, is necessary. The little knowledge on VCs and USOs in the Life Science industry says that "rather than the sector per se, the effectiveness of patents, the importance of complementary assets, the age of the industry, the degree of market segmentation and average firm size in an industry affect the likelihood of USO formation" (Shane, 2004, p. 496). Rosiello and Parris (2009) conclude that the bio-healthcare sector is the main target of UK VCs, however it is very risky due to high attrition rates, high capital requirements, long times of realisation and high uncertainty. Several authors (Baum and Silverman, 2004; Wright et al., 2006) have focused on the decision-making process prior to the relationship with a VC, exploring what VCs look for in a proposal or how attractive VC funding is for USOs in comparison to other funding mechanisms. However, none of these open up the black box of the firm, look at the relationship after the funding or say anything about the relationship between the VC and management. Pina-Stranger and Lazega (2011) at least conclude from a French dataset that personal ties between VCs and biotech entrepreneurs improve and facilitate mutual learning and value-adding. Yet, Pinch and Sunley (2009), who studied a bio-tech cluster at the University of Southampton, found that VCs see their contribution to the firm as large while entrepreneurs judged it as much smaller.

The literature cited above investigate VC funding, the Life Science industry and USOs simultaneously and clearly, the amount of knowledge is limited in terms of data as well as insights. Therefore, the scope for the review was widened to the broader VC research and the broader entrepreneurial population. Wherever possible, references to USOs or VCs operating in the Life Science industry are included and discussed. However, since a clear gap in respect to knowledge on value-adding activities, conflicts and the effect of time on these for VCs and USOs in the Life Science industry exists, it was deemed appropriate to look beyond the narrow field of USO and VC research in the Life Science industry to the broader field of VC research.

All literature identified via the above keyword search is included in the table below (see Table 2). It provides information on the authors, the year of publication, the journal they

have been published in, the main findings and the methodology used. The table is sorted via the publication date.

| Author | Journal | National research context | Main findings | Methodology |
|---|---|---|---|---|
| De Massis et al. (2018) | Entrepreneurship Theory and Practice | N.A. | The authors provide an editorial to a special issue on sectoral differences in entrepreneurship research and suggest avenues for future research which is sensitive to context. | N.A. |
| Meuleman et al. (2017) | Journal of Business Venturing | 12 European countries | The authors find that most VCs partner up with syndicate partners they have worked with before, even if the VC wants to enter a new market and the other VCs might not have experience in that market. The syndication happens because of trust between the syndicate members but a substitute effect for this trust could be strong institutions in the target country/market. | Regression analysis of sample consisting of 1355 cross-border VC investments rounds involving 873 different target companies in 12 European countries during 2000 to 2008 |
| Proksch et al. (2017) | Venture Capital: An International Journal of Entrepreneurial Finance | Germany | This study creates a typology of value-adding activities and finds that VCs add value in financial, human and governance issues but not on operational issues. | Content analysis of various documents form 9 German VCs within longitudinal study |

| | | | | |
|---|---|---|---|---|
| Cumming and Johan (2017) | Strategic Entrepreneurship Journal | N.A. | In this literature review of the field 'entrepreneurial finance' (among which Venture Capital is situated) the authors argue that a lot of research is siloed and fragmented. They conclude with several promising areas of research for the future. | Statistical analysis of citations in several high-ranked journals in the field |
| Fassin and Drover (2017) | Journal of Business Ethics | Not explicitly mentioned, but the cases suggest the data was collected with European firms | The authors find that ethics should be an important lens to look at VC-entrepreneur relationships and provide a taxonomy of unethical behaviours that can explain multiple ethical conflicts. | 12 cases of unethical behaviour in VC-entrepreneur relationships, narratively retold in the form of vignettes with content analysis |
| Zou et al. (2016) | International Small Business Journal | China | The authors find psychological capital shapes entrepreneur perceptions, behaviours and coping strategies in the case of VC conflicts. They find that the four resolution strategies they identified, vary depending on the degree of self-efficacy, hope, optimism and resilience. | Inductive, phenomenological analysis of multiple case studies based on 9 interviews with entrepreneurs |

| | | | | |
|---|---|---|---|---|
| Bertoni, Colombo and Quas (2015) | Small Business Economics | Seven European countries (Belgium, Finland, France, Germany, Italy, Spain and the United Kingdom) | The authors conclude that VC investment pattern differ in between different types of VCs, of which the most distinct are governmental VCs. Furthermore, they find that the European and North American VC pattern differ. | Statistical analysis of relative specialization indices |
| Appelhoff, Mauer and Collewaert (2015) | International Entrepreneurship and Management Journal | Germany | They find that the amount of investor-entrepreneur task conflicts vary, depending on the founding teams' decisions-making style. | Regression analysis of survey responses from 156 VC-backed start-up firms in Germany |
| Autio et al. (2014) | Research Policy | N.A. | Argue that entrepreneurship takes a broad view on innovation, including formal and informal IP, services, and processes. The literature follows a non-linear, bottom-up approach. | Literature review and theoretical discussion of entrepreneurial innovation systems |
| Zambelli (2014) | International Journal of Management Reviews | N.A. in a direct sense, refers to U.S. and Canadian datasets | The author suggests VCs should use convertible preferred stock as optimal security design, and while this is confirmed by U.S. empirical data, Canadian data suggests otherwise. | Literature review |
| Alperovych and | Small Business Economics | Belgium | The authors studied VC-backed firms in Belgium and found that VC-backed firms generate higher return rates than non- | Regression analysis of dataset made up of 990 |

| | | | | |
|---|---|---|---|---|
| Hübner (2013) | | | VC-backed firms, supporting the hypothesis that VCs add value. | Belgian VC-backed firms |
| Croce, Martí and Murtinu (2013) | Journal of Business Venturing | Several European countries | The authors compared two groups of high-tech firms and found the productivity of the group that received VC funds increased in comparison to the non-funded group | Regression analysis and Wald test on VICO database |
| Khanin and Turel (2013) | Journal of Small Business Strategy | US, California | The authors conclude that conflicts between VCs and CEOs of VC-backed new ventures have an impact on the intentions for future collaborations with VCs. | Structural equation modelling based on 104 surveys with US CEOs of new ventures |
| Collewaert and Fassin (2013) | Small Business Economics | Three cases from California, eight from Belgium | The authors find that perceived unethical behaviour among partners leads to blaming. Also, perceived unethical behaviour affects the VCs' choice of conflict management strategy and increases the chance of conflict escalation and of conflict having a negative outcome in the sense of failure or involuntary exit. | 11 embedded case studies; used interviews, emails, phone calls, documents and survey data from previous research with entrepreneurs and VCs |
| Drover and Fassin (2013) | Academy of Management Annual Meeting Proceedings | U.S. | The authors find that ethical behaviour of VCs significantly influences entrepreneurs' willingness to partner and if the reputation is questionable, it overshadows potential value- | Metric conjoint analysis on data from 65 active entrepreneurs |

| | | | | |
|---|---|---|---|---|
| | | | adding activities in the entrepreneurs' evaluation of potential partners. | |
| Brettel, Mauer, and Appelhoff (2013) | Venture Capital: An International Journal of Entrepreneurial Finance | Germany | The authors find that entrepreneurs who perceive a relationship conflict with their VC consider this detrimental to the value of the VC, while task conflicts are perceived to have a positive effect on the perceived value of the VCs. | Regression analysis on survey data from 152 German start-up firms with VC funding |
| Knockaert and Vanacker (2013) | Small Business Economics | Europe | The authors found that VCs focusing on entrepreneurial team characteristics or finances in their selection process undertake fewer value-adding activities. VCs who focus on technological aspects are found to perform more value-adding activities. | Interviews with 68 European early stage high tech VCs |
| Lim and Cu (2012) | Asia Pacific Journal of Management | U.S.; Singapore | The authors find that direct ties in a social network between VCs and entrepreneurs result in more advice from the VC while indirect ties lead to greater level of disagreement. | Regression analysis of survey data from 85 completed responses, 70 from the US, 15 from Singapore, |

| | | | | |
|---|---|---|---|---|
| | | | | identified via the Venture Xpert database |
| Collewaert (2012) | Entrepreneurship Theory and Practice | Belgium and U.S. | The authors find that entrepreneurs who experience more task and goal conflicts, have higher intentions to exit. Angel investors only intend to exit when experiencing more goal conflicts. | Regression analysis of survey data from 65 angel investors and 72 entrepreneurs |
| Chahine, Arthurs and Filatotchev (2012) | Journal of Corporate Finance | UK, U.S. | The authors find that the extent of diversity of a VC syndicate increases pre-IPO accruals and leads to higher under-pricing and lower aftermarket performance. These negative performance effects are stronger in the US. | Regression analysis on data from various databases from matched sample of 274 IPOs |
| Jääskeläinen (2012) | International Journal of Management Reviews | N.A. | The author finds that the current stock of literature on VC syndication can be categorized into the four categories: Antecedents for syndication, decisions and motivations for syndication, composition and dynamics, effects on performance. | Literature review |
| Zheng (2011) | The Journal of Private Equity | 90% of reviewers on TheFunded.com are North | Successful VCs are associated with lack of efficiency and competence by entrepreneurs. The higher the local density | Content analysis and empirical testing of data on the website |

| | | | | |
|---|---|---|---|---|
| | | American; 80% have start-up experience | the more VCs care. Entrepreneurs do not favour an experienced VC or have a higher opinion of them. | TheFunded.com; also used Glante Venture Capital directory and VentureXpert to triangulate data and get background information; Finally, 216 firms in data pool<br>For the comment level they used content analysis<br>For the firm level they used 2 stage least square regression analysis |
| Rasmussen (2011) | International Small Business Journal | Norway | The authors find that teleological, dialectical and evolutionary theories all explain certain life cycle stages at certain points and provide a more holistic, theoretical view. | Longitudinal, multiple case studies of four USOs, use of unstructured interviews and documents |

| | | | | |
|---|---|---|---|---|
| Fairchild (2011) | Journal of Business Venturing | N.A. | The authors find that an entrepreneur's choice of VC or angel-financing in theoretical terms, needs to be descriptive and normative. Therefore, they consider both economic and behavioural factors when developing a model for choice of financier. They consider a case where VCs have higher value-adding capabilities than angels, but where entrepreneurs and angels have a close, empathetic, and trusting relationship, leading to relational rents. In that case, a business angel would have been chosen, which leads to the conclusion, that the behavioural aspects need to be taken into account from both sides. | Development of game-theoretical model |
| Bengtsson and Wang (2010) | Financial Management | 90% of reviewers on TheFunded.com are North American; 80% have start-up experience | Entrepreneurs prefer independent VCs over other types of VCs. Even though entrepreneurs can identify the track record (previous successes) of VCs they do not value firms with long track records higher than short track records. Experiential learning takes place when exposed to VCs. | Analysed responses on the VC rating platform TheFunded.com |
| Forbes, Korsgaard and | Journal of Business Venturing | U.S. | The authors found that VC-backed firms experience more task and relationship conflicts when the firm received a down round of financing. Also, founder-led firms experience | Survey data from 161 CEOs of VC-backed firms, identified via |

| | | | | |
|---|---|---|---|---|
| Sapienza (2010) | | | less destructive relationship conflicts in ordinary up-round financings. | VentureXpert; regression analysis on the responses |
| Zacharakis, Erikson, and George (2010) | Venture Capital: An International Journal of Entrepreneurial Finance | Norway | The authors find that although VCs see task conflict favourably, entrepreneurs do not and entrepreneurial intragroup conflict increases likelihood for inter-group conflict. | Survey of 57 entrepreneurs; structural equation modelling |
| Large and Muegge (2008) | Venture Capital: An International Journal of Entrepreneurial Finance | -NA- | The authors find that within the field there is little agreement on definition and measurement of value-adding activities and little agreement on importance of VCs' value-adding activities. | Literature review |

| | | | | |
|---|---|---|---|---|
| Yitshaki (2008) | International Journal of Conflict Management | Israel | The author found several types of conflicts: Contractual, contextual and procedural conflicts. In terms of contractual disagreements, three problems emerged: company value and share, financing strategy and exit strategy. Other conflict areas are the different perceptions of the firm and the ultimate goal of the venture. VCs involved strategically are seen as having low contextual conflict, those involved managerially have high degrees of conflict. Actual conflicts are identified as conflicts over strategic decision-making in respect to R&D and marketing schedules (market entry, etc.). Conflicts over management occur in respect to managerial replacement and VC's managerial involvement, and conflicts in respect to the distribution of power were also seen as actual conflicts. Procedural conflicts were identified as the perception of fairness, informal relations and trustworthiness. | Inductive, multi-method content analysis of 42 semi-structured interviews with VCs and CEOs and questionnaires |
| Berg-Utby et al. (2007) | Venture Capital: An International Journal of Entrepreneurial Finance | Norway | It was found that there are large expectation gaps between CEOs' expectation before and after the investment took place. The gap was seen to be particularly large in the early stages of the portfolio firm. | Surveys mailed to 240 CEOs |

| | | | | |
|---|---|---|---|---|
| Cumming and Johan (2007) | Financial Markets and Portfolio Management | Europe | The authors find that VC cashflow and control rights improve effort and advice provided by VCs. Conflicts are linked to the quality of the legal system in the studied country and non-contractual governance mechanisms are found to facilitate given advice. | Empirical analysis of surveys and interviews with 14 European VC funds (EVCA members) and 74 entrepreneurial firms |
| Cumming, Siegel and Wright (2007) | Journal of Corporate Finance | N.A. | The authors find that the empirical evidence points to buyouts and private equity deals being linked to incentive and governance mechanisms that enhance performance. They find that the debate on whether the gains can be obtained without taking the firm private is ongoing. | Literature review |
| Parhankangas and Landström (2006) | Journal of Business Venturing | Finland, Sweden | The authors find four types of disappointment to explain VCs' reactions to disappointments caused by entrepreneurs. The analysis also finds that VCs strongly embedded in the VC community use more active and constructive approaches to address the disappointments. | 78 self-report questionnaires with VCs (some preliminary interviews were conducted beforehand) |
| Knockaert et al. (2006) | International Journal of Technology Management | Seven European R&D clusters: Cambridge/London (UK), Ile de France | The authors found that VC managers with previous consulting experience and entrepreneurial experience contributed to a higher involvement in value-adding | Interview data from VC managers from 68 firms in seven regions in |

| | | | | |
|---|---|---|---|---|
| | | (France), Flanders (Belgium), North Holland (the Netherlands), Bavaria (Germany), Stockholm (Sweden), Helsinki (Finland) | activities. The more diverse an investment manager's portfolio, the less involvement in value-adding activities. | Europe from high tech firms in R&D clusters |
| Vanaelst et al (2006) | Entrepreneurship Theory and Practice | Flanders, Belgium | The authors found that members of teams in USOs evolve over time and cannot be studied individually. The team members sometimes bring different experiences but share the same view on doing business. | Inductive, multiple case study design with 10 USOs |
| Maula et al. (2005) | Venture Capital: An International Journal of Entrepreneurial Finance | U.S. | Independent VCs better assist entrepreneurs to arrange finance, recruit key employees, advise on competition and develop the organisational resources of the growing enterprise. Corporate VCs are more effective than independent VCs in attracting foreign customers and providing advice on the technologies used by the portfolio firms. | 91 surveys to CEOs and CVCs in 2000; pair-wise univariate comparison and regression analysis; |

| | | | | |
|---|---|---|---|---|
| Wright, Pruthi and Lockett (2005) | International Journal of Management Review | -NA- | The study finds that the influence of institutional contexts, especially the role of social networks and cultures and VCs crossing country borders are under-researched areas. | Literature review |
| Dolvin (2005) | Venture Capital: An International Journal of Entrepreneurial Finance | Thomson Financial's SDC New Issues Database; the 11 top VCs were all North American | VCs, particularly the ones of higher quality, are associated with lower issuance costs (both direct and indirect), increased upward price adjustments, and shorter lockup periods. | Set of 4606 IPOs from 1986-2000; comparison of the best 11 VCs (according to a Forbes list) to the others in the industry; use of descriptive statistics and multivariate analysis |
| Zu Knyphausen-Aufsess (2005) | Venture Capital: An International Journal of Entrepreneurial Finance | Germany/US: Eight cases from corporate VCs | Corporate VCs can add different degrees of value via entrepreneurial spirit development, strategy development and implementation, technological capability and social capital. The degree to which the corporate VCs can add value depends on the corporate VC. | Multiple case study approach; used interviews and secondary data |
| Busenitz, Fiet, and Moesel (2004) | Journal of Business Venturing | U.S. | The study found that strategic information being passed from VCs to their portfolio firms do not enhance the venture's long-term performance. VCs dismissing staff has a negative | Annual surveys to VC-backed firms from 1889/1990-2000; usable |

| | | | | |
|---|---|---|---|---|
| | | | effect on the performance and VCs intervening in a procedurally just manner has a positive effect. | sample of 183; hypothesis testing |
| Poole and Van de Ven (2004) | Chapter in the "Handbook of Organizational Change and Innovation" | NA | The authors discuss various stage and life cycle models for organisations. | NA |
| Vohora, Wright and Lockett (2004) | Research Policy | UK | The authors found there are several stages USOs go through and there are four distinct critical junctions (opportunity recognition, entrepreneurial commitment, credibility and sustainability). The phases however are non-linear. | Inductive, qualitative multiple case study, based on field studies at nine spin-offs at seven British Universities. Data was collected mostly via semi-structured interviews from USOs, VCs and Universities |

| | | | | |
|---|---|---|---|---|
| Clarysse and Moray (2004) | Journal of Business Venturing | Belgium | The study finds that the development of the entrepreneurial team happens simultaneously to disruptive changes to the firm. | Longitudinal study of a USO with seven team members<br>Use of qualitative data, obtained via interviews and participant observations |
| Druilhe and Garnsey (2004) | The Journal of Technology Transfer | UK | The authors find that academic spin-outs are not a homogenous group and the resource-based view and Penrose's work can help develop typologies for spin-outs. Five types of spin-outs according to nature and difficulty are identified: The easiest, research consultation, second, licensing and selling IP, third software, fourth product and fifth to create infrastructure. | Statistical analysis of empirical dataset of 109 academic firms from Cambridge University plus nine case studies on which data was collected via participant observations |
| Kaplan and Strömberg (2004) | The Journal of Finance | U.S. | The paper finds that agency risk has an effect on contracts and VCs consider hold-up danger in their assessment. Depending on the actions VCs plan to undertake, they use equity or contractual control. | Regression analysis, based on sample of 67 VC-backed firms |

| | | | | |
|---|---|---|---|---|
| Kaplan and Strömberg (2003) | National Bureau of Economic Research Reporter Online | -analysis of several empirical papers- | VCs try to reduce principal-agent conflicts in three ways: sophisticated contracting, pre-investment screening, and post-investment monitoring and advising. The three activities are closely linked. | -analysis of several empirical papers- |
| Sætre (2003) | Venture Capital: An International Journal of Entrepreneurial Finance | Norway | Find that two types of entrepreneurs exist, who try to acquire informal VC (also referred to as Business angels): One type focuses on a match between the own firm and the investor, the other sees capital as a scarce resource. | 20 semi-structured interviews with entrepreneurs within four case studies |
| Torres and Murray (2003) | Irish Marketing Review | Ireland | For the Irish IT sector, networks are identified as important for start-ups' success. VCs were seen as enablers of networks and facilitators. | First, unstructured in-depth interviews with two VCs and three CEOs of SMEs. Then, semi-structured interviews with CEOs of three VC-backed SMEs embedded in networks |

| | | | | |
|---|---|---|---|---|
| Wright and Lockett, (2003) | Journal of Management Studies | UK | The authors find that VCs in a lead position in a syndicate typically have larger equity stakes and information asymmetries are avoided by contracts. The management happens via non-legal sanctions in the form of bad reputation for the syndicate partner. They also find that while power is formally distributed, the lead has an advantage in making time-critical decisions on his own. | Pilot interviews and a two-stage survey, to 106 VCs in the UK with 58 respondents, statistical analysis of results |
| Arthurs and Busenitz (2003) | Entrepreneurship Theory and Practice | N.A. | The authors find that agency theory has relevance only in the pre-funding era of VC-entrepreneur relationships. Stewardship theory is considered ineffective. The authors find three gaps in current theoretical work: Goal congruence and trust should be assumed, VCs should be considered more than partial financial owners and they should be considered as extensions of the individual entrepreneur. | Theoretical analysis |
| Zeng and Chen (2003) | Academy of Management Review | N.A. | The authors demonstrate how a social dilemma lens can be applied to multi-party alliances and formulate several propositions on how the alliance can prevent failure. | Theoretical discussion |
| Higashide and Birley (2002) | Journal of Business Venturing | UK | The authors find that, from the perspective of VCs, conflict between VCs and entrepreneurs is positively associated with | 80 Surveys with VCs |

| | | | | |
|---|---|---|---|---|
| | | | venture performance while personal conflicts are negatively associated. | |
| Gabrielsson and Huse (2002) | Venture Capital: An International Journal of Entrepreneurial Finance | Sweden | The results showed that VCs use the boards in the portfolio firms purposefully, but that there are relations between the differing attributes of VCs and their board involvements in the portfolio firms. They show that boards in VC backed firms are more active than boards in other firms and that the VC and the entrepreneur/owner-manager of the portfolio firm may have differing expectations of board roles. | Reports from four different, empirical studies; three of the four studies used questionnaires, the fourth used in-depth interviews based on two case studies |
| Brander, Amit and Antweiler (2002) | Journal of Economics and Management Strategy | Canada | The authors tested whether VCs invest in syndicates because the screening is improved or their advice skills complement each other. Their findings show that VCs invest in syndicates because they can each contribute to the portfolio firm. | Regression analysis on survey data from 584 participants |
| Hellmann and Puri (2002) | Economic Review-Federal Reserve Bank of Atlanta | U.S. | The findings show that VCs help portfolio firms to build up their human resources but also replace CEOs at times. These actions are interrelated. | Regression analysis of survey data, interviews and database information from 170 high-tech firms |

| | | | | |
|---|---|---|---|---|
| Flynn and Forman (2001) | Journal of Developmental Entrepreneurship | U.S. | The study finds that early stage portfolio firms of VCs need help in negotiating legal and governmental-related issues. They also benefit more from the VC's attempt to assist in crises. To them, personal discussion matters more to than structured information. VCs have a significant impact on early-stage firms' performance. | Random sample of 76 VCs; used Pratt's Guide of the VC industry, which only includes US VCs; the sample consisted of VCs from all industries but healthcare and bio-tech made up 50% of the sample |
| Shepherd and Zacharakis (2001) | Venture Capital: An International Journal of Entrepreneurial Finance | N.A. – theoretical paper | The authors develop a theoretical framework for future testing on the role of trust in VC-entrepreneur relationships. They argue that entrepreneurs can build trust with the VC via signalling commitment and consistency and being fair and just. They should also obtain a good fit with their partner and have frequent and open communication. Furthermore, they propose that open and frequent communications act as a catalyst for other trust building mechanisms. Finally, they suggest that the relationship between control, trust and confidence in partner cooperation has a curvilinear shape. | N.A. |

| | | | | |
|---|---|---|---|---|
| De Clercq and Sapienza (2001) | Venture Capital: An International Journal of Entrepreneurial Finance | N.A. | The authors find that organizational learning theory and social exchange theory can be included in research on VCs and relational rents can be created in VC–entrepreneur dyads via relation-specific investments and knowledge-sharing. | Theoretical discussion |
| Sweeting and Wong (1997) | Journal of Management Studies | Case study of a VC firm in the UK with seven investee cases forming a cross-section of their portfolio (four Management Buyouts, two start-ups, one expansion) | The study finds that a hands-off management approach by VCs only works with trust and by selecting portfolio firms compatible with this leadership style. | Case study, carried out in 1993 by the use of structured interviews |
| Busenitz et al. (1997) | Entrepreneurship Theory and Practice | U.S. | The authors find that the VCs' use of contractual covenants can significantly decrease the teams of firms' perception of fairness. | Regression analysis of results from 116 surveys with VC-funded firms, of whom |

| | | | | |
|---|---|---|---|---|
| | | | | 83% operate in the high-tech sector |
| Cable and Shane (1997) | Academy of Management Review | N.A. | The authors argue that the prisoners' dilemma with a long-term perspective can explain VC-CEO relationships better than principal agent theory. | Theoretical discussion |
| Murray (1996) | Entrepreneurship Theory and Practice | Europe: 6 high-tech firms across France, Germany, UK and Denmark | The author argues that entrepreneurs are exceptionally talented and VCs' task is to choose them carefully. Also, VCs have to have complementary skills to the entrepreneur to bring the company forward. | Exploratory case studies |
| Sapienza, Manigart and Vermeir (1996) | Journal of Business Venturing | US; UK; Netherlands; France | The study found that VCs in the four studied countries (US; UK; France; Netherlands) see strategic input as their biggest value-adding activity, acting as a mentor as second and third networking. | Extensive interviews with VCs and portfolio CEOs and follow-up questionnaires (65 in total) |
| Sapienza and Korsgaard (1996) | Academy of Management Journal | U.S. | The authors find that timely feedback improves the relations between VCs and entrepreneurs and the procedural justice theory is a strong framework to study timely feedback. | Regression analysis of results from surveys with 118 CEOs of VC and an experiment with a University master degree class |

| | | | | |
|---|---|---|---|---|
| Geyskens, Steenkamp and Scheer (1996) | International Journal of Research in Marketing | U.S. and Netherlands | The authors find that calculated commitment (expecting a value return) increases with interdependence between two parties, while trust increases affective commitment (wanting to maintain the relationship). | Regression analysis of results from questionnaire responses from 289 Dutch car dealers and 417 U.S. dealers |
| Fried and Hisrich (1995) | California Management Review | U.S. | Argue that VCs have three types of power: Money, formal power and personal relationships. In addition, they can add value by operating services, networks, and moral support. | Case studies of 14 VC backed firms; personal interviews, in addition some triangulation with grey literature |
| Steier and Greenwood (1995) | Journal of Management Studies | U.S. | The authors argue that staged funding with multiple VCs requires clear understanding of each VCs' role. Also, being funded by a VC offers follow-up funding opportunities. | Case study design; data collection involved interviews, site visits and archives; at one VC five interviews were conducted with VCs, at two other VCs one VC was interviewed; in addition five CEOs and |

| | | | | |
|---|---|---|---|---|
| | | | | two co-founder were interviewed |
| Elango et al. (1995) | Journal of Business Venturing | U.S. | VCs can be divided into four groups based on the stage of interest, three groups in terms of time spent on each portfolio company and no groups in terms of the quality of management. | Questionnaire, involving 149 firms |
| Lerner (1995) | The Journal of Finance | U.S. | The author shows that VCs' representation on the board increases around the time of a CEO turnover, and that the distance between the VC firm and the portfolio firm matter in terms of frequency of board representation. | Empirical analysis of 271 biotech firms with VC funding, identified via Venture Economics |
| Jehn (1995) | Administrative Science Quarterly | Not specified, just mentions an international headquarter | The author found that task and relationship conflicts have different effects on performance of groups. Also, inter-group conflicts on tasks can even have a positive effect. | Regression analysis based survey data from 589 employees in 26 management teams and 79 work groups |
| Ehrlich et al. (1994) | Journal of Business Venturing | California | Private investors and VCs are similar in their investment time horizons and focus on high-tech firms but they differ in respect to stage and size of investment, geography and motivation of investment. | 47 questionnaires |

| | | | | |
|---|---|---|---|---|
| Sapienza and Gupta (1994) | Academy of Management Journal | U.S. | The study found that frequency of interaction between VC and CEO depends on the extent of VC-CEO goal congruence and the degree of the CEO's experience. The venture's stage of development, and the degree of technical innovation also explain the frequency of interaction. However, the degree of management ownership had no impact on the frequency of interaction. | Unstructured interviews, semi-structured interviews, questionnaires and surveys with in total 51 VC-CEO pairs |
| Sapienza (1992) | Journal of Business Venturing | U.S. | Findings are that strategy, level of innovation and environmental uncertainty explain most of the variation in the value of VC involvement.<br>The more innovation is pursued by the venture, the more frequent the contact between the VC and CEO, the more open the communication, and the less likely are conflicts of perspective in the dyad.<br>The study also found that the stage of the firm or CEO experience had no significant impact on value added. | Questionnaire sent out in 1988 to VCs and CEOs, 51 matched-pairs obtained |
| Gupta and Sapienza (1992) | Journal of Business Venturing | U.S. | VC firms which specialise in early stage ventures, prefer less industry diversity and a narrower geographic scope. Corporate VCs prefer less industry diversity but broader geographic scope in comparison to non-corporate VCs. Larger VCs | Regression analysis on 169 VC firms |

| | | | | |
|---|---|---|---|---|
| | | | however, prefer greater industry diversity and broader geographic scope in comparison to small VCs. | |
| Carroll (1991) | Business Horizons | N.A. | The author discusses the notion of moral management and develops a stakeholder/responsibility matrix. | Conceptual discussion |
| Ooghe, Manigart and Fassin (1991) | Journal of Business Venturing | Europe | VCs' sources of funds, preferences for stage and sector of industry, extent of market share and regulatory framework vary on a country-by-country basis. | Statistical analysis of data from European Ventures |
| Gomez-Mejia, Balkin, and Welbourne (1990) | The Journal of High Technology Management Research | U.S. | Results show that VCs are deeply involved in establishing policies and monitoring managerial activities in high tech firms. | Participant observation and interviews with 10 VCs and 10 CEOs of high-tech firms |
| Barry et al. (1990) | Journal of Financial Economics | U.S. | The analysis finds that VCs specialise in monitoring services for their portfolio firms and maintain their investment beyond the IPO. They also serve on the board of their portfolio firms. | Statistical analysis of empirical dataset of 133 IPOs with VC backing and 1123 IPOs without VC backing from Venture Economics Database and the Pratt Guide |

| | | | | |
|---|---|---|---|---|
| Gorman and Sahlman (1989) | Journal of Business Venturing | U.S. | The study finds that early stage lead VCs spend about 10 times the time as a late stage VC on their portfolio firms. | 49 questionnaires to VCs |
| MacMillan, Kulow, and Khoylian (1989) | Journal of Business Venturing | U.S. | Three distinct levels of VC involvement were identified and four distinct areas of involvement: development and operations, management selection, personnel management, and financial participation. | 62 Questionnaires distributed to VCs; regression analysis of the results |
| Sapienza and Timmons (1989) | Frontiers of Entrepreneurship Research | U.S. | VCs are rated in three categories of value: the high importance roles, the medium importance roles and the low importance role, each with slightly different value-adding activities. | Questionnaire sent out in 1988 to VCs and CEOs, 51 matched-pairs obtained |
| Tyler (1989) | Journal of Personality and Social psychology | U.S. | The authors find that trust towards authorities, neutrality of authorities and standing of authorities are the key inputs to explain a perception of procedural justice. | Regression analysis of telephone interviews with population in Chicago |
| Perry (1988) | The Academy of Management Executive | U.S. | Based on three case studies develop a typology of three different natures of VC-founder relationships. | Interviews with founders, employees and VCs |

| | | | | |
|---|---|---|---|---|
| Timmons and Bygrave (1986) | Journal of Business Venturing | U.S. | The authors argue that many portfolio firms are concentrated with few VCs, that the type of non-monetary input received from VCs matters most to entrepreneurs and that a fit between firm and investor is crucial for acceleration effects. There also is a geographical concentration of capital noticeable in certain U.S. regions. | Use of venture economics database and field interviews; Cluster analysis and regression analysis used |
| Dawes (1980) | Annual Review of Psychology | N.A. | In this book chapter the author argues that social dilemma can be solved when participants understand the game and they believe that the other parties will not defect. | Literature review and theoretical discussion |
| Emerson (1976) | Annual Review of Sociology | N.A. | The author argues that a resource is only exchanged between parties if there is a value return contingent on it. | Theoretical discussion |
| Rapoport and Chammah (1965) | | N.A. | In this book on the prisoners' dilemma, the authors show that in certain circumstances the rational behaviour for individual parties is either to collaborate or defect. | Several experiments |
| Olson (1965) | | N.A. | Theoretical discussion on the logic of collective action, public goods and the theory of groups. | N.A. |
| Nash (1951) | Annals of Mathematics | N.A. | The author argues that the only logical behaviour for each player in a two-player prisoners' dilemma with no repeated decision is to choose the selfish option. | Theoretical discussion |

**Table 2 Categorisation of all relevant literature**

From Table 2, several conclusions and observations on the field of VC research can be drawn. First, it shows that the majority of research on VC-entrepreneurial firm relationships has been conducted in the U.S. The implications of this regional bias are discussed later on in this chapter but clearly, there is a gap in respect to VC-focused research in Europe and a gap for comparative research. It is important to address these gaps to avoid that management practices from the U.S. are applied in Europe without paying attention to the European countries' context. Second, while the majority of research in the earlier years of the field focused on value-adding activities by VCs, the field clearly moved towards studying conflicts as an emerging topic in recent years. The higher frequency of research papers focusing on conflict topics in recent years confirms this. Third, about 60% of the relevant and cited research in the following has been published in "Journal of Business Venturing", an ABS four star ranked journal (Chartered Association of Business Schools, 2015), highlighting the relevance of the topic.

### 2.2.2 Value-adding activities

Turning to the literature review's first question (What are different value-adding activities by VCs?), the literature provides several insights. It is widely agreed that VCs provide aspiring entrepreneurs with funds and also have an indirect effect on the firms' financial situation. In respect to financial value-adding activities, Berg-Utby et al. (2007) summarize that VCs provide funds and follow-up investments (either provided by themselves or sourced via the VCs' networks), they hold a certification role in IPOs, help to avoid under-pricing, help to obtain higher valuation at IPO and are associated with lower issuance costs, and better performance after IPO, than non-backed firms. While the financial added-value of VCs is widely undisputed, non-financial added-value presents a more complex view. Based on a lack of coherent understanding of what added-value means, Large and Muegge (2008) reviewed articles on non-financial value-adding activities and developed a typology of eight different categories. This typology (see Table 3) has two categories with an external orientation (legitimation and outreach) and six categories with an internal orientation (recruiting, mandating, strategizing, mentoring, consulting and operating).

| | |
|---|---|
| **Legitimation** | "Providing credibility, reputation, legitimation, validation, comfort, certification" (p. 41) |
| **Outreach** | "Providing active promotion, introductions, negotiations, winning deals" (p. 41) |
| **Recruiting** | "Advising, doing reference checks, recruiting, negotiation, assessment, replacement" (p. 42) |
| **Mandating** | "Providing contract and policy terms, control rights, stock rights, contingent rights, performance targets, reports, controls" (p. 42) |
| **Strategizing** | "Developing business concept/strategies, doing strategic planning, keeping focus on longer-term strategic direction" (p. 42) |
| **Mentoring** | "Providing mentorship, advice, coaching, guidance, facilitation, feedback, motivation, patience, moral support, friendship; acting as confidant, sounding board, implanting entrepreneurial orientation" (p. 42) |
| **Consulting** | "Providing business intelligence, contacts, expertise, competence, teach business skills" (p. 43) |
| **Operating** | "Providing monitoring, controlling, decision making, compensation and incentives, appraisals, discipline, day-to-day hands-on management, professionalization, managing crises and problems" (p. 43) |

**Table 3 VC's non-financial value-adding activities, based on Large and Muegge (2008, p. 41-43)**

Although this is the most comprehensive categorisation of different value-adding activities, it should be noted that none of the papers reviewed by Large and Muegge (2008) mention *all* categories of their typology as added-value inputs. Tables 2 and 3 of Large and Muegge's (2008) paper (see pp. 28-31 of their article) summarise the individual value-adding inputs as defined in the reviewed papers. Among these, Ehrlich et al. (1994) provide the most extensive categorisation of value-adding inputs. Their categories of added-value include financial participation, personnel management, management

selection, development and operations, reporting and operational controls, reporting targets and sought expertise. Only recently another study on VCs' value-adding activities has created a typology with several dimensions, covering most of Large and Muegge' (2008) categories. This study was undertaken by Proksch et al. (2017) and introduced the six dimensions financial, strategic, governance, operational, network, and human capital improvements, which still misses some of the elements identified by Large and Muegge (2008). However, depending on the perspectives, the contexts and the entrepreneurial populations in which data has been collected, the value-adding inputs vary widely, as discussed in the next section.

#### 2.2.2.1 Different entrepreneurial populations

Among Large and Muegge's (2008) reviewed papers there is a difference between the perceptions of value-adding activities of VCs and entrepreneurs and within the two camps. Ehrlich et al.'s (1994) latter three categories of value-adding inputs were based on entrepreneurs' perceptions and differ from the first four categories, which were based on data collection among VCs only. Flynn and Forman (2001) based their categorisations of value-adding inputs purely on data from VCs and found they added value in the forms of information gathering, decision-making styles, decision-making techniques, information gathering devices and the availability of resources. Proksch et al. (2017) also collected their data from VCs only but found that VCs add a lot of value in financial, human and governance issues but less in respect to networks and no value on operational issues. On the other hand, Maula et al. (2005) focused on entrepreneurs and found that value-adding input in this context comprised 'adding additional investors', 'adding key employees', 'adding partners', 'adding domestic customers', 'adding foreign customers', 'advice on the market', 'advice on competition', 'advice on technology' and 'advice on the organisation'. Obviously, little overlap exists. This heterogeneity is also reflected in the research by Bengtsson and Wang (2010), who, using the website TheFunded.com, analysed entrepreneurs' feedback about their VCs and found that, in respect to the post-investment added-value, the fit with the VC matters. This is especially important in terms of the industry and of providing uniform and predictable directions.

> "Specifically, entrepreneurs have a more favourable view of VCs that have valuable contacts, provide operational help, assist with

> recruiting new employees, facilitate in raising additional capital, and, to a lesser extent, assist the company at exit "(Bengtsson and Wang, 2010, p. 1397).

Zheng (2011), using the same database, found that the higher the density of VC firms, the higher the competition, and therefore the effort put into relationship-building. They argue that new VC firms are friendlier because they need to establish a good reputation, with one area of special discomfort to entrepreneurs being the long response times of VCs. While Bengtsson and Wang's (2010) findings fit into Large and Muegge's (2008) typology, Zheng's (2011) findings do not, and thereby provide further evidence for the variety and heterogeneity of findings made from different perspectives in respect to value-adding activities. The fact that entrepreneurs' views are underrepresented in the field constitutes a gap in the literature. Addressing this gap matters because it will allow to have a second perspective on the topic and compare it to the VCs' view. Neglecting the CEOs' view would mean studying value-adding activities without an opinion on the value of the value-adding activities at the receiving end.

In addition to the differing perspectives of VCs and entrepreneurs, the importance of the context for entrepreneurial activity is crucial too (Wright, Pruthi and Lockett, 2005; Autio et al., 2014; De Massis et al., 2018). Therefore, another explanation for the heterogeneity of value-adding inputs is the diverse contexts within which data is collected, as well as the timing of the data collection during the VCs' and the entrepreneurs' relationship. As was evident from Table 2, the majority of data collections took place in the U.S.. Very few studies focus on national differences in terms of the VC industry but those that do, highlight differences between VCs in the U.S. and other regions like Europe or Canada (Bertoni, Colombo and Quas, 2015). One of the few European studies on value-adding activities by VCs was conducted by Murray (1996), who studied how VCs added value for early-stage high-tech firms and their respective VCs in Europe. Murray collected data from six high-tech, early-stage firms across Europe (France, UK, Germany, Denmark) and found the value-adding inputs perceived by both VCs and entrepreneurs to be: (1) strategic and marketing decisions, (2) commercial skills, (3) technical expertise, (4) experience with target markets, (5) rigorous financial control, (6) imposition of demanding targets, (7) identification of additional management resources and lastly (8) assistance with recruitment. However, perceptions of which value-adding input mattered most to the entrepreneurs varied strongly between the cases, as did the level of VC

involvement. Subsequently, the authors conclude that generalising from their findings would be premature. Another study, conducted in the U.S., the UK, the Netherlands and France by Sapienza, Manigart and Vermeir (1996) "examined the determinants of interaction between VCs and CEOs, the roles VCs assume, and VCs' perceptions of how much value they add through these roles" (p. 439). While they found the American and British VCs to be quite hands-on, the French VCs preferred a hands-off management style. Furthermore, the Dutch VCs seem to add more value in the early stages of their portfolio firms, while the French VC firms added more value in the later stages. Referring to other fragmented results from the European VC literature, they state that:

> "studies in Nordic markets reveal the following: (1) in Finland, the activities of financing and active oversight are rated most important […] (2) in Sweden, [it was] […] found entrepreneurs rate access to capital, to VC competence, to moral support, and to networks most important […] [and there are] four styles of venture VC involvement: consultancy oriented, mentor oriented, operations oriented, and structure oriented", (p. 444).

These results support Ooghe, Manigart and Fassin (1991) who found the VC industry in the U.S. to differ structurally from the European one, which in itself differs among the national markets, thereby justifying an approach that is sensitive towards context and national characteristics.

Apart from the dominance of North American studies, there also are differences among the entrepreneurs and investors studied in the VC field. While the majority of papers focuses on the general VC and entrepreneur populations, with an emphasis on high-tech industries, some studies focus on particular sub-groups within the general VC population. Ehrlich et al. (1994) for example collected data from VCs and private investors, while Sweeting and Wong (1997) collected data in a VC firm in the UK that had four Management-Buy-Outs in its portfolio, Sætre (2003) focused on informal capital and zu Knyphausen-Aufsess (2005) compared private VCs with corporate VCs. Knockaert et al. (2006) also focused on a sub-group of VCs, namely high-tech VCs. This study was not included in Large and Muegge's review and argues that three added-value items are of particular importance for high tech VCs, namely the negotiation of intellectual property rights, recruitment of the head of Research and Development and forming an advisory

board (see pp. 9-10). While an overlap of results in respect to value-adding input can be seen, these studies also found important value-adding activities that were not mentioned in previous studies. Therefore, when studying added-value by VCs it should be noted that different VC types have different value-adding activity approaches and that research from the U.S. can not necessarily be applied to the European context. Consequently, the perceptions of added-value inputs by VCs vary considerably among VCs and entrepreneurs, between Europe and the U.S. and between sub-groups of the general VC population, e.g. Business Angels, Corporate VCs and specialist VCs. Given that several studies argue that VCs add value (Brander, Amit and Antweiler, 2002; Alperovych and Hübner, 2013; Croce, Martí and Murtinu, 2013), the need for exploratory research becomes apparent, to answer the questions: What are entrepreneurs' perception of the value added by VCs to their firms in a European context and in the Life Science industry?

#### 2.2.2.2 Value-adding activities over time

This leads to the second review question (Do the value-adding activities change over time and if so, how?) which is reviewed in the following. First, how the broader VC literature incorporates the concept of time when looking at early stage firms in general, is discussed. Second, literature relating to the concept of time with regards to USOs in particular, however not related to VC involvement is discussed. No research could be found that combines studying USOs with the impact of time, hence no paper could be included in this review. As a result, the above two strands of literature are the ones closest to the desired object of study. Those two strands of literature are discussed, as both contribute a better understanding of the existing body of knowledge and, in combination, make the contribution of this thesis obvious, which is to combine the relationship over time with VCs with USOs.

When looking at the broader VC literature and how it incorporates the concept of time, two different approaches can be identified: Firstly, literature on the different levels of involvement of VCs and their effects (with inconclusive and contradictory results), and secondly, fragmented literature on added-value that changes with the firm's age.

Several scholars explore differing levels of VC involvement in the new venture, ranging from a very hands-off approach to a hands-on approach with intense involvement. These

scholars offer contradictory findings and a diversity of VC involvement is noted (MacMillan, Kulow and Khoylian, 1989; Barry et al., 1990; Gupta and Sapienza, 1992; Sapienza and Gupta, 1994; Elango et al., 1995; Lerner, 1995; Sweeting and Wong, 1997; Cumming and Johan, 2007). While the level of involvement does not allow clear conclusions, some of the scholars came to conclusions with respect to added value over time and at certain points of time. Barry et al. (1990) shows that the length of time the VCs spent at the portfolio firms' boards has a positive effect on their ability to advise and add value. Lerner (1995) shows that VCs have a stronger engagement with, and influence on, the venture around the time of CEO turnover. And Cumming and Johan's (2007) European dataset shows that VCs spend 25% of their time at ventures whose risk they assess to be 10% higher. Adding to this, Gomez-Mejia, Balkin and Welbourne (1990) interviewed VCs and CEOs in a U.S. region and found that, in the early stage, VCs spend more time on their portfolio firms and on areas in which the current management team is not competent. They conclude that life-cycle stages are an important determinant of VC involvement. While the above research looks at time in a rather unstructured fashion, the theory of life cycle stages is a more structured approach, employing a sequence of stages or phases (Poole and Van de Ven, 2004). A number of scholars use life cycle theory for research on VCs' involvement with portfolio firms.

Flynn and Forman (2001), focusing on the impact of life-cycle stages, investigated the impact of the variables demography, environment, information processing, structure and decision-making on performance of VC-backed firms over the course of the firms' life cycle. Although there were differences among VCs who invested in later stages and those investing in earlier stages, they only distinguished between early- and late stage, defining late stage as mezzanine capital and bridge investment. Therefore, limited conclusions about added-value from VCs over time can be drawn in respect to early stage firms. One of their main findings is the greater need of early stage firms for aid on the negotiation of legal and governmental issues and a greater need for personal discussion rather than formalised information-seeking processes. Their sample however, was based on 76 questionnaires distributed to the general U.S. VC population, leaving out the entrepreneurs' view. Berg-Utby et al. (2007) studied VC portfolio firms' expectations and post-investment perceptions of VC support within many different industries and, as part of their survey-based data collection, asked the respondents to indicate which life-cycle stage they were in. The scholars defined four life-cycle stages, namely: (1) development; (2) commercialization; (3) growth; and (4) maturity. They compared data from firms in

different stages and found the difference between expectations and perceptions of VC support changed at different life-cycle stages. Apart from the observation that the perceptions of VC support differed from stage to stage, no more details are provided on *how* they differ.

When looking at the specific case of USOs and their development or evolution over time, several scholars have provided fascinating insights, although none relate to VCs. Vohora, Wright and Lockett (2004) for example show that USOs go through five distinct phases in their company life and pass through four distinct, critical junctions. The phases are described as research phase, opportunity framing phase, pre-organization phase, re-orientation stage, and finally sustainable returns phase. The critical junctions are 'opportunity recognition', 'entrepreneurial commitment', 'venture credibility', and 'venture sustainability'. Other studies by Clarysse and Moray (2004) and Vanaelst et al. (2006) used Vohora, Wright and Lockett's (2004) phases model as a categorisation tool to analyse the interaction between different members of the entrepreneurial team over time and they could show that several changes occur in the entrepreneurial team over time, which can be separated into four distinct phases. Two out of the four phases refer to possible interaction with VCs. In phase three, a VC might be contacted for fund-raising and the VC might bring an external CEO on board of the firm (also known as "surrogate entrepreneur"). In phase four, it might happen that the firm has several rounds of funding. The establishment of an external CEO by the VC however is nothing new or surprising, and several authors discussed this form of VCs' added-value (see previous section). Apart from that, no insight is provided on how the relationship with the VCs evolved and developed.

Lastly, a research study by Druilhe and Garnsey (2004) shows that USOs' business models change over time and their resource dependencies change too, thereby providing further evidence for the importance of the impact of time on the development of the USOs. Research by both Vohora, Wright and Lockett (2004) and Vanaelst et al. (2006) however, stresses that even though the firm/team has to pass through the previous stage to get to the next one, this process of passing is an iterative, non-linear process. Therefore, they conclude that life-cycle stages have to be considered carefully. This argument is also developed by Rasmussen (2011), who says that a resource-based view or life cycle theory is not the only theory that can be used to study the influence of time on new firms or USOs in particular. He argues, two distinct theories exist in academic entrepreneurship

research. One being variance theory, which deals with variables and causalities, which the majority of the above studies on VCs' involvement employ, and the second being process theory, which looks at states and events. The majority of the above cited studies however apply either a variance theory approach or a life-cycle theory approach and, while all of the above studies are interesting and partly even look at the influence of time on USOs and show that change occurs constantly over the life time of a firm, none relates to VC. Cleary, a gap in respect to studying VCs' value-adding activities over time for the specific case of USOs exists. Filling this gap matters to gain insights on the changing needs of USOs over their lifetime and ensure their best possible development. Without insights in this regard, it might happen that USOs are supported with ill-fitting actions at the wrong times.

### 2.2.3 Conflicts

Thus far, the 'up' side of VC-entrepreneur interaction, namely added-value, has been discussed; however, as the table at the beginning of the review showed, research has recently started to focus on the 'down' side of VC financing, namely conflicts that arise in VC-entrepreneur relationships. This section now reviews research answering the third and fourth review questions ('What is known about conflicts with VCs and in particular the nature, causes and resolution strategies of conflicts between VCs and CEOs?' And 'Do conflicts between VCs and CEOs from their portfolio firms change over time?'). The following section provides an overview of the research on conflict between VCs and CEOs. Once again, the scope is widened to the broader VC population and portfolio firms' literature, since no research could be identified that has looked at conflicts with VCs in a USO context. The section then discusses two frameworks, which integrate the majority of the findings made in earlier research, but still miss some elements of the literature looking at VC-investee conflicts.

VCs face four generic threats when interacting with entrepreneurs: The entrepreneur might not work enough, the entrepreneur knows his/her skills better, the danger of conflicts in the future and a hold-up danger (Kaplan and Strömberg, 2004). These conflicts, as perceived by the VC, have a significant impact on control rights, cash flow and contingent compensation. Conflicts, when not resolved appropriately, can lead to the termination of a relationship and therefore pose a lethal threat to an investment and its

expected returns. Contracts serve to avoid the four generic threats outlined by Kaplan and Strömberg (2004) *ex-ante*, hence prior to the commencement of the formal relationship. To reduce the ex-ante problems, contracts contain investor rights on (1) the cash flow, (2) control and veto, and (3) the exit, which can take a number of forms (see Figure 2 below). The content of contracts is non-standardised and depends on the negotiations between the VCs and the entrepreneurs (Zambelli, 2014).

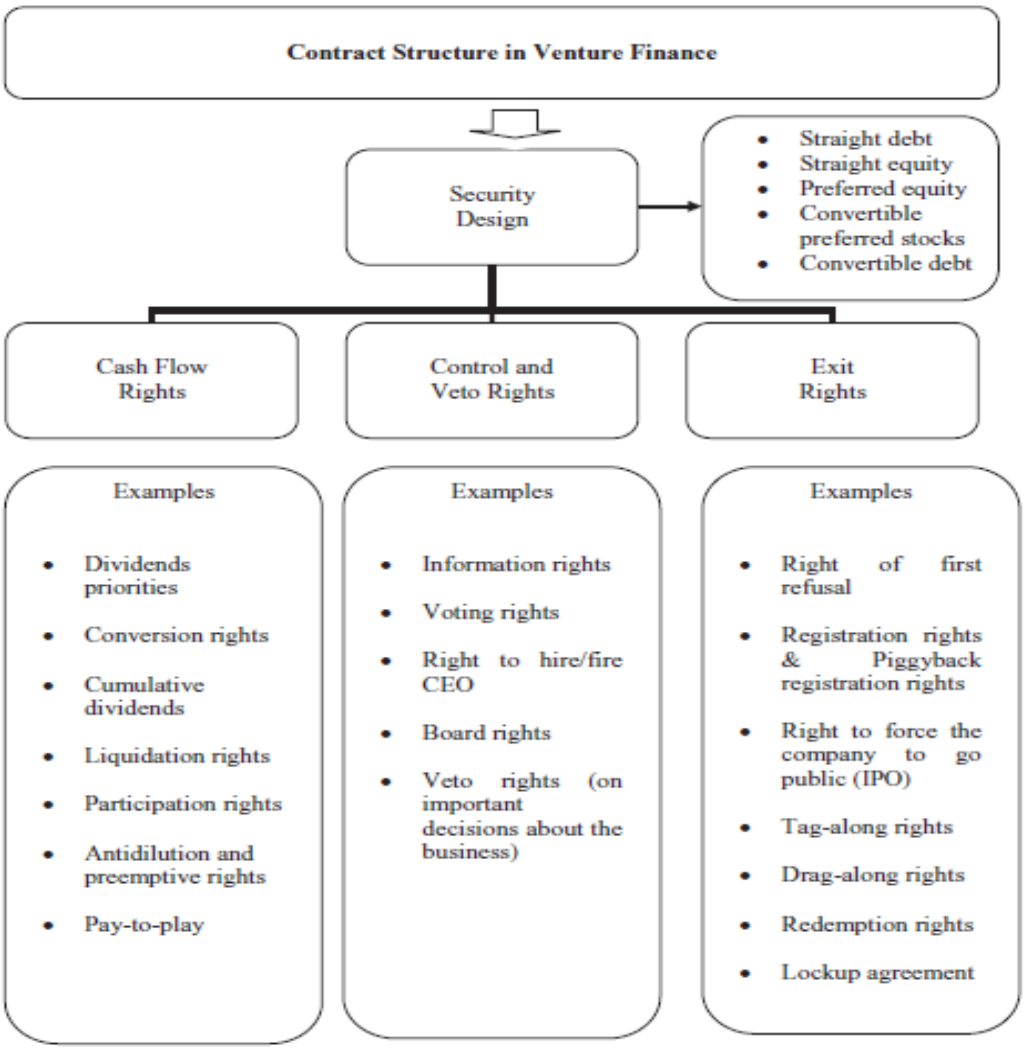


**Figure 2 Contract structure in venture finance**

Source: Zambelli (2014, p. 504) An in-depth explanation of each term can be found in appendix 2 of Zambelli's article. For the reason of brevity this overview was chosen.

However, as contracts are made ex-ante, they are always incomplete due to bounded rationality, meaning that the parties who set up the contract and sign it cannot possibly think about all scenarios the contract would need to cover to be complete (Wright and Lockett, 2003). Apart from contractual arrangements, trust and social capital are widely

regarded as playing a significant role in the investor-investee relationship and have a significant impact on conflicts over the duration of the relationship (Sweeting and Wong, 1997; Shepherd and Zacharakis, 2001; Arthurs and Busenitz, 2003; Fairchild, 2011; Zheng, 2011; Fassin and Drover, 2017). As Fassin and Drover (2017) say when referring to Carroll (1991): “Ethics goes beyond the law.” (p. 17).

Therefore, it can be concluded that VCs are conscious and protective of control over the firm, and in consequence protective of their invested funds. This is also confirmed by Forbes, Korsgaard and Sapienza (2010) who show that CEOs encounter conflicts with VCs around ‘down rounds’, rounds of further funding at a lower valuation rate, leading to higher stakes of equity for the VCs and fewer shares for the CEOs. Appelhoff, Mauer and Collewaert (2015) find that while VCs want to maximize their return-on-investment (ROI), they are concerned about responsible use of resources by the entrepreneurs, while Fassin and Drover (2015) see great potential for conflict around the critical moments of financial milestones and fund renegotiations. Therefore, any framework that aims to look at conflict between VCs and CEOs, has to have a category that accounts for conflicts around financial topics. In addition to these two conclusions, focusing purely on contractual arrangements for ex-ante risk mitigation is too narrow a focus. To develop an analytical framework to understand conflicts between CEOs and VCs, the scope has to be widened.

A number of studies have subsequently widened the scope and considered a great variety of conflicts in between VCs and CEOs. Khanin and Turel's (2013) paper offers a useful overview of the different types of conflicts identified in papers prior to 2008. They grouped these into three categories: (1) conflicts of interest and negative attribution, (2) conflicts of inefficient collaboration, and (3) conflicts due to VC-CEO mismatch (see pages 35-37 of their article). While this is an excellent overview, it does not distinguish systematically between dimensions of conflict, the nature of conflicts and resolution strategies. That gap was filled by Yitshaki (2008), who developed categorisations and a framwork based on, and synthesising findings from the literature on general VC-entrepreneur conflict as well as possible resolution strategies. Yitshaki (2008) conducted a qualitative study on conflict management between Israeli VCs and entrepreneurs and, based on her findings as well as the literature on conflict management, she developed three typologies of the dimensions and natures of conflicts and forms of conflict resolution. She identified three dimensions of conflict, namely the contractual, the

contextual and the procedural. In terms of the nature of conflict, she distinguished between cognitive and affectual conflicts (a finding previously made by Higashide and Birley, 2002) and finally, in terms of resolution of conflicts, she suggested the strategies of collaboration, defection and use of power. Table 4 outlines the typology's components.

| **Dimensions of conflict** | |
|---|---|
| **(1) Contractual** | Based on disagreement over the formal distribution of power as defined in the contracts; entrepreneurs' limited managerial and competitive opportunism; the board composition and VCs control over decision-making; |
| **(2) Contextual** | Refers to the VC's level of involvement in management processes and strategic decision-making; replacement of CEO in case of under-performance |
| **(3) Procedural** | Refers to the quality and frequency of information exchange between the two parties based on trust, shared norms and obligations, commitment and identification with the reference group |
| **Nature of conflict** | |
| **Cognitive** | Refers to different perspectives of the parties involved and can increase the performance of groups and quality of the outcome |
| **Affectual** | Interpersonal differences expressed by feelings and friction are considered dysfunctional |
| **Forms of resolution** | |
| **(1) Collaboration** | Cooperation based on mutual cognitive understanding and mutual interest or as a consequence of compromise or accommodation |
| **(2) Defection** | An avoidance strategy, e.g. exit or an aggressive voice from the VC side and opportunistic behaviour or defect from the entrepreneurs' side |
| **(3) Use of power** | Use of power in the asymmetric power relationship between VCs and entrepreneurs (e.g. managerial replacement or increase of shares) |

**Table 4 Overview on Yitshaki's (2008) dimensions and natures of conflict, and resolution strategies**

Yitshaki's (2008) work was the first to focus on several aspects of conflicts simultaneously and to take both VCs' and entrepreneurs' views into account. Several papers prior to 2008 support elements of her proposed framework, as can be seen in her article. In addition, it will be shown later, that a number of research studies since 2008 also support the holistic nature of this framework.

When exclusively focusing on resolution strategies, two other studies developed a typology of forms of conflict resolutions. One was conducted by Parhankangas and Landström (2006), the other by Zou et al. (2016). Parhankangas and Landström (2006), who investigated VCs' responses to disappointment with their portfolio firms, found that VCs who are firmly embedded in the VC community and possess stronger social ties, use more active and constructive approaches when handling disappointment. Forms of disappointment were identified as disagreement, incompetence, shirking and opportunism. In comparing Parhankangas and Landström (2006) to Yitshaki (2008), it can be seen that these four categories of disappointment align with the contextual category of the dimensions of conflict as defined by Yitshaki (2008). The responses to conflicts by VCs, however, were identified by Parhankangas and Landström (2006) to be loyalty, neglect, the use of either considerate and aggressive voice and exit (for a visual overview see Figure 3). According to their model, loyalty represents a passive, optimistic attitude and neglect represents an attitude of viewing a situation as not one's duty to solve. Voice is split up into considerate and aggressive voice, where "Considerate voice consists of attempts to solve the problem in collaboration with the other party, taking into account the concerns of both parties and aggressive voice consists of efforts to win, without consideration for the concerns of the other party." (p. 777). The final potential response to conflicts, exit, is a voluntary termination of the relationship. In their model 'exit' and 'voice' are considered active responses, with the other two are considered to be passive. 'Loyalty' and 'considerate voice' are considered constructive approaches, whereas 'aggressive voice' and 'neglect' are seen as destructive.

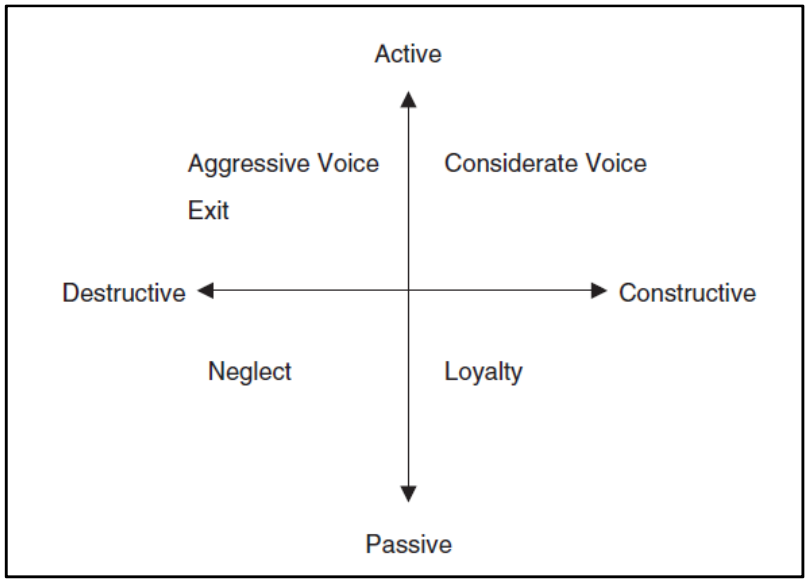


**Figure 3 Parhankangas and Landström's figure of VCs' responses to unmet expectations**

Source: Parhankangas and Landström (2006, p. 778)

Comparing this with Yitshaki's (2008) typology, it can be seen that 'loyalty' and 'considerate voice' fit into the category of 'collaboration' and Yitshaki's (2008) definition of 'defection' equals Parhankangas and Landström's (2006) category of 'neglect'. In the same way, Yitshaki's (2008) category of 'use of power' overlaps with Parhankangas and Landström's (2006) 'destructive voice'. This overlap leads to a mutual strengthening of the scholars' results while Parhankangas and Landström's (2006) typology adds more nuance to Yitshaki's (2008) categories of conflict resolutions.

Another study, which also defined four conflict management strategies, is provided by Zou et al. (2016), who define four resolution strategies in a conflict between VCs and CEOs as competing, collaborating, accommodating, and avoiding. In their words:

> "In the collaborative approach, both sides attempt to work together […] in the accommodating approach, one side makes sacrifices […] The avoiding approach attempts to smooth over conflicts by minimizing discussion […] this may involve turning away or even refusing to acknowledge its existence." And "The competing approach views conflict as a win-lose game in which one side pursues their concerns at the expense of the other." (p. 5)

When comparing Zou et al.’s (2016) work with Yitshaki's (2008) and Parhankangas and Landström's (2006) work, it becomes clear that the collaborative and accommodating approach overlap with the meaning of the collaborative form of resolution as defined by Yitshaki (2008) and the forms of resolution ‘loyalty’ and ‘considerate voice’ as defined by Parhankangas and Landström (2006). Furthermore, Zou et al.'s (2016) avoiding approach equals Yitshaki's (2008) form of ‘defection’ and Parhankangas and Landström's (2006) form of ‘neglect’. And thirdly, Zou et al.'s (2016) ‘competing approach’ overlaps with Yitshaki's (2008) definition of ‘use of power’ and Parhankangas and Landström's (2006) understanding of ‘aggressive voice’.

Comparing the three studies’ definitions of forms of resolution (see Table 5), it becomes apparent that Zou et al.'s (2016) four forms of conflict management offer the most up-to-date and refined conflict management typology. While the ‘avoiding’ and ‘competing’ approaches by Zou et al. (2016) are also reflected in the other scholars’ work, Zou et al. (2016) offer the most intuitive forms of conflict resolution when it comes to the ‘collaborative’ and ‘accommodating’ approach. Yitshaki (2008), when defining her form of conflict resolution termed ‘collaboration’, pre-assumes that mutual understanding exists, which could only be confirmed by data collection from the VCs and CEOs on the same issue. Parhankangas and Landström (2006) on the other hand, when defining loyalty as form of conflict resolution, talk of a passive reaction, which leads to the question whether a passive reaction by the VCs could be detected by the CEOs in the first place. It is therefore concluded, that for an analytical framework to study CEOs’ perceptions of conflict, Zou et al. (2016) is best suited and should be taken as a basis for a synergised framework.

| **Yitshaki (2008)** | **Parhankangas and Landström (2006)** | **Zou et al. (2016)** |
|---|---|---|
| Collaboration: Cooperation based on mutual cognitive understanding and mutual interest or as a consequence of compromise or accommodation | • Loyalty represents a passive, optimistic attitude<br>• "Considerate voice consists of attempts to solve the problem in collaboration with the other party, taking into account the concerns of both parties (p. 777). | • "In the collaborative approach, both sides attempt to work together" (p. 5)<br>• "In the accommodating approach, one side makes sacrifices" (p. 5) |
| Defection: An avoidance strategy, e.g. exit or an aggressive voice from the VC side and opportunistic behaviour or defect from the entrepreneurs' side | Neglect represents an attitude of viewing a situation as not one's duty to solve | "The avoiding approach attempts to smooth over conflicts by minimizing discussion […] this may involve turning away or even refusing to acknowledge its existence." (p. 5) |
| Use of power: Use of power in the asymmetric power relationship between VCs and entrepreneurs (e.g. managerial replacement or increase of shares) | "Aggressive voice consists of efforts to win, without consideration for the concerns of the other party." (p. 777). | "The competing approach views conflict as a win-lose game in which one side pursues their concerns at the expense of the other." (p. 5) |

**Table 5 Overview of key authors' definitions of resolution strategies**

Source: author's compilation

Parhankangas and Landström's (2006), Yitshaki's (2008) and Zou et al.'s (2016) frameworks are based on a number of studies in the field of investor-investee conflict and provide a holistic view of some crucial elements of conflicts in an investor-investee relationship. But the discussed literature has so far only referred to works prior to 2008 (except Zou et al., 2016). Since then, a number of further studies were conducted, that

look at the entrepreneurs' perception of conflict and were not mentioned in the three scholars' work but support the suitability of the above frameworks.

In further literature Appelhoff, Mauer and Collewaert (2015), in reviewing the theoretical literature, agree that the literature on conflict can be grouped as research that looks at task conflict, relationship conflict and process conflict. While the latter two confirm Yitshaki's (2008) procedural dimension of conflicts, the first confirms the cognitive nature of conflicts. Other researchers look at the influence and impact of unethical behaviour and perceived unethical behaviour (Collewaert and Fassin, 2013; Drover and Fassin, 2013; Fassin and Drover, 2017), and find they significantly influence entrepreneurs' willingness to partner with VCs. This supports the dimension of procedure of the framework based on Yitshaki's (2008) work, as VCs and investors should share norms and obligations to avoid conflict. Other research by Zacharakis, Erikson, and George (2010) focused on the impact of conflicts on confidence in partner cooperation and found that, although VCs view task conflict favourably, entrepreneurs do not. Furthermore, intra-group conflict increases the likelihood of inter-group conflicts. This study provides further evidence for the importance of trust in the procedural dimension in the framework based on Yitshaki (2008) and shows why entrepreneurs' perceptions matter. Lim and Cu (2012) highlight how social ties and contractual characteristics can be the source of conflict between VCs and entrepreneurs in the U.S. and Singapore. They found direct social ties to lead to more advice given to entrepreneurs, while weak social ties led to more disagreement. Drawing on the contractual and network perspective, they found that contractual changes are costly and used as an instrument of last resort, underlining on the one hand that a dimension on contracts has to be included in a framework to study VC-investee interaction, but trust is another important element of the relationship. Supporting evidence for the difference between the cognitive and affective nature of conflicts, as argued for by Higashide and Birley's (2002) findings is provided by Brettel, Mauer, and Appelhoff (2013) who surveyed 152 German entrepreneurs and discovered that they believe relationship conflict is detrimental, while task conflict has a positive effect on the perceived value of the venture capital firm.

#### 2.2.3.1 Multi-party conflicts

One underlying assumption of most studies on conflicts between VCs and their portfolio firms however is the idea of a dyadic relationship between one VC and one CEO of a USO. Only two studies say otherwise. This part of the literature review focuses on the final review question (What theories exist to explain multi-party conflicts between VCs and CEOs?). One study mentioning the presence of serval VCs and the conflicts that can arise with it, is by Chahine, Arthurs and Filatotchev (2012), who said that the presence of several investors in one portfolio firm can give rise to conflicts that are termed 'principal-principal' conflict, as they occur in between the investors. The second paper referring to the potential existence of such a phenomenon, was published by Wright and Lockett (2003), who note that nowadays the reality of VC funding is syndicates. "syndicates are a form of inter-firm alliance in which two or more venture capital firms co-invest in an investee firm and share a joint pay-off." (Wright and Lockett 2003, p. 2073). Looking at literature on VC syndication, four areas of research have been identified, (1) antecedents for syndication, (2) decisions and motivations for syndication, (3) composition and dynamics and (4) the effects of syndication on performance (Jääskeläinen, 2012). The effects of syndication have been examined at the venture level, the fund level and the VC firm level. With respect to the venture level (which equates to the portfolio firm level), the few insights are that syndication is likely to enhance performance of individual investments as a result of VCs' pooling of resources that are partly unique. The literature also shows that more VCs function as symbol of legitimacy, and that syndicates provide certification for the selling price of the portfolio firm during the exit process. Moreover, VCs that have formed a syndicate with other VCs once tend to form a syndicate with the same VCs again, since trust has established between them (Meuleman et al., 2017). However, as Jääskeläinen (2012) notes, while there generally is a positive effect of syndication on performance, that could be due to value-adding and certification, it could equally well be due to a reversed causality, namely that successful firms grow big, and therefore need syndicated venture capital. Apart from these insights, based on quantitative analysis, no insights exist on the relationship between portfolio firms and VCs. Discussing possible conflict scenarios, Wright and Lockett (2003) say that, based on the amount of equity held by the investors, one investor will take the 'lead' position. When thinking about the possible conflicts that can occur with the entrepreneur, the altered behaviour of VCs in a syndicate needs to be taken into account. Syndication imposes an agency cost that is reflected in terms of coordination and timing difficulties regarding decision-making (Wright and Lockett, 2003; Cumming, Siegel and Wright, 2007). "it may be more difficult to renegotiate both the investment agreement and to take action

with respect to problem investees" (Wright and Lockett, 2003, p. 2083). They argue that some partners might have changed their investment focus, and others might have fully invested their fund, leading to discrepancies between different investors' timelines. This in turn could be a source of conflict that potentially could have been avoided in a relationship with a single investor.

The dominant form of a theoretical foundation in VC research to explain VC-CEO conflict is principal agent theory (De Clercq and Sapienza, 2001). According to this theory, a problem between an agent (the CEO) and the principal (the VC) arises when goals are incongruent and the parties have different risk preferences. Accordingly, both parties are self-interested and have bounded rationality, leading to information asymmetries. Opportunistic behaviour when possible is the result (Arthurs and Busenitz, 2003). However, numerous flaws have been identified in this theory, for example that it does not take into account that conflicts can occur between two principals rather than one agent and one principal (Sapienza, Manigart and Vermeir, 1996). It also fails to acknowledge that both sides hold unique information that, when not shared, will lead to the failure of the venture instead of allowing one party to gain over another (Sapienza and De Clercq, 2000). Therefore, a range of other theories have been employed in VC research. Among them procedural justice theory and group value model (Tyler, 1989; Sapienza and Korsgaard, 1996; Busenitz et al., 1997). According to procedural justice theory, the portfolio firm will consider an outcome of a decision as just and fair, if the VC allows them to speak forthrightly during the process (the theory refers to this concept as "Standing"), if the VC behaves neutrally (the theory refers to this as "Neutrality") and if the VC can be trusted (the theory refers to this as "Trust"). Clearly, this theory is only concerned with the process rather than the outcome. Another theoretical perspective, used to study VC-CEO interaction is the institutional power and organizational dependence view (Gomez-Mejia, Balkin and Welbourne, 1990). In this context "Power is the capacity of one social actor to restrict the options available to another social actor in such a way that the ultimate action taken is consistent with the dominant actor's interest." (p. 104). The authors argue that as VC funding often is the only form of capital available, a lot of power can be exercised by the VCs. This theory however, faces criticism from several authors who say that a relationship between VCs and CEOs is based on trust (Shepherd and Zacharakis, 2001; Maxwell and Lévesque, 2014) and on information asymmetries being able to go both ways (Sapienza and De Clercq, 2000).

Another theory in the field of VC research is self-efficacy theory (Knockaert and Vanacker, 2013). According to this theory individuals engage in activities they believe they are in control of and capable of handling. “Self-efficacy pertains to the belief that one can successfully execute the behaviour required to produce a specific outcome” (p. 10). This theory however is at odds with the idea of value-adding activities (Brander, Amit and Antweiler, 2002) and the synergy effects between capital and knowledge (Chesbrough, 2003; Shane, 2004). Another theory used is the theory of financial intermediation (Hellmann and Puri, 2002). This theory emphasises the role of monitoring and gathering of information about the firms they finance. While this describes much of the evidence on the pre-funding stage of deal screening, this thesis’ focus on the post-funding stage, after VCs have decided to fund a firm. One theoretical perspective that has received little attention, while it is considered to be of great potential, is a game theory perspective. One exception is research by Cable and Shane (1997), who looked at the interaction between VCs and entrepreneurs from the game theory perspective of a prisoners’ dilemma (Rapoport and Chammah, 1965). The prisoners’ dilemma is a game theory scenario in which two players, A and B, can decide to cooperate, and thereby maximise their wins, or decide to compete, to minimise their losses. However, if one of the parties chooses a cooperation strategy, while the other chooses a competition strategy, the party who chose the cooperation strategy will not gain anything at all (sometimes referred to as the ‘sucker’s payoff’ (Cable and Shane, 1997). Based on the idea of rationality, it therefore follows that rational actors will choose to compete, even though they could gain more *collectively*, if they cooperated. This phenomenon is called the Nash-equilibrium (Nash, 1951). Applying this dilemma to the scenario of VCs and entrepreneurs, it would therefore be only logical to find that VCs and managers compete. However, this prisoner’s dilemma assumes that there will only be one round of interaction between the players. Cable and Shane (1997), who argued for the suitability of a prisoner’s dilemma to entrepreneur-VC relationships, also show that the infinity of future interactions between the two changes the Nash equilibrium to a cooperative style, since the individual players would otherwise fear retaliation. Taking this idea further, De Clercq and Sapienza (2001) argue that the exchange of commitments between the VC and entrepreneur builds a relationship, involving trust. Therefore, they find social exchange theory to be particularly fitting for relationships between VCs and entrepreneurs. According to social exchange theory, relationships are formed by repeated interaction over time, during which the actors interactively increase their vulnerability and commitment (Emerson, 1976; Geyskens, Steenkamp and Scheer, 1996).

While these two theoretical perspectives provide an explanation for why cooperation is chosen, and why ‘time’ is a crucial element in these relationships, both of the perspectives still explicitly consider the relationships between VCs and managers as dual, whereas syndicated VC capital is a reality in the field. However, no literature on conflicts with VCs that considers multi-player scenarios could be found. Therefore, the search scope was widened to alliance theories and an applicable theory was identified in social dilemma theory.

A social dilemma occurs when voluntary contributions to a public good need to be made that everybody benefits from, regardless of their contributions. Here, two assumptions apply: First, everyone could benefit more if they chose not to contribute and secondly, on a collective level, everyone benefits if everyone contributes.

> “In the alliance context, the dilemma manifests itself in the sense that partners of an alliance face a conflict between maximizing their own self-interest (defection; e.g., bargain for a larger share of the pie, withhold key information and knowledge or send second-tier employees) and maximizing the interests of the alliance as a whole (cooperation). It is generally more profitable for a partner to defect, but if all do so, all are worse off than if all choose to cooperate. It is clear that, in this case, a short-term individual partner's self-interested choice, albeit rational, will lead to a long-term alliance failure, which therefore poses a social dilemma […] for each of the partners.” (Zeng and Chen 2003, p. 589)

Zeng and Chen (2003) argue that there are three reasons why social dilemma theory is much wider in scope than the prisoner’s dilemma, and unlike the prisoner’s dilemma, can represent multi-partner alliances. First, in a prisoner’s dilemma, all harm would fall on the other party, but in a social dilemma scenario, all parties of the alliance would be affected. Second, it is more likely in a social dilemma scenario, that non-cooperative behaviour will remain undetected, increasing the temptation to defect. Third, in a prisoner’s dilemma, the other party can be punished in the next interaction, if they have

previously been un-cooperative. Punishment for non-cooperative behaviour is more difficult in multi-player scenarios.

Based on the above definitions and characteristics of social dilemma theory, it seems appropriate to study VC-CEO interaction involving multiple parties. In the context of VC-CEO interaction, the public good would be the shared profit the partners will make from a successful business exit. Similar to social dilemma theory in an alliance context, the VCs as well as the CEOs can decide to behave cooperatively, to find solutions to conflicts that cater to all parties' goals to some extent, or they can decide to be self-interested and compete during conflicts, or withhold information that would be crucial to bring the company forward strategically.

## 2.3 Conclusion

The reviewed literature allows a number of conclusions in respect to value-adding activities by VCs, conflicts with VCs, how time affects the relationship between VCs and entrepreneurs and what theories in the VC field can explain interactions between multiple parties. As discussed at the beginning of the review, the literature on VCs funding USOs in the Life Science industry is scant and did not generate extensive findings that would answer the posed review questions. Therefore, the scope of the review was widened to the general field of VC research, in which this thesis also makes its contribution.

To summarize the main findings from the review in respect to value-adding activities and to highlight the identified gaps in the literature, it was found that different VC types have different value-adding activity approaches and that research from the U.S. can not necessarily be applied to the European context. Consequently, the perceptions of added-value inputs by VCs vary considerably among VCs and entrepreneurs, between Europe and the U.S. and between sub-groups of the general VC population, e.g. Business Angels, Corporate VCs and specialist VCs. The evidence shows that VCs do add value (Brander, Amit and Antweiler, 2002; Croce, Martí and Murtinu, 2013), but no research exists that looks at VC-funded USOs in the Life Science industry in a European context. Therefore, the need for exploratory research becomes apparent, to answer the questions: What do the managers of USOs in the Life Science industry perceive to be added-value from their VCs?

When turning to the impact of time on the relationship between VCs and USOs, the review discussed a number of relevant research papers. It showed that the VCs' level of involvement does not seem to point to clear conclusions, that VCs spend more time with their portfolio firms at certain critical points of time and that a number of scholars, who either look at the general entrepreneurial population or the academic entrepreneurial population, applied life-cycle theory and identified a number of critical phases and junctions in the life of a USO. No research to date, however, examines the relationship over time between VCs and CEOs as perceived by the CEO in the context of USOs. Combining a view on the relationship between VCs and CEOs of USOs with a view on the process over time is identified as a current gap in the academic literature which needs to be addressed. Particularly for Life Science USOs, who have very long development phases, a good and fruitful relationship with their VCs is a crucial element to ensure commercial success at a later stage.

In respect to conflicts between VCs and their portfolio firms, it has been shown that the frameworks by Yitshaki (2008) and Zou et al. (2016) are based on (and are consolidated by) a number of studies in the field of VC-investee conflict literature. However, the presence and influence of multiple VCs, who invest in a syndicate, has so far been largely overlooked in research on VC-investee conflicts. So far, the frameworks perpetuate the idea of a dual relationship, with the VC on the one hand and the portfolio firm on the other hand. In addition, no theoretical work in the field of VC research offers a framework or explanation for conflicts with several conflict parties. Hence, this gap of a lack of research on a theoretical explanation for VC-investees in a multi-party scenario is identified. Not addressing this gap means to continue studying conflicts involving multiple parties with theories that have the underlying logic of dyads.

To tie it all together, the following gaps in the VC literature have been identified in the literature review: A gap exists in respect to studies on the CEOs of USOs' perception of value-adding activities. A gap exists in respect to studies on the CEOs of USOs' perception of how time affects the relationship with VCs. A gap exists in respect to studies on the CEOs of USOs' perception of conflicts and their resolution strategies with VCs. A gap exists in respect to studies on CEOs of USOs relationships with VCs in different national contexts and a gap exists in respect to studies on theoretical explanations for multi-party conflict scenarios in a USO-VC context. Addressing all these gaps allows to

gain profound insights in so-far under-researched USO-VC relationships and allows to understand key components of the relationship from the perspective of the USOs' management. Leaving this gap unaddressed, no insights can be gained that could prevent multi-million € USOs to fail before a successful exit or initial public offering.

Based on the lack of literature integrating added-value by VCs and VC-entrepreneur conflicts while also considering whether time might moderate this interaction, a research framework (see Figure 4) is proposed, which integrates the current stock of knowledge on VCs' value-adding activities, on the impact of time on the relationship with VCs and on conflicts between VCs and portfolio firms into one framework, offering the potential to study the individual entrepreneurs' perception of interaction between the added-value and conflicts (or 'ups' and 'downs') in the VC-entrepreneur relationship over time.

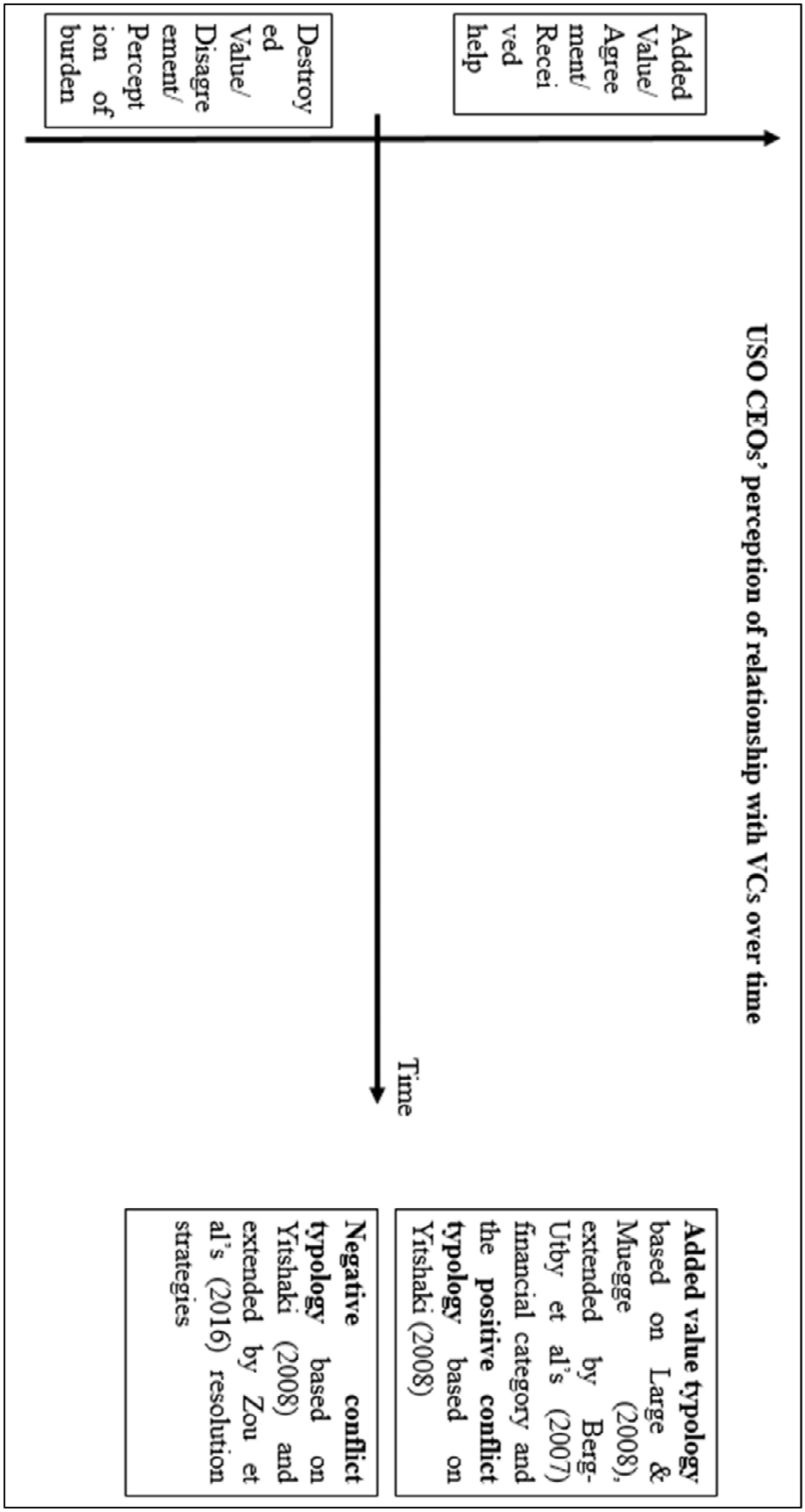


**Figure 4 Analytical research framework for individual managers' perception of relationship with VCs over time**

As can be seen from the graph, added-value and positive conflicts are linked to a positive perception of VC-entrepreneur interaction, while negative conflicts are linked to negative perceptions. In the research framework, the typology provided by Large and Muegge (2008) - extended by the financial category of Berg-Utby et al. (2007) - guides the research on added-value, while the perceptions of conflicts are guided by Yitshaki's (2008) typology, with the extension of the resolution strategies by Zou et al. (2016) as outlined previously. These typologies are chosen due to their comprehensiveness and their integration of previous findings. They are, however, orientated towards the outcome of VCs' actions. The framework also proposes a link between process perspective and outcome perspective. As Ţurcan (2008) notes: "[For the VC and CEO] it is critical to agree not only over the goals of the venture, but also over the ways of getting there." (p. 298). The process perspective will help to identify *how* entrepreneurs perceive the VCs' role in adding value or solving/starting conflicts (in contrast to *in what ways* they did so, which refers to the outcome perspective). Coverage of this perspective will be fulfilled by the chosen method of semi-structured interviews for this study, allowing the deeper exploration of processes. Both perspectives are seen as useful to study entrepreneurs' perceptions of VCs' support *over time*.

In respect to the theoretical concept of time, the framework relies on Mitchell and James' (2001) definition, who say:

> "Our treatment of time is embedded in a fairly traditional view of how time is represented in science, an orientation that Gurvitch (1964) and Clark (1985) describe as standard time or clock time. Time is treated as a commodity that can be broken into meaningful segments or blocks. It flows evenly and continuously. It is precise and quantifiable. It has the properties of an ordinal scale." (Mitchell and James, 2001, p. 531).

Finally, thus far, the suggested research framework might look as if it implicitly assumes that new ventures are funded by only one VC. But the analytical framework above does not exclude syndicated VCs as discussed in the literature review and intends to capture individual entrepreneurs' perceptions of their relationships with VCs, whether they are the sole investor or in a syndicate, over time. It should not be forgotten however, that

usually the lead investor with the biggest equity also interacts with the new venture the most. Nevertheless, the research framework does not exclude the involvement of several VCs.

# 3 Empirical context

This study investigates the relationship between VCs and USOs, entrepreneurial firms with a particularly high density of intellectual property, in the Life Science industry, which is characterised by large sums and long development times required to bring a product to the market (Association of the British Pharmaceutical Industry, 2012). This chapter draws out and discusses characteristics of the Life Science industry since the context in which studies on entrepreneurial populations are conducted are seen to vary widely because of different social, spatial, temporal and institutional characteristics of different industries (De Massis et al., 2018).

As has been mentioned in the previous chapter, VCs often invest in syndicates (Lockett, Ucbasaran and Butler, 2006; Manigart et al., 2006; Dimov and Milanov, 2010; Hopp and Lukas, 2014), with the intention to spread financial risk (Wright and Lockett, 2003; Manigart et al., 2006) which would be particularly relevant in the Life Science industry due to the large sums of money required for a Life Science firm (Association of the British Pharmaceutical Industry, 2012; Lawton, 2016). Meanwhile, traditional banks are not an alternative source of funding for Life Science USOs because banks consider investments in Life Science USOs as too risky while they also lack the personnel to assess potential business plans (Kneller, 2011). While this certainly holds true for Germany as well as the UK, this chapter provides some key facts on the German and British VC industry in the Life Science sector, to explain their distinctiveness and to show their relevance as sites of study. Furthermore, background information on the underpinning cultural, legal and policy characteristics of each nation, in which spin-out activity takes place, are provided.

## 3.1 Statistics on the British and German venture capital and Life Science industries

Within Europe, the UK and Germany play particularly important roles for the Life Science industry, since both countries attract the biggest sums of VC investment to their respective Life Sciences sectors (see Figure 5). They however offer quite different industry characteristics. According to Innovate Europe [2] data (which relies on PEREP_Analytics data[3] [now European Data Cooperative]), the UK is the 4th strongest country in respect to VC being invested in percentage of its GDP (see Figure 6). In the Life Science sector alone, a total of over 245 million € has been invested in the UK, which represents 28.6% of the entire British VC market. Given that there only are 48 VC-backed firms in the Life Science industry, this represents 21.4% of all VC-backed firms in the UK (see Table 6). It can therefore be concluded, that a very large amount of money is invested in fairly few companies, and the UK's VC industry in general is one of the strongest in Europe and worldwide.

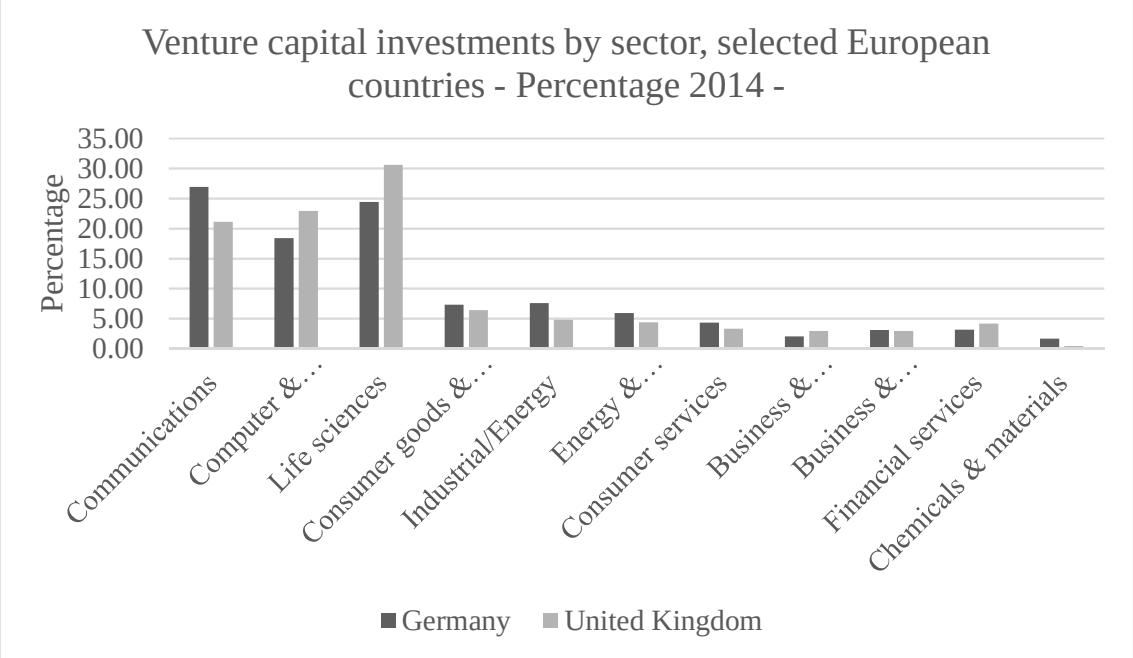


**Figure 5 Venture capital investment by sector**

Source: OECD (2015)

Germany on the other hand presents quite different data, being below the Innovate Europe's calculated annual average of VC investments as percentage of GDP (see Figure 6). In the Life Science industry, the amount invested in Life Science firms is only slightly

[2] Formerly known as 'European Private Equity and Venture Capital Association'

[3] "a fully functional, centralized non-commercial pan-European private equity database with its own staff, internal resources and website where quantitative and qualitative data will be collected" See: https://www.perepanalytics.eu/

more than half of the UK's investment at just over 195 million €. The percentage of Life Science investments as a share of the overall VC investments in 2015 was also below the UK's, at 23.3%. Interestingly, the number of Life Science firms in Germany greatly exceeds the number of firms in the UK with a total of 163 firms (115 firms more than the UK) (see Table 6).

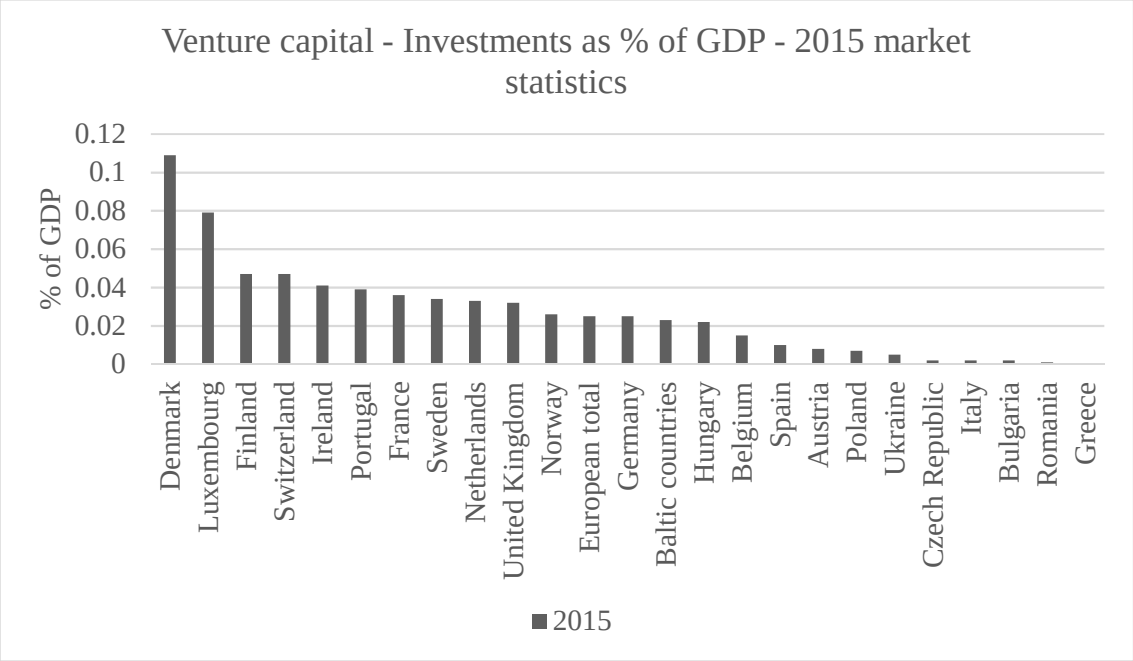


**Figure 6 Venture capital investments as percentage of GDP**

Source: Invest Europe Research (2016)

| **Data** | **UK** | **Germany** |
|---|---|---|
| Venture capital investment in Life Science sector in 2015 | 245.563.000€ | 195.055.000€ |
| Life Science investment in percent as share of overall venture capital investment in 2015 | 28.6% | 23.3% |
| Number of companies in Life Science sector in 2015 | 48 | 163 |
| Percentage of Life Science companies as share of total amount of venture capital-backed firms | 21.4% | 21.4% |

**Table 6 Venture capital industry -key statistics-**

Source: Own compilation of data based on database by Invest Europe Research (2016)

Therefore, for this thesis, data was collected in (1) one country with a very strong VC market and concentration of a vast amount of financial support in few firms, and (2) one country with a VC industry of below average size, but with a great amount of Life Science firms. The difference between the two becomes even more apparent, when looking at OECD statistics on science, technology and research and development (R&D) expenditures (see Table 7). The data shows that, while the UK is far behind Germany on a number of variables, it still has the largest VC industry for the Life Science sector out of the two countries. The academic literature offers several explanations for the above statistics, which can be grouped into legal, cultural and political reasons. These are explained in the following section.

| **Variable** | **Germany** | **UK** |
|---|---|---|
| Gross Domestic Expenditure on R&D | 108,827.22 $ (p) | 44,174.09 $ (p) |
| Total number of (full time equivalent) researchers | 351 130.13 (p) | 273 560.20 (p) |
| Government financed Gross Domestic Expenditure on R&D as percent of GDP | 0.84% | 0.49% (p) |
| Business Enterprise Expenditures on R&D | 73 445.43 $(p) | 28 447.33 $(p) |

p = provisional, national estimate

**Table 7 OECD statistics on science, technology and R&D expenditures**

Source: Author's own compilation based on 2014 database published by OECD (2016b)

## 3.2 Legal, cultural and policy environments of the Life Science industries in the UK and Germany

The reason why many scholars study high-tech start-ups in particular industries is the technology's influence on the start-up's business model and the resources needed to run the firm (Heirman and Clarysse, 2004). For the Life Science sector it is noted that, on the one hand, the information asymmetry between the entrepreneur and the VC is particularly large and, on the other hand, the time to exit is particularly long due to the many development phases involved in pharmaceutical products (Wright et al., 2007). These

internal and industry specific characteristics are then embedded in diverse cultural, legal and policy environments, which are explained in the following.

### 3.2.1 Cultural environment

Comparing the Life Science industry in the UK and Germany, Haeussler and Colyvas (2011) found a number of differences between the countries. First, British scientists seem to be incentivised more strongly by a strong publication record, while this does not hold true for German scientists. The authors assume that this relates to the general tradition of inventing in Germany. Secondly, their data reveals that scientists with more lab employees are more likely to patent in Germany than in the UK. One explanation offered by the scholars is the stronger hierarchical order in German labs, which allows the lead scientists to devote more resources to patents. Thirdly, being embedded in a peer group that values science, has a statistically significant impact on German researchers' commercialisation activity while the perception of the peer group's values does not seem to influence British scientists. The authors speculate, that this result might be explained by the less flexible labour market in Germany and the stronger embeddedness in peer groups.

### 3.2.2 Legal environment

Another factor is the differing legal situation in respect to patents. In Germany, 15% of all patents are co-owned by industry, while only 6% are in the UK (Kneller et al., 2014). Similar to Germany, the UK still falls under the EU's patent law, and in 2012, 267 biotech and 623 medical technology patents were granted in Germany. One unique characteristic of the German Life Science industry though, is the legally binding requirement for public and private health funds in Germany to only allow drugs to be financed when they pass a 'health technology assessment', established in 2000. In this assessment, new drugs have to demonstrate their usefulness and superiority compared to existing products. These assessments are seen to slow down the route to the market. Passing these assessments is of crucial importance, since 90% of the German population are enrolled with statutory health insurance providers, which offers a large potential customer-base.

In the UK, three legal characteristics are of particular importance. First, in 2013, a simplified patent regime was introduced, requiring a 10% corporation tax rate on profits from patented products, licensing and services. This initiative, called 'Patent Box', applies to British and European patents (HM Government, 2012). While eliciting a positive response from large, established corporations, this only benefits small venture capital-backed firms when they make profits, while increasing the barriers to market entry. Large firms with patents are able to capitalise on their competitive advantage, while also making use of economies of scale, proving to be a double barrier to start-up firms.

Secondly, in 2013, the R&D tax credits conditions were altered to encourage more investment in innovation (HM Government, 2012). These R&D credits are directly aimed at funding for research, especially basic research, to address the underfinancing of basic research (Griffith, Miller and O'Connell, 2014).

Thirdly, current price interventions further restrain potential returns on investments for VCs, since the Pharmaceutical Price Regulation Scheme (PPRS) limits prices of branded drugs. This agreement however is voluntary (Deloitte, 2014).

> "The most recent version of the PPRS (2014), introduced a spending ceiling, with companies agreeing to zero price increases for the first two years, followed by small increases of less than 2 per cent in the following three years. The scheme regulates the profits that that companies can achieve on sales to the NHS, rather than regulating prices directly." (p. 1).

Meanwhile, the British market for generics has increased greatly in recent years due to the Government encouraging their use. In 2013, generics made up 75% of all NHS prescriptions (Deloitte, 2014) and, while the government saves costs on healthcare, generics can be produced by every pharmaceutical company since no patent is required. This takes away a unique selling point and discourages VCs from investing in technologies that might soon lose patent protection, due to the increased competition on the generics market. Those VCs investing in generics are faced with the insecurity of the outcome of the drug assessment, carried out by the UK's National Institute for Health and Clinical Excellence (NICE), currently having a rejection rate of 20% (Deloitte, 2014). These assessments of the clinical and cost effectiveness are legally binding and calls have

been made to revise the review process and ensure quicker processing (England and Iossifidis, 2014). In December 2011, the National Institute for Health Research (NIHR) introduced a 70-day benchmark from the receipt of a research application to the first patient for clinical trials. Missing this benchmark also affects NIHR's funding to providers of NHS services (HM Government, 2012).

### 3.2.3 Policy environment

The government's involvement in the Life Science industry is the third factor that plays a defining and crucial role in the studied countries. Before elaborating on each country's unique policy situation, it is worth noting that scholars, focusing on international comparisons, found structural differences between the UK and Germany. In 2001, Hall and Soskice (2001), introduced the concept of 'varieties of capitalism', claiming that an overwhelming amount of countries can be classified as either liberal market economies (including the UK) or coordinated market economies (including Germany). Liberal market economies are seen to coordinate via the market and possess an institutional framework that favours radical innovation, innovation that is ground breaking and does not follow the logic of path dependency or constant, incremental improvements. Coordinated market economies on the other hand depend strongly on non-market relationships and more institutional involvement, which also favours an incremental approach to innovation (Hall and Soskice, 2001). This insight, in combination with their own analysis, led Casper and Matraves (2003) to conclude that British firms, in comparison with German firms in the biotech industry, possess a competitive advantage to generate innovative products due to the legal framework they are embedded in and the more flexible British corporate governance structure.

Assuming that radical innovation then, is most cited in the academic arena, Hall and Soskice's (2001) research would explain the graph below (see Figure 7), showing that UK research is particularly well cited in the global Life Science literature in comparison to Germany.

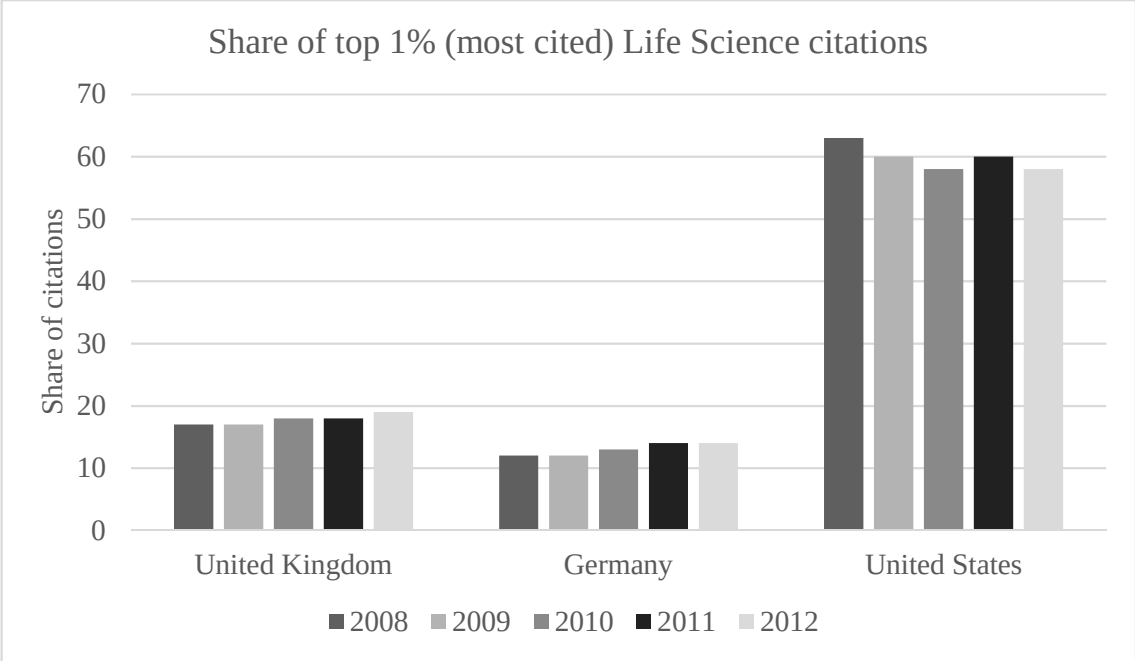


**Figure 7 Share of top 1% (most cited) Life Science citations**

Source: Department for Business Innovation and Skills et al. (2015)[4]

The German Life Science industry is shaped by several policy interventions. In the German Life Science industry and its VC industry, VCs were traditionally considered to be the prime source for capital for biotech firms, their relevance however, has decreased over time. Today, local VCs possess a 60% share of the overall VC market (Lawton, 2016). Also, universities are not the only source of Life Science innovation. Germany possesses 107 public biotech research facilities that belong to one of the following four associations: the Leibniz Association, the Fraunhofer Association, the Max Planck Society and the Helmholtz Association. These research institutions as well as universities account for 70% of all medical biotech partnerships in Germany and 84% of all German universities claim that 'red biotech', which focuses on human health, plays a dominant role in their research agenda.

In 2004, the government established 30 bio regions in Germany to stimulate economic growth across the sector of modern biosciences and apart from its provision of local infrastructure, it also heavily funds the Life Science industry as evident from Table 8.

[4] This source was chosen over the original source due to its improved overview and the synergy of several other statistics, published in the Department for Business, Innovation and Skills' publication 'International Comparative Performance of the UK Research Base – 2013'.

| Ongoing funding schemes (as of 2013) | Sums |
|---|---|
| GO-Bio: Pre-Seed (2-4 years, 100% public funding) and seed funding (another 3 years, 70% public money) for start-ups | ~15 million € p.a. |
| KMU-innovativ: Funding of R&D projects of SME (3 years, 40-75% public money, collaborative or single projects) | ~35 million € p.a. in total |
| Drug development: 2 public-private partnerships (public funding for each PPP, 30-50% public money for R&D projects) | 40 million € |
| Industrial biotechnology: Networks and alliances | ~40 million € p.a. |

**Table 8 Funding schemes in Germany (2013)**

Source: Lawton, (2016, p. 125)

Since its launch in 2007, the 'KMU-innovativ' funding scheme has invested 200 million € (Lawton, 2016). Two further forms of governmental support, in particular for USOs, are the programmes 'EXIST' and the 'High-Tech Gründerfonds'. EXIST has three schemes: (1) financial support to promote a culture of entrepreneurship, (2) business start-up grants for students and faculty, irrespective of their institutional affiliation, and (3) transfer of research grants aimed at financing the resources necessary to launch a business. For the Life Science industry, EXIST scholarships however play a minor role due to the fairly small financial support they offer.

The second funding programme, the 'High Tech Gründerfonds', is an independently managed VC scheme, with a plurality of investors. It has about 886 million € under management in three funds (High-Tech Gründerfonds GmbH, 2015) and has a variety of Life Science start-ups in its portfolio with a division solely dedicated to Life Science high-tech.

A different picture presents itself when looking at the UK. For the UK, two major issues shape the Life Science industry. The first relates to price intervention, which has been discussed previously. This price regulation reflects government concerns over increasing healthcare costs (Casper and Matraves, 2003). A second major impact of regulation on the Life Science industry concerns the government's funding efforts. All USOs in the UK, across all fields, receive in total around 160 million £ annually via the Higher Education Investment Fund to improve commercialisation and intellectual property infrastructure

(Hewitt-Dundas, 2015). In 2011, the Government published the ‘Strategy for UK Life Science’, outlining a 10-year strategy, with a focus on five distinct areas: Translational research infrastructure, venture investment, industrial inward investment, NHS adoption and innovation and fifth, global promotion of the UK via the UKTI (Department for Business Innovation and Skills, 2011). Within this strategy, several actions have had an especially strong impact on the Life Science industry and USOs in particular. First, via the UK research partnership investment fund, in the 2012 budget alone, 146.5 million £ were invested in Life Science fields and during the third round of funding of the Regional Growth Fund, 42 million £ were invested in the Life Science sector. Furthermore, the Medical Research Centre and the then Technology Strategy Board (now called ‘Innovate UK’) jointly invested 180 million £ over three years into the Biomedical Catalyst, designed to fund and support the development of healthcare challenges, to secure “funding to support the process of taking research from concept to commercialisation.” (HM Government, 2012, p. 15). The report concludes that genomics and bioinformatics are considered to be of particular importance to the UK Life Science industry, and have the potential to be world-leading. It can therefore be expected that future funding might emphasise these areas.

## 3.3 Conclusion

In this chapter background information on the two studied countries, the UK and Germany, was provided. It highlighted that three factors play important roles for each nation’s distinct Life Science industry. These factors are the national culture, the legal characteristics and government support. Despite the fact that these three factors have been discussed separately above, it should be noted that they are intertwined and influence each other. Thinking of these factors as causes and effects falls short of an in-depth analysis, however they provide valuable, rich contextual information for the analysis. This chapter emphasises that studying VC-funded USOs in a Life Science industry means studying USOs in an industry that has several distinct features and follows very specific rules of the market (Pinch and Sunley, 2009; Pina-Stranger and Lazega, 2011; Lawton, 2016).

# 4 Methodology

This chapter outlines the chosen method of semi-structured, in-depth interviews and explains how the method is embedded in a social constructionist epistemology with a subtle realist ontology.

Due to the identified gaps in the academic literature on the relationship between VCs and the specific type of USOs as portfolio companies, an exploratory research approach was deemed appropriate. Still, since a number of findings were made in the wider literature on VCs and portfolio firms in general terms, they were taken into account to guide the analysis. To achieve this balance, the data analysis is based on the Gioia method (Gioia, Corley and Hamilton, 2013). The following sections explain the data analysis and methodology in more detail.

## 4.1 Ontology: Subtle realism

The ontological question deals with the form and nature of reality, and what can be known about it (Guba and Lincoln, 1994). This research is based upon a subtle realist ontology (Hammersley, 2013). Subtle realism is defined as the belief in an external world, independent from the mind, but it can only be understood through the human mind and socially constructed meanings. As Hammersley put it:

> "subtle realism … [recognises] that all knowledge is based on assumptions and purposes and is a human construction, but it rejects … [the] abandonment of the regulate idea of independent and knowable phenomena. Perhaps most important of all, subtle realism is distinct … in its rejection of the notion that knowledge must be defined as beliefs whose validity is known with certainty." (p. 52)

Based on subtle realism as an ontology, participants' own interpretations of researched topics will lead to different 'vantage points' which in turn lead to a better understanding (Ritchie et al., 2013). Following subtle realism as an ontology, qualitative research should be conducted in a way that passes external scrutiny (Ritchie et al., 2013). The goal of subtle realism therefore is to describe and understand social life in terms of social actors' motives and understandings (Blaikie, 2007).

## 4.2 Epistemology: Social constructionism

Having answered the ontological question, it follows that the epistemological question should be addressed, namely what is the nature of the relationship between the knower and what can be known (Guba and Lincoln, 1994).

This thesis takes a social constructionist epistemological position whereby knowledge is socially constructed between individuals (Berger and Luckmann, 1966). As Burr (2003) notes, our understanding of the world is historically and culturally specific, and all knowledge derives from looking at the world from one vantage point or another. This in turn paves the way for the triangulation of perceptions, also termed 'critical multiplism' (Guba and Lincoln, 1994), to uncover the underlying reality. According to social constructionism, there is however no way to get objective facts, independent from the observer (Burr, 2003). This is not at odds with a subtle realist ontology though, as Ahl (2004) states:

> "Social constructionism does not, however, say anything about the existence of an objective reality. Social constructionism […] is an epistemology, not an ontology. It says that there is no way to get objective knowledge about the world, which is independent from the observer. It does not claim that a world independent from our observation is non-existent. As such, constructionism is thus often compatible with either empiricism or realism" (Ahl, 2004, p. 21).

According to Blaikie (2007) a combination of a subtle realist ontology and constructionist epistemology can lead to the development of theory that can be elaborated iteratively. For those reasons, subtle realism and social constructionism are seen as compatible philosophical and theoretical positions.

Lastly, the methodological question needs to be answered, namely how to design a robust and relevant process of data collection and analysis, given the above ontological and epistemological positions. This question is answered in the next section.

## 4.3 Method: Semi structured, in-depth interviews

Based on the subtle realist ontology and social constructionist epistemology, individuals are seen to be the unit of analysis. In total, 24 semi-structured, in-depth interviews were conducted. Kvale (1983) defines interviews as a method "whose purpose is to gather descriptions of the life-world of the interviewee with respect to interpretation of the meaning of the described phenomena" (p. 174). Therefore, the aim of a qualitative research interview is to see the research topic from the perspective of the interviewee, and to understand how and why they have this perception (King, 2001). Interviews were chosen as the data collection method, because they provide opportunities to gain insight into people's perspectives and can draw out cognitive, behavioural and affective elements (Cassell and Symon, 2004). Semi-structured interviews offer a trade-off between room for answers that can explain complex situations on the one hand, and structure on the other hand (Yin, 2009). Another advantage of the method is that qualitative research interviews are considered to be ideally suited to examine topics in which different levels of meaning need to be explored and where several layers of different, intertwined factors add to the complexity (King, 2001). Disadvantages to the method are that the conduct of interviews, as well as the recruitment process and the data analysis, are time-consuming. Also, recruitment can be difficult since participants will have to take time out and the interviewer has to prepare extensively for each interview (King, 2001). Despite these challenges, the method was considered to be most suitable to explore this emerging, and so far under-researched field.

The most used method in the field of VC research is questionnaires, hence this method was evaluated at great length and several disadvantages of this method were identified for this particular research project. For example, in focusing on time, a questionnaire would have forced respondents to choose particular timespans, to categorize the impact of time. This would have required assumptions, which are at odds with this exploratory research. More importantly, the response rates to questionnaires are usually significantly lower than response rates to interviews (Knockaert and Vanacker, 2013). This was of crucial importance, since the VC industry for USOs in the Life Science industry is very small and there are relatively few potential participants. It was therefore decided that depth rather than breadth was important, given the exploratory nature of the research.

More so, semi-structured interviews can adjust to and follow the interviewee's experiences and perceptions, something which is difficult to do in a questionnaire. As King (2001) notes:

> "A key feature of the qualitative research interview method is the nature of the relationship between interviewer and interviewee. In a quantitative study using structured interviews, the interviewee is seen as a research 'subject' in much the same way as if completing a questionnaire or taking part in an experiment. The researcher's concern is to obtain accurate information from the interviewee, untainted by relationship factors. The interviewer therefore tries to minimize the impact of inter-personal processes on the course of the interview. In contrast the qualitative researcher believes that there can be no such thing as a 'relationship-free' interview. Indeed the relationship is part of the research process, not a distraction from it. The interviewee is seen as a 'participant' in the research, actively shaping the course of the interview rather than passively responding to the interviewer's pre-set questions." (p. 11)

To further strengthen the credibility and trustworthiness of this study (Yin, 2016) the following explains the interview schedule creation, the participant identification process, and how the interviews were conducted. To strengthen the validity of the study (Yin, 2016) the data analysis approach, based on the Gioia method (Gioia, Corley and Hamilton, 2013) is explained.

The development of the interview schedule was closely aligned with the research questions. The research questions, as stated in the beginning of this thesis, were:

1. What do the managers of USOs in the Life Science industry perceive to be added value from their VC and what conflicts occur with them?
    i. How does time relate to the perceptions of added value and conflicts?
2. How are the perceived conflicts between Life Science USOs' managers and their VCs resolved?

3. Do the perceptions of added values and conflicts differ between Germany and the UK?

The interview schedule can be found in the appendix 9.

To explore these research questions, without being leading in any way, questions were asked using several complementary strategies. The rationale behind the approach can be described as a 'funnel-approach' (see Figure 8): In the beginning of the interview (see the interview schedule in the appendix 9*)*, the participants are presented with an imaginary timeline, along which they were asked to mark positive and negative experiences in their relationship with the VC (see question 2). Depending on the response, the question was narrowed down to an approach, which still stressed the relevance of time, but limited the focus onto the first interaction (see question 3 and 4). In a third step, the line of inquiry moved away from a focus on time and shifted to questions that were geared towards the most memorable events (see questions 5 and 6). The idea for that approach is based on the critical incident technique (Chell (2004) in Cassell and Symon, 2004). For Flanagan (1954), the inventor of the critical incident technique, the technique focuses on the objective of a task and what the person, who carries out that task, is expected to accomplish (Butterfield et al., 2005). However, as this research aims to understand added-value and conflicts with VCs as perceived by CEOs of USOs, the definition of the critical incident technique used in this thesis is closer to Chell's definition (in Cassell and Symon 2004). In this case, using the critical incident technique relates "context, strategy and outcome" (p. 47) which gives evidence for a relationship between context and outcome. "The objective is to gain an understanding of the incident from the perspective of the individual, taking into account cognitive, affective and behavioural elements." (p. 48). Although the technique is called 'critical incident' some scholars consider the term 'critical period' more suitable (Cope and Watts, 2000) since -depending on the critical moment studied- there might be several. A priori setting the boundaries to a single critical moment is considered too narrow, therefore the interview schedule purposely mentions critical incidents in a plural form, to acknowledge a potential plurality of relevant added-value incidents and conflicts.

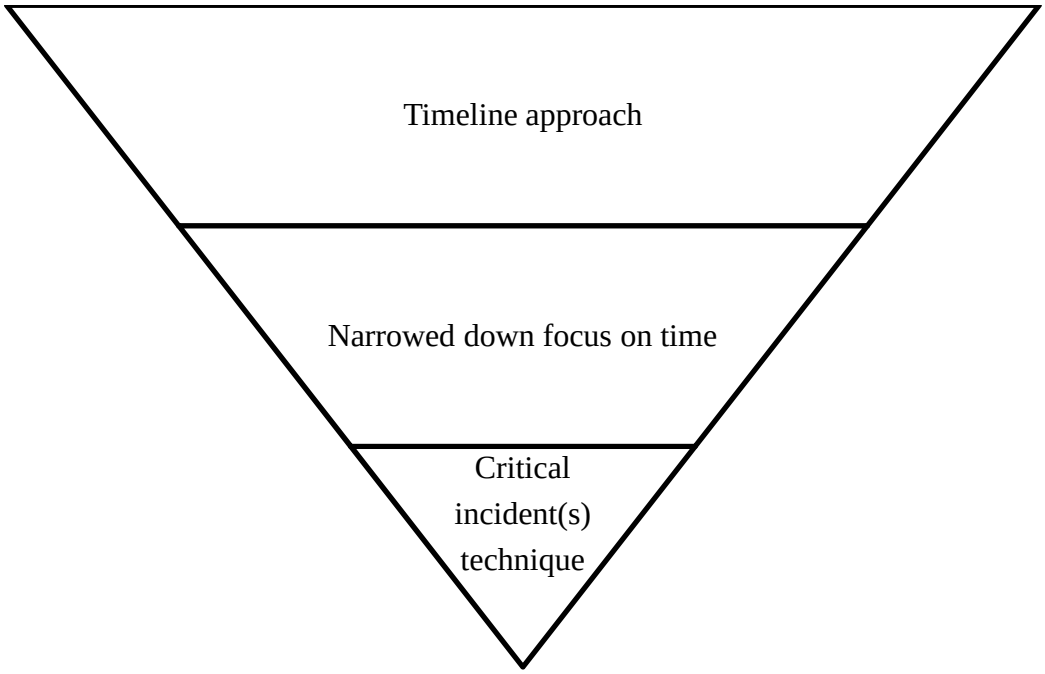


**Figure 8 'Funnel-approach' to research interviews**

Lastly, it should be acknowledged that flexibility in the conduct of interviews is a very important factor (King, 2001). While a common opening question was used in all interviews, sometimes the order of the questions was changed to cater to the flow of the interview. Also, when a participant preferred to go into detail on one aspect, intended to be discussed at a later point of time, the relevant questions would have been asked at that time, to allow the participant to finish his train of thoughts and to get the most out of the participants' replies while his mind was set to discussing that topic at that point of time.

## 4.4 Participant sampling approach

This section explains the systematic approach to the sampling of study participants. The sampling approach chosen is based on a criterion sampling approach (Patton, 2015), and in one instance also relied on a convenience sampling approach (Patton, 2015) for reasons elaborated later on. In short, the University of Leeds was included in the list of universities looked at for USO links, since it was believed that being a researcher at the University would facilitate access. This proved to be right and could extend the data pool. The criteria looked for, and that every participant had to fulfil are the following four:

| **Participant selection criteria:** | **Justification for choice of participant selection criteria:** |
|---|---|
| (1) Every USO had to originate from universities or had to be set up by the use of formal intellectual property from universities, or had to use informal intellectual property from universities such as in the form of former faculty members, who set up the firm. | The reason for this definition is based on Wright et al. (2007) who write: "We define university spin-offs as new ventures that are dependent upon licensing or assignment of an institution's IP for initiation. This definition is consistent with that used by the AUTM in the US. […] if we only focus on spin-offs using the first part of the definition [holding patent rights] we would miss a substantial part of the reality. At some universities in some institutional contexts, IP is not necessarily owned by the university. Moreover, many companies are created that do not build upon formal, codified knowledge embodied in patents. Therefore, we also include start-ups by faculty based in universities which do not involve formal assignment of the institutions' IP but which may draw on the individual's own IP or knowledge." (p. 4). In accordance with this definition, which is widely used across the VC research field, the definition was chosen for this study. |
| (2) Every USO had to be a Life Sciences firm. | This thesis focuses on USOs in the Life Science industry since the Life Science industry has a number of characteristics making it distinct and unique. As Rosiello and Parris (2009) note, the bio-healthcare sector is the main target of UK VCs, however it is very dangerous due to high attrition rates, high capital requirements, long times of realisation and high uncertainty. As shown in the chapter 3 'empirical context', the Life Science industry has a number of unique institutional settings and the academic world and its incentive structures differ. Therefore, as the declared goal of this thesis, only Life Science USOs were studied. Excluding USOs from other sectors |

| | |
|---|---|
| | avoided 'contaminating' the sample, e.g. a USO operating in the logistics sector has not been contacted. |
| (3) Every USO had to be funded by a VC. | It is this study's goal to examine the relationship between VCs and USOs as perceived by the CEOs of USOs which means that only USOs that received VC funding could be considered. To avoid USOs only talking about a relationship with a VC retrospectively, it was also a requirement that study participants either be currently funded or very recently funded by a VC. |
| (4) Every participant had to be the CEO. | In small, new ventures, the CEO is heavily involved in organisational aspects. It is also the CEO's responsibility to ensure adequate funding, which is why the CEOs are usually most in touch with VCs and also sit at the Board of Directors, where they have contact with VCs. As a result, CEOs were considered to be the most relevant study participants. |

**Table 9 Study participant selection criteria and justification for selection criteria choice**

To ensure the criteria were met, every firm that did not fulfil the criteria during the search was excluded. In addition, a verification process, which involved starting every interview by asking the participants for their USO's institutional background, what industry they identified with, and since when they were funded by a VC was included. Only firms that met the above criteria were included in the data analysis. The only slight exemption made, was with regards to criterion (d) for one USO, at which the CEO suggested talking to his head of research, since the head of research had had more contact with the VCs. Given that this suggestion was made proactively by the CEO, that participant was included.

As mentioned, in one case convenience sampling took place too. During the identification process of British participants, the University of Leeds was included in the list of universities that were looked at for USOs and VC connections. The University of Leeds was included because it was believed that former or current University of Leeds employees, who had spun-out a firm, might be more likely to participate in a research study conducted from their alma mater. This decision proved to be right, since one

participant told the researcher off-record that he participated in the project also because of his links to the University. Apart from the inclusion of the University of Leeds, no further convenience sampling took place and every other sampling was based on a criterion sampling approach (Patton, 2015) as elaborated above.

Furthermore, there are several reasons for why the sample is made up of USOs, not VCs. First, as evident from Table 2, the majority of the literature has collected data from VCs, mostly via surveys. However, several researchers mention that a clear gap exists in respect to research that looks at the other side: the entrepreneur/CEO. Yet "how entrepreneurs perceive their VC investors remains an under-researched topic, though such perception could significantly affect VC-entrepreneur interaction and effectiveness of VC investment." (Zheng, 2011, p. 72). Clearly though, as argued in the literature review, the perceptions of e.g. value-adding activities differ in between VCs and entrepreneurs (Flynn and Forman, 2001; Maula, Autio and Murray, 2005; Bengtsson and Wang, 2010) as do the perceptions of skills and information availability (Kaplan and Strömberg, 2004). This problem has also been identified by Knockaert et al. (2006) who said that future research should look at the extent to which the perceptions of investment managers on their value-adding involvement are also related to their actual involvement. Secondly, it is mentioned in the literature that studying VCs' perceptions of value-adding activities and particularly conflicts in regards to a single portfolio firm is very difficult. Higashide and Birley (2002) mentioned that in an early stage of their pilot study, they realised that VCs were not willing to complete a questionnaire and when interviewed, were not willing to be identified with a specific client. They also did not make any introductions or revealed any information on performance measures of the portfolio firm. Therefore, matching interviews with VCs and portfolio firms proved unfeasible. Furthermore, when looking at the number of VCs that actually invest in USOs in the Life Science industry (see Table 11 and Table 12) there are very few firms in the industry, and assuming the average response rate of about 10-20% to inquiries on research projects in the field of VC research (Fried, Bruton and Hisrich, 1998; Lim and Cu, 2012), there simply would not have been a sufficient amount of data to come to any conclusions based on patterns in the data. This approach also provides valuable data to the field in presenting a viewpoint that so far has been under-researched, namely the entrepreneurs' side. This way, while a lot of VC-collected research has been published, the results of this study can be used to assess whether the perceptions are shared among the portfolio firms too. Clearly, collecting data from one side only, only generates insights from one perspective and only provides

another piece to the full puzzle. Yet, the perspective of entrepreneurs is seen to be an important part of that puzzle.

## 4.5 Participant identification process

This section explains the participant identification process for German participants and British participants. First, the participant identification process for German participants is explained, followed by the participant identification process for British participants. To identify and contact German USOs that fit in the scope of this research project, an eight-step plan was followed (see Figure 9). The following section explains each step in more detail.

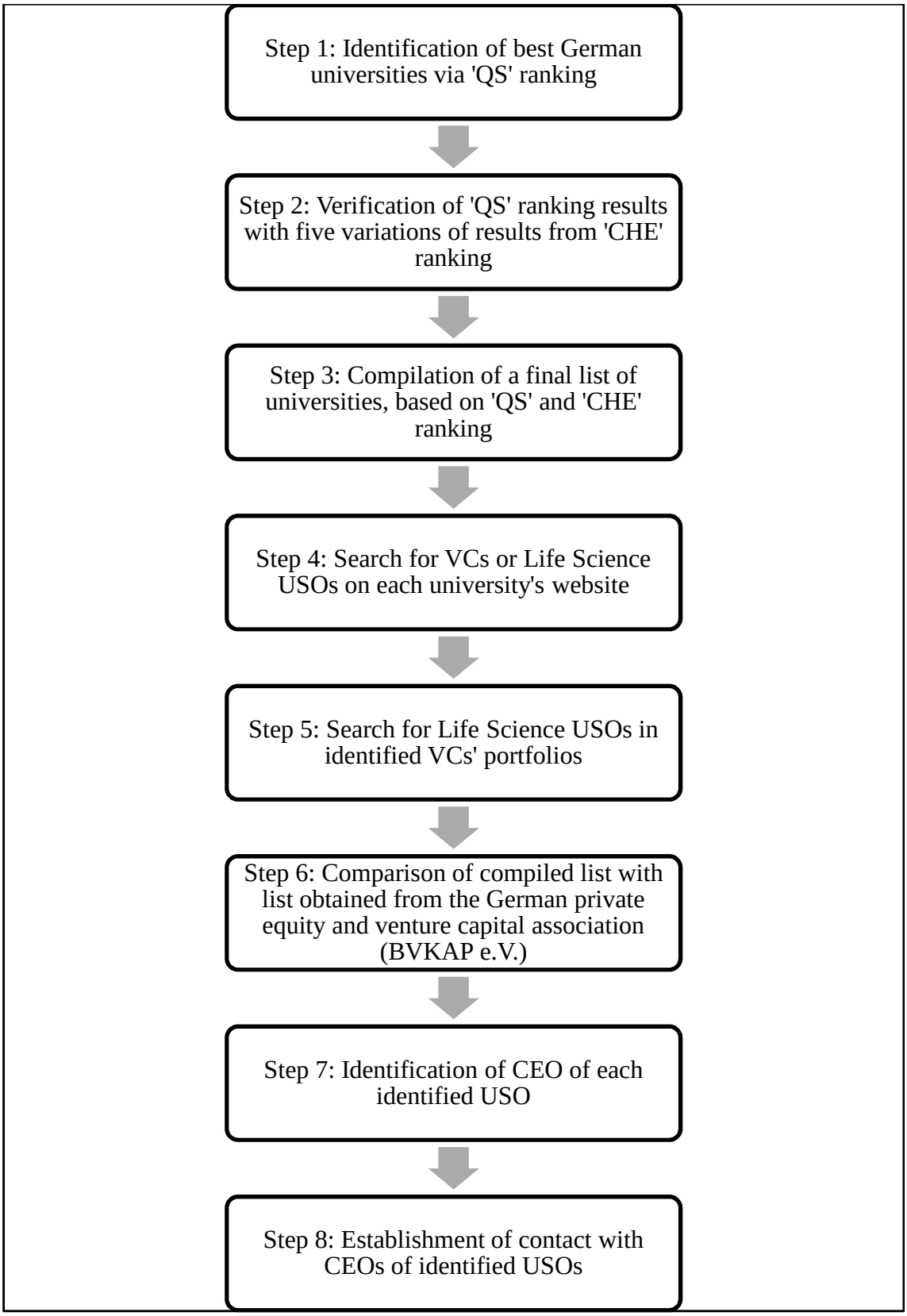


**Figure 9 Visual representation of participant identification process -Germany-**

In the first step, the well-known, international ranking of universities, called 'QS' ranking[5] was used. The latest available edition at the time was the ranking from 2013. The QS ranking was used to identify the best German universities, by using the filter 'Location' and setting it to Germany. However, no particular type of faculty was chosen.

In a second step, the results obtained from the QS ranking were verified with a German, national ranking table. Therefore, the 2014/2015 version of the 'CHE' ranking[6] was used, which is widely used in Germany. To access a list of universities to compare, the CHE-ranking website requires the choosing of a subject as well as a degree level. In respect to the degree level, the level of undergraduate was chosen, since this was the only degree, all universities had been assessed for. In respect to the subject, it was decided to triangulate the data, by using five different subjects. The subjects chosen to obtain a ranking of the universities were: Chemistry (Chemie), Biology (Biologie), Information technology (Informatik), Engineering (Ingenieurwissenschaften) and Pharmacy (Pharmazie). Those five subjects were chosen, since several research studies mention the above fields of science as fields in which knowledge transfer from universities to industry takes place to a great extent (Elango et al., 1995; Autio, 1997; Heirman and Clarysse, 2004; Mustar et al., 2006). Of the five lists of rankings, produced by having chosen five different subjects as a filter for the ranking, the names of the first 25 universities were written down.

In a third step, the list obtained from the QS ranking was used as a basis, to make a simple frequency count of how many times the universities from the QS ranking were mentioned in the five different CHE-ranking lists. Having counted the occurrences, all universities that were not mentioned or only mentioned once were excluded. All universities mentioned at least twice across all lists were included in a final list. This is the final list:

Ruprecht-Karls-Universität Heidelberg
Technische Universität München
Ludwig-Maximilians-Universität München
Universität Freiburg

[5] http://www.topuniversities.com/university-rankings/world-university-rankings/2013#sorting=rank+region=140+country=162+faculty=+stars=false+search= [Date of access: 03.02.2018]
[6] http://ranking.zeit.de/che2016/en/ [This is the 2017/2018 version, but I used the 2014/2015 version. Date of access: 03.02.2018]

Freie Universität Berlin
Karlsruhe Institute of Technology (KIT)
Georg-August-Universität Göttingen
Rheinisch-Westfälische Technische Hochschule Aachen
Rheinische Friedrich-Wilhelms-Universität Bonn
Universität Frankfurt am Main
Universität Stuttgart
Technische Universität Darmstadt
Technische Universität Dresden
Universität Jena
Ruhr-Universität Bochum
Universität Bremen
Universität Düsseldorf
Universität Bayreuth
Universität des Saarlandes
Philipps-Universität Marburg
Universität Bielefeld
Leibniz Universität Hannover
Justus-Liebig-Universität Gießen
Technische Universität Braunschweig
Martin-Luther-Universität Halle-Wittenberg
Universität Paderborn
Universität Rostock

In a fourth step, the list was used to visit each university's website, and assess whether the university had either associated VCs, or early-stage, high-tech USOs, operating in the Life Science industry.

In a fifth step, the websites of all VCs identified via the universities' homepages were checked, to identify USOs in their active portfolios and to reaffirm and expand the list of identified USOs.

In a sixth step, the list was also compared with another list of firms that was given to the researcher in the meantime by the German Private Equity and Venture Capital

Association (BVKAP e.V.[7]). That list featured German firms that had received VC funding since 2008. That list was used to identify further VCs and relevant USOs that had not been identified previously. To ensure that the information was accurate, every firm on that list was checked again to find out whether it fulfilled the criteria of the research project. In the following, the list facilitated by the BVKAP can be found. It features all spin-off firms in Germany that were spun out since 2008. The BVKAP used publicly available information and press releases to compile this list. It features USOs and corporate spin-outs from all industries. The language used has not been changed since it is not the author's work but the BVKAP's work:

[7] http://www.bvkap.de/en [Date of access: 03.02.2018]

| **Jahr (Year)** | **Beteiligungsgesellschaft (Venture Capital Fund)** | **Name/Ort (Name, Location)** | **Branche (Industry)** | **Anlass gesamt (Occasion)** | **Anmerkungen (Annotations)** |
|---|---|---|---|---|---|
| 2008 | Triangle Venture Capital | iOpener Media GmbH, Aachen/Delft | Software / Computerspiele | Start up | Spin-off der ESA |
| 2008 | TVM Capital, Nomura Phase4 Venture, weitere ungenannte Investoren | Albireo, Schweden | Biotechnologie | Start up | Spin-off; Ausgründung aus AstraZeneca |
| 2008 | High-Tech Gründerfonds, BBAF Business Angels Berlin | EcoIntense GmbH, Berlin | Software / Umwelttechnologie | Seed | Spin-Off der FHTW Berlin |
| 2008 | Wellington Partners, weitere ungenannte Investoren | Netcrystal Inc., USA | Solartechnik | Start up | Spin-off der Stanford University |
| 2008 | Intel Capital, IBB Beteiligungsgesellschaft, Ventegis, Climate Change Capital, AIG, Demeter Partners, Zouk Ventures, Bank Invest | Sulfurcell Solartechnik GmbH, Berlin | Photovoltaik / Solarzellen | Later Stage-VC | Spin-off des Helmholtzzentrums Berlin |

| | | | | | |
|---|---|---|---|---|---|
| 2008 | LBBW Venture Capital, KfW/ERP-Startfonds | CheckMobile GmbH, Hamburg | Software | Start up | Spin-off |
| 2008 | TVM Capital, Global Life Science Ventures, NGN Capital, Atlas Venture, DeutscheBank Principle Investing | Nitec Pharma AG, Schweiz | Pharma | Start up | Spin-off der Merck KGaA |
| 2008 | High-Tech Gründerfonds, Bayern Kapital | Lophius Biosciences GmbH, Regensburg | Biotechnologie | Seed | Spin-off des Instituts f. Med. Mikrobiologie u. Hygiene Regensburg |
| 2008 | High-Tech Gründerfonds, Bayern Kapital | Corrmoran GmbH, Augsburg | Messtechnik | Seed | Spin-off der Universität Augsburg |
| 2008 | Climate Change Capital | Power Plus Communications AG, Mannheim | Energiezählersysteme | Growth | Spin-off der MVV Energie |
| 2008 | High-Tech Gründerfonds, Bayern Kapital | SurgicEye GmbH, München | Medizintechnik | Seed | Spin-off der TU München |
| 2008 | S-Beteiligungsgesellschaft Freiburg-Nördlicher Breisgau, S- | Vitracom AG, Karlsruhe | Software / Kundenstrommessung | Buy-Out | Spin-off des Fraunhofer-Instituts Karlsruhe |

| | | | | | |
|---|---|---|---|---|---|
| | Beteiligungsgesellschaft Pforzheim-Calw | | | | |
| 2009 | High-Tech Gründerfonds | HiperScan GmbH, Dresden | Optik / Analyse | Seed | Spin-off des Fraunhofer-Instituts fürPhotnische Mikrosysteme |
| 2009 | Wellington Partners, BankInvest New Energy Solutions Kapital | Enecsys, Großbritannien | Energietechnik / Solaranlagen | Start up | Spin-Off der Uni Cambridge |
| 2009 | Wellington Partners, Kleiner Perkins Caufield and Byers, MVP Munich Venture Partners | Agnion Technologies GmbH, Pfaffenhofen | Erneuerbare Energien | Start up | Spin-off der TU München |
| 2009 | Seed Fonds Aachen | VerkehrsmittelVergleich.de GmbH, Aachen | Onlineportal | Seed | Spin-off der RWTH Aachen |
| 2009 | Wellington Partners, Robert Bosch Venture Capital, BASF Venture Capital, RWE Innogy, High-Tech Gründerfonds, eCapital, Technologiegründerfonds | Heliatek GmbH, Dresden | Solartechnik | Start up | Spin-off der Universitäten Dresden und Ulm |

| | | | | | |
|---|---|---|---|---|---|
| | Sachsen (S-BG Leipzig/SIB/SC-Kapital/CFH), GP Bullhound Sidecar | | | | |
| 2009 | Technologiegründerfonds Sachsen (S-BG Leipzig/SIB/SC-Kapital/CFH) | Riboxx GmbH, Dresden | Biotechnologie | Start up | Spin-off der TU Dresden |
| 2009 | SHS, Bayern Kapital, KfW/ERP-Startfonds | LipoFIT Analytic GmbH, Regensburg | Diagnostik | Start up | Spin-off der Uni Regensburg |
| 2010 | Triangle Venture Capital, KfW/ERP-Startfonds | TakWak GmbH, München | Elektronik / Kommunikationstechnologie | Seed | Spin-off der FG Microtec GmbH |
| 2010 | NRW.Bank.Venture Fonds, TVM Capital | DIREVO Industrial Biotechnology GmbH, Köln | Biotechnologie | Start up | Spin-off der DIREVO AG |
| 2010 | IBB Beteiligungsgesellschaft, estag Capital | Match Technologies GmbH, Berlin | Software / IT | Seed | Spin-off der Fraunhofer Gesellschaft |
| 2010 | IBB Beteiligungsgesellschaft | IPR Systems UG, Berlin | Software / Recherche und Bewertung gewerblicher Schuttzrechte | Start up | Spin-off InTraCoM GmbH und der Fraunhofer Gesellschaft |

| | | | | | |
|---|---|---|---|---|---|
| 2010 | Bayern Kapital, FVW investments for your health, High-Tech Gründerfonds | SurgicEye GmbH, München | Medizintechnik | Start up | Spin-off der TU München |
| 2010 | Life Science Partners, Aescap Venture, KfW/ERP-Startfonds, Bayern Kapital, EMBL Ventures | Affectis Pharmaceuticals AG, München | Biopharma | Later Stage-VC | Spin-off des Max-Planck-Instituts für Psychiatrie |
| 2010 | High-Tech Gründerfonds | Humedics GmbH, Grossbeeren | Medizintechnik / Analyse | Seed | Spin-off der FU Berlin und der Charité |
| 2010 | High-Tech Gründerfonds | PEPperPRINT GmbH, Heidelberg | Laserdruck / Biochips | Seed | Spin-off des deutschen Krebsforschungszentrums Heidelberg |
| 2010 | dievini Hopp BioTech Holding | CureVac GmbH, Tübingen | Biopharma | Start up | Spin-off der Universität Tübingen |
| 2010 | S-Refit, High-Tech Gründerfonds, Bayern Kapital | Lophius Biosciences GmbH, Regensburg | Biotechnologie | Start up | Spin-off der Universität Regensburg |
| 2010 | High-Tech Gründerfonds, Sirius Seedfonds, Business Angel | Evocatal GmbH, Düsseldorf | Biotechnologie | Start up | Spin-off der Heinrich-Heine-Universität Düsseldorf |

| | | | | | |
|---|---|---|---|---|---|
| 2010 | Technologiegründerfonds Sachsen (S-BG Leipzig/SIB/SC-Kapital/CFH), High-Tech Gründerfonds | HiperScan GmbH, Dresden | Optik / Analyse | Start up | Spin-off des Fraunhofer Instituts in Dresden |
| 2010 | High-Tech Gründerfonds, Bayern Kapital | TM3 Software GmbH, Regensburg | Software / Warenwirtschaftssystem | Seed | Spin-off des Instituts für Wirtschaftsinformatik der Uni Regensburg |
| 2010 | V+ Venture Plus | axioGENESISAG, Köln | Pharma | Growth | Spin-off der Universität Köln |
| 2010 | Rheinland Venture Capital/Intelligent Venture Capital, KfW/ERP-Startfonds | GreenPocket GmbH , Köln | Software | Seed | Spin-off der Schwetje Digital |
| 2010 | High-Tech Gründerfonds | ConWeaver GmbH, Darmstadt | Software / Such-Software | Seed | Spin-off der Fraunhofer IGD |
| 2010 | dievini Hopp BioTech Holding, Wellington Partners, MIG, AT Impf GmbH, weitere ungenannte Investoren | immatics biotechnologies GmbH, Tübingen | Biopharma | Later Stage-VC | Spin-off der Universität Tübingen |

| | | | | | |
|---|---|---|---|---|---|
| 2010 | High-Tech Gründerfonds, Seedfonds Baden-Württemberg | Biametrics GmbH, Tübingen | Medizintechnik / Analysegeräte | Seed | Spin-off der Universität Tübingen |
| 2010 | V+ Venture Plus | axioGENESIS AG, Köln | Biopharma | Later Stage-VC | Ausbau der bestehenden Anteile; Spin-off der Universität Köln |
| 2010 | KfW/ERP-Startfonds, Privatinvestoren | Leukocare AG, München | Biotechnologie / Medizintechnik | Start up | Spin-off der Universität Frankfurt |
| 2010 | ViewPoint Capital Partners | HYPE Softwaretechnik GmbH, Bonn | Software | Growth | Spin-off aus der Daimler-Forschung |
| 2010 | TVM Capital | Biovertis AG, Österreich | Biotechnologie | Later Stage-VC | Spin-off der Intercell |
| 2011 | Technologiegründerfonds Sachsen (S-BG Leipzig/SIB/SC-Kapital/CFH), High-Tech Gründerfonds | Caterna GmbH, Dresden | Software / Medizintechnik | Start up | Spin-off der TU Dresden |
| 2011 | IBB Beteiligungsgesellschaft/VC Fonds Berlin, estag Capital | Match Technologies GmbH, Berlin | Software / IT | Start up | Spin-Off der Fraunhofer Gesellschaft |

| | | | | | |
|---|---|---|---|---|---|
| 2011 | Intel Capital, Climate Change Capital Private Equity, Bankinvest Group, Zouk Ventures, Masdar Cleantech Investments, Demeter Partners, Ventegis , IBB Beteiligungsgesellschaft, Conetwork Erneuerbare Energien | Sulfurcell Solartechnik GmbH, Berlin | Photovoltaik / Solarzellen | Later Stage-VC | Spin-off des Helmholtzzentrums Berlin |
| 2011 | High-Tech Gründerfonds, hannover innovation fonds/EnjoyVenture | Tixel GmbH, Hannover | IT / Netzwerktechnologie | Seed | Spin-off des Thomson-Konzerns |
| 2011 | Seed Fonds Aachen | InBio GmbH, Jülich | Biotechnologie / Lebensmittelanalysesysteme | Seed | Spin-off der Hochschule Niederrhein |
| 2011 | Wellington Partners, Kleiner Perkins Caufield and Byers | Orcan Energy GmbH, München | Energietechnik | Start up | Spin-Off der TU München |
| 2011 | MIG, KfW/ERP-Startfonds | cynora GmbH, Karlsruhe | Halbleiter / Organische Elektronik | Start up | Spin-off der RWTH Aachen |

| | | | | | |
|---|---|---|---|---|---|
| 2011 | High-Tech Gründerfonds, Seedfonds Baden-Württemberg | Compositence GmbH, Stuttgart | Maschinenbau / Carbon-Verarbeitungstechnologie | Seed | Spin-off der Universität Stuttgart |
| 2011 | Technologiegründerfonds Sachsen (S-BG Leipzig/SIB/SC-Kapital/CFH) | VivoSensMedical GmbH, Leipzig | Medizin / Diagnostik | Start up | Spin-off der Universitätsfrauenklinik Leipzig |
| 2011 | S-Refit, High-Tech Gründerfonds, Bayern Kapital | Lophius Biosciences GmbH, Regensburg | Biotechnologie | Start up | Spin-off der Universität Regensburg |
| 2011 | BASF Venture Capital, ungenannte Privatinvestoren | baseclick GmbH, Tutzing | Biotechnologie / Diagnostic | Start up | Spin-off der LMU München und BASF SE |
| 2011 | Creathor Venture, Rheinland Venture Capital/Intelligent Venture Capital, KfW/ERP-Startfonds | Sividon Diagnostics GmbH, Köln | Biotechnologie / Diagnostik | Start up | Spin-off von Siemens Healthcare |
| 2011 | bm-t beteiligungsmanagement thüringen | Simlity GmbH, Jena | Software / Browserspiele | Start up | Spin-Off der FSU Jena |

| | | | | | |
|---|---|---|---|---|---|
| 2011 | SHS, Bayern Kapital, KfW/ERP-Startfonds | LipoFIT Analytic GmbH, Regensburg | Diagnostik | Start up | Spin-off der Uni Regensburg |
| 2011 | High-Tech Gründerfonds, Seedfonds Baden-Württemberg, K and S W Invest | CorTec GmbH, Freiburg | Medizintechnik / Neurotechnologie | Seed | Spin-Off der Uni Freiburg |
| 2011 | High-Tech Gründerfonds, Charite Biomedical Fund/Peppermint VenturePartners, IBB Beteiligungsgesellschaft, KfW/ERP-Startfonds, Ventegis Capital | Humedics GmbH, Grossbeeren | Medizintechnik / Analyse | Start up | Spin-off der FU Berlin und der Charité |
| 2011 | BayBG | iThera Medical, München | Medizintechnik | Start up | Spin-Off des Helmholtz Zentrum München |
| 2012 | Boehringer Ingelheim Venture Fund, Novartis Venture Fonds | AMP-Therapeutics GmbH, Leipzig | Biotechnologie | Start up | Spin-off der Uni Leipzig |

| | | | | | |
|---|---|---|---|---|---|
| 2012 | High-Tech Gründerfonds | KonTEM GmbH, Bonn | Optik / Transmissions-Elektronenmikroskopie (TEM) | Seed | Spin-off der Max-Planck-Gesellschaft und des Forschungszentrums ceasar |
| 2012 | High-Tech Gründerfonds, Constantin Bastian Leander Venture Capital, ILB Brandenburg | t-cell Europe GmbH, Kleinmachnow | Medizin / Plattform-Therapie | Seed | Spin-off des Berlin-Brandenburg Centers für Regenerative Therapien |
| 2012 | Rheinland Venture Capital/Intelligent Venture Capital, KfW/ERP-Startfonds, NRW.Bank, Schwetje Digital | GreenPocket GmbH , Köln | Cleantech / Software | Start up | Spin-off der Schwetje Digital |
| 2012 | V+ Venture Plus | axioGENESIS AG, Köln | Biopharma | Later Stage-VC | Ausbau der bestehenden Anteile; Spin-off der Universität Köln |
| 2012 | Climate Change Capital, Siemens Venture Capital, British Gas | Power Plus Communications AG, Mannheim | Energiezählersysteme | Growth | Spin-off der MVV Energie |

| | | | | | |
|---|---|---|---|---|---|
| 2012 | Technologiegründerfonds Sachsen (S-BG Leipzig/SIB/SC-Kapital/CFH) | Baselabs GmbH, Chemnitz | Software / Automobilindustrie | Seed | Spin-Off der TU Chemnitz |
| 2012 | High-Tech Gründerfonds, ungenannter Privatinvestor | Epivios GmbH, Düsseldorf | Medizintechnik / Diagnostik | Seed | Spin-Off der TTHU Düsseldorf |
| 2012 | Technologiegründerfonds Sachsen (S-BG Leipzig/SIB/SC-Kapital/CFH), High-Tech Gründerfonds | Data Virtuality GmbH, Leipzig | Software | Seed | Spin-Off der Uni Leipzig |
| 2012 | Technologiegründerfonds Sachsen (S-BG Leipzig/SIB/SC-Kapital/CFH) | VivoSensMedical GmbH, Leipzig | Medizin / Diagnostik | Start up | Spin-off der Universitätsfrauenklinik Leipzig |
| 2012 | Merck Serono Ventures | Prexton Therapeutics, Darmstadt | Biotechnologie | Start up | Spin-off von Merck Serono |
| 2012 | EnjoyVenture, Invest-Impuls | Qnips GmbH, Hannover | Software / mobiles Qualitätsmanagement | Seed | Spin-Off der Leibniz-Uni Hannover |

| | | | | | |
|---|---|---|---|---|---|
| 2012 | dievini Hopp BioTech Holding | CureVac GmbH, Tübingen | Biopharma | Later Stage-VC | Spin-off der Universität Tübingen |
| 2012 | Merck Serono Ventures | Asceneuron SA, Schweiz | Biopharma | Start up | Spin-Off von Merck Serono |
| 2012 | High-Tech Gründerfonds, Stiftung für Technologie, Innovation und Forschung Thüringen (STIFT) | JeNaCell GmbH, Jena | Biotechnologie | Seed | Spin-Off der Friedrich-Schiller-Universität Jena |
| 2012 | High-Tech Gründerfonds, Shefter Capital, Fraunhofer Venture | ConWeaver GmbH, Darmstadt | Software / Such-Software | Start up | Spin-off der Fraunhofer IGD |
| 2012 | Bayern Kapital, High-Tech Gründerfonds, BayBG, FVW investments for your health | SurgicEye GmbH, München | Medizintechnik | Start up | Spin-off der TU München |
| 2012 | High-Tech Gründerfonds, Gründerfonds Münsterland/eCapital | Cysal GmbH, Münster | Biotechnologie | Seed | Spin-off der Uni Münster |
| 2013 | S-Refit, High-Tech Gründerfonds, Bayern | Lophius Biosciences GmbH, Regensburg | Biotechnologie | Start up | Spin-off der Universität Regensburg |

| | | | | | |
|---|---|---|---|---|---|
| | Kapital, VRD GmbH, WIC GmbH | | | | |
| 2013 | High-Tech Gründerfonds, VersoVentures | Cumulocity GmbH, Düsseldorf | Software / Cloud Services | Seed | Spin-Off von Nokia Siemens Networks |
| 2013 | EXTOREL, Bayern Kapital, UnternehmerTUM, BioM | Dynamic Biosensors GmbH, München | Biotechnologie / Sensorik | Start up | Spin-Off der TU München |
| 2013 | NRW.Bank.Venture Fonds, TVM Capital, Danisco Venture | DIREVO Industrial Biotechnology GmbH, Köln | Biotechnologie | Later Stage-VC | Spin-off der DIREVO AG |
| 2013 | High-Tech Gründerfonds, Seedfonds Baden-Württemberg, ZFHN Zukunftsfonds Heilbronn | Compositence GmbH, Stuttgart | Maschinenbau / Carbon-Verarbeitungstechnologie | Start up | Spin-off der Universität Stuttgart |
| 2013 | High-Tech Gründerfonds, m2f investment | Dolosys GmbH, Berlin | Medizintechnik | Seed | Spin-off der Charité der HU Berlin |
| 2013 | High-Tech Gründerfonds, Klingel Versandhandels-Gruppe | uberMetrics Technologies GmbH, Berlin | Software / Media-Monitoring | Seed | Spin-Off der Humboldt-Universität zu Berlin |

| | | | | | |
|---|---|---|---|---|---|
| 2013 | E.ON Venture Partners, Wellington Partners, Kleiner Perkins Caufield and Byers | Orcan Energy GmbH, München | Energietechnik / Abwärme-Recycling | Start up | Spin-Off der TU München |
| 2013 | High-Tech Gründerfonds, Sirius Seedfonds, NRW.Bank, Lanxess, Business Angel | Evocatal GmbH, Düsseldorf | Biotechnologie | Start up | Spin-off der Heinrich-Heine-Universität Düsseldorf |
| 2013 | High-Tech Gründerfonds, Bayern Kapital, Bilfinger Venture Capital | Corrmoran GmbH, Augsburg | Messtechnik | Start up | Spin-off der Universität Augsburg |
| 2013 | High-Tech Gründerfonds, Seedfonds Baden-Württemberg, K and S W Invest, M-Invest, KfW/ERP-Startfonds | CorTec GmbH, Freiburg | Medizintechnik / Neurotechnologie | Start up | Spin-Off der Uni Freiburg |
| 2013 | High-Tech Gründerfonds | PS Biotech GmbH, Aachen | Biotechnologie | Seed | Spin-off der RWTH Aachen |
| 2013 | dievini Hopp BioTech Holding, Wellington Partners, MIG, AT Impf GmbH, | immatics biotechnologies GmbH, Tübingen | Biopharma | Later Stage-VC | Spin-off der Universität Tübingen |

| | | | | | |
|---|---|---|---|---|---|
| | weitere ungenannte Investoren | | | | |
| 2013 | Bayern Kapital | EXTEND3D GmbH, München | Sensorik / 3D-Projektoren | Start up | Spin-off der TU München |
| 2013 | High-Tech Gründerfonds, Extorel, MBG Baden-Württemberg, VRD | Extoll GmbH, Heidelberg | Netzwerktechnologie | Seed | Spin-off der Uni Heidelberg |
| 2013 | Technologiegründerfonds Sachsen (S-BG Leipzig/SIB/SC-Kapital/CFH), High-Tech Gründerfonds, HCS Beteiligungsgesellschaft | HiperScan GmbH, Dresden | Optik / Analyse | Start up | Spin-off des Fraunhofer Instituts in Dresden |
| 2013 | Seventure Partners, Tiburon, Seed Fonds Aachen, Business Angels | fromAtoB GmbH (VerkehrsmittelVergleich.de), Aachen | Onlineportal | Start up | Spin-off der RWTH Aachen |
| 2014 | High-Tech Gründerfonds | WPX Faserkeramik GmbH , Köln | Werkstoffe | Seed | Spin-Off des Deutschen Zentrums für Luft- und Raumfahrt |

**Table 10 List of spin-out firms in Germany since 2008**

Source: Result of email correspondence with BVKAP in 2015.

In a seventh step, each relevant USO's website was revisited, to identify who the CEO or the operating manager was. The managers or CEOs, are the ones most in contact with the VCs, and therefore are the people best suited to give accounts of the relationships with VCs.

Finally, an email was sent to the individual firms, informing the CEO/manager about the research and its purpose, and asking for his/her participation (see appendix 9.2).

Next then, the participant identification process for British participants is explained. The identification process for British USOs relied on five steps (see Figure 10), which are explained in more detail in the following:

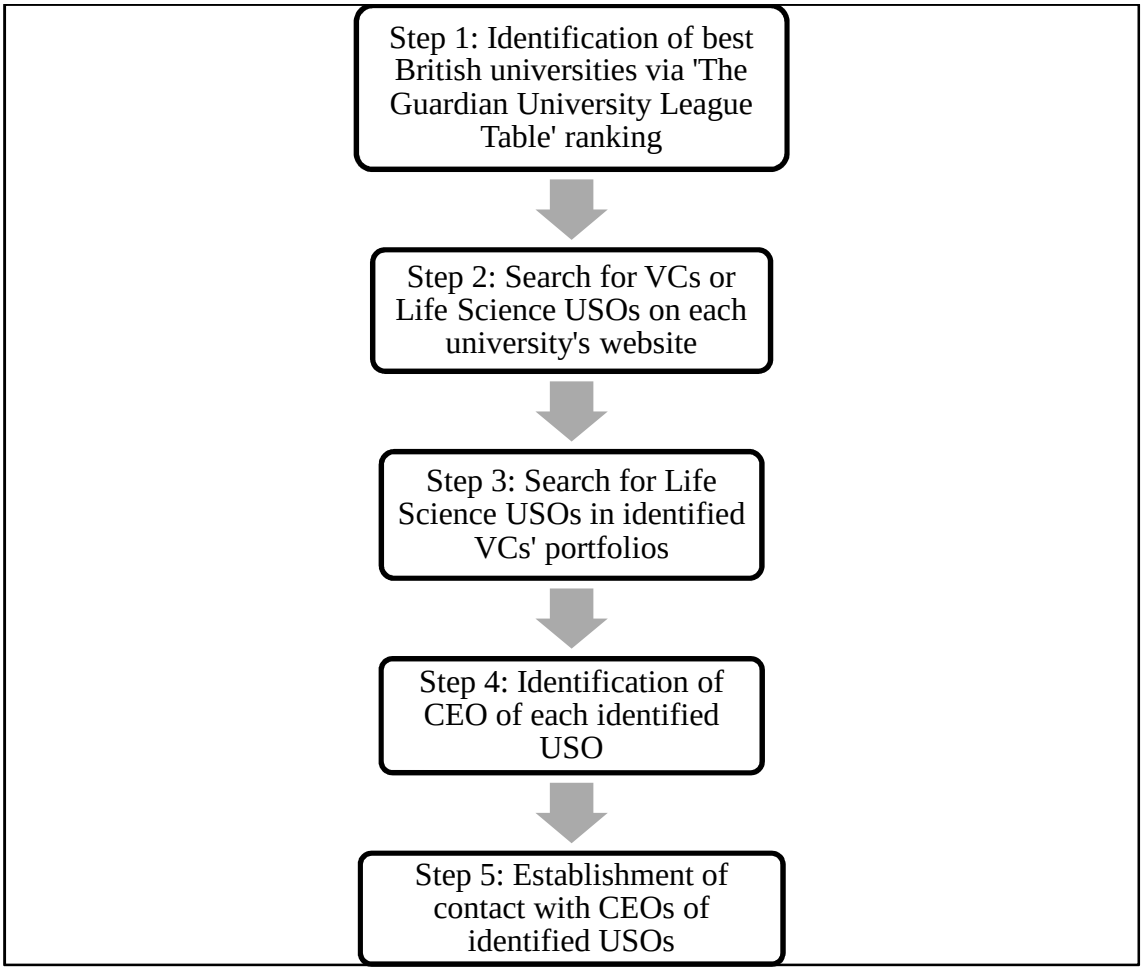


**Figure 10 Visual representation of participant identification process -UK-**

First, the 'The Guardian University League Table'[8] from 2014 was used, to identify the highest ranked universities, based on the same logic as explained in the previous section.

[8] https://www.theguardian.com/education/table/2013/jun/03/university-league-table-2014 [Date of access: 03.02.2018]

From the 2014 league table, the first 34 universities were noted down. The reason for choosing the first 34 universities rather than the first 30 or 20 is due to the fact that the University of Leeds is ranked 34th according to this ranking and since this thesis was written at the University of Leeds, it was believed, and confirmed later on, that contacts the university holds with VCs and USOs, ease access to organisations.

In a second step, each university's website was visited to find out whether spin-out activities took place and whether the university had any relationships with VCs. Some universities mentioned their partner VCs directly on their website, other universities only presented their technology transfer office or highlighted some successful case studies of spin-outs or start-ups and others did not have any statement indicating spin-out activities or intentions at all. Taking universities that directly mentioned VCs and those at least flagging up their technology transfer office or presenting case studies of spin-out firms made up a list of 9 universities. Those universities are:

Cambridge
St. Andrews
UCL
Durham
Imperial College
Warwick
Leicester
Edinburgh
Strathclyde

Furthermore, 12 universities that all used the VC IP Group plc were identified. Those universities were:

Oxford
Bath
Surrey
York
Glasgow
Bristol
Southampton
Nottingham
Cardiff

Manchester
King’s College London
Leeds

In a third step, the list of VCs that were either mentioned on the universities’ websites directly or whose names could be found via the universities’ technology transfer offices was used to go through their portfolios to look for USOs that operated in the Life Science industry. In a fourth step, each relevant USO’s website was revisited, to identify who the CEO or the operating manager was. Finally, an email was sent to the individual firms, informing the CEO/manager about the research and its purpose, and asking for his/her participation (see appendix 9.2).

In the following, a list of all contacted USOs can be found, along with key criteria such as their institutional affiliation, the VC funding the firm and the USO’s website:

| Name of firm | University affiliation | Funded by | Website/Contact | Notes | Bio-tech | Healthcare |
|---|---|---|---|---|---|---|
| Lophius | University of Regensburg | VRD GmbH, Heidelberg, Germany | http://www.lophius.com/home.html | At that time, the current CEO was a professor and faculty member | X | |
| SurgicEye GmbH | Technische Universität München | High-Tech Gründerfonds, Bayern Kapital | http://www.surgiceye.com/en/company/about_us.html | | | X |
| Riboxx GmbH | University of Dresden | Technologiegründerfonds Sachsen (S-BG Leipzig/SIB/SC-Kapital/CFH) | http://www.riboxx.com/management/ | | X | |
| LipoFit Analytical GmbH | University of Regensburg | SHS, Bayern Kapital, KfW/ERP-Startfonds | http://www.numares-health.com/ueber-numares-health/presse/presse-detailansicht/article/lipofit-analytic-gmbh-startet-kooperation-mit-bruker-biospin-gmbh.html | | | X |

| | | | | | | |
|---|---|---|---|---|---|---|
| Humedics | Charieté and Freie Universität Berlin | BioMedPartners, Vesalius Biocapital, Seventure, Peppermint VenturePartners, VC Fonds Technologie Berlin, KfW ERP Startfonds, High Tech Gründerfonds und Ventegis Capital AG | http://www.humedics.de/index.php?article_id=20andclang=0 | | | X |
| Curevac | University of Tübingen | Dievini | http://www.curevac.com/de/unternehmen/management/ | | X | |
| Evocatal | Heinrich-Heine-Universität Düsseldorf | High-Tech Gründerfonds, Sirius VC | http://www.evocatal.com/de/ueber-uns.html | | X | |
| Axiogenesis GmbH | University of Cologne | V+ Venture Plus | http://axiogenesis.com/company/investor-relations.html | | X | |
| Biametrics | Eberhard-Karls University | High-Tech Gründerfonds and Seedfonds BW | http://biametrics.com/en/ | | X | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Viviosensmedical | University clinic for women, Leipzig | Technologiegründerfonds Sachsen (S-BG Leipzig/SIB/SC-Kapital/CFH) | http://www.vivosensmedical.com/history.html | | | X |
| CortecNeuro | University of Freiburg | High-Tech Gründerfonds, die LBBW Venture Capital und die K and S W Invest | http://cortec-neuro.com/unternehmen/ueber-uns | | | X |
| AMP Therapeuthics | University of Leipzig | Boehringer Ingelheim Venture Fund; Novartis Venture Funds | http://www.amp-therapeutics.com/de/overview.html | | X | |
| Jenacell | University of Jena | High-tech Gründerfonds | http://www.jenacell.com/de/unternehmen/kernkompetenzen | | X | |
| Cysal | University of Münster | Ecapital and High-tech Gründerfonds | http://www.cysal.de/people | | X | |
| Dynamic Biosensors GmbH | TU München | Extorel, UnternehmerTUM (university capital), Bayern Kapital | http://www.dynamic-biosensors.com/about/dynamic-biosensors | | X | |
| Dolosys | Charieté Berlin | High-tech Gründerfonds and m2f investment | http://www.dolosys.de/Kontakt.htm | The CEO is the private lecturer Priv.-Doz. Dr. med. Jan Baars | | X |

| | | | | | | |
|---|---|---|---|---|---|---|
| PS Biotech GmbH | RWTH Aachen | High-tech Gründerfonds | http://www.psbiotech.com/about-us | | X | |
| Coramaze | University Hospital of Essen | Seed Dortmund, EXIST, High-tech Gründerfonds, | http://www.coramaze.com/index.php/news | | | X |
| Microstim | Universitätsklinikum Schleswig-Holstein, Campus Lübeck | High-tech Gründerfonds, Pepermint Venture Partners, | http://www.microstim.de/index.php/en/company.html | | | X |
| NovaPump | University of Jena | High-tech Gründerfonds | http://www.novapump.de/ | This newspaper article states that the firm is a USO. http://www.thueringer-allgemeine.de/web/zgt/wirtschaft/detail/-/specific/Thueringer-Innovationspreis-Mehr-Leben-bei-schweren-Herzinfarkten-retten-1903384678 | | X |

| | | | | | | |
|---|---|---|---|---|---|---|
| Pentracor | Among others the University clinic Charité | High-tech Gründerfonds, Salud Invest Gmbh, ILB | http://www.pentracor.de/partner.html | | | X |
| Capical | University of Braunschweig | High-tech Gründerfonds, M-invest, KfW | http://www.capical.de/en/company/ | http://www.emg.ing.tu-bs.de/team/mitarbeiter/schilling/index_d.html | | X |
| Amedo | University of Witten/Herdecke and Grönemeyer Instituts für Mikrotherapie auf dem Campus der Ruhr-Universität Bochum | High-tech Gründerfonds | http://www.amedo-gmbh.com/index.php/shareholder-management.html | The associated centre: https://institut.groenemeyer.com/prof-dr-med-dietrich-h-w-groenemeyer ; The firm was established by faculty staff | | X |

| | | | | | | |
|---|---|---|---|---|---|---|
| Fiagon | Charité Berlin | High-tech Gründerfonds | http://www.fiagon.de/index.php?unternehmen | This link provides information on the institutional background, showing that the firm is an academic start-up by a faculty member: http://high-tech-gruenderfonds.de/de/portfolio/fiagon/?b=life-science,biotechnologie,diagnostik,healthcare,medizintechnik,pharmazie-drug-developmentandr=plz1,plz2,plz4,plz5,plz0,plz3,plz6,plz7,plz9,plz8 | | X |
| Medineering | Klinikum Fürth | High-tech Gründerfonds | http://www.medineering.de/Kontakt.html | These sources show that the firm is based on University IP: | | X |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | https://www.xing.com/profile/Maximilian_Krinninger<br><br>http://www.closingcircle.com/medineering-gmbh-a-munich-based-medtech-company-closes-seed-investment-round/ | | |
| Microdimensions | Technische Universität München | High-Tech Gründerfonds, Bayern Kapital, private investor | http://micro-dimensions.com/company | Note: The scientific mentor of this firm is co-founder of SurgicEye GmbH | | X |
| Scopis | Fraunhofer-Gesellschaft and Charité-Universitätsmedizin Berlin | High-tech Gründerfonds, IBB, Extorel | http://www.scopis.com/en/company/company-profile/ | Prof. Erwin Keeve was leader at the Centre where Scopis was developed | | X |

| | | | | | | |
|---|---|---|---|---|---|---|
| MultiBIND | *Not sure but the founding professor is called Prof. Dr. Thomas Lisowsky who worked at University of Düsseldorf | High-tech Gründerfonds | http://high-tech-gruenderfonds.de/en/portfolio/multibind-2/?b=life-science-en,biotechnology,healthcare-en,medical-engineering,pharmacy-drug-developmentandr=plz1,plz2,plz4,plz5,plz0,plz3,plz6,plz7,plz9,plz8 | | X | |
| Advanova | University of Erlangen-Nürnberg | High-tech Gründerfonds | http://www.advanova.de/kontakt/index.html | | | X |
| Bomedus | Universitätskliniku m Bonn | High-tech Gründerfonds | https://bomedus.com/ | | | X |
| Desino | RWTH Aachen und der Deutschen Sporthochschule Köln | High-tech Gründerfonds, Business Angel | http://www.desino.eu/info.html | | | X |
| Exelonix | Technische Uni Dresden/Evangelische Uni Dresden | High-tech Gründerfonds | http://www.exelonix.com/?gruender | All of the founders have previous experience in setting up businesses | | X |

| | | | | | | |
|---|---|---|---|---|---|---|
| Futalis | University of Leipzig | High-tech Gründerfonds | http://futalis.de/ueber-futalis/team | https://de.linkedin.com/pub/janes-potthoff/21/21a/4a2 | | X |
| Preventicus | University of Jena | High-tech Gründerfonds, one further VC, one private investor | http://preventicus.com/index.php/de/team/20-wer-steht-hinter-preventicus | While few information are provided on the website, it is stated that the service is based on university research. | | X |
| Tinitrack | University of Münster | High-tech Gründerfonds, Investitions- und Förderbank Hamburg mit der Innovationsförderung InnoRampUp, European Union Regional Development Fund. FORT | http://www.tinnitracks.com/de/unternehmen | | | X |
| Advance Cor | University of Tübingen and Würzburg | MIG Fonds, ERP-Startfonds, Bayern Kapital, HighTech-Gründerfonds | http://www.advancecor.de/die-gruender.html | | X | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Audiocure | Wildau Technical University of Applied Sciences (close to Berlin) | High-tech Gründerfonds, private investors | http://audiocure.de/?page_id=47 | | X | |
| OMEICOS | Max Delbrück Centre, Charité, Berlin | High-tech Gründerfonds | http://www.omeicos.com/management.html | | | X |
| AlsterScience 4 Animals | University of Hamburg | High-tech Gründerfonds | http://alsterscience.com/unternehmen/team/ | Several academic research projects are being conducted while operating the business | | X |
| ImmunService | Hamburg | High-tech Gründerfonds | http://www.immunservice.com/index.php?page=core-management-team | | X | |
| Protectimmun | Ruhr-Uni Bochum | High-tech Gründerfonds, Enjoy Venture, Ascenion GmbH | http://www.protectimmun.de/d/ | | X | |
| Rigontec GmbH | University of Bonn | High-tech Gründerfonds | http://rigontec.de/management/ | | X | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Provecs Medical | University Medical Centre Hamburg-Eppendorf | High-tech Gründerfonds | http://www.provecs.com/man_.html | Founder has previous spin-out experience; and university background | X | |
| OnCGnostics | University clinic for women, Jena | High-tech Gründerfonds | http://www.oncgnostics.com/index.php/de/teamkontakt | | X | |
| Chromotek | Ludwig Maximilan University Munich | High-tech Gründerfonds | http://www.chromotek.com/about-us/management-team/ | | X | |
| c-Lecta | University of Leipzig | High-tech Gründerfonds | http://www.c-lecta.com/?lang=deandcategory=companyandpage=management | The firm now owns the patent of the technology. | X | |
| M2pLabs | RWTH Aachen University | High-tech Gründerfonds | http://www.m2p-labs.com/managing/ | | X | |
| Rodos BioTarget | Essen/Heidelberg/ Hannover/Brunswick | 2008-2012 High-tech Gründerfonds; since 2012: Hannover Beteiligungsgesellschaft | http://www.biotargeting.eu/management.html | | X | |
| Vimecon | Universitätsklinik Aachen | SHS Beteiligungsgesellschaft, SUBG | http://www.vimecon.de/index.php/de/im-profil/historie.html | | | X |

| | | | | | | |
|---|---|---|---|---|---|---|
| Caprotec | University of Hamburg | Creathor Venture, IBB Beteiligungsgesellschaft (VC Fond Berlin), LBBW Venture Capital, KfW (ERP Startfonds) as well as private investors | http://www.caprotec.com/index.php?id=28 | Prof. Dr. Hubert Köster is the CEO and serial entrepreneurs | X | |
| Machtfit | Technische Uni Berlin | IBB; | https://www.machtfit.de/ | | | X |
| Autodisplay | Heinrich-Heine-Universität Düsseldorf | Sirius VC | http://autodisplay-biotech.com/wordpress/company-overview/ | Fundamental research is being conducted at a research group of Prof. Jose at the Institute for Pharmaceutical and Medical Chemistry at University of Münster | | X |
| Acousia | University of Tübingen | Boehringer Ingelheim Venture Fund | http://www.acousia.com/about-us/founder/ | | | X |
| Cevec | University of Köln | Creathor Venture | http://www.cevec.com/company/history | Several university professors founded the firm | X | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Sirion | LMU | Creathor Venture | http://www.sirion-biotech.com/page/Management.html | | X | |
| Acuros | Humboldt University Berlin | ELSA | http://www.acuros.de/acuros/Company.html | | X | |
| Isarna Therapeutics | University of Heidelberg | S-Refit | http://www.isarna-therapeutics.com/de/unternehmen/management/prof-dr-med-eugen-leo/ | | | X |
| Multimmune | Technische Universität München | S-Refit | http://www.multimmune.de/company.companyprofile.php | | X | |
| ViroLogik | University of Erlangen | S-Refit | http://www.virologik.com/index.php/virologik-unternehmen/geschaeftsleitung.html | | X | |
| Greenovation | University of Freiburg | Zukunftsfonds Heilbronn | http://www.greenovation.com/management.html | | X | |
| Protagen | Ruhr University of Bochum | Zukunftsfonds Heilbronn | http://protagen.com/company | | X | |
| Seleon | University of Freiburg | Zukunftsfonds Heilbronn | http://www.seleon.de/deutsch/kontakt/ansprechpartner.html#c79 | | | X |

| | | | | | | |
|---|---|---|---|---|---|---|
| XtalConcepts | University of Hamburg and University of Lübeck | Innovationsstarter | http://www.xtal-concepts.com/index.php/en/home.html | | X | |
| Embella GmbH | TU Hamburg-Harburg | Innovationsstarter | http://www.embella.de/presse.html | Initially funded by the Ministry for Economy and Technology | | X |
| 3di GmbH | Uniklinikum Jena | BMT | http://www.3di.de/cms/index.php?id=103 | | | X |
| MedCooling | Helmut-Schmidt-Universität and Hamburg-Harburg | BMT | http://www.medcooling.com/das-unternehmen | | | X |
| AMSilk | TU München | MIG Fonds, | http://www.amsilk.com/ueber-uns/management.html | | X | |

**Table 11 List of all USOs contacted in Germany**

| **Name of firm** | **University affiliation** | **Funded by** | **Website/Contact** | **Bio-tech** | **Healthcare** |
|---|---|---|---|---|---|
| Asalus | University of Cardiff | IP Group | http://asalus.com/ | | X |

| | | | | | |
|---|---|---|---|---|---|
| Avacta | University of Leeds | IP Group | http://www.avacta.com/ | | X |
| Azellon | University of Bristol | IP Group | http://www.azellonctx.com/ | | X |
| Capsant | University of Southampton | IP Group | "Capsant was established in 2002 by academic founders Dr Lars Sundstrom, Dr John Chad and Dr Ashley Pringle." http://www.southampton.ac.uk/biosci/business_partnership/case_studies/capsant.page | | X |
| Crysalin | University of Oxford | IP Group | http://www.crysalin.com/wp/ | | X |
| Evocutis | University of Leeds | IP Group | http://www.evocutis.com/ | | X |
| Glythera | University of Bath | IP Group | http://www.glythera.com/ | X | |
| InhibiOx | University of Oxford | IP Group | http://www.inhibox.com/ | | X |
| Iqur | University of Southampton | IP Group | http://www.iqur.com/ | X | |
| Karus | University of Southampton | IP Group | http://www.karustherapeutics.com/ | X | |

| | | | | | |
|---|---|---|---|---|---|
| Medaphor | University of Cardiff | IP Group/Fusion IP | http://www.medaphor.com/ | | X |
| Modedx | University of Glasgow | IP Group | http://www.modehealth.com/ | | X |
| Optimal Medicine | University of King's College | IP Group | http://www.optimalmedicine.com/ | | X |
| Oxehealth | University of Oxford | IP Group | http://www.oxehealth.com/ | | X |
| Oxford Biotrans | University of Oxford | IP Group | http://oxfordbiotrans.com/ | | X |
| Nanopore Technologies | University of Oxford | IP Group | https://www.nanoporetech.com/ | | X |
| Drugsensor | University of Oxford | IP Group and Oxford Technology | http://www.oxtox.com/ | | X |
| Progenteq | University of Cardiff | IP Group | http://www.cardiff.ac.uk/racdv/latestventures/progenteq-spinout-from-biosi.html | | X |

| | | | | | |
|---|---|---|---|---|---|
| Retroscreen Virology | University of Queen Mary | IP Group | http://www.retroscreen.com/ | | X |
| Stratophase | University of Southampton | IP Group | http://www.stratophase.com/ | | X |
| Summit | University of Oxford | IP Group | http://www.summitplc.com/ | X | |
| Synairgen | University of Southampton | IP Group | http://www.synairgen.com/ | X | |
| TissueRegenix | University of Leeds | IP Group | http://www.tissueregenix.com/ | | X |
| Ubiquigent | among others Univ. of Dundee | IP Group | http://ubiquigent.com/ | | X |
| Absynth Biologics | University of Sheffield | Fusion IP (IP Group owns 19.8% share) | http://www.absynthbiologics.co.uk/ | X | X |
| Asterion | University of Sheffield | Fusion IP | http://www.asterion.co.uk/ | X | X |
| Blader Cancer | University of Cardiff | Fusion IP | have no website yet - but "is based on the latest research undertaken by Professor Ian Weeks and colleagues in the School of Medicine, | | x |

| | | | | | |
|---|---|---|---|---|---|
| Diagnostics | | | Cardiff University" http://www.fusionip.co.uk/casestudy/bladder-cancer-diagnostics/ | | |
| Diurnal | University of Sheffield | Fusion IP | http://www.diurnal.co.uk/ ; the CSO is the same as for Asterion | X | |
| Extraject | University of Cardiff | Fusion IP | No website yet - but " has been founded on the work of Professor James Birchall and colleagues in the School of Pharmacy and Pharmaceutical Sciences, Cardiff University" http://www.fusionip.co.uk/casestudy/extraject-2/ | X | |
| Medella Therapeutics | University of Sheffield | Fusion IP | no website yet - has been founded by Prof. Tim Skerry (http://mellanbycentre.dept.shef.ac.uk/members/skerry.htm) | | X |
| Morvus | University of Cardiff | Fusion IP | http://www.morvus.com/ | X | |
| Nanotether | University of Cardiff | Fusion IP | http://79.170.44.140/nanotether.co.uk/ | X | |
| Ph Therapeutics | University of Sheffield | Fusion IP | http://phtherapeutics.com/ | | X |

| | | | | | |
|---|---|---|---|---|---|
| Pro Flu | University of Cardiff | Fusion IP | No website; founded by Prof. Chris McGuigan (http://www.cardiff.ac.uk/phrmy/contactsandpeople/fulltimeacademicstaff/mcguigan-chrisnew-overview_new.html) | X | |
| Wound Genetics | University of Cardiff | Fusion IP | http://www.woundgeneticsgroup.com/ | | X |
| Zilico | University of Sheffield | Fusion IP | https://zilico.co.uk/ | | X |
| Nandi Proteins | University of Herriot Watt | Frontier IP Group | http://nandiproteins.com/about-us/ | X | |
| GlycoBioChem | University of Dundee | Frontier IP Group | http://www.glycobiochem.com/ | | X |
| Kinetic Discovery | University of Dundee | Frontier IP Group | http://www.kineticdiscovery.com/ | X | |
| Tissue Repair Technologies | University of Dundee | Frontier IP Group | http://www.tissuerepairtechnologies.com/ | | X |
| Circassia | Imperial College London | Imperial Innovations | http://www.circassia.co.uk/ | X | |

| | | | | | |
|---|---|---|---|---|---|
| Veryan Medical | Imperial College London | Imperial Innovations and Seroba Kernel | http://www.veryanmed.com/ | | X |
| Abzena | Imperial College London | Imperial Innovations and Longbow Capital and Catapult Ventures and Mercia and Oxford Technologies | http://www.abzena.com/ | X | |
| Oxford Immunotec | University of Oxford | Imperial Innovations and Spark Ventures | http://oxfordimmunotec.com/international/ | | X |
| Cell Medica | Imperial College London | Imperial Innovations | http://www.cellmedica.co.uk/ | X | |
| Psi Oxus | University of Oxford | Imperial Innovations, Mercia | http://www.psioxus.com/ | X | |
| Stanmore Implants | Uni College London | Imperial Innovations | http://www.stanmoreimplants.com/ | | X |
| Autifony Therapeutics | Uni College London | Imperial Innovations | http://www.autifony.com/ | | X |

| | | | | | |
|---|---|---|---|---|---|
| TopiVert | Imperial College London | Imperial Innovations | http://www.topivert.com/ | | X |
| Crescendo Biologics | Babraham Institute | Imperial Innovations | http://www.crescendobiologics.com/ | X | |
| Mission Therapeutics | University of Cambridge | Imperial Innovations | http://www.missiontherapeutics.com/ ; Professor Steven Jackson, Chief Scientific Officer at Mission Therapeutics graduated in Leeds | X | |
| Abdingdon Health | Imperial College London | Imperial Innovations | https://www.abingdonhealth.com/ | | X |
| Pulmocide | Imperial College London | Imperial Innovations | http://www.pulmocide.com/ | X | |
| Ixico | Imperial College London | Imperial Innovations | http://www.ixico.com/ | | X |
| Psychology Online | University of Cambridge | Imperial Innovations | http://www.psychologyonline.co.uk/ | | X |

| | | | | | |
|---|---|---|---|---|---|
| Ambicare | University of Dundee and University of St. Andrews | Scottish Health Innovations Ltd and Longbow Capital | http://www.ambicarehealth.com/investors/ | | X |
| Aridhia | University of Edinburgh and University of Dundee | Scottish Health Innovations Ltd | http://www.aridhia.com/our-collaborations | | X |
| Biotronics 3D | Dublin City University | Longbow Capital | http://www.biotronics3d.com/ | | X |
| Calon Cardio | University of Swansea | Longbow Capital | http://www.caloncardio.com/about_us.htm | | X |
| Domainex | St George's University of London and University of Manchester | Longbow Capital | http://www.domainex.co.uk/<br>Prof Laurence Pearl, Chief Scientific Officer at Domainex, is from Sussex University | X | |
| Sky Medical | | Longbow Capital | http://www.skymedtech.com/ | | X |

| | | | | | |
|---|---|---|---|---|---|
| Technology | | | | | |
| Orla Protein Technologies | University of Newcastle | NEL Fund Managers | http://www.orlaproteins.com/about-orla/the-board/ | | X |
| Cellaura | University of Nottingham | Catapult Ventures | www.cellaura.com | | X |
| Critical Pharmaceuticals | University of Nottingham | Catapult Ventures | http://www.criticalpharmaceuticals.com/about/history | X | |
| Haemostatix | University of Leicester | Catapult Ventures and Spark Ventures | http://www.haemostatix.com/aboutus.html | | X |
| Intelligent Orthopaedics | University of Staffordshire and Keele University | Catapult Ventures and Mercia Fund | http://www.intelligent-orthopaedics.com/content/about-the-company | | X |
| Lumora | University of Cambridge | Catapult Ventures and Tate Lyle Ventures | http://www.lumora.co.uk/about.html | X | |

| | | | | | |
|---|---|---|---|---|---|
| Monica Healthcare | University of Nottingham | Catapult Ventures | http://www.monicahealthcare.com/aboutus/management.php Kevin D'Silva, Chairman, is chemical engineer with degree from University of Leeds | | X |
| Nanotherics | University of Keele | Catapult Ventures | http://www.nanotherics.com/thecompany.htm | | X |
| Probe | University of Coventry | Catapult Ventures | http://www.probescientific.com/companyinfo/managementteam.asp | X | |
| Cytox | University of Birmingham | Midven | http://www.cytoxgroup.com/about-us/ | | |
| CellCentric | University of Cambridge | Midven | http://www.cellcentric.com/lead-programmes.php | | X |
| Aston EyeTech | Aston university | Mercia | http://www.astoneyetech.com/ | | X |
| CYP design | De Montfort University | Mercia | http://www.cypdesign.co.uk/ | X | |
| InoCardia | University of Coventry | Mercia | http://www.inocardia.com/ | X | |
| Scancell | University of Nottingham | Oxford Technology | http://www.scancell.co.uk/company/management | X | |

| | | | | | |
|---|---|---|---|---|---|
| Glysure | University of Bath | Delta Partners and Amadeus Capital Partners | http://www.glysure.com/about/directors-advisors/ | | X |
| Fluidic Analytics | University of Cambridge | Amadeus Capital Partners | http://www.fluidicanalytics.com/company/about-us/ | | X |
| Xention | University of Cambridge | Seroba Kernel and Omnes and MVM | http://seroba-kernel.com/xention/ | X | |
| Horizon Discovery Group | University of Cambridge | MVM | http://www.horizondiscovery.com/about-us | X | |
| Vantia Ltd | University of Southampton | MVM | http://www.vantia.com/index.php | X | |

**Table 12 List of all USOs contacted in the UK**

## 4.6 Data analysis approach

This section provides a short overview on the collected data and then goes on to explain how the data was analysed. In total, 24 interviews with CEOs of British and German USOs were conducted. More than eight hours of interviews were conducted with UK participants and more than seven hours were conducted with German participants. See Table 13 below for an overview on key characteristics of all interviewed firms:

| **Fake name of USO (fake participant name)** | **Year of first funding** | **Gender** | **CEO appointment** | **The industry** | **Rounds of funding** | **Number of financial backers** | **Serial entrepreneur** | **Prior VC experience** | **Duration of the interview** |
|---|---|---|---|---|---|---|---|---|---|
| **German participants** | | | | | | | | | |
| **Aconite (Albert)** | 2014 | M | via founder/patent holder | Healthcare | 1 | 1 VC | X | | 37:08 mm:ss |
| **Baptisia (Brian)** | 2011 | M | via founder/patent holder | Healthcare | 3 | 1 VC, 1 BA, Crowd F. | X | | 34:34 mm:ss |
| **Calcarea (Charles)** | 2013 | M | is founder | Healthcare - technology | 2 | 1 VC | X | | 32:00 mm:ss |
| **Digitalis (David)** | 2012 | M | is founder | Biotech | 2 | 1 VC | | | 49:32 mm:ss |
| **Echinacea (Eva)** | 2010 | F | via founder | Biotech | 1 | 1 VC | | X | 51:43 mm:ss |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Formica (Francine)** | 2012 | F | is founder | Biotech | 2 | 1 VC, 1 Foundation | | | 57:16 mm:ss |
| **Gelsemium (Gabriel)** | 2012 | M | is founder | Biotech | 2 | 1 VC, 1 Foundation | | | 26:01 mm:ss |
| **Hamamelis (Hadrian)** | 2006 | M | is founder | Biotech | 3 | 4 VCs | | | 45:00 mm:ss |
| **Indicum (Idal)** | 2007 | M | via founder | Biotech | 5 | 3 Public VCs, 3 Private VCs | | | 57:46 mm:ss |
| **Juniperus (James)** | 2013 | M | met founder via University | Healthcare | 1 | - | | | This participant did not give consent to be recorded. However, he permitted notes during the interview. |
| **Kreatinin (Kingsley)** | 2014 | M | VCs contacted him | Biotech | 1 | - | | | This participant did not give consent to be recorded. However, he permitted notes during the interview. |
| **UK participants** | | | | | | | | | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Lachesis (Luke)** | 2006 | M | By shareholders | Healthcare | 3 | 2 VCs, 1 grant, 1 public loan | X | | 22:43 mm:ss |
| **Macrotin (Martin)** | - | M | joined as business partner | Healthcare | 1 | 1 Private VC, 1 Public VC, University fund | | | 22:43 mm:ss |
| **Niacinum (Natalie)** | 2005 | F | Through investors | Healthcare | 3 | 2 VCs | consultancy experience | | 1:10:28 h:mm:ss |
| **Ocytoxin (Oliver)** | 2007 | M | By VC | Healthcare | 4 | 1 Private VC, 1 Public VC, Bas, founder's capital | | X | 38:39 mm:ss |
| **Pulsatilla (Peter)** | 2009 | M | Colleague of founder and inventor | Healthcare | 1 | 1 BA, public institution, 1 VC | | | 35:16 mm:ss |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Ruta (Robert)** | 2004 | M | Headhunted by VCs | Biotech | 4 | 1 VC, 1 BA, national grant, supranational grant | | | 45:55 mm:ss |
| **Sepia (Stephen)** | 2012 | M | chairman introduced VC founder, who offered CEO position | Healthcare | 3 | 2 VCs, some small shareholders | | | 24:54 mm:ss |
| **Thuja (Thomas)** | 2013 | M | the chairman | Biotech | 1 | 1 VC, founder's capital, University fund | | | 24:55 mm:ss |
| **Ulmus (Ulfred)** | 2013 | M | VCs 'chased' them | Biotech | 1 | 4 VCs (1 Corporate, others private) | X | | 47:10 mm:ss |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Valeriana (Vernon)** | 2004 | M | approached by one of the non-Exec directors | Biotech | 6 | 4 VCs, 1 PE firm, public project funding, 20-25 Bas | | Worked for VC-backed firm | 38:32 mm:ss |
| **Whitlavia (Walter)** | 2012 | M | via founders | Biotech | 2 | 1 VC | | | 26:04 mm:ss |
| **Xenon (Xavier)** | 2004/ 2011 | M | via VCs | Biotech | 2 | 2 VCs | X | X | 46:22 mm:ss |
| **Yage (York)** | 2001 | M | via VCs | Healthcare | 3 | 2 VCs | | Consultancy work for VC | 44:55 mm:ss |
| **Zeroxalat (Zakaria)** | 2013 | M | | Biotech | 1 | - | | | No recording existing. The participant allowed notes during the interview but did not give consent to be recorded. |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Zeroxalat Duo (Zakaria)** | 1997 | | | | 3 | - | | | See above. |

**Table 13 Characteristics of all data collection participants**

As evident from the above table, the average length of UK interviews was 38 minutes and the average length of interviews with German participants was 43 minutes. In the UK, 13 participants were interviewed, in Germany 11 participants were interviewed. There is no particular reason for why those numbers were interviewed in the respective countries except that those participants were the ones that agreed to participate in the study and given the small of amount of USOs, funded by VCs in the Life Science industries in the UK and Germany, no constraint was placed on the data collection to ensure a perfectly even distribution, since this study is not a quantitative study. The UK firms, on average, had received two rounds of funding, while the German USOs had received on average 2.5 rounds of funding. The average year of founding of the UK firms was 2007, while the average year of founding for the German USOs was 2011. This means that at the point of time of the data collection, the German USOs were on average four years old while the UK USOs were seven years old.

The data analysis follows the principles of the Gioia method (Gioia, Corley and Hamilton, 2013). The Gioia method separates the data analysis and representation in two stages. In the first stage, 'informant-centric terms and codes' (p. 18) are used, and the researcher only reports on what the participants said rather than imposing pre-defined concepts. This stage explores the participants' responses and does not impose any typologies or theories. The process of exploration follows the principles of grounded theory (Glaser and Strauss, 1967) and a thematic analysis, focusing on the content and the context in which the content was mentioned (Joffe and Yardley, 2004). During this stage, the coding itself is guided by the desire to answer the research questions. In the second stage, 'researcher-centric concepts, themes and dimensions' are used, and thereby information gathered from the first stage are linked with the second stage. The Gioia method offers a number of advantages. One is that it can help uncover patterns in raw data that can later be tested empirically (Williams and Shepherd, 2015). This strength is based on the mixture of an inductive and deductive approach, hence an abductive approach, that is followed with the application of the Gioia method (Smets, Jarzabkowski and Burke, 2015). Furthermore, the Gioia method with its grounded theory approach allows us to open black boxes of processes, to find out what is going on on the micro-level (Murphy, Klotz and Kreiner, 2017). This is particularly useful in the field of VC research, where a lot of studies looked at effects of VCs' activities in a quantitative fashion but could not make any statements on how the process is perceived. While there are advantages to using the Gioia method it needs to be acknowledged that there are also a few drawbacks. One potential disadvantage

seen with the Gioia method is that it is too quantitative because it focuses on linear causal effect and abstract theorizing similar to quantitative research (Cornelissen, 2017). Meanwhile the criticism is voiced that the Gioia method runs danger of taking away two main values of qualitative research, namely thick description and pattern description that cannot be measured in quantitative terms (Cornelissen, 2017). These criticisms are repulsed by providing thick descriptions and allowing the participants' voice to be heard in its original wherever possible. Also, a constant back and forth between the several coding stages took place, to avoid linear thinking. Also, with the Gioia method a danger of confirmation bias is seen (Gioia, Corley and Hamilton, 2013; Murphy, Klotz and Kreiner, 2017), when knowing the literature too intimately. Therefore, the researcher did not look at the literature or used a theoretical framework during the stage of developing first-order codes (Locke, 2001) and only brought it in when analysing 2nd order codes.

The analysis started by reading through the participants' comments and identifying which responses answered the research questions. Then, the responses were coded into nodes by using the analysis tool Nvivo (version 10). It was chosen for its variety of analysis tools, widespread use among qualitative researchers, and the opportunity to use coding and nodes to work with the data. Nvivo also allows to go one level up and visualize data in several forms such as word clouds, charts or matrices (QSR International, 2014), which help to identify patterns. The created nodes were revisited several times to identify overlaps between previously created nodes and to decide whether these nodes could be combined in groups (Shepherd and Williams, 2014). This also involved forming sub-groups in the data to identify patterns. The data was layered and separated into nationality, hence whether USOs were from the UK or Germany as well as whether more or fewer than the average rounds of funding took place, whether the participant was male or female, whether the CEO was the founder or a surrogate entrepreneur, whether the USO was funded by more than one VC or not, and whether or not the CEO had prior business experience. This process generated first-order codes (Locke, 2001).

Following this, subtheoretical, theoretical and aggregate theoretical dimensions (axial coding) (Locke, 2001) took place, to see whether there were overlaps with previously identified frameworks or whether patterns had emerged from the raw data that would warrant further empirical research. This process was by no means linear but iterative and involved a constant back and forth between the raw data, the first-order codes and second order codes to the aggregated dimensions (Patzelt, Williams and Shepherd, 2014). After

the completion of axial coding and identification of aggregate theoretical dimensions, which are presented in the form of themes in the following chapter, a one-page executive summary of the findings was sent to the study participants, with an invitation to provide feedback on the findings. In total, the analysis led to three key themes. The analysis for each section in the three themes is visualised in the form of the data structure (Gioia, Corley and Hamilton, 2013) below (see Figure 11; Figure 12; Figure 13 and Figure 14). One visualisation of the data structure focuses on examples of value-adding codes, one on examples of coding for the “honeymoon” vs “long-term relationship” patterns, one on rounds of funding as a cognitive roadmap and one on conflicts in multi-party scenarios and the applicability of social dilemma theory. The analysis path from the raw data via several iterations to first-order codes to subtheoretical, theoretical and aggregate theoretical dimensions via various iterations is exemplarily provided.

| **Comments in the raw data** | | **First nodes** | | **Grouped first-order codes** | | **2nd order codes: Subtheoretical, theoretical nodes** | | **Aggregated dimensions** |
|---|---|---|---|---|---|---|---|---|
| "So helping to build that company from the board upwards, or board downwards rather, has been key." | } | Building the company | } | Business development | → | Operational value-adding activity (as defined by Large and Muegge, 2008) | | Value-adding activities by VCs |
| "venture groups have really been helpful in terms of building the company" | | | | | | | | |
| "they brought some, particularly at the later stage, bigger businesses brought them wisdom to the commercial discussions that we had at Board and they were focussed on growing the business" | → | Commercial wisdom | | | | | | |
| "And they did help us a little bit with things like business development and so forth" | → | Business development | | | | | | |
| "generally it's easier to find another investor when you've got two very supportive investors already in there who've already said they'll put money in. So the third investor or fourth investor is actually not that difficult when you've got cornerstone investments in from the existing investors, because they're feeling much more comfortable at it." | → | Confidence for other investors | } | Confidence for other investors | → | Legitimation (as defined by Large and Muegge, 2008) | → | |
| "The idea of trying to do it only with private investors would be difficult, I think, because one of the things that happens is that those private investors defer to, for instance, the due diligence and legal progress of the institutions. So having the VCs on board or the institutions makes all the other investment from private individuals just that bit easier because there's a sort of crowd mentality of, well if a big institution's invested that must be safe for us." | → | Crowd effect | | | | | | |

**Figure 11 Visualisation of the application of the Gioia method on value-adding activities**

| **Comments in the raw data** | | **First nodes** | | **Grouped first-order codes** | | **2nd order codes: Subtheoretical, theoretical nodes** | | **Aggregated dimensions** |
|---|---|---|---|---|---|---|---|---|
| "there was an acquisition, in terms of investment funds, made by [VC], and that led to some organisational changes to the company, internally. And that created quite a bit of tension, from their side of the table, inwardly, as well as with us. Because it was unclear...we were going through the […] drawdowns of the investment, and it was relatively unclear how we were going to achieve that in this new company format, and they didn't know that either." | → | Conflict between VC, VC manager and CEO | | Multi-party conflict | → | Multi-party conflict instead of dyad relationships (did not fit in previous frameworks) | | Refinement of conflict resolution framework (Zou et al. 2016)<br><br>AND<br><br>Applicability of social dilemma theory |
| "Yeah management was keen to continue to grow the business and I think it was [VC] that health care seeking themselves, would've liked to have grown a bit further but they were being told by [VC HQ] that they had to exit the business, exit all their health care investments. | → | Conflict between VC HQ, VC and CEO | | | | | | |
| "there's always a challenge trying to align interest, especially when you've got a very diverse shareholder base and aligned interest with the management and employees of the company along with a diverse shareholder base, [but we] worked through that to build a consensus for what the company should be focused on and the direction we should be going." | → | Consensus; Different views from different stakeholders; | | Multi-party conflict resolution | → | Cooperation (as defined by Zou et al, 2016)<br><br>AND<br><br>Dyadic logic no longer applicable (e.g. prisoner's dilemma) | | |
| "So, the founders want a quick exit; don't really care what happens so long as it's a quick exit; current investors want a reasonably near to the exit without very much more dilution but want it to be reasonably sized and I want to build a big business […] So you've got three completely different strategic horizons and you just have to be honest about that and find a compromise" | → | Compromise; three different views | | | | | | |

**Figure 12 Visualisation of the application of the Gioia method on conflict scenarios and applicability of social dilemma theory**

| **Comments in the raw data** | | **First nodes** | | **Grouped first-order codes** | | **2nd order codes: Subtheoretical, theoretical nodes** | | **Aggregated dimensions** |
|---|---|---|---|---|---|---|---|---|
| "initially it probably started off very enthusiastic with the relationship" | → | Positive perception of relationship at start AND UK participant | | Dynamic perception of relationship over time with more positive perception at beginning | → | "Honeymoon"-phase (self-created word, since no theory/framework in the literature applied) | | "Honeymoon" vs "Long-term relationship" pattern in perception of relationship over early days of relationship |
| "I think quite quickly it actually really fell very, very badly and then we changed the person who we were interacting with because it was really was…never on the same page" | → | More negative perception of relationship in comparison to after start AND UK participant | | | | | | |
| The participant got in touch with one of the coaches that are advertised on the VC's website, to prepare the application for funding from the VC. The work with the coach however, turned out to be "problematic" and it resulted in the participant "losing an entire year". | → | Negative perception of relationship at start AND German participant | | Dynamic perception of relationship over time with more negative perception at beginning | → | "Long-term relationship"-phase (self-created word, since no theory/framework in the literature applied) | | |
| The VC helped the participant to replace the coach and then received funding from the VC. When asked about the strongest support he had received, the participant said that without the money in round A, there would have been no business and that the strongest help was therefore the financial support at the beginning after the problematic coach was replaced. | → | More positive perception of relationship in comparison to after start AND German participant | | | | | | |

**Figure 13 Visualisation of application of the Gioia method on relationship over time**

| **Comments in the raw data** | | **First nodes** | | **Grouped first-order codes** | | **2nd order codes: Subtheoretical, theoretical nodes** | | **Aggregated dimensions** |
|---|---|---|---|---|---|---|---|---|
| In response to a question about the relationship over time, the respondent said: "Yeah that's an eight-year timeline. We have been successfully funded up to this point from venture capitalists and other corporates and angel investors." | → | Timeline thinking | | Rounds of funding as cognitive roadmap for relationship over time | → | No use for standard clock time (Mitchell and James, 2001) on its own AND Rounds of funding as cognitive roadmaps | → | Rounds of funding as timeline approach for participants |
| "The company had received funding from the very beginning and that was what, it must've been 2004 I think it was […] So it would be 2004 was the kick off. Then it sort of went down. Then I joined in about 2007, I think it was. And we managed to get that grant funding." | → | Rounds of funding equal relationship | | | | | | |
| "[…] I mean the other time when you tend to get more involved is obviously fundraising, so we did a further fundraising which closed in April of last year and we actually engaged [VC] to work on that really" | → | Critical moments around funding | | | | | | |
| "So it becomes a little bit more complicated because obviously what I've just described was new money coming on so we had a further investor came on board; you've probably accessed this information anyway if you looked at our accounts, a company called [VC2], they came on board in April last year. So from them being on board you can kind of ask, you can ask the question of both communities." | → | Funding as roadmap for relationship | | | | | | |

**Figure 14 Visualisation of the Gioia method on funding rounds as timeline approach**

To ensure anonymity to the research participants, every identifying reference, such as firm names, VC names and references to individuals were deleted in the raw data for this thesis. Instead, as can be seen in Table 13, participants were given fake names to make the data more tangible and ease distinguishing the various participants' accounts and their USOs. This anonymization meets the legal and ethical obligation the researcher has to the study participants, who were asked to sign a consent form (see appendix 9.3) prior to the research, promising confidential treatment of their responses. The participants were reassured that their comments will be treated confidentially and that it will not be possible to be identified in the final document or any publication arising out of the research. The analysis of the German interview data took place on the German texts, since the researcher is a German native speaker. For the findings chapter, the transcripts were translated into English. Throughout the analysis of the data a data analysis journal was maintained to document questions and ideas to follow up during the analysis, to write up preliminary analysis results, and to go back to previous nodes and themes during the axial coding. In the findings and discussion chapter several figures and tables are included to visualise the results. Now follows the chapter presenting the findings based on the outlined analysis.

# 5 Findings

Based on the data analysis approach as explained in the previous chapter, this chapter presents the findings as three key themes. These themes focus on the impact of time on perceptions of the relationship with VCs, dual and multi-party conflicts and resolution strategies, and perceptions of value-adding activities.

## 5.1 Theme one: Impact of time on perceptions of the relationship

In this theme data is analysed in respect to the perception of the relationship over time, which show some differences between the perceptions of the British participants and the German participants. In addition, it is found that several participants preferred to talk about the relationship over time by using funding as moments which allow them to structure their thoughts.

Overall, it seems that British participants had a more positive perception of their relationship with their VCs at the beginning of the relationship, while German participants frequently had a less positive perception of their relationship with their VCs at the beginning which became more positive over time. The numerous reasons for this observation are explored, guided by the literature. The pattern for the British participants is therefore termed "honeymoon-phase" while the German participants' pattern might be best described as "long-term relationship". Followed by that, the comments by the participants that used rounds of funding as their timeline approach are presented.

### 5.1.1 The "honeymoon" phase

Natalie from Niacinum, when talking about the entire relationship over time in a very condensed form, said:

> "I think initially it probably started off very enthusiastic with the relationship so I would say so probably here but I think quite quickly it actually really fell very, very badly and then we changed the person who we were interacting with because it was really was…never on the same page."

It seems that Natalie had a difficult relationship with the VC on a personal level which apparently never improved to an extent that it would have been a functioning work-relationship, otherwise she would not have felt the need to replace the person. This quote resonates with Pina-Stranger and Lazega (2011) finding that personal ties between VCs and biotech entrepreneurs improve and facilitate mutual learning and value-adding, which apparently did not take place in this context. Apparently, one sub-theme in the broader theme of the "honeymoon" pattern are personal ties, which can cause a dip in the relationship over time. Furthermore, this recollection of a conflict seems to fit with the findings of Berg-Utby, S⊘rheim and Widding (2007) who showed that the expectations of portfolio firms vary with the stage the firm is in. What is surprising and novel is that it appears as if the relationship was perceived more positively at the beginning than at a later point of time.

Peter from Pulsatilla said that the relationship with the VC during the period of initial negotiations was "very good", and a "keen"-ness to work with each other existed. He said:

> "We pitched to [VC] and they had cash and at that point, this is end of 2008, they were very keen to work with us and the relationship was very good. That's because they had a timeline on investing their fund, and had failed to find enough Life Science companies to do so. So they were keen to invest in somebody and we were very keen to take their money. So our relationship was therefore pretty good at that point when we were only talking about it."

However, shortly after that positive perception of the relationship, Peter said that the terms and conditions of the actual funding were perceived as 'onerous' and therefore the relationship turned 'a bit more stressed', indicating that the perception of the relationship was more positive at the beginning of the relationship in comparison to what followed. He said:

> "As, of course, we got nearer the investment in 2009 which eventually happened towards the end of 2009 I would say the relationship got a little more stressed, literally as each set of new terms that came from [VC] became a little more onerous and I think as the board worked out that from what looked like a very positive, simple decision was turned into a relatively complicated one with [VC] wanting, as we would say in English, wanting their cake and to eat it, in that they clearly wanted more rights than the other shareholders, something which is [sic] not, over the years sat well with other shareholders."

This recollection of the relationship over time by Peter resonates with the findings of Zambelli (2014) who mentioned that the content of funding contracts are non-standardised, need to be negotiated and can strain a relationship. It also fits with what Wright and Lockett (2003) found, that contractual arrangements in combination with trust are important for the relationship. In this case it appears as if the level of trust in the VC was lower at the later point of time since they started to renegotiate the details at a later point of time. In addition, it seems as if another reason for the dip in the quality of the relationship is that the behaviour of the one VC did not sit well with the other parties involved. A similar reason for a less positive perception of the relationship could also be noted with the USO Sepia. Stephen from Sepia mentioned numerous value-adding activities by the VC that was onboard in the first place, however, mentioned that after some time a further investor entered the firm, which then led to a dip in the relationship.

According to Stephen, the VC should have introduced the management to further potential fund providers, which in the end it did not. He called this incident 'disappointing'. In his own words:

> "R: So it becomes a little bit more complicated because obviously what I've just described was new money coming on so we had a further investor came on board; you've probably accessed this information anyway if you looked at our accounts, a company called [VC2], they came on board in April last year. So from them being on board you can kind of ask, you can ask the question of both communities. I would say [VC1] have kind of broadly followed through on what they'd said they'd do which is good. I think [VC1] sold their benefit, [VC2] sold their benefits as a shareholder in terms of being you know open doors to further investors because we will be doing that as fundraising at some point this year. They haven't delivered on that, they've actually tended to say well get [VC1] to introduce you to more people who would invest in you which you know might be true but wasn't quite what we'd understood might happen. […]

It appears that one sub-theme within the broader theme of a "honeymoon" pattern is a less positive relationship because of the entrance of another party. This is a novel aspect that so far was only mentioned in theoretical terms by Wright and Lockett (2003) and will be picked up on later in this chapter (see section 5.2.1) and be discussed in more detail in the discussion chapter. Furthermore, it is interesting to see that once again the relationship started positive and turned less positive later on, a finding that could not be found in other studies and will be discussed in detail in the discussion chapter too.

Vernon from Valeriana also reports of a less positive relationship as time went on, however for a very different reason. He said:

> "R: Since I've been here in 2008, I think it's been a very positive relationship. They have been very supportive of the business. They are fairly small funds though, so an issue for us has been that the company's grown, we've really outgrown our VC investors. The other issue, I suppose, with the VC investors is the nature of the funds, they're closed funds, so their investment and exit horizons are fairly short for biotechnology."

It seems the issue Vernon has, lies with the size of the VC fund, which seems unfit to keep up with the particularly long development times in the Life Science industry and the huge amounts of capital required (Association of the British Pharmaceutical Industry, 2012). This need for a fit with the investor to ensure a shared understanding of the industry resonates with other studies (Timmons and Bygrave, 1986; Shepherd and Zacharakis, 2001). Also, Vernon from Valeriana is not the only one reporting on such an issue. Xavier from Xenon also mentioned a positive relationship at the beginning of the firm, which was later put under pressure because of the limited size of the VC. Xavier said:

> "R: […] So I successfully raised venture funding from a small UK firm called [VC1], largely based on the relationships that I had with the principal who was involved at [VC1] and we were then able to fund the business; moved it out of the University setting; get our initial sales in the UK, Europe and go to the US to start commercialising there. So at that point the relationship with venture capital was very positive."

Then, Xavier went on to report that he had to structure a deal differently, which 'imposed quite a few constraints'. He said:

> "[…]in 2007/8, on the basis of commercial success in the US, it was clear to me that the business had the opportunity of raising a lot of money and becoming significantly more successful commercially but one of the funds that we had involved in the business was out of money, so we had to structure a funding arrangement which they could tolerate. So that imposed quite a few constraints on the nature of the deal that we could do"

Based on this recollection of the interaction with the VC as well as the one of Valeriana, it seems suitable to introduce a sub-theme termed "out-grown" to the "honeymoon" pattern. While the reason for the dip in the relationship may differ though, it is interesting to see that the overall pattern of a more positive perception of the relationship with VCs in comparison to later on in time seems to be observable. This novel finding of a pattern of a honeymoon phase will be discussed in more detail in the discussion chapter.

### 5.1.2 The “long-term relationship”

Contrary to the “honeymoon” pattern, several participants of the German dataset made remarks indicating that their perception of the relationship with the VCs was less positive at the beginning of the relationship than later on. Due to the opposite character of this pattern, it was termed “long-term relationship” pattern. Data indicating this trend is discussed in the following.

Albert from Aconite said that the relationship with the risk capital provider ‘worked well’ but also stated:

> “If you now ask me for problems we encountered with the risk capital provider, they were only concerning the contracts. […] the first point always is that you have to coordinate the documents in the due diligence phase and you have to agree on them”

Albert mentioned that the due diligence phase was less positive than the experience and work relationship with the VC later on. Similar to Peter at Pulsatilla of the British participants, this recollection of the relationship over time fits with the findings of Zambelli (2014), that contracts and their negotiation can strain a relationship. It also fits with Wright and Lockett's (2003) findings that contracts in combination with trust are important for the relationship. What is different though is that for Albert the relationship improved after this initial stage of due diligence. Rather than “poisoning” the relationship that followed, Albert apparently, as soon as the stage of the contract negotiation was overcome, had a more positive relationship. After that, everything “worked well” for Albert. This is a surprising finding, especially in the light of the pattern of a “honeymoon” phase as the case for several British participants. Reasons for the difference between the German and the British dataset will be explained in the next section, and the novelty of a trend where a relationship starts on less positive terms than it is later, is discussed in the discussion chapter.

Another example for this perception of an improving relationship is David at Digitalis, who said that prior to being funded by the VC, he got in touch with one of the coaches that are advertised on the VC’s website, to prepare the application for funding from the

VC. However, the work with the coach turned out to be “problematic” and it resulted in David “losing an entire year”. After that, David said the VC helped him replace the coach and that he then received funding from the VC, which as he said significantly moved things forward and helped the firm Digitalis, especially since Digitalis then received funding, which David perceived to be the key input without which there would not have been a firm, as he recalled. It seems that David perceived the first period of interactions with the VC as fairly negative and his perception only improved after the coach was replaced. It appears that a finding from another study on the greater need for personal discussions in the early stages of a venture (Flynn and Forman, 2001) can be seen in this case too. A coach was needed to advise the entrepreneur on how to move things forward. It is also interesting to see that when being asked about the relationship with the VC, David made the mental link to the coach who the VC only brokered but did not have on their payroll. On the one hand this shows how bad experiences with partners of the VC lead to bad reputation for the VC itself but it also provides an example for a case in which a bad experience with the VC does not necessarily have an adverse effect on the willingness to get into business with the VC. This therefore stands against the findings by Drover and Fassin (2013), who found behaviour of VCs to significantly influence entrepreneurs’ willingness to partner. Interestingly, this is another case of a perception of relationship with a VC that started on a less positive tone and turned positive later on. This is so far novel to the literature and will be discussed in more detail in the discussion.

Yet another example is Francine from Formica who recalled that the time prior to signing the contracts was “relatively uncomplicated” however was not too enthusiastic about the VC at that time and made no further positive comments in respect to that point of time, while when asked about a later point of time, namely the beginning of the firm, she stressed that the VC firm was a “very big help” in the beginning, since Francine did not have any prior business experience. According to Francine, the VC firm helped in two distinct ways, it helped to outsource the controlling and it supported the management, who perceived themselves as ‘beginners’ in negotiating with potential customers. It seems this resonates with the finding that VCs add value by giving advice on organisational issues (Maula, Autio and Murray, 2005) and operations in general (Large and Muegge, 2008). This case also resonates strongly with the findings by Gomez-Mejia, Balkin and Welbourne (1990) who found that, in the early stage, VCs spend more time on their portfolio firms and on areas in which the current management team is not competent. Meanwhile, Formica’s experience does not seem to sit well with the findings made by

Flynn and Forman (2001), who said that early stage firms have a greater need for the negotiation of legal and governmental issues. But this case of Formica also allows the observation that for Formica the most appreciated value-adding activity took place at the beginning of the lifespan of the firm however after the initial contact with the VC during which the contractual arrangements were made. It seems that the perception of the relationship therefore turned more positive to this later point, supporting the idea of a "long-term relationship" perception. This novel finding will be discussed in detail in the discussion chapter.

In respect to a "long-term relationship" pattern with the VC, Gabriel from Gelsemium also said that the relationship had always been very constructive, and that he had not experienced any lows. Gabriel also considered the VC manager, who was assigned to Gelsemium, as someone who cared intensively about the firm. In another comment, Gabriel however said that prior to a second round of funding, the relationship intensified and the VC firm took even more care of the portfolio firm, to ensure it could secure its follow-on funding. This seems to fit well with the value-adding activity "outreach" as defined by Large and Muegge (2008), namely to win deals and to ensure financial backing (Berg-Utby, S⊘rheim and Widding, 2007). While it seems that the relationship has always been perceived as positive, the perception was even more positive at a later point of time, leading to the assumption that the relationship over time moved in an upward fashion, providing support to the long-term relationship pattern. It can also be observed that the most intense moment in respect to value-added occurred around a round of funding, which is a surprising finding that could not be made in the literature yet. Interestingly, rounds of funding as a cognitive roadmap also seem to be of importance to the participants, which is a thought explored in the next but one section. The next section focuses on reasons that could explain the different perceptions of the "honeymoon pattern" for British participants and the "long-term relationship" pattern for the German participants.

### 5.1.3 Contextual differences between Germany and the UK

As could be observed from the discussed data in the previous two sections, several British participants had a more positive perception of their relationship with VCs at the beginning of the interaction with VCs in comparison to later points of time. Interestingly, several

German participants had a less positive perception of the relationship in comparison to later on.

One factor that could explain this difference is the different size of the funding budgets for the German and British USOs. As outlined in the chapter “3 Empirical context” funding is more concentrated in the UK and in general the sums obtained by the British USOs are larger than that of their German counterparts. Several of the German participants were funded by the High-Tech Gründerfonds, a big, well-established VC in Germany, which only issues first rounds of funding of the size of half a million €. Hence it could be that British USOs have more of a financial interest in engaging with VCs and the money makes up a bigger part of what they seek (as one participant said: “At the end of the day what you want from VCs is money.”) while German USOs are generally more interested in and keen on non-financial value-adding activities, knowing the financial injections will be small at first.

Another factor that could explain this difference of perceptions could be that -as outlined in the chapter “3 Empirical context”- the UK is classified as a radical innovation country while Germany is a country classified to be suited for incremental innovation (Hall and Soskice, 2001). Maybe, due to the high degree of specialisation in British USOs, VCs can add less value to the USOs except financial input and therefore every other activity except funding is perceived as intrusion by the British participants. Meanwhile, since the degree of innovation is lower in the case of the German USOs, VCs might be able to get involved more actively and provide more appreciated input, hence leading to a generally more positive perception of a relationship.

### 5.1.4 Rounds of funding as timeline approach

Apart from the comments in the previous sections, indicating that the relationship with VCs is perceived differently at different times, there were also a number of comments from participants which indicate that the participants prefer to think in terms of rounds of funding instead of years or months, when asked about the relationship “over time”. In the following, a number of comments by participants are presented, all answering the interview question on whether the participant could talk through the ups and downs of the relationship over time, imagining a blank timeline. Instead of replying with comments

that were structured in time units such as years or months, the participants used funding as their cognitive roadmap. It seems as if funding is always at the back or front of the participants' heads and obtaining continuous funding ensures survival of the USO, hence being of such importance. But using rounds of funding as a timeline approach might also mean that every action or interaction is subordinated to obtaining and securing funding and while time continuously progresses, funds continuously run out until a new round of funding is secured and "time is bought".

Robert from Ruta when asked about the relationship over time replied:

> "R: The company had received funding from the very beginning and that was what, it must've been 2004 I think it was […] So it would be 2004 was the kick off. Then it sort of went down. Then I joined in about 2007, I think it was. And we managed to get that grant funding. Then we did some loan notes in about 2009. We got more, did another one [VC fund raising] in 2012, another on in 13, yeah that's right. And then we did a big fund raising in 2014 and there will be a second one in 2015. It will be something like that."

While Robert mentioned the points of time at which funding was obtained, the entire focus of talking about the relationship was on financial input from the VCs. Based in this, it is assumed that Robert used the rounds of funding as a cognitive roadmap to structure his thoughts.

In the same way, York from Yage, when asked to imagine the blank timeline, replied:

> "R: Yeah, so the first funding event in 2001 was essentially a guy trying to put money into the business to allow it to develop technology to the point where it could be simply marketed and commercialised. In late 2002, the company tried to raise further capital to allow it to do that commercialisation process."

Once again, York referred to moments at which funding arrived and used these to structure his response to the interview question. It appears as if the rounds of funding are the time construct on which the participants rely to reply.

Brian from Baptisia, when asked about the blank timeline, replied that first he received half a million and a year later received another round of funding from the same investor, over another million. He then went on to refer to a low in the relationship and to situate the moment in the story said that it was “around the third round of funding”, not mentioning a year altogether. Brian also used rounds of funding to structure the story of Baptisia over time. David from Digitalis replied to the question about the blank timeline that he could not talk about lows in the relationship and immediately followed by that started to talk about the first round of funding for Digitalis and how the investor helped to secure the second round of investment, also not referring to years but instead to rounds of funding. Only once did David refer to a year, however mentioned in a side comment that he was not too sure about the year, while not expressing any doubts about the accuracy of the statement that a third round of funding was about to happen. This indicates that David also preferred to use rounds of funding as a timeline approach and that time is only second to rounds of funding. Finally, Francine from Formica, when asked about the blank timeline and how Formica’s relationship with the VC developed, replied that the firm has had two rounds of funding and that a week ago a third round of funding had been secured. While Francine did not mention any year or month, the rounds of funding along with the sums were elaborated on by her.

These comments indicate that some participants seem to prefer to talk about relationships over time with VCs in reference to rounds of funding and it appears that this is the cognitive structure the participants prefer over standard clock time, to situate events of their relationships over time in the overall story. While this finding resonates with the finding by Vohora, Wright and Lockett (2004) that USOs go through certain stages it does not fit with their finding that these stages are non-linear. Instead, this novel finding seems to be reflected in the discussion of process theory for studies on USOs as discussed by Rasmussen (2011) who argues that life cycle stages of a USO are structured by certain events. The data of this study indicates that rounds of funding might be those events.

### 5.1.5 Summary

This theme presented the findings that British participants seem to perceive their relationships with VCs as more positive at the very beginning, while German participants seem to have a less positive perception of their VC partners in the beginning and warmed

up to their partners at a slightly later point of time. These comments in the data led to the conclusion that there is some indication in the data for a certain pattern which could be described as a “honeymoon” pattern for the British participants and a “long-term relationship” pattern for the German participants. Furthermore, some comments indicate that some participants seem to prefer to talk about their firm’s relationships over time by using rounds of funding as units of time instead of months or years of the calendar year.

While these findings generally align with the findings made by Berg-Utby, S∅rheim and Erikson (2007) that the expectations and perceptions of VCs vary over time, these findings can actually offer some preliminary insight a certain pattern which appears to be dependent on national contexts. In addition, it is an interesting finding both content-wise as well as methodologically, that the participants prefer to use rounds of funding as timelines since it offers insights in their priorities, the hierarchical order of such and a potential avenue for future enquiries that try to “speak the language of the participants”. These novel findings will be discussed in more detail in the discussion chapter.

## 5.2 Theme two: Dual and multi-party conflicts and resolution strategies

This second theme presents the findings made in respect to how participants perceived conflicts with their VCs in respect to the conflicts’ nature, conflicts’ dimensions, constellations and how conflicts were resolved. The first section shows that the majority of conflicts perceived by the participants appear to involve more than two parties. Followed by that, participants’ accounts that suggest conflicts occur on a cognitive and affective level are presented. Third, the findings in respect to dimensions of the conflicts are shown and finally, participants’ perceptions of the conflict resolutions are presented. Throughout this theme several references are made to the various perceptions of conflict cases as retold by the participants. To provide an overview over the conflicts that are discussed in detail in this section and to give a short overview on the conflicts that are not discussed in the analysis but formed part of the data, a table is provided below (see Table 14). In the table, the conflicts are categorised by the number of parties involved (dyads or multi-party scenarios) and whether the conflict had been solved at the point of time of the data collection or was still ongoing. The conflicts are numbered since some participants

reported on several different conflicts and only mentioning their name and USO would have led to confusion when presenting and discussing their perceptions in the following.

| | **Conflicts with two conflict parties** | | | **Conflicts with multiple conflict parties** | | |
|---|---|---|---|---|---|---|
| | **USO experiencing the conflict (conflict ID)** | **Conflict topic** | **Resolution** | **USO experiencing the conflict (conflict ID)** | **Conflict topic** | **Resolution** |
| **Conflicts with a resolution** | USO Aconite (#14) | Whether milestone requirements are fulfilled | VCs followed CEO's argumentation | USO Pulsatilla (#12) | One VC pressed for exit | The CEO 'beat them down over time' and the VCs ignored their exit deadline |
| | | | | USO Ruta (#10) | Lack of confidence in performance and bootstrapping | One investor got diluted out, the other took over much equity |
| | | | | USO Ruta (#4) | Additional funding | Consensus |
| | USO Echinacea (#16) | Projections of | Numbers were approved | USO Sepia (#9) | One VC did not deliver on promise to help with fundraising | 'Disappointed' with the one VC, now work through the other VC |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | future profit | | USO Valeriana (#3) | Strategic direction | Consensus |
| | USO Baptisia (#15) | Conflict over VC funding for round C | Set the VC a deadline | USO Whitlavia (#1) | Conflict over organisational change | VC gave backing because it was in his interest |
| | | | | USO Whitlavia (#2) | Acquisition of funds by one VC | VC manager sorted things out with VC on behalf of CEO |
| | | | | USO Yage (#5) | Fear of dilution | Compromise |
| | | | | USO Yage (#6) | Rejection to cooperate | Avoiding other VCs |
| | | | | USO Yage (#13) | The VC's HQ pressed for an exit | The VC exited |
| | | | | USO Echinacea (#18) | In one instance, a conflict between the CEOs occurred and in another instance one CEO wanted to renegotiate his compensation | Being less of a sensitive issue for the VC, the VC solved the problems for the CEO |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | USO Indicum (#19) | Projections of future profit; CEOs feel pressure to project giant profits, while an obligation for realistic reporting exists | An external, independent board of advisors was formed, approving the figures |
| | | | | USO Hamamelis (#21) | A management conflict, the VCs split into two groups supporting the CEOs, leading to deadlock and a missed milestone as a ripple effect | One VC exited, and for the remaining, a new contract was set up and signed |
| **Ongoing conflicts/ No resolution applicable** | USO Indicum (#17) | VC exercises pressure to exit | Ongoing | USO Pulsatilla (#11) | VCs' and investors' differing risk adversity | - |
| | | | | USO Lachesis (#7) | Varying degrees of input/impact on company direction | Financial and influential dilution |
| | | | | USO Yage (#8) | Timing of exit | Ongoing/Open conversation suggested |
| | | | | USO Indicum (#20) | Statements on valuation of the firm, while having heterogeneous VC base | Ongoing |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | USO Indicum (#22) | The VC manager do not want to be held accountable for management decisions and therefore remain silent | Ongoing |

**Table 14 Overview on conflict scenarios in the data**

### 5.2.1 Dual and multi-party conflicts

The first finding made in the data is that, while several participants retold conflicts involving two parties only, the majority of the participants mentioned in various ways that their conflicts involved more than two parties, hence being a multi-party conflict. The CEOs of the USOs Aconite, Echinacea, Baptisia and Indicum were the only ones identified in the data to give accounts of conflicts that appear to have occurred in a dyad. In the case of Albert from Aconite a conflict occurred over a milestone. The VC and the CEO disagreed whether the requirements had been fulfilled. Albert did not go into too much detail in respect to the specific topic that the VC and him disagreed over, but he said that the conflict was related to a topic that was not as straight forward as quantitative data which could be measured very straight-forwardly. The conflict hence occurred in between the CEO and the VC. Similarly, Brian from Baptisia mentioned he had a conflict with a VC over follow-on funding. Brian was annoyed with the fact that the VC did not make up his mind on whether or not to continue to fund the firm in a round C, but rather requested more and more detailed information that the VC did not request prior to round A or B. This conflict also occurred in a dyad made up of the VC and Brian, the CEO. As a last example, Eva from Echinacea complained that she had set up a business plan, and when she reached the goals set in her business plan, her investor 'accused' her of not planning aggressively enough, which she considered to be demotivating. She said that she did not feel comfortable with projecting massive numbers even though they were unrealistic and could not be fulfilled. This dyadic conflict also occurred in between the CEO and the VC. This finding resonates with several studies in the field of VC literature such as the studies by Cable and Shane (1997), De Clercq and Sapienza (2001) and Fassin and Drover (2015) who looked at VC-CEO interaction from different lenses but all focused on a dyad made up of one VC and one CEO.

However, the majority of the conflicts the participants perceived seem to occur in scenarios involving several parties. As Peter from Pulsatilla said:

> "R: …I think the nub of this thing always in a small company like ours is not so much the relationship between the company that's [USO name], or perhaps myself and [name], the sort of full-time executives and the VC, the difficult bit and the real… the strategy bit to the relationship is between the VC and other

> investors. That is the bit that actually makes it difficult to deal with. If the VC were on its own difficult to deal with, myself and my colleagues would deal with that, we'd work in such a way that we kept on top of that. What's difficult to do is when it's a sort of three way split and we have a slightly strained relationship with the VC, but then that VC at board meetings has a strange relationship with other investor groups. Usually that's to do with the fact that their expectations or objectives are misaligned. That's where the difficulty comes, once it's a triangle, not when it's one to one."

This issue of misaligned interests within several parties is also echoed by Vernon from Valeriana who said:

> "R: […] I think there's always a challenge trying to align interest, especially when you've got a very diverse shareholder base and aligned interest with the management and employees of the company along with a diverse shareholder base, so, you know, we've certainly had disagreements with investors about which direction to go, what to focus on but I think we've worked through that to build a consensus for what the company should be focused on and the direction we should be going. It's clearly some of the Venture Capital companies, actually all of them, you know, are looking after their own interests and what they care about is return on for their funds, not necessarily what's in the best interest of the company"

Unlike Vernon, the CEO of Valeriana, who apparently experienced a conflict during a time he was being funded by several VCs, Robert from the USO Ruta also told about a conflict that occurred when trying to bring another investor on board of the firm. He said:

> "particularly for us; we've got quite a wide shareholder base. Our existing shareholders will say, "I'm not taking that" and they could stop the deal. And we will have to go to our investors if we wanted to have, bring a new one in and say, "Look are you prepared to give away this much equity"? And for us, if you were starting off, it wouldn't really matter so much, but we're not, we're an established company with an established shareholder base. And that becomes a problem."

Furthermore, it appears that conflicts do not only have to stem from misaligned interests between different investor groups but can also result from or be made more complex by the CEO having yet another view on the issue. As York from the USO Yage said:

> R: "So, the founders want a quick exit; don't really care what happens so long as it's a quick exit; current investors want a reasonably near to the exit without very much more dilution but want it to be reasonably sized and I want to build a big business, take on board $30 or 40 million worth of capital and run this business in 2020; be commercial and grow a very large business that might have a very big exit at the end. So you've got three completely different strategic horizons and you just have to be honest about that and find a compromise that you can then all live with because that is the basis of how you go forward and often those objectives aren't vocalised and if they're not vocalised, then you end up with people misinterpreting behaviour because people think they're aligned when they're not. So, that's really the secret to get those things out on the table and talk honestly about them and then get alignment."

This finding resonates with the findings of Chahine, Arthurs and Filatotchev (2012), who said that the presence of several investors in one portfolio firm can give rise to conflicts that are termed 'principal-principal' conflict, as they occur in between the investors. It is also reflected in the study by Wright and Lockett (2003) who note that based on the amount of equity held by the investors, one investor will take the 'lead' position. To them, syndication imposes an agency cost that is reflected in terms of coordination and timing difficulties regarding decision-making (Wright and Lockett, 2003; Cumming, Siegel and Wright, 2007). They argue that some partners might have changed their investment focus, and others might have fully invested their fund, leading to discrepancies between different investors' timelines. This in turn could be a source of conflict that potentially could have been avoided in a relationship with a single investor. These problems appear to be reflected in the conflict accounts by Robert from Ruta and York from Yage as described above along with several other similar descriptions in the data. Generally, the authors' assumption that conflicts can arise because of investors' differing goals and aims, strongly resonates with the findings of this study. Interestingly, as will be presented in the section on conflict resolutions, the great amount of conflict scenarios analysed as part of this study were solved by collaboration nevertheless, which is a novel insight in the field

of VC research and would carry several implications which are presented later in this chapter and are discussed in the discussion chapter.

Moreover, when looking at the topics of the conflicts and comparing the British dataset against the German dataset, it could be noted that the majority of conflicts for the British participants arose in multi-party scenarios. In comparison, more German participants reported on dual conflicts between them and the VC. This stronger presence of dual conflicts might be explained by the fact that the German USOs are on average four years younger than their British counterparts, had fewer rounds of funding and most importantly, less investors, which means that they might have been less exposed to multi-party conflicts. A second observation from the data from German participants, is that the conflict type #21 (experienced by Hadrian at the USO Hamamelis) was a case of a conflict were the two CEOs in the management team had a conflict and some of the VCs took sides with one of the CEO while some of the VCs took sides with the other CEO. This deadlock in terms of decision-making led to a missed milestone later on and showed, that conflicts do not necessarily occur in isolation but can cause 'ripple effects'. These 'ripple effects' mean that one conflict, when unsolved, can lead to further conflicts. Ripple effects in conflicts are seen as a strong justification for the necessity of research into conflicts and their nature, dimensions and resolutions as done in the following sections.

### 5.2.2 Nature of conflicts

When looking at the nature of conflicts in respect to whether conflicts occurred on a cognitive or on an affective level, the findings of this study are that the majority of conflicts are perceived to be on a purely cognitive level while only very few participants used emotionally laden language when recalling their conflicts. In respect to conflicts that indicate an affective element to it, one participant for example said: "I've had people say to me, if you take his money then you won't get our money", and another said "...without naming names, and I won't name names, there was a personality clash". Yet another participant said:

> "So it was just…instead of looking to see if there was any common ground, I think they just to the point of looking to see where the differences were you know and where there was going to be sort of an argument. And I have met this guy and he's

> not very personable so it's not…I mean whether he's not very personable because he's got a relationship with this group and with the company or whether he's just not very personable. It's a bit hard to say. So like lots of things when it comes down to relationships, in the end it actually comes down to personalities"

These comments indicate that some conflicts are based on elements of emotions and resonate with the findings made by George, Erikson and Parhankangas (2016) that affective conflicts have the potential to lead to a dysfunctional relationship (see also Brettel, Mauer and Appelhoff, 2013). Also, this finding echoes what is said by Meuleman et al. (2017) namely that VCs prefer to form a syndicate with VCs they already know and trust. In the above accounts it appears that the trust has broken down. Still, the overwhelming majority of conflicts were perceived as being of cognitive nature. As one participant said "the relationships with [VC] between ourselves have always been professional, but it's when it gets into a triangle of relationships with mismatched objectives, then it just gets difficult to manage.". Apparently, the problem is not on an emotional level for the participant but instead a situation where interests are misaligned and hence a conflict on a cognitive level. Similarly, another participant said "I think most people were acting in the greater good. Some, yeah, I think overall we got to where we needed to be which, so I think everybody acted, you know, we came to a negotiated solution which, you know, wasn't exactly what we wanted but, you know, it gave us the clarity and control that we needed in order to raise further investment.". This comment also indicates that the individuals that were dealt with were respected and their motivations understood and potentially even sympathised with, hence the conflict only occurred on a cognitive level. Even more, conflicts could also be seen as being positive. As one participant said: "people come with different perspectives and so I encourage that" and "I think conflict around the boardroom table, is actually a requirement". These comments echo the findings of Higashide and Birley (2002) that cognitive conflicts can enhance performance while affective conflicts cannot, a finding also made by Brettel, Mauer and Appelhoff (2013), who also show that cognitive conflicts can enhance the perceived value that an entrepreneur ascribes to his VC firm. These comments also suggest that the developed framework in respect to the nature of conflicts (see Table 15) appears suitable to take the differences between cognitive, affective and positive and negative conflicts into account, since all comments in the data seem to fit into this framework. The novel element to the existing studies is that the majority of conflicts appear to be on a cognitive level, indicating a certain degree of professionalism and

calling into question how relevant the above studies are in respect to the likelihood of occurrence of these types of conflicts. In addition, the literature has so far largely overlooked conflict as a positive element. This is discussed in more detail in the discussion chapter.

| | **Negative conflict** | **Positive conflict** |
|---|---|---|
| **Nature of conflict (Yitshaki, 2008)** | Affective<br>Cognitive | Cognitive |

**Table 15 Conceptual framework on nature of conflicts**

Moreover, looking at subsets in the data, there were comments indicating that participants with no prior experience reported on more cognitive conflicts and conflicts over exit than participants with any sort of prior experience. Conflicts over finance however occurred equally often for all participants, no matter their experience. One possible explanation could be that CEOs with prior experience are aware from the outset of a relationship with VCs that it will end in an exit. Also, participants with prior VC experience seemed to stress more often that a mutual understanding between VCs and entrepreneurs and an understanding of the industry matter. In combination with the observation that participants with prior VC experience also reported on less cognitive conflicts, it suggests that a mutual understanding is helpful in conflict avoidance.

### 5.2.3 Dimensions of conflicts

In respect to the dimensions of conflicts, the findings in the data are that several of the conflicts resonate with Yitshaki's (2008) taxonomy of dimensions of conflicts (see Table 16), while other accounts of conflicts could be identified that do not seem to fit in the taxonomy.

| | **Negative conflict** | **Positive conflict** |
|---|---|---|
| **Dimension of conflict (Yitshaki, 2008)** | Contractual<br>Contextual<br>Procedural | Contractual<br>Contextual<br>Procedural |

**Table 16 Conceptual framework on dimensions of conflict**

In the data, several accounts of conflicts were identified to have occurred around contractual issues. In the case of conflict #5 as experienced by York from Yage for instance, he reported on a conflict between the management and VCs, who are afraid of getting diluted. Since shares and the formal distribution of power tend to be defined in contracts (see Zambelli, 2014), this conflict was seen to be on a contractual level. Similarly, in the case of conflict #19 which Idal at Indicum recalled, a conflict occurred for the management over the projections of future profit it had provided. The VCs were perceived to exercise control over the decision-making on the projections, while the contracts in place state that projections have to follow national laws. While this conflict relates to how the contract is effectively filled with life, in the case of the conflict #21 in the USO Hamamelis the conflict arose within the management team but led to a deadlock between two groups in the firm, and due to the decision-making requirements in the contracts, no decisions could be taken. Finally, in the case of conflict #20, experienced by Idal in Indicum, a conflict with the shareholders over the manager's statements on the valuation of the firm occurred. The manger's contract does not allow him to make such statements and he assumed that an estimate would not fall into that category. Ultimately, what all these conflicts have in common is that they seem to fit with the definition of a contractual definition as given by Yitshaki (2008) who said that they are based on disagreement over the formal distribution of power as defined in the contracts as well as the board composition and its control over decision-making. Hence, the above conflicts indicate that the developed conceptual framework is applicable to these conflict scenarios.

In addition, one conflict scenario could be identified in the data that also seems to align and overlap with the procedural dimension of conflicts as defined by Yitshaki (2008). In this conflict case, case #9 by Stephen at Sepia, the management perceived a conflict over the lack of one VC's commitment to the USO, since the VC did not deliver on previously made promises. According to Stephen, the VC had promised to support Sepia in fundraising and providing contacts for the next round of funding, however when that moment arrived, suggested that the CEO approaches the other VC for support in that respect, which can be interpreted as a breach in trust or understood commitment. Since the definition for the procedural definition is that it refers to the information exchange between the two parties based on trust, shared norms and obligations, commitment and identification with the reference group, this conflict is seen to resonate with that definition.

Also, numerous conflict scenarios in the data could be identified that seem to fit in the definition of a contextual dimension. For example, in the case of conflict #1, experienced by Walter in Whitlavia, a conflict over organizational restructuring occurred, hence it was a conflict over the firm's strategy. Similarly, in the case of conflict #2, also experienced by Walter, the VC firm of the USO had been acquired by another fund, and the VC firm disagreed internally about the strategy in respect to the USO, meaning the to be expected level and style of VC involvement in the firm was uncertain. Also, as in the case of the conflict #4 in the USO Ruta a conflict between the USO's manager Robert and the VC about the introduction of another investor had happened. This is a conflict over the funding strategy of the USO which is a key strategic area for USOs. Another key moment in a USO's life cycle also are exits (see Cumming, 2008) over which in the case of conflict #8 in USO Yage a conflict took place, with every conflict party having different ideas about the exit strategy. And in the case of the conflicts #12 for Peter, #13 for York and #17 for Idal a similar conflict occurred in respect to the timing of the exit. In addition, several conflicts occurred on a more operational level such as in the case of the conflict #10 in the USO Ruta with Robert, where a conflict over the perception of the USO's performance and chances to successfully complete a project occurred. Or the case of #15 in Baptisia for Brian where a conflict with a VC over the level of involvement in management processes and the amount of information the VC requested took place. What all of these conflicts are seen to have in common is that they all relate to a VC's level of involvement in either operational issues or strategic issues, which is also Yitshaki's (2008) definition of the contextual dimension, namely that it refers to the VC's level of involvement in management processes and strategic decision-making and the perceived performance of the entrepreneurial firm. Based on the numerous examples given above it is therefore suggested that this dimension can remain part of the conceptual framework. However, taking the analysis further, it can also be noted that a difference between levels of involvement in decision-making and the direction of decision-making seems to be present in the data. For instance, in the case of conflict #3, experienced by Vernon at USO Valierana, flat out a conflict occurred about the "strategic direction of the firm". Also, in the case of #8 with York, the conflict had occurred over the timing of the exit, which shows that the conflict was not simply about the level of involvement, but about different approaches on how to take the firm forward. Similarly, in the case of #10 for Robert at Ruta, a lack of confidence in the performance of the firm, led to bootstrapping. Here, the VCs saw the firm going in a different direction in the future than the USO manager indicating that the conflict was purely on the direction of the firm's strategy. This sort of

conflict occurred in exactly the same fashion in the cases of #12 (USO Pulsatilla) and #17 (USO Indicum) too, were the strategies in mind for the firm fundamentally differed between the VC and the USO's CEOs. Finally, in the case of #21 in Hamamelis, the mentioned management conflict led to a deadlock because the two sides that had formed, could not agree which route to take. What is found here is that all of these conflicts not only occurred around the level of involvement in the strategic decision-making but more on the direction to take. Hence it is suggested to introduce a more fine-grained extension to the typology here, based on Yitshaki's (2008) work. The discussion of the integration of this novel insight will take place in the discussion chapter.

However, the data also features several accounts of conflicts that do not fit in any of the three dimensions above because of different conflict causes or constellations. These are presented in the following.

One observation made in the data was that the conflict #20, experienced by Idal in Indicum, appears to be a mixture of a contractual and contextual conflict. Idal who retold the conflict complained that he is legally prohibited from making any statements on the valuation of his firm to potential buyers or funders because of his heterogeneous VC base. Meanwhile this hinders him in operating the business efficiently since he cannot attract further investors or potential buyers which means his exit strategy becomes less feasible. What this conflict suggests is that the lines between the dimensions can be blurred and a case can be situated in between two dimensions. Conflict #21 at Hamamelis provides further support to this suggestion. This conflict was a management conflict leading to a deadlock between one group of VCs, who had teamed up with one of the CEOs, and another group of VCs, who had teamed up with the other CEO. Both sides could not agree which route to take, which indicates it fits in the discussed contextual dimension, however, the conflict then led to a missed milestone, leading to a new valuation of the firm and the signing of a new contract, which in turn seems to touch on the contractual dimension. Therefore, it is concluded that a distinction between the dimensions seems to hold up for the majority of studied conflicts, but the lines between the dimensions could be semi-permeable. In her work, Yitshaki (2008) did not make that claim and the above finding suggests a potential extension might be useful, as will be discussed in the discussion chapter.

Another observation made in the data is that several conflicts could not be seen to resonate with the above triad of dimensions since they did not occur between the management and the VCs, but rather in between VCs or between VCs and investors. Those conflicts involved no active role by the USOs' management and occurred entirely outside of the USOs' 'sphere'. Those conflicts were seen to be #6 (for York at Yage), #11 (for Peter at Pulsatilla) and #22 (for Idal at Indicum). In the case of the conflict #6, one VC did not wish to work together with another VC because of a lack of trust and unsatisfying interaction in the past. The CEO played no active role in this conflict, but nevertheless, as a result, could not approach the other VC for funding without jeopardizing the relationship with the current funder. In the case of the conflict #11, the VCs and the investors on board of the firm had differing attitudes towards risk and thereby put the CEO in a difficult situation who had to meet both groups' demands to a certain extent. The CEO however played no active role in creating this conflict but had to deal with the consequences and was caught "stuck in the middle". Finally, in the case of the conflict #22, the VC managers in this USO did not want to be blamed by their VC for influencing a management decision, hence they remained silent in board meetings. As a consequence, the CEO did not receive any strategic input and had to suffer from a tension that existed between the VC firms and their VC managers at the Board of Directors in the USO. What these conflicts share is that the source of the conflict seems to lie outside the USOs' realm of control. This observation and distinction had not been made in the study of Yitshaki (2008) and the discussion chapter will look at how this novel finding can enrich the existing literature.

### 5.2.4 Conflict resolutions

The findings presented in this section are that some conflict scenarios could be identified in the data that occurred within a dyad and seem to resonate with the work by Zou et al. (2016), while a great amount of conflicts was perceived to have occurred in a multi-party constellation and different resolution strategies were chosen for the different parties. Interestingly, numerous conflict accounts indicate that the resolution strategy chosen most was collaboration. Also, it could be found that the introduction of another party would not necessarily lead to a more complex conflict situation but could act as a resolution.

As discussed in the literature review, Zou et al. (2016) categorised conflict strategies into the categories ‘competition’, ‘collaboration’, ‘avoidance’ and ‘accommodation’. According to Zou et al. (2016), resolutions are implied to be shared between two parties and contain varying elements of positive or negative outcomes for the management (for a visual representation see Figure 15). In this study, the conflict resolution strategies obviously have been perceived by the CEO, hence they are judged on and evaluated by the participants. Therefore, an interpretation of a positive or negative outcome in the broadest sense is made by seeing it from the participants’ perspective.

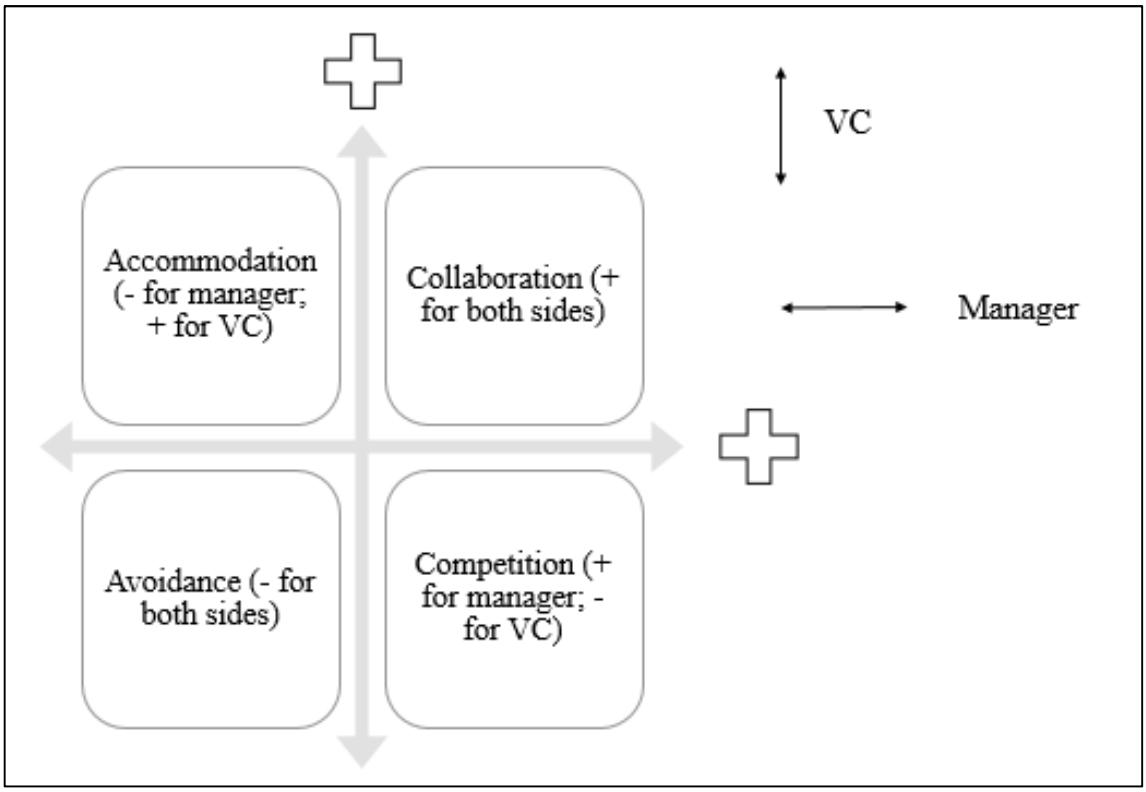


**Figure 15 Visual representation of conflict resolution strategies**

In the data the conflict #1 for Walter at Whitlavia was identified as being a conflict solved via collaboration. The VC backed the CEO in his conflict with the staff to change the organisation, hence collaboration took place between the VC and CEO, since both parties gained from this approach. Similarly, the conflict #14 for Albert at Aconite seems to have followed the idea of a collaborative conflict resolution. The CEO and VC could not agree on whether or not a milestone had been reached. Therefore, Albert produced more information, and the VC ultimately followed his argumentation. Given both parties benefited from this strategy, collaboration took place. Yet another example of a collaborative conflict resolution seems to have occurred in the case of conflict #16 for

Eva at Echinacea, where the VC was unsatisfied with the CEO's profit projections, but ultimately agreed with the CEO, since steeper projections would have implied a need for greater sums of funding. By collaborating, both parties could avoid either spending more, or putting further effort in the projections. Based on these accounts it is concluded that the collaborative conflict resolution as outlined by Zou et al. (2016) resonates with the findings made in this data. Furthermore, other conflict accounts could be identified in the data that seem to match the other resolution strategies by the authors. In the case of conflict #15 the CEO of Baptisia, Brian, was annoyed that the VC did not make a commitment to further funding but instead asked for more and more information to delay the moment he would need to make a definite decision. Therefore, the CEO sent a letter to the VC, presenting the VC with a deadline on their decision for follow-on funding. Ultimately, the VC left the firm and thereby lost potential profits, while the CEO secured planning safety, for which overlap with the resolution strategy 'competition' is seen. Another conflict case was seen to fit with the resolution strategy of accommodation: In the case of #13 for York at Yage the VC's HQ pressed for an exit, and York, the CEO, ultimately had to give in, and exit the firm, so the VC HQ could make its money back. While the VC HQ could achieve its goals, the CEO had to exit, despite having had preferred to take the firm further. Therefore it appears as if the CEO had to accommodate and "make sacrifices" (Zou et al., 2016, p.5). Finally, York retold a conflict that indicated an avoidance resolution had taken place: In the case of #6 at Yage, he could not approach other investors for funding because the VC would refuse to work with that investor. The manager therefore could not secure further funding, and the VC lost out on the chance to spread the risk, which appears to be a situation in which both parties lose out. Due to the observation that Zou et al.'s (2016) conflict resolution strategies seem to fit to the conflict scenarios within dyads as found in the data leads to the suggestion that this framework is suitable to study dyadic conflicts between VCs and CEOs.

However, numerous accounts of conflicts could be identified in the data that involved several parties and several, partly differing resolution strategies for the different parties involved. For instance, in the conflict case #2 for Walter at Whitlavia, the VC was bought by another VC leading to "some organisational changes to the company, internally" resulting in uncertainties in regard to the funding situation of the USO. In this scenario, the VC manager collaborated with the CEO to sort out those uncertainties with the VC firm, which also collaborated to sort out the new situation it had found itself in. The VC manager, as a third party, proved to be an ally for the management, which ultimately led

to the solution of the conflict by choosing a collaborative approach with the VC manager as well as with the VC firm. Hence in this case a collaborative approach was chosen twice. Choosing the same conflict resolution style did not turn out to be the case with all participants however. In the case of #21 at Hamamelis, it seemed the CEO Hadrian chose an accommodation strategy with one party while choosing a competition strategy with another. In this scenario, a management conflict had occurred which led to the VCs splitting into two groups, one supporting one CEO the other supporting the other CEO. This in turn led to a decision-making deadlock and a missed milestone as a knock-on effect. This conflict was solved by the drafting of a new contract, which included a revised distribution of equity, resulting in a lower share for the managers. Therefore, the managers had to accommodate with one of the VCs' wishes and demands (which fits with the accommodation strategy). As for the other VC, that one exited the firm and while that meant a financial loss for the VC, it meant that the deadlock situation in the firm could be solved and the CEO could regain control. The regained control seemed to be a positive outcome for the CEO while the resulting financial loss for the VC seems negative for him, hence fitting to the 'competition' strategy. Furthermore, cases could be found in the data that indicate that a collaboration strategy was only chosen with one VC while the other was treated differently. For example, in the case of #10 (USO Ruta), it seemed that a collaboration approach and a competition approach was chosen. As the participant said: "It was two separate groups of VCs. There was the ones […] that just weren't sure. And then there were the existing investors, who you know, relatively small stake, but have supported us all the way through. And they said, "Right well, if [VC1] don't want it, we do" and they took it. […] our existing investors took it and you know [VC1] are still involved, but to a much lesser extent, they got diluted out massively, so you know, that's their loss." In this case it is argued that collaboration took place with VC2 while VC1 got diluted out and "lost", while the CEO "gained", hence using a competition strategy for himself. Based on these accounts it seems appropriate to argue that Zou et al.'s (2016) resolution strategies offer an applicable and useful taxonomy, however, as the findings show, several differing resolution strategies can be chosen at the same point of time in the same conflict scenario. The implications of this finding in respect to Zou et al.'s (2016) framework and findings are discussed in detail in the discussion chapter.

Furthermore, it was interesting to find that out of the different conflict resolution strategies that could have been chosen with the different conflict parties, collaboration with one or even both parties turned out to be the most frequent one. For instance, in the

case of #3 for Vernon at Valeriana, where he was faced with disagreements among the investors over the strategy for the firm, but built a consensus with them. Also, in the case of #4 (USO Ruta) the CEO had to negotiate with the existing shareholder base and a new investor and had to find a consensus to bring that new investor on board. Or the conflict case #12 where the CEO Peter of Pulsatilla and one side of the shareholders collaborated in the sense that they both agreed that a fixed timescale for an exit was not desirable. The other VC however initially wanted to exit at a certain point of time, and only later agreed with the other parties. Still, that VC eventually collaborated too. This finding resonates with the findings made by Cable and Shane (1997) and De Clercq and Sapienza (2001) in the sense that they both showed that cooperation is a sensible choice, may it be because of trust or fear of retaliation. However, these two studies assumed a dyadic relationship but in this case multiple parties are involved in the conflict. To accurately reflect the underlying logic for the dominance of cooperation as the conflict resolution style in multi-party scenarios, it was found that social dilemma theory (Zeng and Chen, 2003) could explain this phenomenon since the establishment of a USO with founders and several investors resonates with the idea of a collective good of which all parties would benefit if successful and all parties would eventually lose when conflicts escalated and could not be solved. How this finding might contribute to the VC literature and how social dilemma theory could be a useful theoretical explanation for this finding is discussed in the next chapter.

Moreover, two cases of conflicts could be identified in the data that showed how a conflict could be solved, rather than provoked, by bringing in a third party. Usually, a third party was the reason for a conflict in the first place, but this did not apply to the conflict situation in the conflict types #18 at Echinacea and #19 at Indicum. In the case of the conflict #18 at Echinacea, the management was made up of two CEOs of which one CEO wanted to renegotiate his compensation. In this case the VC volunteered to negotiate on behalf of the CEO Eva, who felt that the negotiated issue was too sensitive for her, given her work relationship with the other CEO as her colleague. She said that this had the advantage that she did not have to do the rather uncomfortable negotiation herself, while the VC acted in her interest since he knew that the performance of the firm is dependent on the operative success of the firm. The participant termed this “form of support” in conflict situations a “good guy, bad guy” strategy, presumably in the style of a ‘good cop, bad cop strategy’, as known from several Hollywood movies. In a similar fashion, the participant recalled a conflict where a conflict occurred around negotiations of a contract. The participant said

that in negotiations for licenses or compensations, she would use the VC as an entity that needs to agree to the deal for it to become an agreement. Therefore, she would for example say that in some instances she would claim that certain specifics of a proposed deal by the party she negotiates with are a ‘no-go’ for her investor. This way she could solve situations in which she was ‘in doubt’ and generate freedom for her to start negotiating again. Hence, while the VC was not even present at the negotiations, the participant used the VC to argue that certain deals could not be made. Similarly, in the case of the conflict #19 for Idal at Indicum, the conflict occurred around the projections of future profit. The conflict the participant perceived happened in between the management team, the VC and the legislator. Idal said that on the one hand he felt pressure by the VCs to create ‘enormous’ financial projections and to predict ‘gigantic’ growth. But on the other hand, he knew that he had to be realistic towards the legislator. The participant described this conflict between the VCs’ and the legislator’s requirements as a ‘constant tightrope walk’. He said that the VCs accused the management of ‘sand-bagging’ by setting the goals for future achievements as too low. This tension might also have been perceived as even more intense by the participant since he had previously worked in a big corporation, where underperformance by a few percent to the a priori set goals led to talks about restructuring. But according to Idal, it is a characteristic of the ‘system’ the VC and his firm Indicum are in, that the firm will end up with lower actual results than the ones forecasted in the plans. To solve this problem, Idal recalled that his firm had established an external advisory board, that assessed and confirmed the management’s financial projections. According to the participant, the advisory board is composed of one exit-experienced person, one person with executive manager experience and one analyst. None of the members of the board have shares in the firm or any involvement, and they were chosen by the VC and the firm together. The downside of this approach though was reported by the participant as being the costs coming with the maintenance of the advisory board. What these two situations have in common, is that a third party proved to be the solution rather than the source of conflict. What these two situations also have in common is that the third party was involved proactively. This finding could not be identified elsewhere in the literature and is novel and interesting in the sense that it could be considered whether a triangle situation could be perceived as positive and constructive when created proactively. The implications of this finding will be discussed in the next chapter.

### 5.2.5 Summary

This section on the theme two on dual and multi-party conflicts and resolution strategies, presented the finding that few conflicts occurred in dyads while the majority appear to have involved several conflict parties. The section then went on to show that the findings suggest that the nature of conflicts can be cognitive as well as affective and that conflicts were perceived as both negative and positive, depending on the situation at hand. In respect to the conflicts' dimensions several cases suggest that the typology of Yitshaki (2008) resonates with some of the cases in the data, however there also are cases where an extension might be useful. Finally, it was shown that some conflicts' resolutions resonate with Zou et al.'s (2016) conflict resolution strategies, however only those that occurred in dyads. The majority of the conflict scenarios in the data occurred in multi-party scenarios and the data suggests that different resolution strategies were chosen for different parties within the same conflict scenario. Interestingly, the majority of conflicts were solved via collaboration for which a possible explanation is discussed in the next chapter.

## 5.3 Theme three: Perceived value-adding activities

This theme focuses on the findings in the data in respect to value-adding activities by the VCs as identified and communicated by the participating CEOs of the various USOs. The raw data on comments on value-adding activities was very extensive and a lot of first nodes and grouped first order codes emerged. These were then analysed under the light of the conceptual framework leading to second order codes, which in turn resulted in the aggregated dimensions. Due to the extensive amounts of data it was decided to choose representative examples for the presentation of the findings. As a result of the first order codes, 16 codes emerged, each representing a distinct value-adding activity of VCs as identified by the participants. These value-adding activities were (1) accountancy and controlling, (2) business development, (3) business plan support, (4) confidence for other investors, (5), direct financial support, (6) exit support, (7) human resources, (8) installing a CEO, (9) knowledge transfer, (10) legal support, (11) marketing, (12) networks, with the four forms contact to potential buyers, contact to other start-up firms, contact to suppliers or staff and introduction to further follow-on investors. In addition, the participants mentioned (13) operational support, (14) the provision of a coach, (15) strategic support and (16) training.

One form of value-adding activity that featured heavily in the first nodes and was mentioned by nearly all participants are networks. Here comments could be categorised into four types of networking: (1) contacts to other start-up firms, (2) contact to potential buyers, (3) contact to suppliers and (4) introductions to other investors, sometimes leading to follow-on funding. The last type was the one mentioned most by the participants and was appreciated in particular. As one participant said: “so we did a further fundraising which closed in April of last year and we actually engaged [VC] to work on that really so we didn’t want to pay a classic you know third party to do quite expensive fundraising because that was going to burn too much cash but we knew we wouldn’t be able to do all the running around ourselves so we had to engage someone from one of their subsidiaries to do that activity which involved bringing in, as it happened, one further significant major shareholder. There were a couple of minor shareholders who came in as well but there was one big new name which put in a seven-figure number which was important in that fundraising. So they were good in that, so they were able to do that cost effectively for us and we had a successful outcome.”. Other participants also mentioned that the VC

managers that sat at their boards of directors knew other VC managers and VC firms and actively promoted the USO or established contacts when required, which as they said helped them enormously. Several of the participants who were being funded by one particular VC also stressed that a "family day" (an event organised by the VC to bring together the various portfolio firms, potential customers and other VCs) offers the opportunity to meet all sorts of potential partners, among which follow-on funders. When looking at different subsets in the data, it also appeared as if firms with less than the average rounds of funding, networks and introductions to further investors matter more than for firms above the average rounds of funds. This difference between the two sub-groups of the dataset is logical, given the younger firms have to keep raising funds, and need contacts to do so. This observation however strengthens the observation that time has an impact on the relationship between the VCs and USOs (as examined in section 5.1). Also, for healthcare firms, it appeared as if networks and an introduction to further investors matter more than for healthcare firms, presumably because greater amounts of funding are necessary for bio-tech firms. These accounts are seen to resonate with the findings made by Colombo et al. (2010) who stressed that value-adding is facilitated by extensive networks. Also, this finding in the data seems to fit the category of "outreach" as defined by Large and Muegge (2008) as "Providing active promotion, introductions, negotiations, winning deals" (p. 41) for their value-adding activities typology. Hence this study's data indicates that the value-adding category of outreach is an appropriate one. Furthermore, further data from a different node from the raw data is seen to fit with the category of outreach too. A few participants mentioned that the VCs provide marketing support, an area of support also identified by Lim and Cu (2012). One participant acknowledged that the VC provided a coach, who then supported the firm in their marketing efforts and another one stressed that the VC organized the referred to 'family days'. This form of marketing as such was mentioned separately as a value-adding activity by the participants, indicating that they perceive it to be distinct from the above networks. Since the direction of their interests is outwards too, it is concluded that this form of perceived value-adding activity also aligns with the category of outreach as defined by Large and Muegge (2008).

Another very frequently mentioned form of value-adding activity is strategic support, which nearly all participants mentioned and appreciated. Mostly, this strategic support plays out on the level of board of directors where VCs provide input. As one participant said "we have some experienced industry experts on our board of directors […] it's a

discussion on the market environment where certain parts of the world is moving in terms of the specific therapeutic areas that we're focusing on, how our product lines fit in, how the competition is and it's looking at all those things and then saying okay the next milestones etc for us as a business are x, y and z and we have a discussion around that.". Another participant preferred to call it an "active input", saying "They have an active input into the direction of the company.[…] they understood the market environment, understood med-tech companies, so they were very helpful in their diligence process, asking questions of the business that made up as management think, actually.". Most comments in respect to strategic input move along those lines and usually centre around discussions on the market, competitors, timelines and follow-on funding. This form of support was frequently mentioned by the participants and it was appreciated by the participants to "get input" or "kick around ideas". Other comments also stressed the developmental side of this form of input, which was mentioned by about every third participant. They said that "helping to build that company from the board upwards, or board downwards rather, has been key" and that VCs "have really been helpful in terms of building the company" or that "they offered help in business analysis because you know we have limited resources so they recognise that and you know we need a bit of additional resource in some areas then they will provide that, be it a business analysis exercise.". This finding resonates with several other studies in the field of VC research (see for example Sætre, 2003; Berg-Utby, S⊘rheim and Widding, 2007; Luukkonen, Deschryvere and Bertoni, 2013) and is also seen to fit in the category of "strategizing", defined as "Developing business concept/strategies, doing strategic planning, keeping focus on longer-term strategic direction" (p. 42) by Large and Muegge (2008). Also, looking at subsets in the data, it could be noted that for British participants, the business development activity was perceived as a value-adding activity by VCs, while it was not for German participants. This echoes what Proksch et al. (2017) found in their study of German VC documentation on value-adding activities, namely that VCs provide little operational support. Going back to Large and Muegge's (2008) typology, the category of 'strategizing' of the typology is found to be useful to study perceptions of value-adding activities.

Business plan support was mentioned by a few participants, who stated that "they gave us input you know they gave us useful input on the proposition, what the business could do which helped us then provide the business plan and came with a better story." and other participants mentioned that based on the VC's input the business plan was refined

or even re-worked as in one case. Still, this value-adding activity, while distinct from the other activities being discussed here, was only perceived by a few participants. Interestingly, this form of value-adding activity was not included in Large and Muegge's (2008) typology. One reason for this might be that this value-adding activity technically already takes place prior to the formal relationship, which would explain why it has not been considered by Large and Muegge (2008) when constructing their typology. But since only few participants explicitly mentioned this form of value-adding activity it can be assumed that it is of low importance to the USOs. Nevertheless, the fact that some participants mentioned business plan support, despite it being an activity that already takes place prior to the relationship, indicates that value-adding activities change over time, and that there might be value in seeing them from a time perspective while also considering it a value-adding activity by VCs who seem to provide value already before the "formal" commencement of a relationship. The implications of this novel finding will be discussed in the discussion chapter.

Another collection of comments revolved around confidence for other investors as a value-adding activity by VCs who thereby help to attract other investors. This was mentioned by about a third of the participants. As one participant said: "it's easier to find another investor when you've got two very supportive investors already in there who've already said they'll put money in. So the third investor or fourth investor is actually not that difficult when you've got cornerstone investments in from the existing investors, because they're feeling much more comfortable at it." And another participant described it as: "having the VCs on board or the institutions makes all the other investment from private individuals just that bit easier because there's a sort of crowd mentality of, well if a big institution's invested that must be safe for us. Trying to do it solely as individuals would be quite tough I think." Another participant referred to this value-adding activity as a "quality stamp", which allows to attract further investment. Another participant added to this that depending on the reputation of the VC, this effect is even reinforced, since the VC is seen to be of high quality in the industry. This finding resonates with several studies in the field of VC research (see Torres and Murray, 2003; Maula, Autio and Murray, 2005) and is seen to fit into the category of legitimation of the value-adding typology by Large and Muegge (2008) which is described as "Providing credibility, reputation, legitimation, validation, comfort, certification" (p. 41). Interestingly, Berg-Utby, S∅rheim and Widding (2007) saw VCs to provide certification and higher valuation to take place at the moment of an IPO but this finding suggests that this form

of value-adding activity also occurs at a sooner point of time in a USO's life cycle. Therefore, the category of legitimation seems appropriate to look at perceptions of value-adding activities.

Several participants also mentioned legal support as a form of value-adding activity, ranging from contracts with employees to extensive legal work during processes of going public. As one participant said: "so when we listed the company, there was a massive amount of legal work and due diligence work to do and she gave us all that time and effort for free. That was worth a bunch of money. So that was really good, actually." Another participant stressed that the VC helped substantially with the intellectual property rights and ensuring that the spinning out process from the university was done in a legally sound way. This participant mentioned that a number of special requirements have to be fulfilled to transfer intellectual property and be able to use it commercially at a later point. This finding is also reflected in the study of Flynn and Forman (2001) who found VCs to have specialists on legal issues in their networks. Furthermore, this finding appears to fit in the category 'mandating' as defined by Large and Muegge (2008) in their typology of value-adding activities.

Also, a few participants mentioned that the VC facilitated knowledge transfer from other firms or from previous employees and took an active role in the transfer. As one participant said: "there was a lot of knowledge transfer to do from them to me and they were very good about that, gave the time that was required and continue to be available as and when required." While this sort of activity is distinct from others, there were only few participants mentioning this sort of value-adding activity. Interestingly, this form of value-adding activity was not included in the value-adding typology by Large and Muegge (2008). One reason for this might be that knowledge transfer is distinct to USOs who rely on 'knowledge'. However, even for the interviewed USOs, 'knowledge transfer' seemed to be a value-adding activity seldom mentioned hence maybe of low priority. Nevertheless this form of interaction has also once been mentioned by De Clercq and Sapienza (2001) who studied VC-CEO interaction and meanwhile this study's finding seems to suggest that it is of certain value to CEOs of USOs in the Life Science industry. Therefore it is suggested that this form of value-adding activity has the potential to be a useful extension to Large and Muegge's (2008) typology. This will be discussed in more detail in the discussion chapter.

Next, accountancy and controlling as a form of value-adding was mentioned a few times by participants of which one said “they [the VC] run a back-office support facility which we use so we don’t employ any accountants or admin staff as a result of that” and another participant mentioned that due to her background in a Life Science area she was new to the field of business and the VC supported the firm in the area of controlling. The accounts of the node accountancy and controlling were seen to resonate with the item “consulting” from the value-adding activities typology by Large and Muegge (2008) defined as “Providing business intelligence, contacts, expertise, competence, teach business skills” (p. 43) and this finding also resonates with several other studies in the field (see Gabrielsson and Huse, 2002; Busenitz, Fiet and Moesel, 2004). This suggests that this category of the value-adding typology can be used to study perceptions of VCs’ value-adding activities.

Another form of value-adding activity as perceived by the participants was identified in direct financial support, which was mentioned in an overwhelming amount of data collection interviews. The participants stated that the financial support was “important” if not “critical” or “vital” to the firm and some participants even went further to ask “what is there despite the money?”. This leads to assume that the financial support is a form of direct value-adding from VCs, much noticed and much appreciated from the VCs. As one participant said, without the funding there had not been a firm to begin with and therefore the role of VCs is a very important one in that respect. This finding was seen to resonate with the findings by Berg-Utby, S⊘rheim and Widding (2007) that direct investments are a crucial element of VCs’ work. Furthermore, several other comments could be identified in the data that fit with another finding by Berg-Utby, S⊘rheim and Widding (2007), namely that VCs provide assistance in the exit process. In the data, exit support was mentioned by a few participants, who appreciated that their VCs were “very experienced in the exit process because clearly they’ve got lots of experience of selling businesses which was helpful in negotiating a good deal” and that this sort of expertise added value in the form of going public or selling the firm at a good price. While this form of value-adding is distinct from other forms discussed here, only few participants considered this form worth noting or perceiving it a value-adding activity to begin with. Nevertheless, it suggests that the financial category of the conceptual framework, is useful to study VC-CEO interaction in regard to value-adding activities.

Next, some comments indicated that VCs provide operational support as a form of value-adding. This form of value-adding activity however is a special case since a few participants were grateful for the operational support, while others mentioned a fear of a too extensive interference and several of the participants did not consider it to be a value-adding activity by the VCs but rather 'an intrusion'. Several participants stressed that they would not allow the VCs to take too active a role, or that the VCs wanted to be informed about every detail and want to have information about the operations of the business, leading to discomfort on the managers' side. One participant mentioned that the VC got involved in the operations in the early days of the firm, but the participant "tried to push it away", since he did not see the VC's role to provide operational support. Another participant also stressed that, while he had the opportunity to ask his contact person at the VC firm for operational support, the contact person did not get involved proactively in the operations, which he saw to be a big difference. In respect to the literature and the conceptual framework, these comments are seen to fit with the category of 'operating', which resembles "Providing monitoring, controlling, decision making, compensation and incentives, appraisals, discipline, day-to-day hands-on management, professionalization, managing crises and problems" (p. 43) as defined by Large and Muegge (2008). What could not be found in the literature is the observation in the data that operational support can also be perceived as an intrusion. The implications of this finding are discussed in the next chapter.

Furthermore, a great amount of participants mentioned some sort of human resources involvement by the VC, adding value to the USOs. In one group of comments a few participants mentioned that VCs helped them to find skilled employees or received good rates with head-hunters, all facilitated by the VCs. As one participant said: "[The VC] found me a sales guy that could work part time and he turns out to be a [unclear] with sales experience, sales director experience who was looking for part time work and was just right place right time, but came through, in effect, the [VC] network, yes.". Some more participants mentioned that the VC helped to install a CEO, which was perceived as being a value-adding activity. One participant said: "the investors or the shareholders then recruited me and started up the commercial team so that is how it worked with [USO] and then ever since I've joined they've been on the board of directors helping take the business forward strategically." And another said "they, essentially, founded the company, through their own investment, and then effectively brought me on board, we've grown the company into a really good position.". While this sort of intervention by the VCs is seen

as positive by the interviewed participants it needs to be taken into account that the participants speak about themselves in these cases and therefore it can be expected that their assessment of the VC's involvement in that respect will be favourable. The perception that this formed a positive involvement of the VC still remains though and also resonates with the findings made by several authors in the field (Gomez-Mejia, Balkin and Welbourne, 1990; Flynn and Forman, 2001; Proksch et al., 2017). Thirdly, another form of a human resources value-adding activity by VCs was mentioned by a few participants as the provision of a coach. This coach, or consultant as it was called by one participant, helped with the development of the business and with the preparation of an application for funding in one case. Coaches were therefore assumed to be a distinct form of value-adding activity. All of the above comments are seen to resonate with the category of 'recruiting' of Large and Muegge's (2008) typology, which is described as "Advising, doing reference checks, recruiting, negotiation, assessment, replacement" (p. 42). Hence it appears that that category might be useful to look at VC value-adding activities too.

Finally, another form of a value-adding activity was mentioned by one participant as formal training, a form of support that had not been mentioned in any other context. The participant, who recalled such an event, said "[VC] also put together a kind of like a leadership programme for their chief execs so a number of sort of half day sessions to work through various areas of their report into running a start-up, a spin out. So again, that was that's been a pretty useful programme.". Since having a formalised training programme was a form of support distinct from the other value-adding activities, a separate node was created and it was found that this form of value-adding activity resonates with Large and Muegge's (2008) understanding of mentoring, which they see to be "Providing mentorship, advice, coaching, guidance, facilitation, feedback, motivation, patience, moral support, friendship; acting as confidant, sounding board, implanting entrepreneurial orientation" (p. 42). It is therefore concluded, that this category of value-adding activity should also form part of a typology of value-adding activities.

Looking at the data from a different angle, namely the frequency at which certain value-adding activities were mentioned, the top three most-mentioned value-adding activities are: (1) Direct financial support, (2) networks that allow to gain further funds, and (3) strategic support. This could indicate that those three value-add activities are what managers of USOs consider most essential from their VCs, and in turn could mean that

the managers care most about financial stability for their firms and some guidance and scrutiny from the VCs, without them interfering too extensively.

To conclude this section, it is considered important to stress that, while a number of different value-adding activities have been mentioned by the participants which were discussed in this section, only three were referred to with such an overwhelming consent: Those are the financial support, the networks for future funding and the strategic support. Apart from that, it was found that the conceptual framework, based on the works of Berg-Utby, S⊘rheim and Widding, (2007) and Large and Muegge, (2008) seems to receive support from the findings. What remains an open question is the role of surrogate entrepreneurs. The observation that several British participants reported that the VC installed a CEO, while none of the German participants mentioned something alike, this leads to the question whether surrogate entrepreneurs as a form of VC intervention might be more prominent in the UK.

Apart from that, this theme offered some insights on how important different value-adding activities are for portfolio firms and what the core activities are of VCs as perceived by CEOs of USOs, limited to the participants of this study.

## 5.4 Conclusion

This chapter presented the findings made in the data in three key themes, namely the impact of time on relationship with VCs, dual and multi-party conflicts and resolution strategies and thirdly perceived value-adding activities. The first theme showed that several of the British participants perceived their relationship to be more positive at the beginning in comparison to a later point. This indication of a downward trend was termed “honeymoon” pattern and stands in contrast to a “long-term relationship” pattern which could be observed with several of the German participants, who perceived their relationship to be more positive at a later point of time. Also, that theme showed that several comments from a number of participants indicate that participants prefer to use moments of funding as a cognitive way of a timeline approach instead of calendar years or months to talk about the development of their firms over time. The second theme then showed that the majority of conflicts as perceived by the participants seem to appear in scenarios with more than one VC. Furthermore, the data points towards dimensions of

conflicts being more nuanced than initially assumed as part of the conceptual framework. In addition, the findings suggest that different conflict resolution strategies are chosen with different VCs in the same conflict situation, however, the most relied on conflict resolution strategy was collaboration with one or even all conflict parties. An explanation for this finding is discussed in the next chapter and so are the implications of several parties being involved in one conflict for the conceptual framework. Lastly, the third theme showed that participants seem to acknowledge several forms of value-adding activities by VCs, however, the three that appear to receive the most appreciation are the financial support, networks to follow-on investors and strategic support. Also, in more general terms, support for all different value-add categories as defined by Large and Muegge (2008) could be found in the data.

# 6 Discussion

## 6.1 Introduction

This study set out to answer three research questions. (1) What do the managers of USOs in the Life Science industry perceive to be added value from their VCs and what conflicts occur with them? (1.2) How does time relate to the perceptions of added value and conflicts? (2) How are the perceived conflicts between Life Science USOs' managers and their VCs solved? (3) And do the perceptions of added values and conflicts differ in between Germany and the UK?

This chapter considers the answers generated by the study and how this enriches the current academic literature. It answers the part on value-adding activities of the first research question in the first section, the sub-question to the first research question on the impact of time in the second section and the second research question on how conflicts are solved as well as the second part of the first research question, what conflicts occurred, in the third section. The discussion regarding question three on the national differences is woven throughout all three sections.

## 6.2 Value-adding activities

When looking at the literature on value-adding activities, this study's findings suggest that Large and Muegge's (2008) typology can be extended by incorporating two other activities: (1) knowledge transfer, and (2) business plan support. As mentioned earlier however, knowledge transfer was only mentioned a few times, and business plan support usually takes place in advance to the formal start of the VC-CEO relationship, suggesting Large and Muegge's (2008) typology already covers the majority of value-adding activities. Nevertheless, such an extension could raise awareness for such activities. This study also corresponds to Knockaert et al.'s (2006) findings. Those authors focused on a sub-group of VCs in their study, namely high-tech VCs. High-tech VCs also focus on academic research, and therefore are comparable to VCs for USOs. This study was not included in Large and Muegge's (2008) review, and it found that that three value-adding items are of particular importance for high tech VCs, namely (1) the negotiation of intellectual property rights, (2) the recruitment of the head of Research and Development and (3) the forming of an advisory board. None of those were mentioned by participants of this study and one explanation for this might be that high-tech VCs and VCs for USOs are distinct nevertheless, and that some of the activities technology transfer offices at universities would take care of, have to be taken care of by high tech VCs, whose portfolio firms do not have the same institutional background as USOs. Instead, the findings of this study indicate that the value-adding activities in the form of financial support, providing networks for future funding and the strategic support are most relevant to the CEOs of USOs. This study also addresses one key finding by Pinch and Sunley (2009). They interviewed VCs, entrepreneurs and technology transfer officers in the Southampton biotech and photonics cluster and found that entrepreneurs mentioned that the contacts VCs claim to have are not very useful. Similarly, Proksch et al. (2017) concluded from various VC documents that they only make moderate use of their networks. In contrast, this study could identify comments by participants that suggest the opposite, positioning the networks that VCs hold as one of the most relevant activities as perceived by the interviewed CEOs. This research also offers differing views on findings by Flynn and Forman (2001), who concluded that early stage firms have a greater need for the negotiation of legal and governmental issues and prefer personal discussion rather than formalised information-seeking process. This is at least what the interviewed VCs said in their study, since entrepreneurs were not part of the data collection. The findings of this

study on the other hand, present a different view. Evidently, as mentioned already by several other authors, the perspective of the entrepreneurs is still underrepresented in the literature, and the perceptions of the relationships can differ widely (Zacharakis and Meyer, 1998; Zacharakis, Erikson and George, 2010; Zheng, 2011). Moreover, while Gabrielsson and Huse (2002) found operational support to be a form of value-adding activity, the findings of this study indicate that operational support is perceived with mixed feelings and occasionally is perceived as a form of intrusion. Lastly, the findings of this thesis also challenge the finding by Busenitz, Fiet and Moesel (2004), that VCs do not add value by providing strategic information. The interviewed managers of USOs mentioned strategic input as being appreciated in numerous cases. These findings therefore suggest that USOs are a category of entrepreneurial firm with distinct needs and perceptions.

To conclude, it can be said that this study adds new insights to several studies on VCs' value-adding activities and most notably could identify two potential extensions to the added value typology by Large and Muegge (2008) which itself is based on a meta-analysis of the research in this field. The two potential extensions could potentially tailor their typology more to the USO context.

## 6.3 The impact of time on the perceptions of the relationship

The findings chapter highlighted two main observations in theme one, one indicating that different patterns of positive perceptions of VCs exist in the two studied countries and the other that funding rounds were used by several participants as a timeline approach, questioning how useful calendar year time units are to study relationships with VCs over time.

As the literature review showed, no research is known or could be identified that looked at the impact of time on relationships between VCs and USOs in particular. Meanwhile the findings indicated that the British participants perceive their relationship to be more positive at the beginning of the relationship in comparison to a later point of time, while German participants seem to have a less positive perception of their VCs at first but feel more positive about them later on. These findings along with the sub-themes presented in the findings chapter are seen to be the first steps towards an understanding of the impact

of time in the area of VC research for the particular case of USOs. Furthermore, the findings of this study also add knowledge and contribute to related research conducted in the wider field of VC research. Flynn and Forman (2001), focused on the impact of life-cycle stages and investigated the impact of the variables demography, environment, information processing, structure and decision-making on performance of VC-backed firms over the course of the firms' life cycles. The authors only distinguished between early- and late stage, defining late stage as mezzanine capital and bridge investment. Therefore, limited conclusions about added-value from VCs over time can be drawn in respect to early stage firms and furthermore their sample was based on surveys from VCs only. While the authors showed that differences between the early and late stage VCs exist, this seems to be a very crude distinction. This study only focused on early stage firms and shows that, within the early stage firms, there are patterns in respect to the perception of the relationship over time. In addition, while Flynn and Forman (2001) looked at a number of variables within one national context, this study can add to it, that another variable could be national context or nationality, since, as the findings chapter demonstrated, patterns of perceptions of relationships over time vary between the studied countries. This said, the knowledge gained with this study could also provide an argument against generalisations that go beyond national borders, since the pattern identified in the participants' comments from this study varied in between the studied countries.

Furthermore, when looking at the impact of time on the firms, research by both Vohora, Wright and Lockett (2004) and Vanaelst et al. (2006) on life-cycle stages found that even though the firm has to pass through the previous stage to get to the next one, this process of passing is an iterative, non-linear process. Therefore, they conclude that life-cycle stages have to be considered carefully. This thesis adds to their observation that there is indication of a pattern of perceptions of relationships at least in respect to the beginning of a relationship with a VC, hence some degree of linearity seems to occur.

Finally, this thesis adds to the existing stock of knowledge on the impact of time on VC-CEO relationships that several participants of this study commented in a way that allowed to suggest that rounds of funding might be a timeline approach preferred over calendar year units such as years, months or weeks, to talk about the own firm. This insight is a contribution to the entire field of VC research since no prior study could be identified suggesting this approach or mentioning the existence of such a preference by their participants. This contribution then adds to knowledge in the field on a conceptual level

since it could be a fruitful way in to encourage future participants to talk about the relationships with VCs, in a format that is more intuitive and graspable in comparison to standard clock time units (Mitchell and James, 2001).

To conclude, this thesis adds knowledge to the field of VC literature and to research on USOs in particular in two ways: It shows that there is indication of a pattern of perceptions of relationships with VCs at the beginning of a relationship, which vary between the studied countries. Furthermore, a contribution is made on a conceptual level, suggesting that rather than standard clock time as a form of structuring life cycle stories of firms, rounds of funding might be more suited to provide the participants with a structure that seems familiar and tailored to their context.

## 6.4 Conflicts and conflict resolution strategies

In respect to the second part of the first research question, namely what conflicts occur between VCs and USOs, and the second research question, how perceived conflicts between Life Science USOs and their VCs are solved, this study makes several contributions to the existing stock of literature. It found that the dimensions and categories of the nature of conflicts as defined by Yitshaki (2008) fit to several of the conflict scenarios of this study, however could be extended to make the typology more nuanced. Also, the findings show that the majority of conflicts were perceived to occur in multi-party scenarios by the participants which adds to the resolution strategies defined by Zou et al. (2016). Furthermore, this study introduces a new theory to the field of VC literature to study VC-CEO conflicts with a theoretical foundation, believed to be more accurate to incorporate the reality of VC relationships with their portfolio firms. The added theory is the social dilemma theory, which is suggested as tailored to the specific case of multi-party conflict resolution strategies in the case of USOs and VCs.

With respect to the nature of conflicts, Higashide and Birley (2002) and Brettel, Mauer and Appelhoff (2013) concluded that cognitive conflicts can have a positive effect on the perceived value of the VC firm’s input. What the findings of this thesis add to their work is the observation that the overwhelming majority of conflicts was perceived as being cognitive by the participants. Therefore, trying to understand what the emotional stance to a problem is, might not offer the most fruitful insights into VC-CEO interactions in the

context of USOs. When looking at the literature in respect to the dimensions of conflict, a number of insights could be gained, starting with a response to Kaplan and Strömberg's (2004) and Zambelli's (2014) work. Kaplan and Strömberg (2004) and Zambelli (2014) argue that contracts serve to avoid classic principal-agent problems such as shirking, but the findings of this thesis, in support of Yitshaki's (2008) finding, indicate that conflicts can also be a source of a conflict or tension. Second, Yitshaki (2008) found that conflicts on strategic decision-making occurred over (1) R&D activities, and (2) marketing schedules. The findings of this thesis were that not a single participant reported on conflicts around these issues. And some further conflicts in Yitshaki's (2008) study occurred around managerial replacement and managerial involvement in (1) employee recruitment and (2) compensation. Once again, no data from this study indicates this. The different national contexts in which the data has been collected, could well be one of the reasons for those differences, as could the maturity of the VC industry or the industry the interviewed firms operate in, since the Life Science industry possesses several unique characteristics. This qualitative, in-depth study therefore proved useful in identifying these differences.

Furthermore, Forbes, Korsgaard and Sapienza (2010), showed that conflicts occurred around ‘down rounds’ of further valuation, leading to fewer shares for the CEOs. While a few participants mentioned this danger, more participants reported on conflicts around exit strategies. One reason for this might be that an exit by a VC means the imminent end of the relationship between the manager and VC. An end of the relationship would also mean that there is an end to any sort of reciprocity in between the manager and the VC, hence less incentive to act in a collaborative manner. Another reason could also be that the participants of Forbes, Korsgaard and Sapienza's (2010) study had to do more fundraising from new investors instead of being able to go back to their existing shareholder base, hence them being more exposed to new negotiations.

Moreover, the observation from the data that multiple players are involved in an overwhelming amount of conflict scenarios, and that the presence of several investors leads to more conflicts, indicates what has so far only been mentioned theoretically in a few cases (Wright and Lockett, 2003; Chahine, Arthurs and Filatotchev, 2012). Thereby, this thesis adds to the field of VC literature that conflicts cannot be assumed to take place in between two parties but often occur in multi-party scenarios. What kind of implications

this finding has on the conceptual framework in combination with the other findings is discussed in the following.

Looking at how the conflict stories fit in the conceptual framework based on Yitshaki (2008) and Zou et al. (2016), it is argued that five changes should take place to represent the data of this study. The first is the erasure of the notion of a dual VC-CEO relationship, to fit it to a multiple player scenario. As has been demonstrated earlier, more than one VC is present in a great amount of interviewed USOs. Therefore, it is argued that an entirely new dimension should be included in the conceptual framework to address this finding. This in turn would mean that the definitions for the conflict dimensions should also be adapted to take the presence of multiple parties in one conflict scenario into account (see Table 17).

| | |
|---|---|
| **Contractual** | Based on disagreement over the formal distribution of power as defined in the contracts; entrepreneurs' limited managerial and competitive opportunism; the board composition and VCs control over decision-making; |
| **Contextual** | Refers to the ~~venture capitalist's~~ [9] VCs' level of involvement in management processes and strategic decision-making; replacement of CEO in case of under-performance |
| **Procedural** | Refers to the quality and frequency of information exchange between the ~~two~~ multiple parties based on trust, shared norms and obligations, commitment and identification with the reference group |

**Table 17 Adaptations of definitions for conflict dimensions**

A third suggested change then refers to the different dimensions and their interplay. Yitshaki (2008) mentioned in her study that the conflict dimensions should be seen as having reciprocal influence, hence the borders between the different dimensional categories should not be seen as too rigid. However, this was not included in her model. But as the findings showed, the conflict #20 at Indicum appeared to be a mixture of a contractual and contextual conflict in which the participant Idal complained that he is legally prohibited from making any statements on the valuation of his firm to potential buyers or funders because of his heterogeneous VC base which hinders him in operating

[9] The crossed-out text is the original text from Yitshaki (2008), which the author of this study amended based on the findings made in this study.

the business efficiently. Likewise, it was shown that the conflict #21 at Hamamelis was a management conflict leading to a deadlock between one group of VCs, who had teamed up with one of the CEOs, and another group of VCs, who had teamed up with the other CEO. Both sides could not agree which route to take, which would fit the contextual dimension, but the conflict then led to a missed milestone, leading to a new valuation of the firm and the signing of a new contract, meaning the conflict also occurred in the contractual dimension. These accounts showed that the lines between the dimensions can be blurred and therefore it is suggested that a distinction between the dimensions still holds up for the majority of studied conflicts, but the lines between the dimensions should be regarded as semi-permeable. This amendment to the conceptual framework is presented in Table 18.

The fourth out of the five changes refers to the ‘sphere’ in which conflicts occurred. As shown in the findings chapter, several conflicts did not sit well with the definitions of a contextual, contractual or procedural conflict dimension since they did not occur between the management and the VCs, but rather in between VCs or between VCs and investors. Those conflicts involved no active role by the USOs’ management and occurred entirely outside of the USOs ‘sphere’. Based on this observation, it is suggested to introduce a fourth dimension, which could be called ‘The external dimension’, calling attention to the danger of conflicts that occur outside of the USOs’ realm but still impact them.

The fifth and final change refers to conflicts over strategic decision-making. As shown in the findings, several conflicts occurred not only about the level of involvement in strategic decision-making but they also show that the direction of the strategic decision-making is sought to be different, with VCs preferring a different strategic route to what the CEOs had in mind. Hence it is suggested to introduce another category to the dimensions of conflict, called ‘directional dimension’, being able to categorise conflict accounts in future studies according to the exact reason of a conflict over strategic decision-making.

Based on all of these suggested changes, the initial framework therefore could be changed as follows in Table 18:

| | **Negative conflict** | **Positive conflict** |
|---|---|---|
| **<u>Semi-permeable</u> dimension of conflict (based on Yitshaki, 2008)** | Contractual<br>Contextual<br>Directional<br>Procedural<br>External | Contractual<br>Contextual<br>Directional<br>Procedural<br>External |
| **Number of dimensions** | Dual/multiple party conflict | Dual/multiple party conflict |

**Table 18 Changes to dimensions of conflict**

Furthermore, the findings made in this study also contribute to the resolution strategies as defined by Zou et al. (2016). The authors defined resolution strategies to a conflict between VCs and CEOs as (1) competing, (2) collaborating, (3) accommodating, and (4) avoiding, and this thesis adds to their typology in that, while the strategies resonate with the findings and are seen to be useful and suitable to distinguish resolution strategies, the presence of multi-party conflicts converts their 2x2 matrix of resolution strategies into a matrix of $(2x2)^n$ where $n$ is the number of players involved. The majority of conflict scenarios actually involved three-parties (for a visual representation of the conflict resolution constellation see Figure 16), but the conflict scenarios also showed that in some cases (the conflicts #20 (USO Indicum), #21 (USO Hamamelis) and #22 (USO Indicum)) conflicts can involve even four or five players, indicating that three parties are not the upper limit of parties that can be involved in a conflict in the context of USO-VC relationships. Hence this study suggests that different resolution strategies can be chosen and in fact are chosen, with different VCs, as the comments in the findings chapter suggest. Therefore, to capture the perceptions of resolution strategies adequately, the concept of further parties would need to be included in the conceptual framework and it is suggested to achieve this by placing brackets around the resolution strategies and multiplying them to the power of *n*, resembling the number of conflict parties involved (Table 19).

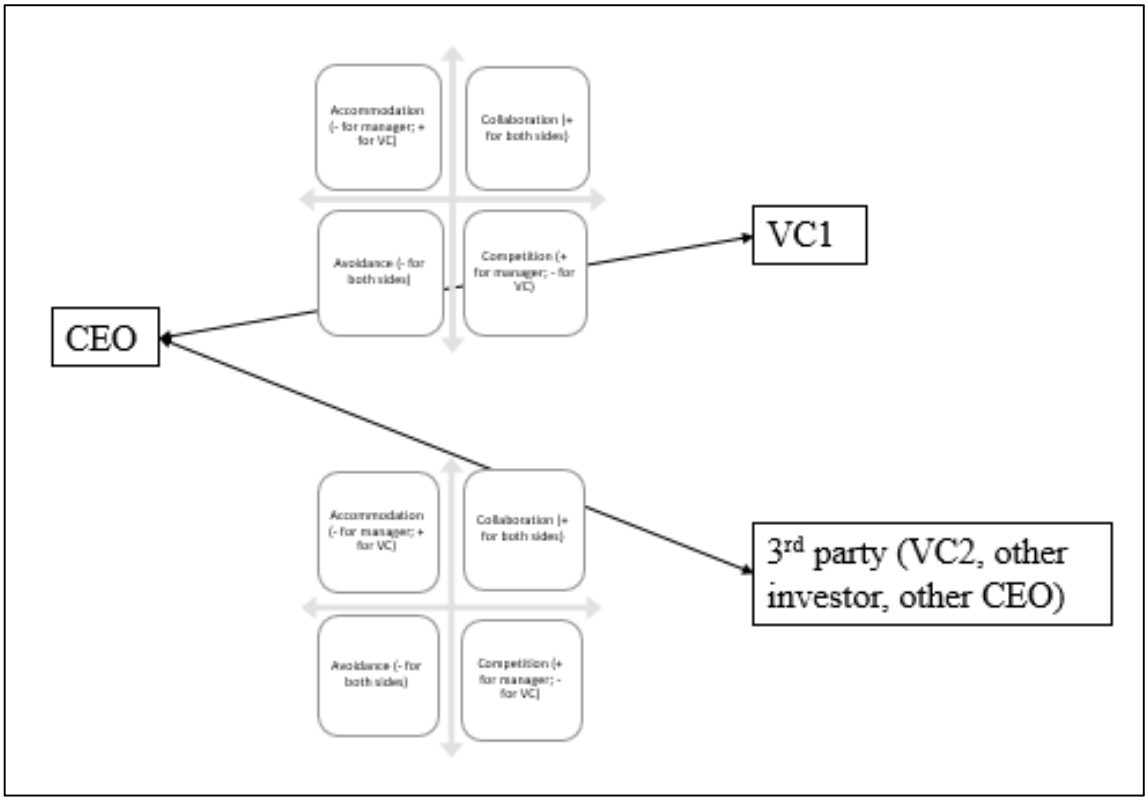


**Figure 16 Conflict resolution strategies in multi-party scenarios**

| | **Negative conflict** | **Positive conflict** |
|---|---|---|
| **Forms of resolution (Zou et al, 2016)** | Competing<br>Collaborating<br>Accommodating<br>Avoiding<br>*n* (in case of multi-player conflicts) | |

**Table 19 Adaptation of conflict resolution framework**

Having noticed that collaboration seems to be the most used form of conflict resolution, the second contribution of this study is to introduce social dilemma theory to the field of VC research to offer a theoretical explanation for the dominance of collaboration as a resolution strategy. Social dilemma theory, in the context of VC-CEO interaction, would suggest that the public good would be the shared profit the partners will make from a successful business exit. VCs, as well as the CEOs, can decide to behave cooperatively, to find solutions to conflicts that cater all parties' goals to some extent, or they can decide to be self-interested and compete during conflicts, or withhold information that would be crucial to bring the company forward strategically. However, since several variations of social dilemma theory exist, this study suggests tailoring the social dilemma theory to the

case of VC-CEO interactions for future studies drawing on social dilemma theory literature. It is suggested that social dilemma theory that is applicable to VC-CEO interaction in the case of USOs should fulfil three criteria:

The first criteria is seen to refer to Zeng and Chen's (2003) understanding of social dilemma theory. Zeng and Chen (2003) claim that in a social dilemma, it is more likely that non-cooperative behaviour will remain undetected, increasing the temptation to defect. But the crucial difference in the context of VC-CEO interactions, is that the number of members of syndicates are much smaller, often involving only three parties. The partners therefore know each other, and will immediately learn of non-cooperative behaviour, if chosen by any of the partners. The group size therefore could explain why cooperation is the dominant form among these small groups (Olson, 1965). As Olson (1965) points out, in small groups the collective good can be provided by one voluntary, self-interested member of the group, because that member will receive a substantial share of the total gain from the collective good. “the larger the group, the farther it will fall short of providing an optimal amount of a collective good” (p. 35). It is for this reason, as well as quicker and more involved decision-making in comparison to large groups, that Olson (1965) refers to small groups as the ‘privileged’ groups. This study seems to resonate with Olson's (1965) claim and therefore argues that a social dilemma theory in the context of VC-CEO interaction needs to be based on the understanding that groups in which conflicts occur are small.

The second criteria refers to communication among the parties. In research on variations of the social dilemma scenario, Kragt and Orbell (1983) showed by the use of various experiments, that communication among the parties in a social dilemma scenario significantly increased the chances of cooperation. Based on the findings that communication between the conflict parties occurred throughout the conflicts’ timespans it is suggested to make open communication another criteria for social dilemma theory that is suited to study VC-CEO interaction in the case of USOs.

The third criteria seen to be relevant refers to the procedure involved. In literature on social dilemma experiments two different versions of the social dilemma scenarios exist, one where decisions on whether or not to cooperate are made without knowledge about previous outcomes and previous decision-making preferences by the parties, and the other, where a sequential protocol is applied, making the previous decisions available so they

can be taken into account when deciding on whether or not to cooperate during the next round (Erev and Rapoport, 1990). Since the findings showed that relationships take place over time and vary over time, as well as the fact that the partners know each other, and have on-going conversations, it is suggested that the more realistic version of a social dilemma theory that can realistically be applied to the conflict scenarios studied in this study's data, is one that relies on a sequential protocol with full availability of information on past actions by other parties.

These are the three criteria that social dilemma theory is supposed to fulfil to be of use to the field of VC research, based on the findings made in this study. Furthermore, based on the findings made, this thesis suggests the expansion of social dilemma theory to a certain extent, to ensure it is fully applicable to the specific context of VC-CEO interactions. This expansion, while adding to the knowledge in the field of VC research might also be worth to be considered as an expansion for the field of social dilemma research. Based on the logic of the social dilemma theory, and Olson's (1965) remarks in respect to the crucial importance of group size on cooperative behaviour, it could be argued that conventional wisdom is: The more parties involved in a situation, the more likely conflict is. This view is strengthened by the fact that seven different solutions have been identified to social dilemma scenarios (Zeng and Chen, 2003). These are to change the payoff matrix, to introduce sanction systems, to reduce the group size, to change the allocation rules, to improve communication among the partners, to establish long-term goals among the partners and lastly to inform partners about negative consequences. According to the third type of solution, a smaller group will lead to less conflict potential and less self-interested behaviour. However, some comments could be identified in the data that suggested that conflicts in which another party is *deliberately* introduced, can actually solve the conflict instead of adding to it. As explained earlier in the findings chapter, in one case, an independent advisory board was established, with the role to assess and confirm the management's financial projections over which the VC and the management could not agree. The establishment of this advisory board eased the conflict over the financial projections, since an independent voice could confirm the management's numbers. In the second case, one manager of a USO used the VC to play a 'good cop'/'bad cop' strategy by either letting the VC do the negotiations that were uncomfortable for the CEO or using the excuse that something was a 'no-go' for the VC, to improve the CEO's position in negotiations. What these two cases have in common, is that the introduction of another party happened *proactively.* Therefore, contrary to the conclusion on resolution strategies

in social dilemmas, the increase of the group size, rather than the reduction, can in fact solve a conflict as the data showed as long as the introduction of another party happens *proactively*. This observation leads to the conclusion that the social dilemma literature could be enriched by an additional solution to social dilemma: The proactive *increase* of the group size, in which the new party's role is to either establish external legitimacy or deflect.

## 6.5 Amended conceptual framework and conclusion

A further contribution of this study is seen in bringing the findings of the three themes together and incorporating them in one comprehensive analytical framework, as a suggestion for future research. As has been argued in this chapter, several extensions and amendments are suggested to the works of various authors. These form the basis for an integrative conceptual framework. As a reminder, the initial conceptual framework is presented in Figure 17 below:

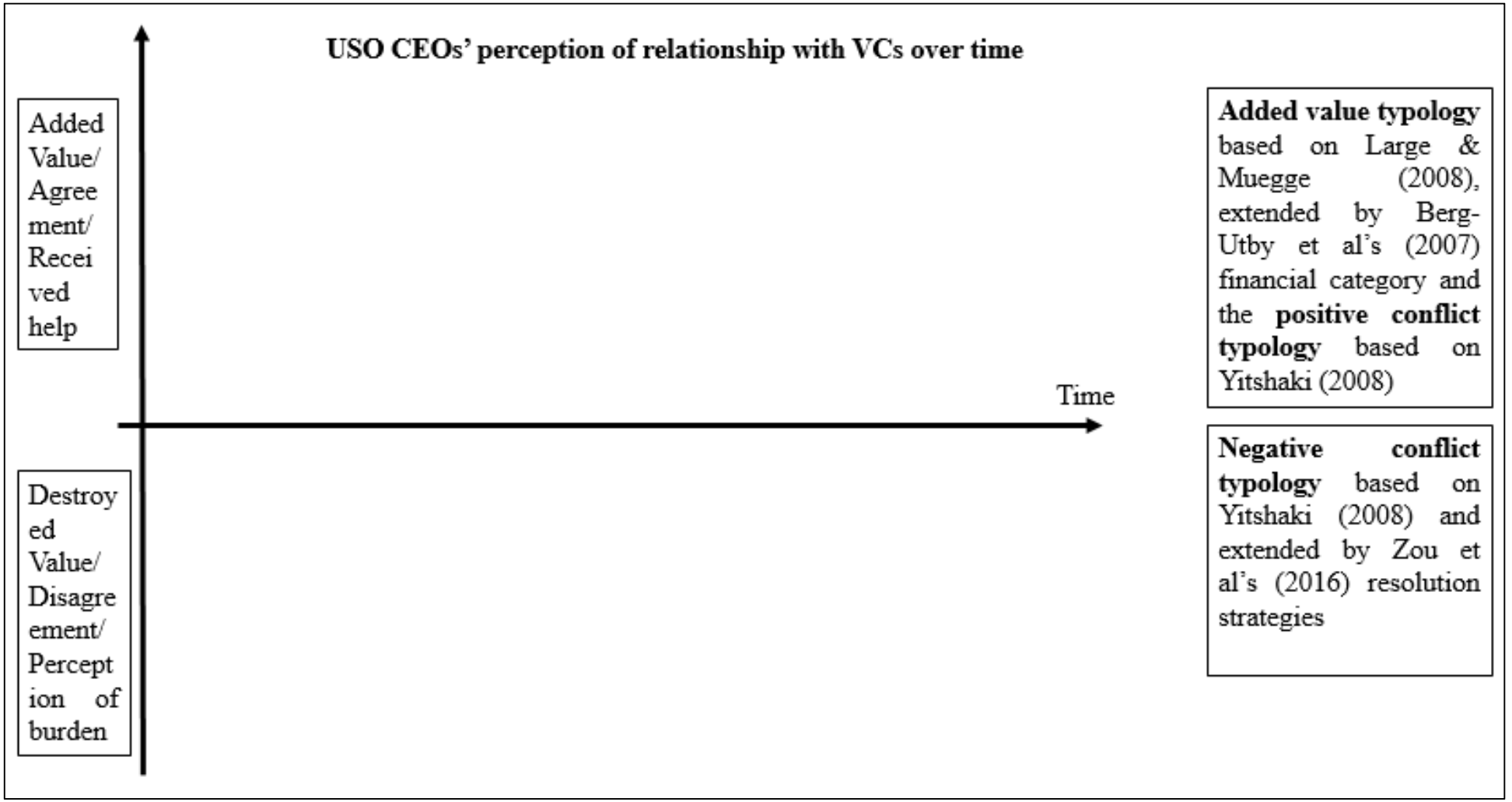


**Figure 17 Analytical research framework for individual managers' perception of relationship with VCs over time**

Based on the findings, a number of changes were suggested to the conflict typology, now looking as follow (see Table 20 below):

| | **Negative conflict** | **Positive conflict** |
|---|---|---|
| **Nature of conflict (Yitshaki, 2008)** | Affective<br>Cognitive | Cognitive |
| **Semi-permeable dimension of conflict (based on Yitshaki, 2008)** | Contractual<br>Contextual<br>Directional<br>Procedural<br>External | Contractual<br>Contextual<br>Directional<br>Procedural<br>External |
| **Number of dimensions** | Dual/multiple party conflict | Dual/multiple party conflict |
| **Forms of resolution (Zou et al, 2016)** | Competing<br>Collaborating<br>Accommodating<br>Avoiding<br>*n* (in case of multi-player conflict) | |

**Table 20 Complete, adapted conflict framework of analytical framework**

Apart from the above suggested changes to the analytical framework a number of further findings are seen to be worth incorporating as well, to gain a more holistic understanding of the underlying processes in the VC-entrepreneur relationship. First, the findings in respect to VCs' value-adding activities, namely that financial support, strategic support and the networks for USOs to access further funding, seem to be the most referred to value-adding activities. Secondly, the framework should include that the characteristics of the USOs, the contracts, and in particular the presence of more than one VC, has an impact on the relationship between the USOs and investors. Finally, the first theme showed that 'time' is a component, moderating the relationship between USOs and VCs. But while the initially developed analytical research framework conceptualised time as 'standard time or clock time' (Mitchell and James, 2001), comments by participants suggest that they prefer to use rounds of funding as their cognitive sense-making of time.

Based on these insights and results from the data analysis, an amended, integrative framework is put forward as a suggestion to capture the perceptions of the relationship with VCs by USOs' managers (see Figure 18).

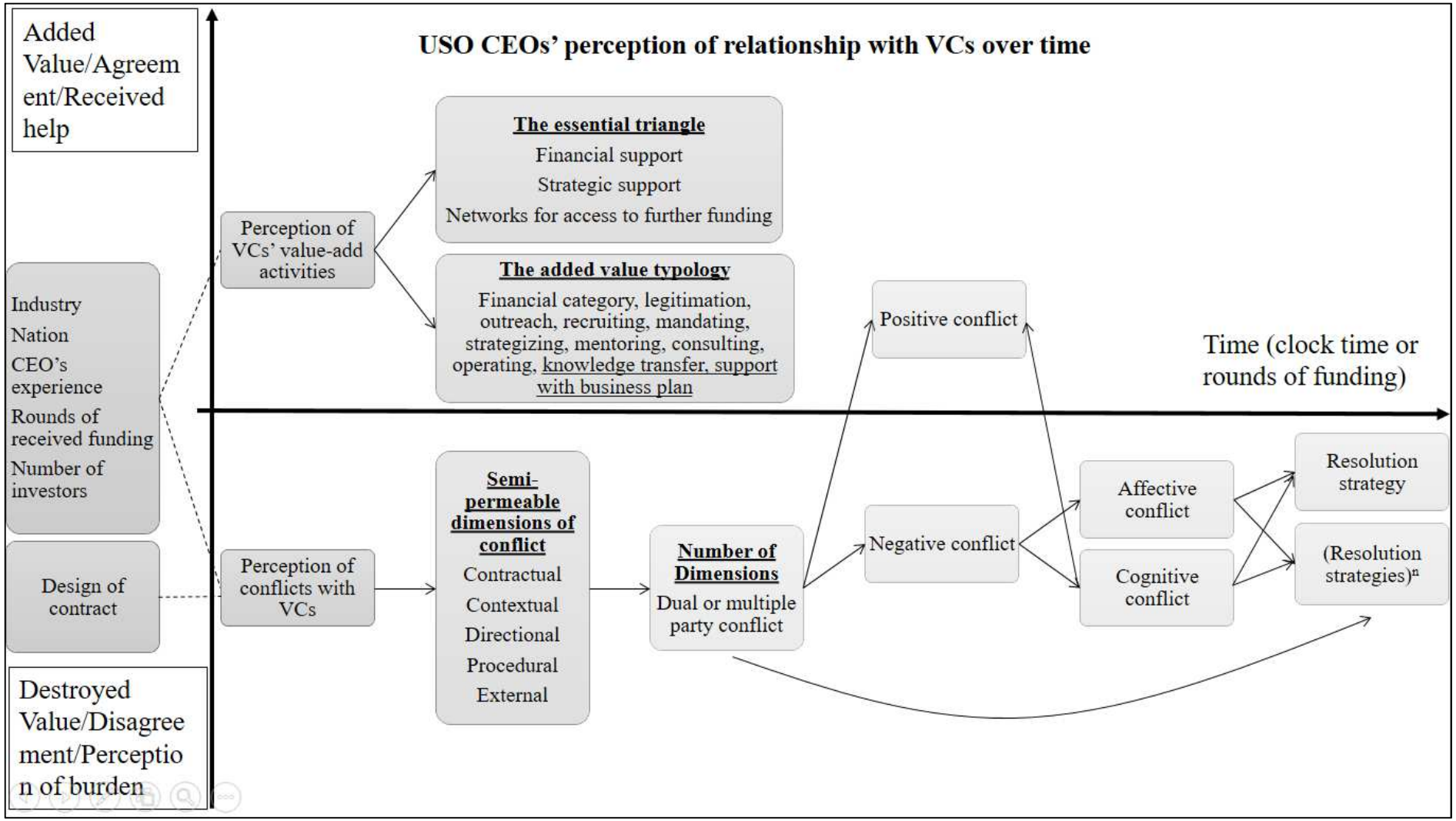


**Figure 18 Integrative model of findings**

This model incorporates the different levels of importance of VCs' value-adding activities, and it also notes that positive conflicts are in fact 'encouraged' and wished for, hence they have been situated above the x-axis, in the value-adding side of the graph. The framework also takes all the changes that were suggested to be made to the analytical conflict framework into account, and it distinguishes between dual conflicts and multi-party conflicts, which in turn have an impact on the type of resolution strategies. This holistic framework of the findings, serves the purposes to (1) summarize the findings in a visual way, and (2) to offer a refined, further developed analytical framework, based on the works of Higashide and Birley (2002), Berg-Utby, S⊘rheim and Widding (2007), Large and Muegge (2008), Yitshaki (2008) and Zou et al. (2016). It should be noted however, that the relationship between a USO and its VC(s) is by no way linear or follows a certain pattern, as the above framework might indicate, but instead is a construct in which individual USOs' stories of their relationships with VCs could be situated. Which sort of conflict or form of value-adding activity might become relevant or applicable to individual cases is not the aim of above framework. It solely wishes to offer an integrative framework, incorporating elements that are perceived to be of relevance to study perceptions of CEOs of USOs, for future studies.

# 7 Conclusion

This study has looked at managers of USOs' perceptions of their relationship with VCs over time in the Life Science industry. Investigating the perceptions of managers of USOs is identified as being relevant and important, since they work with VCs over a long investment time-span, face technological and financial uncertainty, and operate in an industry that is characterised by high USO failure rates (Wright et al., 2007; Hewitt-Dundas, 2015). Meanwhile, as shown in the literature review, data from managers is still scarce, despite the fact that they provide a different viewpoint and insights in comparison to VCs (Bengtsson and Wang, 2010; Zacharakis, Erikson and George, 2010; Collewaert and Fassin, 2013). Therefore, placing the focus on the relationship as perceived by CEOs of USOs highlighted a number of insights about perceptions of value-adding activities, conflicts and their resolutions and the impact of time on the relationship, which were gained by the use of semi-structured in-depth interviews with 24 managers of USOs in Germany and the UK.

In respect to value-adding activities as perceived by the participants, this study generated three novel insights. First, the findings suggest that managers of USOs perceive three value-adding activities by VCs as particularly important and noteworthy. These are strategic support, direct financial support and networks that allow them to identify further follow-on investors. While the prior studies, discussed in the literature review, list different forms of value-adding activities, this study indicates that there are forms of value-adding activities that are being appreciated more and less. The second new insight, gained from this study, relates to the perception of operational support which some participants perceived as intrusion while others spoke more positively of it. Showing that some portfolio firms of some VCs might not be appreciative of all the input coming from the VCs is a novel insight that could not be found in the literature beforehand. Third, some data suggests that business plan support and knowledge transfer are forms of value-adding activities that CEOs of USOs appreciate from their VCs and these are suggested as an extension to the value-adding typology developed by Large and Muegge (2008) in which these forms of value-adding activity of VCs currently are not included.

In respect to the perceptions of conflicts by the participants, three novel insights were generated. The first is the observation that the majority of conflicts perceived by the participants of this study occurred in scenarios with multiple parties instead of a dyad as often assumed in the literature (Cable and Shane, 1997; De Clercq and Sapienza, 2001; Ţurcan, 2008; Dimov and Milanov, 2010). This in turn leads to the suggestion to adapt the conflict resolution framework by Zou et al. (2016), which is based on the notion of a conflict dyad, to incorporate multi-party conflicts. Second, the findings lead to the conclusion that the dimensions of conflict as conceptualised by Yitshaki (2008) could be expanded to be more attentive to several subtleties in conflict scenarios. Third, due to the fact that current theories in the field of VC research that look at VC-CEO conflict assume a dyadic relationship, which stands in contrast with the findings made from this thesis, the social dilemma theory, which focuses on conflict solutions in multi-party scenarios, is introduced. The theory is then amended and tailored to the field of VC research as a suggestion to be used in future research. In addition, due to suggestions in the findings that conflicts can also be solved by deliberate introduction of another party, the social dilemma theory is expanded for the field of VC research and it is offered to the field of social dilemma theory to examine whether the expansion is suitable for other areas of research too.

Finally, this study generated two novel insights in respect to the impact of time on relationships between VCs and CEOs as perceived by the study participants of this study. First, several comments by study participants suggest that participants of British USOs perceive their relationship with the VCs as more positive in the beginning in comparison to a slightly later point of time. This pattern was termed ‘honeymoon phase’. In contrast, several comments by German participants indicate that an adverse pattern exists, with the participants perceiving their relationship with VCs as less positive at the beginning than at a later point of time. This pattern was termed ‘long-term relationship’. These patterns suggest that the so far under-researched area of time as a factor in VC-CEO relationships could have an influence on the perceptions of relationships. Lastly, some participants feel more comfortable talking about the timeline of the firm by using rounds of funding as their measurement of time units, instead of using calendar time units such as years or months. This novel insight might be of relevance for future conceptual considerations with intentions to “speak the same language” as the participant and generate a cognitive way-in in their narrative approach.

## 7.1 Limitations

With this study and its findings come a number of limitations that need to be made explicit and be considered by future researchers, when using this study’s findings.

The data of this study is based on 24 semi-structured in-depth interviews and it is important to understand that qualitative researchers can never get 'definite answers' in any research and qualitative research can only highlight and explore themes, similarities, differences and concerns in the particular contexts in which the study took place. It is not possible to generalise interview data beyond its context and cutting loose its strings from the context they were collected in (Fontana and Frey, 1998). In addition, the researcher’s knowledge, and that of the interviewees, is always fallible and partial, meaning generalisations beyond the dataset are not possible. There is always the possibility of further, alternative lines of interpretation and it needs to be taken into account that the participants’ language might not perfectly mirror reality (Alvesson, 2003). To increase the generalisability it might have been possible to use mixed methods, which tend to generate more robust, quantitatively testable results (Molina-Azorin, 2012) but a research study has to have a fit between the research questions, the maturity of the domain of the

study and the chosen methodology (Gibson, 2017) and since interviews are very time-consuming, not only in the conduction but also in the analysis (Doody and Noonan, 2013) while the field of research on VCs' involvement in USOs was seen to be in an early stage, the choice was made for a purely qualitative design.

It also needs to be remembered that this study only collected the perceptions of managers of USOs. While this was the explicit goal of the study, it would have also been of interest to collect the perceptions of 'the other side' of the VC-CEO relationships, namely of the VCs. However, as discussed in greater length in the methodology chapter, there are several reasons why the sample is made up of USOs, not VCs. The majority of the literature has collected data from VCs and a clear gap exists in respect to research that looks at the other side: the entrepreneur. Addressing this gap is particularly important to avoid that value-adding activities and conflicts were only studied from one angle. Also, it is mentioned in the literature that studying VCs' perceptions of value-adding activities and particularly conflicts in regard to a single portfolio firm is very difficult. Moreover, when looking at the number of VCs that actually invest in USOs in the Life Science industry there are very few firms in the industry and assuming the normal response rate of about 10-15% to inquiries on research projects, there simply would not have been a sufficient amount of data to come to any conclusions based on patterns in the data. This approach allowed to provide valuable data to the field by presenting a viewpoint that so far has been under-researched, namely the entrepreneurs' side. This way, while a lot of VC-collected research has been published, the results of this study can be used to assess whether the perceptions are shared among the portfolio firms too.

Finally, another limitation is that when looking at relationships between VCs and CEOs in a Life Science USO context, it needs to be taken into account that only managers of USOs that have been successful with their firm up to that point were interviewed. Not only had they secured VC funding, but a great number of them had secured several rounds of funding, and therefore the conclusion is that the data is composed of success stories in a wider sense. It might well be that stories of the relationships with VCs might look different from the perspective of USOs that had to close down.

## 7.2 Managerial implications

With the insights gained from this study come potential implications for managers of USOs, technology transfer officers who want to prepare researchers for a management role in USOs, and of course for VCs in the Life Science industries in the UK and Germany.

One thought VCs might want to consider is that it seems as if the major cause of conflicts for the managers of their portfolio firms, are scenarios in which more than one other party is present. This potential conflict of goals then leads to the implication, that managers of VC firms for portfolio firms as well as the CEOs of VC firms might want to consider shifting their attention to a relationship management with the other investors in their portfolio firms. The VC managers might want to consider resolving conflicts with other investors in the absence of the USOs' CEOs, to avoid further pressure or ripple effects on the CEOs of the USOs by conflicts that were not caused by them.

The managers of USOs on the other hand might want to look at the additional potential of conflict when working with an additional VC. For them, it should not only be of importance what the potential new VC brings, but also what its relationship to the existing VC might be, which is already on board of the firm. In addition, the managers should consider the fit of the VC's potential to add value with respect to their own background and position. In some circumstances the most valuable value-adding activity might be networks the VC holds to gain access to funds in the future, while in other cases only the immediate financial injection matters.

Also, both VCs as well as managers of USOs might want to think about whether a counter-intuitive solution for conflicts might be to introduce another player into conflict scenarios, to either create external legitimacy or deflect. Downsides obviously are higher costs and more people, but some cases of the data indicated that the benefits can outweigh the costs.

Finally, VCs and CEOs of USOs might want to consider the social dilemma's resolution strategies to apply to conflict situations in USO-VC conflicts. Those resolution strategies were seen to be:

1. To change the payoff matrix,

2. To introduce sanction systems,
3. To reduce the group size,
4. To change the allocation rules,
5. To improve communication among the partners,
6. To establish long-term goals among the partners,
7. And to inform partners about negative consequences.

These might be an aid to VCs or CEOs trying to solve a multi-party conflict.

## 7.3 Future research

In the hope that this study can be used to enrich future studies and to build on the observations, a few routes of potential future research, that are considered to promise the most fruitful insights, are outlined.

First, the section on the analysis of the resolution strategies provided indications that in scenarios with multiple players, multiple, different resolution strategies are perceived by the participants. Still, this is only one perspective in those multi-party relationships, and future studies could involve getting the other parties' perspectives too. It has to be noted though, that several researchers already tried to capture the VCs' perspectives, but they pointed out that VCs, when being interviewed retrospectively, usually speak about their portfolio firms in general terms (Zacharakis and Meyer, 1998; Yitshaki, 2008). Therefore, it might be more suitable to choose a longitudinal, ethnographic study (given access can be obtained).

Secondly, while this study looked at the Life Science industry, which is characterised by several unique features, it would be of particular interest to collect data with a similar approach in other industries. Especially industries such as the information technology industry in which less investments are made (OECD, 2015) and the lengths of the relationships between CEOs and VCs are shorter.

Thirdly, while some research has already been undertaken in respect to different nations and cultures (Wright, Pruthi and Lockett, 2005; Devigne, Vanacker and Manigart, 2013), it would be interesting to look at the individual as the unit of analysis inside as well as outside Europe as well as cross-nationally, while taking their different cultures, policy

environments and legal circumstances into account. As Hofstede et al. (2010) mention, just because there are no universal solutions to management problems, it does not mean that countries and organizations from other cultures cannot learn from each other. Looking at the other side of the fence tends to be one of the most effective ways of getting new ideas. A “Lack of awareness of national limits causes management and organization ideas and theories to be exported without regard for the values context in which they were developed […] there is nothing as impractical as a bad theory” Hofstede et al. (2010, p. 338).

Fourthly, it would be of great interest to see whether the same managers could be interviewed after the VCs have exited the firm, and to then compare their accounts of the relationship with the ones they gave for this thesis, while still being in an active relationship. It has been noted earlier that the sense-making process is influenced by time (Ring and Van de Ven, 1994).

All of these avenues are seen to possess great potential for future research, which could enhance the understanding of managers’ perceptions of relationships with VCs. This might be a step towards mutual understanding between USOs and VCs, to less conflicts, to higher profits and to driving down firms’ early termination.

# 8 References

Ahl, H. (2004) *The scientific reproduction of gender inequality: A discourse analysis of research texts on women's entrepreneurship*. Liber: Copenhagen Business School Press.

Alperovych, Y. and Hübner, G. (2013) 'Incremental impact of venture capital financing', *Small Business Economics*, 41(3), pp. 651–666.

Alvesson, M. (2003) 'Beyond nepositivists, romantics, and localists: A reflexive approach to interviews in organizational research.', *Academy of Management Review*, 28(1), pp. 13–33.

Appelhoff, D., Mauer, R. and Collewaert, V. (2015) 'The conflict potential of the entrepreneur's decision-making style in the entrepreneur-investor relationship', *International Entrepreneurship and Management Journal*, 12(2), pp. 601–623.

Arthurs, J. D. and Busenitz, L. W. (2003) 'The boundaries and limitations of agency theory and stewardship theory in the venture capitalist/entrepreneur relationship', *Entrepreneurship Theory and Practice*, 28(2), pp. 145–162.

Association of the British Pharmaceutical Industry (2012) *Time to flourish [WWW]*. Available at: http://www.abpi.org.uk/about-us/resources/publications-library/medicine-development-process (Accessed: 3 February 2018).

Autio, E. (1997) 'New, technology-based firms in innovation networks symplectic and generative impacts', *Research Policy*, 26(3), pp. 263–281.

Autio, E. et al. (2014) 'Entrepreneurial innovation: The importance of context', *Research Policy*, 43(7), pp. 1097–1108.

Barry, C. B. et al. (1990) 'The role of venture capital in the creation of public companies: Evidence from the going-public process', *Journal of Financial Economics*, 27(2), pp. 447–471.

Baum, J. A. C. and Silverman, B. S. (2004) 'Picking winners or building them? Alliance, intellectual, and human capital as selection criteria in venture financing and performance of biotechnology startups', *Journal of Business Venturing*, 19(3), pp. 411–436.

Baumeister, R. F. and Leary, M. R. (1997) 'Writing narrative literature reviews', *Review of General Psychology*, 1(3), pp. 311–320.

Becker, H. S. (1970) *Sociological work*. 2nd edn. New Bruinswick: Transaction Publishers.

Bengtsson, O. and Wang, F. (2010) 'What matters in venture capital? Evidence from entrepreneurs' stated preferences', *Financial Management*, 39(4), pp. 1367–1401.

Berg-Utby, T., S□rheim, R. and Erikson, T. (2007) 'The Joint Influence of Interaction

History and Time Horizon on Venture-Capitalist/New-Venture Team Cooperation', *Babson College Entrepreneurship Research Conference (BCERC) 2007; Frontiers of Entrepreneurship Research 2007*.

Berg-Utby, T., S□rheim, R. and Widding, L. Ø. (2007) 'Venture capital funds: Do they meet the expectations of portfolio firms?', *Venture Capital: An International Journal of Entrepreneurial Finance*, 9(1), pp. 23–41.

Berger, P. L. and Luckmann, T. (1966) *The social construction of reality*. Garden City: Anchor.

Bertoni, F., Colombo, M. G. and Quas, A. (2015) 'The patterns of venture capital investment in Europe', *Small Business Economics*, 45(3), pp. 543–560.

Blaikie, N. (2007) *Approaches to social enquiry: Advancing knowledge*. 2nd edn. Cambridge: Polity Press.

Blundel, R. and Lockett, N. (2011) *Exploring entrepreneurship: Practices and perspectives*. 1st edn. Oxford: Oxford University Press.

Brander, J. A., Amit, R. and Antweiler, W. (2002) 'Venture Selection vs. the Value-Added Hypothesis', *Journal of Economics & Management Strategy*, 11(3), pp. 423–452.

Brettel, M., Mauer, R. and Appelhoff, D. (2013) 'The entrepreneur's perception in the entrepreneur–VCF relationship: the impact of conflict types on investor value', *Venture Capital: An International Journal of Entrepreneurial Finance*, 15(3), pp. 173–197.

Brusche, L. (2016) 'Gaps in Academic Literature on Venture Capitalists'; Decision-Making on Funding for Early-Stage, High-Tech Ventures', *Technology Transfer and Entrepreneurship*, 3(2), pp. 82–89.

Burchardt, J. et al. (2016) 'Venture Capital Contracting in Theory and Practice: Implications for Entrepreneurship Research', *Entrepreneurship Theory and Practice*, 40(1), pp. 25–48.

Burr, V. (2003) 'Social constructivism', *London and New York: Routledge*.

Busenitz, L. W. et al. (1997) 'The framing of perceptions of fairness in the relationship between venture capitalists and new venture teams', *Entrepreneurship Theory and Practice*, 21(3), pp. 5–21.

Busenitz, L. W., Fiet, J. O. and Moesel, D. D. (2004) 'Reconsidering the venture capitalists'"value added" proposition: An interorganizational learning perspective', *Journal of Business Venturing*, 19(6), pp. 787–807.

Butterfield, L. D. et al. (2005) 'Fifty years of the critical incident technique: 1954-2004 and beyond', *Qualitative Research*, 5(4), pp. 475–497.

Cable, D. M. and Shane, S. (1997) 'A prisoner's dilemma approach to entrepreneur-

venture capitalist relationships', *Academy of Management Review*, 22(1), pp. 142–176.

Carroll, A. (1991) 'The pyramid of corporate social responsibility: Toward the moral management of organizational stakeholders', *Business Horizons*, 34(4), pp. 39–48.

Casper, S. and Matraves, C. (2003) 'Institutional frameworks and innovation in the German and UK pharmaceutical industry', *Research Policy*, 32(10), pp. 1865–1879.

Cassell, C. and Symon, G. (2004) *Essential guide to qualitative methods in organizational research*. London: Sage.

Chahine, S., Arthurs, J. and Filatotchev, I. (2012) 'The effects of venture capital syndicate diversity on earnings management and performance of IPOs in the US and UK: An institutional perspective', *Journal of Corporate Finance*, 18(1), pp. 179–192.

Chartered Association of Business Schools (2015) *Academic Journal Guide 2015 [WWW]*. Available at: https://charteredabs.org/academic-journal-guide-2015/ (Accessed: 3 February 2018).

Chesbrough, H. W. (2003) *Open innovation: The new imperative for creating and profiting from technology*. Boston: Harvard Business School Press.

Clarysse, B. and Moray, N. (2004) 'A process study of entrepreneurial team formation: the case of a research-based spin-off', *Journal of Business Venturing*, 19(1), pp. 55–79.

De Clercq, D. and Sapienza, H. J. (2001) 'The creation of relational rents in venture capitalist-entrepreneur dyads', *Venture Capital: An International Journal of Entrepreneurial Finance*, 3(2), pp. 107–127.

De Clercq, D. and Sapienza, H. J. (2006) 'Effects of relational capital and commitment on venture capitalists' perception of portfolio company performance', *Journal of Business Venturing*, 21(3), pp. 326–347.

Collewaert, V. (2009) 'Conflict between angel investors and entrepreneurs: Perception, reality and impact on innovation', in *Academy of Management Annual Meeting Proceedings*. Academy of Management, pp. 1–6.

Collewaert, V. (2012) 'Angel investors' and entrepreneurs' intentions to exit their ventures: A conflict perspective', *Entrepreneurship Theory and Practice*, 36(4), pp. 753–779.

Collewaert, V. and Fassin, Y. (2013) 'Conflicts between entrepreneurs and investors: The impact of perceived unethical behavior', *Small Business Economics*, 40(3), pp. 635–649.

Colombo, M. G. et al. (2010) 'Venture capital and high-tech start-ups', *Venture Capital: An International Journal of Entrepreneurial Finance*, 12(4), pp. 261–266.

Cope, J. and Watts, G. (2000) 'Learning by doing–an exploration of experience, critical incidents and reflection in entrepreneurial learning', *International Journal of*

*Entrepreneurial Behaviour & Research*, 6(3), pp. 104–124.

Cornelissen, J. P. (2017) 'Preserving Theoretical Divergence in Management Research: Why the Explanatory Potential of Qualitative Research Should Be Harnessed Rather than Suppressed', *Journal of Management Studies*, 54(3), pp. 368–383.

Croce, A., Martí, J. and Murtinu, S. (2013) 'The impact of venture capital on the productivity growth of European entrepreneurial firms: "Screening" or "value added" effect?', *Journal of Business Venturing*, 28(4), pp. 489–510.

Cumming, D. (2008) 'Contracts and exits in venture capital finance', *Review of Financial Studies*, 21(5), pp. 1947–1982.

Cumming, D. and Dai, N. (2013) 'Why Do Entrepreneurs Switch Lead Venture Capitalists?', *Entrepreneurship Theory and Practice*, 37(5), pp. 999–1017.

Cumming, D. J. (2006) 'The Determinants of Venture Capital Portfolio Size : Empirical Evidence The Determinants of Venture Capital Portfolio Size : Empirical Evidence', *The Journal of Business*, 79(3), pp. 1083–1126.

Cumming, D. and Johan, S. (2017) 'The Problems with and Promise of Entrepreneurial Finance', *Strategic Entrepreneurship Journal*, 11(3), pp. 357–370.

Cumming, D. and Johan, S. A. (2007) 'Advice and monitoring in venture finance', *Financial Markets and Portfolio Management*, 21(1), pp. 3–43.

Cumming, D., Siegel, D. and Wright, M. (2007) 'Private equity, leveraged buyouts and governance', *Journal of Corporate Finance*, 13(4), pp. 439–460.

Dawes, R. (1980) 'Social dilemmas', *Annual review of psychology*, 31(1), pp. 169–193.

Deloitte (2014) *2015 life sciences outlook United Kingdom [WWW]*. Available at: https://www2.deloitte.com/content/dam/Deloitte/global/Documents/Life-Sciences-Health-Care/gx-lshc-2015-life-sciences-report-united-kingdom.pdf (Accessed: 3 February 2018).

Department for Business Innovation and Skills (2011) *Strategy for UK Life Sciences [WWW]*. Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/32457/11-1429-strategy-for-uk-life-sciences.pdf (Accessed: 3 February 2018).

Department for Business Innovation and Skills, Department of Health and Office for Life Science (2015) *Life science competitiveness indicators [WWW]*. Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/418305/BIS-15-249-life-science-competitiveness-indicators.pdf (Accessed: 3 February 2018).

Devigne, D., Vanacker, T. and Manigart, S. (2013) 'The role of domestic and cross-border venture capital investors in the growth of portfolio companies', *Small Business*

*Economics*, 40(3), pp. 553–573.

Dimov, D. and Milanov, H. (2010) 'The interplay of need and opportunity in venture capital investment syndication', *Journal of Business Venturing*, 25(4), pp. 331–348.

Doody, O. and Noonan, M. (2013) 'Preparing and conducting interviews to collect data', *Nurse Researcher*, 20(5), pp. 28–32.

Drover, W. and Fassin, Y. (2013) 'The Role of Ethical Reputation in the Evaluation of VC Investors: The Entrepreneurs' View', in *Academy of Management Annual Meeting Proceedings*. Academy of Management, pp. 479–484.

Drover, W., Wood, M. S. and Payne, G. T. (2014) 'The Effects of Perceived Control on Venture Capitalist Investment Decisions: A Configurational Perspective', *Entrepreneurship Theory and Practice*, 38(4), pp. 833–861.

Drover, W., Wood, M. S. and Zacharakis, A. (2017) 'Attributes of Angel and Crowdfunded Investments as Determinants of VC Screening Decisions', *Entrepreneurship Theory and Practice*, 41(3), pp. 323–347.

Druilhe, C. and Garnsey, E. (2004) 'Do academic spin-outs differ and does it matter?', *The Journal of Technology Transfer*, 29(3–4), pp. 269–285.

Ehrlich, S. B. et al. (1994) 'After the cash arrives: a comparative study of venture capital and private investor involvement in entrepreneurial firms', *Journal of Business Venturing*, 9(1), pp. 67–82.

Elango, B. et al. (1995) 'How venture capital firms differ', *Journal of Business Venturing*, 10(2), pp. 157–179.

Emerson, R. (1976) 'Social exchange theory', *Annual Review of Sociology*, 2(1), pp. 335–362.

England, P. and Iossifidis, L. (2014) *The 'Strategy for UK Life Sciences', two years on [WWW]*. Available at: http://www.taylorwessing.com/synapse/ti_strategylifesciences.html (Accessed: 3 February 2018).

Erev, I. and Rapoport, A. (1990) 'Provision of step-level public goods the sequential contribution mechanism', *Journal of Conflict Resolution*, 34(3), pp. 401–425.

Fairchild, R. (2011) 'An entrepreneur's choice of venture capitalist or angel-financing: A behavioral game-theoretic approach', *Journal of Business Venturing*, 26(3), pp. 359–374.

Fassin, Y. and Drover, W. (2017) 'Ethics in Entrepreneurial Finance: Exploring Problems in Venture Partner Entry and Exit', *Journal of Business Ethics*, 140(4), pp. 649–672.

Fernhaber, S. A. and McDougall-Covin, P. P. (2009) 'Venture Capitalists as Catalysts to New Venture Internationalization: The Impact of Their Knowledge and Reputation

Resources', *Entrepreneurship Theory and Practice*, 33(1), pp. 277–295.

Flanagan, J. C. (1954) 'The critical incident technique', *Psychological bulletin*, 51(4), p. 327.

Flynn, D. and Forman, A. M. (2001) 'Life cycles of new venture organizations: Different factors affecting performance', *Journal of Developmental Entrepreneurship*, 6(1), pp. 41–58.

Fontana, A. and Frey, J. H. (1998) 'Interviewing, the art of science', in Denzin, N. K. and Lincoln, Y. S. (eds) *Collecting and Interpreting Qualitative Materials*. Thousand Oaks: Sage Publications.

Forbes, D., Korsgaard, M. and Sapienza, H. (2010) 'Financing decisions as a source of conflict in venture boards', *Journal of Business Venturing*, 25(6), pp. 579–592.

Fried, V. H., Bruton, G. D. and Hisrich, R. D. (1998) 'Strategy and the board of directors in venture capital-backed firms', *Journal of Business Venturing*, 13(6), pp. 493–503.

Gabrielsson, J. and Huse, M. (2002) 'The venture capitalist and the board of directors in SMEs: roles and processes', *Venture Capital: An International Journal of Entrepreneurial Finance*, 4(2), pp. 125–146.

George, B., Erikson, T. and Parhankangas, A. (2016) 'Preventing dysfunctional conflict: examining the relationship between different types of managerial conflict in venture capital-backed firms', *Venture Capital: An International Journal of Entrepreneurial Finance*, 18(4), pp. 279–296.

Geyskens, I., Steenkamp, J. and Scheer, L. (1996) 'The effects of trust and interdependence on relationship commitment: A trans-Atlantic study', *International Journal of Research in Marketing*, 13(4), pp. 303–317.

Gibson, C. B. (2017) 'Elaboration, Generalization, Triangulation, and Interpretation', *Organizational Research Methods*, 20(2), pp. 193–223.

Gioia, D. A., Corley, K. G. and Hamilton, A. L. (2013) 'Seeking qualitative rigor in inductive research notes on the Gioia methodology', *Organizational Research Methods*, 16(1), pp. 15–31.

Glaser, B. and Strauss, A. (1967) *The discovery grounded theory: strategies for qualitative inquiry*. Chicago: Aldin.

Gomez-Mejia, L. R., Balkin, D. B. and Welbourne, T. M. (1990) 'Influence of venture capitalists on high tech management', *The Journal of High Technology Management Research*, 1(1), pp. 103–118.

Gorman, M. and Sahlman, W. A. (1989) 'What do venture capitalists do?', *Journal of Business Venturing*, 4(4), pp. 231–248.

Griffith, R., Miller, H. and O'Connell, M. (2014) *The UK will introduce a Patent Box, but to whose benefit? [WWW], Institute for Fiscal Studies*. Available at: http://www.ifs.org.uk/publications/5362 (Accessed: 3 February 2018).

Guba, E. G. and Lincoln, Y. S. (1994) 'Competing paradigms in qualitative research', in Denzin, N. K. and Lincoln, Y. S. (eds) *Handbook of Qualitative Research*. Thousand Oaks: Sage, pp. 105–117.

Gupta, A. K. and Sapienza, H. J. (1992) 'Determinants of venture capital firms' preferences regarding the industry diversity and geographic scope of their investments', *Journal of Business Venturing*, 7(5), pp. 347–362.

Haeussler, C. and Colyvas, J. A. (2011) 'Breaking the ivory tower: Academic entrepreneurship in the life sciences in UK and Germany', *Research Policy*, 40(1), pp. 41–54.

Hall, P. A. and Soskice, D. W. (2001) *Varieties of capitalism : the institutional foundations of comparative advantage*. Oxford: Oxford University Press.

Hammersley, M. (2013) *What's wrong with ethnography? : methodological explorations*. London: Routledge.

Heirman, A. and Clarysse, B. (2004) 'How and Why do Research-Based Start-Ups Differ at Founding? A Resource-Based Configurational Perspective', *The Journal of Technology Transfer*, 29(3–4), pp. 247–268.

Hellmann, T. and Puri, M. (2002) 'On the fundamental role of venture capital', *Economic Review-Federal Reserve Bank of Atlanta*, 87(4), pp. 19–24.

Hewitt-Dundas, N. (2015) *Profiling UK university spin-outs [WWW], ERC Research Paper, Vol 35*. Available at: http://www.enterpriseresearch.ac.uk/wp-content/uploads/2015/07/ERC-ResPap35-M.-Hewitt-Dundas.pdf (Accessed: 3 February 2018).

Higashide, H. and Birley, S. (2002) 'The consequences of conflict between the venture capitalist and the entrepreneurial team in the United Kingdom from the perspective of the venture capitalist', *Journal of Business Venturing*, 17(1), pp. 59–81.

High-Tech Gründerfonds GmbH (2015) *Facts & Figures [WWW]*. Available at: https://high-tech-gruenderfonds.de/en/#facts-figures-2 (Accessed: 3 February 2018).

HM Government (2012) *Strategy for UK Life Sciences One Year On [WWW]*. Available at:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/36684/12-1346-strategy-for-uk-life-sciences-one-year-on.pdf (Accessed: 3 February 2018).

Hofstede, G. H., Hofstede, G. J. and Minkov, M. (2010) *Cultures and organizations:*

*software of the mind : intercultural cooperation and its importance for survival*. New York; London: McGraw-Hill.

Hopp, C. and Lukas, C. (2014) 'A Signaling Perspective on Partner Selection in Venture Capital Syndicates', *Entrepreneurship Theory and Practice*, 38(3), pp. 635–670.

Invest Europe Research (2016) *European Private Equity Activity Data 2007-2015 [WWW]*. Available at: http://www.investeurope.eu/research/activity-data/annual-activity-statistics/ (Accessed: 3 February 2018).

Jääskeläinen, M. (2012) 'Venture capital syndication: Synthesis and future directions', *International Journal of Management Reviews*, 14(4), pp. 444–463.

Jehn, K. (1995) 'A multimethod examination of the benefits and detriments of intragroup conflict', *Administrative Science Quarterly*, 40(2), pp. 256–282.

Joffe, H. and Yardley, L. (2004) 'Content and thematic analysis', in Marks, D. and Yardley, L. (eds) *Research Methods for Clinical and Health Psychology*. London: Sage.

Jones, O. and Gatrell, C. (2014) 'Editorial: The Future of Writing and Reviewing for IJMR', *International Journal of Management Reviews*, 16(3), pp. 249–264.

Kaplan, S. N. and Strömberg, P. E. R. (2004) 'Characteristics, contracts, and actions: Evidence from venture capitalist analyses', *The Journal of Finance*, 59(5), pp. 2177–2210.

Khanin, D. and Turel, O. (2013) 'Conflicts between venture capitalists and CEOs of their portfolio companies', *Journal of Small Business Strategy*, 23(1), pp. 31–55.

King, N. (2001) 'Using Interviews in Qualitative Research', in Symon, G., Cassell, C., and Dickson, R. (eds) *Qualitative methods in organizational research and practice*. London: Sage publications, pp. 11–22.

Kneller, R. (2011) 'The importance of new companies for innovation, and ways to improve Japan's environment for science based research', in Watanabe, T. (ed.) *University and Human Resource Development in Innovation Systems*. Tokyo: Hakuto-Shobo Publishing Co., pp. 173–200.

Kneller, R. et al. (2014) 'Industry-University Collaborations in Canada, Japan, the UK and USA – With Emphasis on Publication Freedom and Managing the Intellectual Property Lock-Up Problem', *PLoS ONE*, 9(3), p. e90302.

Knockaert, M. et al. (2006) 'Do human capital and fund characteristics drive follow-up behaviour of early stage high-tech VCs?', *International Journal of Technology Management*, 34(1), pp. 7–27.

Knockaert, M. and Vanacker, T. (2013) 'The association between venture capitalists' selection and value adding behavior: evidence from early stage high tech venture capitalists', *Small Business Economics*, 40(3), pp. 493–509.

Kragt, A. Van de and Orbell, J. (1983) ‘The minimal contributing set as a solution to public goods problems’, *The American Political Science Review*, 77(1), pp. 112–122.

Kvale, S. (1983) ‘The qualitative research interview: A phenomenological and a hermeneutical mode of understanding’, *Journal of phenomenological psychology*, 14(2), pp. 171–201.

Large, D. and Muegge, S. (2008) ‘Venture capitalists’ non-financial value-added: an evaluation of the evidence and implications for research’, *Venture Capital: An International Journal of Entrepreneurial Finance*, 10(1), pp. 21–53.

Lawton, S. (2016) *European Biotechnology*. Oslo: Horn International AS.

Lerner, J. (1995) ‘Venture capitalists and the oversight of private firms’, *The Journal of Finance*, 50(1), pp. 301–318.

Lim, K. and Cu, B. (2012) ‘The effects of social networks and contractual characteristics on the relationship between venture capitalists and entrepreneurs’, *Asia Pacific Journal of Management*, 29(3), pp. 573–596.

Locke, K. D. (2001) *Grounded theory in management research*. Thousand Oaks: Sage Publications.

Lockett, A., Ucbasaran, D. and Butler, J. (2006) ‘Opening up the investor–investee dyad: syndicates, teams, and networks’, *Entrepreneurship Theory and Practice*, 30(2), pp. 117–130.

Luukkonen, T., Deschryvere, M. and Bertoni, F. (2013) ‘The value added by government venture capital funds compared with independent venture capital funds’, *Technovation*, 33(4), pp. 154–162.

MacMillan, I. C., Kulow, D. M. and Khoylian, R. (1989) ‘Venture capitalists’ involvement in their investments: Extent and performance’, *Journal of Business Venturing*, 4(1), pp. 27–47.

Manigart, S. et al. (2006) ‘Venture Capitalists’ Decision to Syndicate’, *Entrepreneurship Theory and Practice*, 30(2), pp. 131–153.

Manigart, S. (2013) ‘Venture Capital Investors and Portfolio Firms’, *Foundations and Trends in Entrepreneurship*, 9(4–5), pp. 365–570.

De Massis, A. et al. (2018) ‘Sector-Based Entrepreneurial Capabilities and the Promise of Sector Studies in Entrepreneurship.’, *Entrepreneurship: Theory & Practice*, 42(1), pp. 3–23.

Maula, M., Autio, E. and Murray, G. (2005) ‘Corporate venture capitalists and independent venture capitalists: What do they know, who do they know and should entrepreneurs care?’, *Venture Capital: An International Journal of Entrepreneurial*

*Finance*, 7(1), pp. 3–21.

Maxwell, A. L. and Lévesque, M. (2014) 'Trustworthiness: A Critical Ingredient for Entrepreneurs Seeking Investors', *Entrepreneurship Theory and Practice*, 38(5), pp. 1057–1080.

Meuleman, M. et al. (2017) 'Venturing into the unknown with strangers: Substitutes of relational embeddedness in cross-border partner selection in venture capital syndicates', *Journal of Business Venturing*, 32(2), pp. 131–144.

Mitchell, T. R. and James, L. R. (2001) 'Building better theory: Time and the specification of when things happen', *Academy of Management Review*, 26(4), pp. 530–547.

Molina-Azorin, J. F. (2012) 'Mixed Methods Research in Strategic Management', *Organizational Research Methods*, 15(1), pp. 33–56.

Murphy, C., Klotz, A. C. and Kreiner, G. E. (2017) 'Blue skies and black boxes: The promise (and practice) of grounded theory in human resource management research', *Human Resource Management Review*, 27(2), pp. 291–305.

Murray, G. (1996) 'A synthesis of six exploratory, European case studies of successfully exited, venture capital-financed, new technology-based firms', *Entrepreneurship Theory and Practice*, 20(4), pp. 41–60.

Mustar, P. et al. (2006) 'Conceptualising the heterogeneity of research-based spin-offs: A multi-dimensional taxonomy', *Research Policy*, 35(2), pp. 289–308.

Nash, J. (1951) 'Non-cooperative games', *Annals of mathematics*, 54(2), pp. 286–295.

OECD (2015) *Venture capital investments by sector, selected European countries: Percentage, 2014 [WWW]*. OECD Publishing. Available at: http://www.keepeek.com/Digital-Asset-Management/oecd/industry-and-services/entrepreneurship-at-a-glance-2015/venture-capital-investments-by-sector-selected-european-countries_entrepreneur_aag-2015-graph97-en#page1 (Accessed: 3 February 2018).

OECD (2016) *Main Science and Technology Indicators [WWW]*. Available at: http://dx.doi.org/10.1787/data-00182-en (Accessed: 3 February 2018).

Olson, M. (1965) *The logic of collective action*. London: Harvard University Press.

Ooghe, H., Manigart, S. and Fassin, Y. (1991) 'Growth patterns of the European venture capital industry', *Journal of Business Venturing*, 6(6), pp. 381–404.

Van Osnabrugge, M. S. (1998) *The financing of entrepreneurial firms in the UK: a comparison of business angels and venture capital procedures*. (PhD), University of Oxford.

Oxford Dictionary (2016a) *Definition of CEO in English [WWW]*. Available at: https://en.oxforddictionaries.com/definition/ceo (Accessed: 3 February 2018).

Oxford Dictionary (2016b) *Definition of manager in English [WWW]*. Available at: https://en.oxforddictionaries.com/definition/manager (Accessed: 3 February 2018).

Parhankangas, A. and Landström, H. (2006) 'How venture capitalists respond to unmet expectations: The role of social environment', *Journal of Business Venturing*, 21(6), pp. 773–801.

Patton, M. (2015) *Qualitative evaluation and research methods*. 4th edn. Newbury Park: Sage publications.

Patzelt, H., Williams, T. A. and Shepherd, D. A. (2014) 'Overcoming the Walls That Constrain Us: The Role of Entrepreneurship Education Programs in Prison', *Academy of Management Learning & Education*. Academy of Management, 13(4), pp. 587–620.

Pina-Stranger, A. and Lazega, E. (2011) 'Bringing personalized ties back in: Their added value for biotech entrepreneurs and venture capitalists interorganizational networks', *The Sociological Quarterly*, 52(2), pp. 268–292.

Pinch, S. and Sunley, P. (2009) 'Understanding the role of venture capitalists in knowledge dissemination in high-technology agglomerations: a case study of the University of Southampton spin-off cluster', *Venture Capital: An International Journal of Entrepreneurial Finance*, 11(4), pp. 311–333.

Poole, M. and Van de Ven, A. (2004) 'Theories of organizational change and innovation processes', in Poole, M. and Van de Ven, A. H. (eds) *Handbook of organizational change and Innovation*. 1st edn. Oxford: Oxford University Press.

Proksch, D. et al. (2017) 'Value-adding activities of venture capital companies: a content analysis of investor's original documents in Germany', *Venture Capital: An International Journal of Entrepreneurial Finance*, 19(3), pp. 129–146.

QSR International (2014) *Nvivo 10 for Windows - Getting Started [WWW]*. Available at: http://download.qsrinternational.com/Document/NVivo10/NVivo10-Getting-Started-Guide.pdf (Accessed: 3 February 2018).

Rapoport, A. and Chammah, A. (1965) *Prisoner's dilemma: A study in conflict and cooperation*. United States of America: University of Michigan Press.

Rasmussen, E. (2011) 'Understanding academic entrepreneurship: Exploring the emergence of university spin-off ventures using process theories', *International Small Business Journal*, 29(5), pp. 448–471.

Ring, P. S. and Van de Ven, A. H. (1994) 'Developmental processes of cooperative interorganizational relationships', *Academy of Management Review*, 19(1), pp. 90–118.

Ritchie, J. et al. (2013) *Qualitative research practice: A guide for social science students and researchers*. 2nd edn. Edited by J. Ritchie et al. London: Sage.

Rosiello, A. and Parris, S. (2009) 'The patterns of venture capital investment in the UK bio-healthcare sector: the role of proximity, cumulative learning and specialisation', *Venture Capital: An International Journal of Entrepreneurial Finance*, 11(3), pp. 185–211.

Sætre, A. L. F. (2003) 'Entrepreneurial perspectives on informal venture capital', *Venture Capital: An International Journal of Entrepreneurial Finance*, 5(1), pp. 71–94.

Sapienza, H. J. and De Clercq, D. (2000) 'Venture capitalist-entrepreneur relationships in technology-based ventures', *Enterprise and Innovation Management Studies*, 1(1), pp. 57–71.

Sapienza, H. J. and Gupta, A. K. (1994) 'Impact of agency risks and task uncertainty on venture capitalist–CEO interaction', *Academy of management Journal*, 37(6), pp. 1618–1632.

Sapienza, H. J. and Korsgaard, M. A. (1996) 'Procedural justice in entrepreneur-investor relations', *Academy of management Journal*, 39(3), pp. 544–574.

Sapienza, H. J., Manigart, S. and Vermeir, W. (1996) 'Venture capitalist governance and value added in four countries', *Journal of Business Venturing*, 11(6), pp. 439–469.

Shane, S. A. (2004) *Academic entrepreneurship: University spinoffs and wealth creation*. Cheltenham: Edward Elgar Publishing.

Shepherd, D. A. and Zacharakis, A. (2001) 'The venture capitalist-entrepreneur relationship: control, trust and confidence in co-operative behaviour', *Venture Capital: An International Journal of Entrepreneurial Finance*, 3(2), pp. 129–149.

Shepherd, D. and Williams, T. (2014) 'Local venturing as compassion organizing in the aftermath of a natural disaster: The role of localness and community in reducing suffering', *Journal of Management Studies*, 51(6), pp. 952–994.

Smets, M., Jarzabkowski, P. and Burke, G. (2015) 'Reinsurance trading in Lloyd's of London: Balancing conflicting-yet-complementary logics in practice', *Academy of Management*, 58(3), pp. 932–970.

Sweeting, R. C. and Wong, C. F. (1997) 'A UK "Hands-off" Venture Capital Firm and the Handling of Post-investment Investor-Investee Relationships', *Journal of Management Studies*, 34(1), pp. 125–152.

Taylor, S. and Spicer, A. (2007) 'Time for space: A narrative review of research on organizational spaces', *International Journal of Management Reviews*, 9(4), pp. 325–346.

Timmons, J. A. and Bygrave, W. D. (1986) 'Venture capital's role in financing innovation

for economic growth', *Journal of Business Venturing*, 1(2), pp. 161–176.

Torres, A. M. and Murray, J. A. (2003) 'The role of networks in venture creation among Irish software firms', *Irish Marketing Review*, 16(1), pp. 5–14.

Ţurcan, R. V (2008) 'Entrepreneur–venture capitalist relationships: mitigating post-investment dyadic tensions', *Venture Capital: An International Journal of Entrepreneurial Finance*, 10(3), pp. 281–304.

Tyler, T. R. (1989) 'The psychology of procedural justice: A test of the group-value model', *Journal of personality and social psychology*, 57(5), pp. 830–838.

Vanaelst, I. et al. (2006) 'Entrepreneurial Team Development in Academic Spinouts: An Examination of Team Heterogeneity', *Entrepreneurship Theory and Practice*, 30(2), pp. 249–271.

Venkataraman, S. (1997) 'The distinctive domain of entrepreneurship research, an editor's perspective', in Katz, J. and Brockhaus, R. (eds) *Advances in entrepreneurship, firm emergence and growth*. Greenwich: JAI Press, pp. 119–138.

Vohora, A., Wright, M. and Lockett, A. (2004) 'Critical junctures in the development of university high-tech spinout companies', *Research Policy*, 33(1), pp. 147–175.

Van de Vrande, V. and Vanhaverbeke, W. (2013) 'How Prior Corporate Venture Capital Investments Shape Technological Alliances: A Real Options Approach', *Entrepreneurship Theory and Practice*, 37(5), pp. 1019–1043.

Williams, T. and Shepherd, D. (2015) 'Mixed Method Social Network Analysis Combining Inductive Concept Development, Content Analysis, and Secondary Data for Quantitative Analysis', *Organizational Research Methods*, 20(2), pp. 268–298.

Wright, M. et al. (2006) 'University spin-out companies and venture capital', *Research Policy*, 35(4), pp. 481–501.

Wright, M. et al. (2007) *Academic entrepreneurship in Europe*. Cornwall: Edward Elgar Publishing.

Wright, M. and Lockett, A. (2003) 'The Structure and Management of Alliances: Syndication in the Venture Capital Industry', *Journal of Management Studies*, 40(8), pp. 2073–2102.

Wright, M., Pruthi, S. and Lockett, A. (2005) 'International venture capital research: From cross-country comparisons to crossing borders', *International Journal of Management Reviews*, 7(3), pp. 135–165.

Yin, R. (2016) *Qualitative research from start to finish*. 2nd edn. New York: The Guilford Press.

Yitshaki, R. (2008) 'Venture capitalist-entrepreneur conflicts: An exploratory study of

determinants and possible resolutions', *International Journal of Conflict Management*, 19(3), pp. 262–292.

Zacharakis, A., Erikson, T. and George, B. (2010) 'Conflict between the VC and entrepreneur: the entrepreneur's perspective', *Venture Capital: An International Journal of Entrepreneurial Finance*, 12(2), pp. 109–126.

Zacharakis, A. L. and Meyer, G. D. (1998) 'A lack of insight: do venture capitalists really understand their own decision process?', *Journal of Business Venturing*, 13(1), pp. 57–76.

Zambelli, S. (2014) '"If the Facts Don't Fit the Theory…": The Security Design Puzzle in Venture Finance', *International Journal of Management Reviews*, 16(4), pp. 500–520.

Zeng, M. and Chen, X.-P. (2003) 'Achieving cooperation in multiparty alliances: A social dilemma approach to partnership management', *Academy of Management Review*, 28(4), pp. 587–605.

Zheng, Y. (2011) 'In Their Eyes: How Entrepreneurs Evaluate Venture Capital Firms', *The Journal of Private Equity*, 14(2), pp. 72–85.

Zou, H. et al. (2016) 'Psychological capital and conflict management in the entrepreneur–venture capitalist relationship in China: The entrepreneur perspective', *International Small Business Journal*, 34(4), pp. 446–467.

Zu Knyphausen-Aufsess, D. (2005) 'Corporate venture capital: Who adds value?', *Venture Capital: An International Journal of Entrepreneurial Finance*, 7(1), pp. 23–49.

# 9 Appendix

## 9.1 Interview schedule

**Interview questions for a phone interview**

1. Since when are you funded by a VC?

**Timeline approach:**

2. Imagine a **blank graph** or a **timeline**, can you talk me through the ups and downs of the relationship with the VC in respect to help received since you are funded by them?

**Narrowed down focus on time:**

3. After they started funding you: When did you feel them to help you for the first time?

4. When did you have your first conflict?

**Critical Incident(s) Technique:**

5. Now I want to focus on the moment where you felt them to help you the most:

Which moment of received help would you call the strongest?

a. What happened that it turned from satisfaction into dissatisfaction?

b. What did the VC do?

c. How did you react?

d. How did he respond to your reaction?

e. What in particular made you feel strong dissatisfaction?

f. Did you trust the VC to have your best interest in mind?

6. Let us focus on one particularly strong conflict: Which moment of conflict would you call the strongest?

a. What happened that it turned from dissatisfaction to satisfaction?

b. What did the VC do?

c. How did you react to that?

d. How did he respond to your reaction?

e. Did you trust the VC?

7. Is there anything that would have improved your relationship with the VC in respect to help received?

8. Did you consider alternative sources of funding (peer to peer/crowdfunding)?

9. Is there anything you think I should have asked you?

10. If you could choose all over again, would you partner with the VC again? Why?

Figure 19 **Research interview schedule**

## 9.2 First contact email

Dear XY,

My name is Lutz Brusche and I am a researcher at the Leeds University Business School and part of a research team that currently conducts research on venture capitalists' role for university spin-off firms in the UK and Germany.
You and your company are of great interest for our research project and we were wondering whether we could invite you to participate in the form of a short conversation. On completion of the research we would be happy to share our findings and insights with you.

I look forward to hearing from you!

Best wishes

Lutz Brusche
The project's website: http://lec.leeds.ac.uk/research/uso-research/

## 9.3 Participant consent form

Leeds University Business School

UNIVERSITY OF LEEDS

**Consent to take part in research on venture capitals' role for academic firms**

| | Add your initials next to the statement if you agree |
|---|---|
| I confirm that I have read and understood the information sheet explaining the above research project and I have had the opportunity to ask questions about the project. | |
| I understand that my participation is voluntary and that I am free to withdraw at any time until the end of the first month after the researcher ended his data collection without giving any reason and without there being any negative consequences. In addition, should I not wish to answer any particular question or questions, I am free to decline.<br>Contact number: 0044 758 3369 085<br>Data already collected that the participant does not want to be included in the study will be excluded. | |
| I give permission for members of the research team to have access to my anonymised responses. I understand that my name will not be linked with the research materials, and I will not be identified or identifiable in the report or reports that result from the research.<br>I understand that my responses will be kept strictly confidential. | |
| I agree for the data collected from me to be used in relevant future research in an anonymised form. | |
| I agree to take part in the above research project and will inform the lead researcher should my contact details change. | |

| | |
|---|---|
| Name of participant | |
| Participant's signature | |
| Date | |
| Name of lead researcher | Lutz Alexander Brusche |
| Signature | |
| Date | |

**Figure 20 Participant consent form**