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How do VC nature and degree of involvement impact portfolio company performance?

A study on focus on support and focus on monitoring & control in Scandinavian venture capital

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Executive Summary

This thesis combines the early studies on degree of involvement with the contemporary studies on nature of involvement in order to answer the research question "How do the degree and nature of Scandinavian VC involvement in post-investment activities impact performance of their portfolio companies?" In doing this, a distinction between a focus on support and focus on monitoring & control is made. Hence this thesis can move beyond the common active-passive distinction, using quantitative methods to derive conclusions on the nature of involvement. Using statistical analysis this thesis found that, for the nature of involvement in the Scandinavian context, a focus on support yields better performance compared to a focus on monitoring & control. Furthermore, based on conclusions on both score for degree of involvement as well as involvement in various post-investment activities, a VC investor should carefully consider which post-investment activities can create value based on the specific needs and situation of each portfolio company as being too actively involved can be counterproductive.

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Table of Contents

1 Introduction **2**

1.1 Problem discussion . . . 3

1.2 Aim of the study . . . 5

1.3 Theoretical and practical relevance . . . 6

2 Literature Review **7**

2.1 Background on VC . . . 9

2.1.1 Private equity . . . 9

2.1.2 VC investment process . . . 9

2.2 VC in Scandinavia . . . 11

2.3 Post-investment activities . . . 13

2.3.1 Degree of involvement . . . 14

2.3.2 Nature of involvement . . . 18

2.4 Performance . . . 26

2.4.1 Early studies on degree of involvement . . . 26

2.4.2 Contemporary studies on nature of involvement . . . 27

2.5 Contributions . . . 28

2.6 Theoretical framework and hypotheses development . . . 29

2.7 Limitations . . . 32

3 Methodology **34**

3.1 Research Design . . . 34

3.1.1 Literature review . . . 34

3.1.2 Pre-study . . . 35

3.1.3 Main study - Data Collection Method . . . 36

3.1.4 Main study - Survey design . . . 36

3.1.5 Main study - Sample & Respondents . . . 39

3.2 Data Analysis . . . 39

3.3 Robustness checks . . . 43

3.4 Potential Limitations 44

4 Results **47**

4.1 Descriptive statistics 47

4.2 Factor analyses 49

4.3 Regression model 50

4.4 T-tests 54

4.5 Overview of hypotheses 55

5 Discussion **57**

5.1 Discussion of results 57

5.2 Theoretical implications 60

5.3 Practical implications 61

5.4 Future research 62

5.5 Limitations 63

5.6 Concluding remarks 64

References **65**

6 Appendices **69**

Key concepts

Venture Capital (VC) - a financial intermediary investing capital in privately owned, early stage companies with large growth potential, and whom generally provides non-financial value-adding services in addition to the capital invested.

Business Angels (BA) - refers to private individuals investing in early stage ventures, due to similarities to VC used in literature review to complement the VC literature.

Degree of involvement - deals with the extent a VC investor gets involved in post-investment activities and ranges from being very passive and barely involved in the venture to being very actively involved in various types of activities.

Nature of involvement - deals with explaining how a VC investor gets involved, and refers to the distinction between an attitude with a focus on support and an attitude with focus on monitoring & control.

Focus on support - deals with both instrumental and non-instrumental support activities, and is related to value creation and based on the theoretical assumptions of the resource dependence theory and resource based view.

Focus on monitoring & control - deals with control and monitoring activities, and is related to value protection and based on the theoretical assumptions of agency theory.

Performance - in this thesis, performance deals with the portfolio company performance and is measured using profit, revenue growth and return on investment(ROI). All measures indicate the growth and development the portfolio company is achieving and are used to indicate the VC's ability to add value to the portfolio firm.

1 Introduction

The European Venture Capital Association (EVCA) describes venture capital, hereafter referred to as VC, as a financial intermediary investing primarily institutional capital in privately owned, early stage companies with large growth potential. These investments are characterized by high uncertainty and non-liquid assets, which makes other sources of capital unlikely to be available. VCs are active investors whom, in addition to capital, potentially bring relevant knowledge, business contacts, networks, reputation, and strategic advice to their investments.

VC has played an important role in the development of well known ventures, like Apple, Facebook and Google. Examples of successful VC investments in Sweden include Skype, Spotify, Klarna and iZettle. Hence, venture capitalists and the relationship with their portfolio firms have been the focus of much debate and research (Berglund, 2011; De Clercq and Manigart, 2007; Manigart and Wright, 2013; Sapienza, 1992; Sexton and Landström, 2000). There is a lot of literature suggesting that VC can contribute post-investment to the success of new ventures in other ways than financing, and many VCs appear to deliberately promote themselves as active value-adding investors (Berglund, 2011; Ehrlich et al., 1994; Gorman and Sahlman, 1989; Large and Muegge, 2008; Macmillan et al., 1989; Niemann, 2011; Sapienza, 1992; Wijbenga et al., 2007). Accordingly, from an entrepreneur's perspective, in addition to capital, an investor may provide a wide array of benefits, such as networking and operating expertise, involvement in operations, management and personnel recruitment, or financial and strategic management. These skills constitute a set of benefits that may evolve through interactions between entrepreneurs and their investors (Ehrlich et al., 1994). While there is an impressive, growing number of studies on VC in general and the post-investment activities particularly, there are still areas that remain under-researched. One of these areas concerns 'how' VC investors impact performance post-investment. Early studies focused on the involvement frequency in relation to performance, rather than the nature of post-investment activities (De Clercq and Manigart, 2007). This study contributes to this research by combining the degree of involvement and nature of involvement in analyzing how VC post-investment activities impact portfolio firm performance. In the following sections, I will firstly present the problem discussion, followed by the aim of the study and theoretical & practical relevance.

1.1 Problem discussion

A key characteristic of VC as a source of capital is the value-adding services to the portfolio companies. Due to the dilution of ownership and high costs of equity financing, these activities are often an important consideration for the entrepreneur when choosing VC as a source of capital. In pursuing these post-investment activities, one can distinguish between monitoring & control, and supporting activities, as they rely on different theoretical assumptions (De Clercq and Manigart, 2007). Whereas support activities are characterized by value creation, and can be explained using resource dependence theory and the resource based view, monitoring & control activities are characterized by value protection and are mainly explained using agency theory (Berg-Utby et al., 2007; Gabrielsson and Huse, 2002; Wijbenga et al., 2007). These two distinct types of post-investment activities and their effect on performance form the basis of this thesis. The basic conceptual model used can be seen in figure 1.

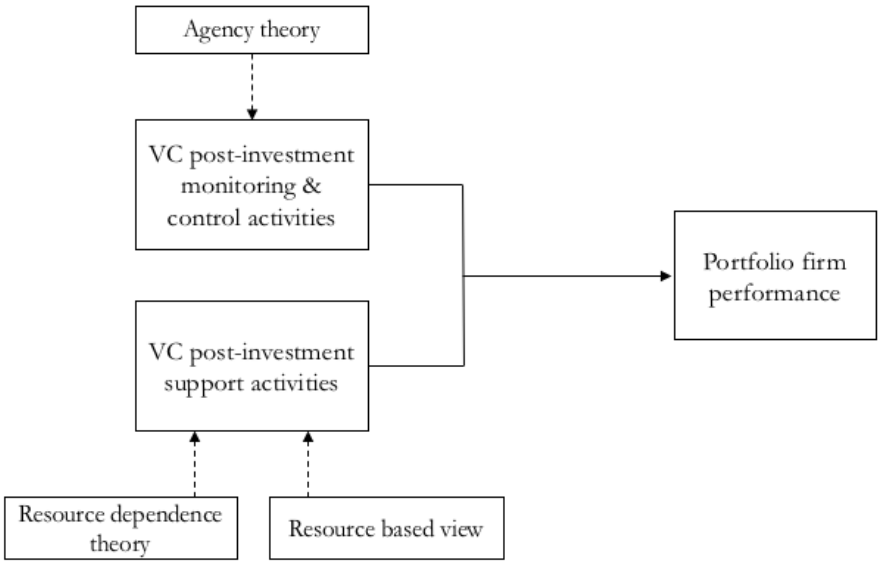


Figure 1: Basic conceptual model of VC value added

This thesis is based on two main streams of literature. Firstly, the early studies on degree of involvement during post-investment activities in relation to performance (Ehrlich et al., 1994; Gorman and Sahlman, 1989; Macmillan et al., 1989; Sapienza, 1992). Considering these early studies, especially the study by Macmillan et al. (1989) is often replicated and adopted by other authors. Macmillan et al. (1989) was the first study addressing degree of involvement

during post-investment activities to performance. Ehrlich et al. (1994), adopted the survey to study investor involvement from the entrepreneur's perspective, and Sapienza (1992) studied involvement using the VC-entrepreneur dyad, thereby being able to not only report on both perspectives but also discrepancies in perceptions on the same investment. These early studies focused on assessing post-investment involvement and its relation to performance, and emphasis was placed on the distinction between active and passive investors.

The second stream of literature are the contemporary studies addressing the nature of involvement and focusing on 'how' performance is impacted during post-investment activities (Berglund, 2011; Macht, 2011; Niemann, 2011; Wijbenga et al., 2007). This literature addresses theoretical assumptions inherent to different VC attitudes using both agency theory and resource theories. However, this current research is critical towards the early studies as in such relationship driven activities, little attention has been paid to the nature of the involvement. Berglund (2011) for example stresses that to 'be deeply involved', 'act as a sounding board' or 'monitor operating performance' in a venture may mean very different things to VCs depending on the venture's situation and VC style and experience. He thereby argues to carefully assess the various activities and the underlying assumptions related to them. Macht (2011) addresses the same topic in the business angel(BA) context by stating that the passive-active distinction does not poses any explanatory power. Similarly, Manigart and Wright (2013) address the lack of clarity in explaining how value is created by stating that the majority of research has treated the value-adding process played by VCs as a 'black box'. Recently, several exploratory studies have focused on addressing the nature of VC involvement using theories to explain the underlying behavioral assumptions and addressing how differences in these theoretical assumptions have different implications for performance (Berglund, 2011; Macht, 2011; Niemann, 2011; Wijbenga et al., 2007). However, these studies address that more research is needed in order to gain explanatory power describing how nature of involvement impacts performance.

In addition to a need for more research on the nature of involvement, Berglund (2011) addresses the emphasis of the VC literature on the US market, and how this leads to our understanding of regional differences being quite poor. This is confirmed by Spliid (2013)

who underlines the lack of literature describing and analyzing private equity, including VC, in the Nordic region. Berglund (2011) furthermore describes Scandinavia as the 'young Silicon Valley' due to the high ranking on regional creativity and innovativeness indexes. The Financial Times has reported that Stockholm has the second highest per capita rate of start-ups reaching a value of one billion USD worldwide after Silicon Valley. Groh et al. (2010) find that the Scandinavian countries are among the most attractive markets in Europe for VC with a third, fourth and fifth place for Denmark, Sweden and Norway respectively. The similarities in institutional environment, as well as the attractiveness of the VC market in Scandinavia make this region particularly interesting for this study.

In conclusion, this thesis addresses both the limited explanatory power in the current literature on how VC involvement impacts performance as well as the limited research on both degree and nature of involvement addressing Scandinavian VC.

1.2 Aim of the study

In order to address the problem outlined above, this thesis will combine the early research on degree of involvement with the contemporary studies on nature of involvement in the Scandinavian context and assess how both factors impact portfolio company performance. By combining degree and nature of involvement, this study aims to move beyond the active-passive distinction using a focus on support versus a focus on monitoring & control. Using the combination of degree and nature of involvement and their impact on portfolio firm performance, this thesis does not only assess to what extent VCs should get involved in post-investment activities but also draws conclusions on how post-investment involvement will yield the best results. This leads to the following research question:

> How do the degree and nature of Scandinavian VC involvement in post-investment activities impact performance of their portfolio companies?

1.3 Theoretical and practical relevance

This thesis is relevant both from a theoretical and a practical perspective. Firstly, theoretically it adds to the impressive body of literature on the VC post-investment activities and addresses issues that have not received much attention to date. De Clercq and Manigart (2007) state that future research should further build on the literature pertaining how value is added in the VC-entrepreneur relationship. As outlined above, recently several exploratory studies have opened up the 'black box' as Manigart and Wright (2013) describe it, but more research is needed in order to have explanatory power describing the impact nature of involvement has on portfolio company performance. Niemann (2011) addresses that it is still under-researched how value creation is delivered to ventures. By addressing a combination of degree and nature of involvement with a quantitative study, this thesis builds on the exploratory research by either confirming or rejecting the implications from these studies in a deductive analysis. Additionally, this thesis adds to the limited existing literature on Scandinavian VC, an institutional context that has become a very attractive environment for VC but has not received much attention in the literature due to the focus on the US (Berglund, 2011; Manigart and Wright, 2013).

From a practical perspective this thesis is relevant for both entrepreneurs and VC investors (Macht, 2011). Firstly, to entrepreneurs the content of this thesis may aid in their decision making regarding prospective investors by recognizing that investors can offer substantially positive contributions independent of capital. VC investors, on the other hand can enhance their interactions, both during the pre-investment decision making and their post-investment involvement if they are aware of the impact various activities and attitudes have on their portfolio companies.

Taken together, this study seeks to contribute to the field of VC post-investment involvement by building on the exploratory research on the nature of involvement through combining degree and nature of involvement and asses to what extent Scandinavian VCs should be active and whether they should focus their efforts on support or on monitoring & control. In the following chapter I will address the theoretical background, followed by a chapter on the methodology. Then I will present the results, after which I will present the discussion.

2 Literature Review

In this chapter I will create a theoretical framework for this study. After briefly introducing the most important literature, I will describe the broad outline of VC investing in order to provide the reader with a context. Then I will elaborate on the Scandinavian context of this study, after which I will go deeper into the post-investment involvement by elaborating on degree of involvement and nature of involvement. I will continue with a section on performance, and end this chapter by providing the theoretical framework, summarizing the hypotheses made, and discussing the theoretical gap as well as potential limitations.

VCs participate a great deal of pressure on the management team to achieve high results consistent with the business plan. Accordingly, most VCs take a highly active role in the management of their portfolio companies (Ehrlich et al., 1994). Common forms of involvement include acting as a sounding board, serving on the portfolio company's board of directors, making customer and supplier introductions, monitoring operating performance and assisting with strategic issues (Busenitz et al., 2004; Fried and Hisrich, 1995; Macmillan et al., 1989; Timmons and Bygrave, 1986). It seems that VCs with a high frequency of contact with their venture put a high priority on involvement, both monitoring performance and supporting the management team (Gabrielsson and Huse, 2002). Providing non-financial assistance to portfolio companies is an essential task of a VC to reduce the risk-return mix (Gorman and Sahlman, 1989; Manigart and Wright, 2013; Sapienza et al., 1996; Timmons and Bygrave, 1986), however VCs are usually not able to undertake all post-investment activities for all portfolio companies (Gifford, 1997). Hence, VCs have to decide how to allocate their efforts in an optimal manner (Manigart and Wright, 2013).

There is an impressive body of research on the VC post-investment activities written in the past decades. Two streams within this research are particularly relevant for this thesis. Firstly, the early studies on involvement. These quantitative studies focus mostly on the degree of involvement and distinguish between active and passive investors. These are prominent studies in the literature that have been quoted, replicated and adapted many times in the past years. Secondly, this thesis will use the contemporary stream of literature that addresses

the question how VC involvement impacts performance. The literature in this stream I use consists out of literature reviews and exploratory empirical studies. The literature reviews provide an overview of the relevant findings to date and introduce the theoretical bases of the contemporary studies. The empirical studies have focused on opening up the so called 'black box' of involvement activities. This thesis will build on the findings from these studies and develop a theoretical model that combines degree and nature of involvement. A summary of the main studies used in this thesis is presented in table 1.

		Method	Point of view	Research topic
Early studies on degree of involvement	Macmillan et al. (1989)	Survey	VC (US)	Degree of involvement
	Gorman and Sahlman (1989)	Survey	VC (US)	Degree of involvement
	Sapienza (1992)	Survey	VC-entrepreneur dyad (US)	Degree of involvement and VC-CEO interaction
	Ehrlich et al. (1994)	Survey	Entrepreneur (US)	Degree of involvement
Contemporary studies on nature of involvement	De Clercq and Manigart (2007)	Literature review	VC	Providing an overview of the relevant aspects and findings of the post-investment phase, with a focus on the VC-entrepreneur interaction.
	Wijbenga et al. (2007)	Survey	Entrepreneurs (Netherlands)	The role and influence of VC governance activities on performance
	Large and Muegge (2008)	Literature review	VC	Providing an overview of the literature on non-financial value-added by VC
	Niemann (2011)	Survey	VC (Germany)	Social interactions between VC syndicates and ventures
	Berglund (2011)	Semi-structured interviews	VC (US & Scandinavia)	Comparing VC investing in California and Scandinavia
	Macht (2011)	Case study	Ventures with BA investments	Hard vs. soft involvement activities for BA investors
	Manigart and Wright (2013)	Literature review	VC	Providing an overview of the relevant aspects and findings on the VC post-investment phase

Table 1: Overview of main studies used in this thesis

2.1 Background on VC

In this section, I will briefly describe private equity and the VC investment process in order to provide readers not familiar with VC with the context of the post-investment activities this thesis focuses on.

2.1.1 Private equity

VC is a subset within the private equity (PE) investment area. PE refers to investments in non-listed companies, and is often used to develop new products and technologies, to expand working capital, to make acquisitions, to strengthen a company's balance sheet, or to buy out other shareholders (Söderblom and Wiklund, 2006). PE can be split up in three categories, BA, VC and buyout capital. BA refers to private individuals investing in very early stage ventures, and buyout capital refers to investments in established companies. Whereas in terms of post-investment activities VC and buyout capital differ substantially from one another, BA and VC are often quite similar. Hence, in this thesis several studies on BA are used to complement the theory on VC.

2.1.2 VC investment process

The investment process of a VC consists out of several phases (De Clercq et al., 2006; Fried and Hisrich, 1994), as can be seen in figure 2.

The pre-investment phase is a time-consuming and labor-intensive process leading up to the investment being made that takes on average 97.1 days according to Fried and Hisrich (1994). The first step, *deal origination*, refers to the initial contact between entrepreneur and VC (De Clercq et al., 2006). Important for deal origination is deal flow, generating a continuous stream of high quality investment opportunities (Söderblom and Wiklund, 2006). The ventures that approach a VC are always screened. The goal of *deal screening* is to select the ventures that offer the potential for high capital gains (De Clercq et al., 2006), as due to the illiquid and high risk nature of VC investments high growth is needed. For a VC to make an interesting investment, the concept of the business needs to show potential (De Clercq

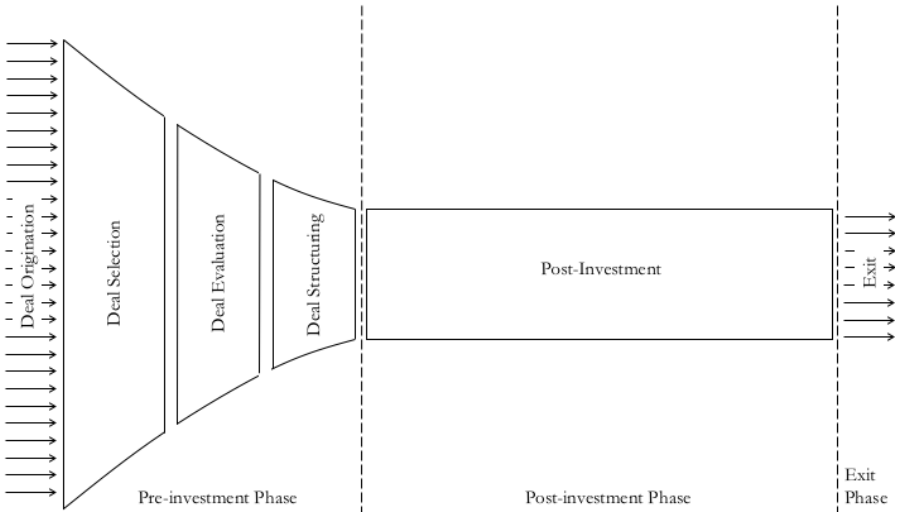


Figure 2: The investment process

et al., 2006; Macmillan et al., 1985), the management has to be knowledgeable and capable of leading the firm through the growth phase (De Clercq et al., 2006; Kaplan and Strömberg, 2001; Macmillan et al., 1985), and the return expectations need to offer significant growth and an exit opportunity within 3-10 years (Gorman and Sahlman, 1989; Macmillan et al., 1985). The purpose of *deal evaluation* is to systematically assess the risks involved in the investment, hence the VC complements the screening with a due diligence process (De Clercq et al., 2006). The final step of the pre-investment phase is *deal structuring*, this refers to the process of negotiating and finalizing the legal documents and ends when the deal is signed (De Clercq et al., 2006). For the VC, deal structuring is an important tool to mitigate risk (Kaplan and Strömberg, 2004). One very common mechanism is to stage the investment across multiple rounds of financing (De Clercq et al., 2006), giving the VC the ability to liquidate if milestones are not met (Kaplan and Strömberg, 2004). Apart from mitigating risks, the financial contracts serve a second purpose. The financial contracts affect the VC's ability and incentives to carry out monitoring, control and support activities post-investment (Kaplan and Strömberg, 2004).

Monitoring, control and support activities take place in *the post-investment phase*. According to Gorman and Sahlman (1989), every year a lead VC spends an average of 112 hours in direct contact with the entrepreneur, either on site or over the phone, and makes an average of 19 visits to the entrepreneur. This step in the investment process is the focus of this thesis, hence

a more in-depth discussion of the post-investment activities will be provided in the upcoming sections.

After a post-investment phase of usually 5 to 7 years (Gorman and Sahlman, 1989), the VC investor needs to realize returns through an *exit*. The exit is already considered before an investment is made, as exiting the investment is the only way an investor can realize returns. Preferential exits are an initial public offering (IPO), trade sale or secondary sale (De Clercq et al., 2006; Söderblom and Wiklund, 2006).

2.2 VC in Scandinavia

There is an impressive number of studies on VC, however VCs' value-adding behavior may differ depending on the part of the world or the institutional context (Manigart and Wright, 2013). Institutional theory argues that a broad range of regulative, normative and cognitive institutions influence the behavior of organizations and individuals (Berglund, 2011). While VC has become a global phenomenon, our knowledge about regional differences is quite poor. Spliid (2013) furthermore stresses the lack of literature describing and analyzing private equity(PE) in the Nordic region(ie. Sweden, Norway, Denmark, Finland and Iceland). Berglund (2011) attributes this to the critical empirical basis on which subsequent theory was developed which is mainly focused on the US. American based data and theories are not necessarily transferable to other countries or regions due to differences in management cultures, size of economies, the structure of industries and differences in the way capital and credit markets work (Spliid, 2013). In the Nordic region, management's motivation factors are different, the investment universe is smaller than in the US and the Nordic VC market is less-developed. This leads to fund raising being more complicated, because Nordic PE firms are dependent on international investors from very different jurisdictions, and there are fewer credit sources in the bank-dominated Nordic credit markets. Finally, the Nordic governments are more eager to control PE and to reduce the industry's tax advantages (Spliid, 2013), indicating the differences in regulative institutions compared to the US.

Over the past years, Nordic PE firms have been able to raise increasingly larger funds and attract additional international investors (Spliid, 2013). Especially the VC market has devel-

oped significantly. Berglund (2011) describes Scandinavia (ie. Sweden, Norway and Denmark) as the 'young Silicon Valley', due to the high ranking on regional creativity and innovativeness indexes. These indexes indicate a high proportion of talented, skilled and well-educated individuals as well as a high concentration of innovation and high technology industries, and a widespread tolerance for diverse lifestyles. Indicating similar normative and cognitive institutions in the Scandinavian countries. These elements combined make the metropolitan areas in Scandinavia a great place for young, often high-technology ventures. Berglund (2011) compares Scandinavian to Californian VC, as Silicon Valley has the highest concentration of VC activity worldwide. It is very clear that Californian VCs have more operational experience which influences priorities and activities during the post-investment phase (Busenitz et al., 2004). Scandinavian VCs are often actively involved, but this involvement remains at arm's length and typically concerns discrete interventions, Californian VCs meet more often and seem to work more intimately together with their portfolio companies. Considering their extensive operational experience, Berglund (2011) reported that this is a natural role for them to assume. A further difference between the two is that whereas Scandinavian VC's seem to seek influence over their portfolio companies, Californian VCs instead seek to establish a working relationship with the entrepreneur (Macmillan et al., 1989). Finally, the study reported a difference in the extent and rigor of the structure applied and the amount of milestones set. Californian VCs tended to set up more milestone goals and test them in shorter increments. This confirms that both the quality and frequency of VC involvement seems related to their operational experience (Busenitz et al., 2004).

Scandinavian VCs seem to prioritize their role as investors. They often describe themselves as being deeply involved and being value adding investors, however, Berglund (2011) concluded that from his qualitative study this does not always reflect their true priorities. In many ways, Scandinavian VCs think like investment managers and a lot of effort goes into identifying deals in promising markets, negotiating good term sheets, and then timing and positioning the ventures for profitable exits. The coaching role comes second and the partner role did not seem to exist in the Scandinavian group according to Berglund (2011). These findings cohere with Sapienza et al. (1996) who suggests that the banking background of many European VCs might explain why they spend less time with portfolio companies than US VCs.

Groh et al. (2010) analyzed the relative attractiveness of European countries, and found that while they are similar with respect to many criteria, there are two major differences that affect the country's attractiveness for VCs. Firstly, the protection of investors and corporate governance, and secondly the size and liquidity of its capital market. Based on six criteria (economic activity, depth of capital market, taxation, investor protection and corporate governance, human and social environment, and entrepreneurial culture), Groh et al. (2010) find that the Scandinavian countries are among the most attractive markets in Europe for VC with a third, fourth and fifth place for Denmark, Sweden and Norway respectively. The Scandinavian countries score particularly high on entrepreneurial culture. Spliid (2013) furthermore states that the languages and cultures of Sweden, Denmark and Norway are closely related; they all have a welfare system based on high taxation, a high degree of social security, and comprehensive public service. Additionally, Nordic investors perceive cross-border investments within the Nordic region as less risky than investments in other European countries. This indicates that despite some institutional differences within Scandinavian countries, the high degree of similarity in regulative, normative and cognitive institutional context, enables the use of Scandinavia as one region for this study. In summary, the attractiveness of the Scandinavian countries for VC and the high VC activity compared to other European countries (Berglund, 2011; Groh et al., 2010), makes Scandinavia both an appropriate region to study due to similar institutional contexts as well as an interesting market to study as there is limited research available on Scandinavian VC.

2.3 Post-investment activities

This section will introduce the literature on VC post-investment involvement by describing both the theory on the degree and nature of involvement. I will firstly address the degree of involvement using mainly the early literature. As common with early studies in various fields, these studies are mostly empirical studies describing the phenomena of VC post-investment activities. I will continue by addressing the nature of involvement, this contemporary stream within the VC post-investment literature is much more theoretical and uses agency theory and resource theories to distinguish between support and monitoring & control activities.

2.3.1 Degree of involvement

Degree of involvement deals with the extent of VC involvement in post-investment activities and ranges from being very passive and barely involved in the venture to being very actively involved in various types of activities. Large and Muegge (2008) found that five out of the twenty studies analyzed in their literature review explicitly support the association between post-investment involvement and performance (Dolvin, 2005; Flynn and Forman, 2001; Macmillan et al., 1989; Sapienza, 1992; Sweeting and Wong, 1997), additionally twelve out of twenty studies implicitly support this statement. The early studies on VC involvement focused on defining the VC's roles and the extent of involvement (De Clercq and Manigart, 2007). The main studies on degree of involvement used in this thesis are Ehrlich et al. (1994); Gorman and Sahlman (1989); Macmillan et al. (1989); Sapienza (1992), these studies are summarized in table 2.

Macmillan et al. (1989) is one of the pioneer studies on VC involvement, and their survey is often quoted, replicated and adapted. Their survey asks VC investors to what extent they are involved in certain activities for a specific investment, whether they would change any of these activities and asks about performance. Based on the findings from this survey, Macmillan et al. (1989) distinguish between three groups based on patterns of involvement. Firstly, the Laissez-Faire group who exhibit very limited involvement. Secondly, the Moderates group, and finally the Close Trackers, who consistently exhibit more involvement in virtually every activity. Furthermore, Macmillan et al. (1989) found that the differences between clusters did not result from any other factor than the VC elected, and no significant differences in performance were found. Since no differences in performance were found by Macmillan et al. (1989), the possible explanation that Close Trackers are closely managing ventures in trouble, whilst the Laissez-Faire groups are leaving highly successful ventures alone is unlikely to be plausible in this study. Generally, the VCs getting closely involved feel that they do as well, or as badly, as those that take a hands-off approach (Macmillan et al., 1989). Ehrlich et al. (1994) alter the study from Macmillan et al. (1989) to suit both the VC and entrepreneur. Interesting in this study is the conclusion that entrepreneurs report lower levels of VC involvement across all activities, compared to VCs. Barney et al. (1996) furthermore find that the optimal level

Study	Variables	Findings
Macmillan et al. (1989)	Survey to VC	20 post-investment activities performed, and whether the VC would change involvement in any of these activities 4 performance variables	*Overall highest involvement:* Serving as a sounding board to the entrepreneur, obtaining alternative sources of equity financing, and interfacing with investor group *Overall lowest involvement:* Selecting vendors and equipment, developing production and service techniques, and developing actual product or service *Cluster analysis - three patterns of involvement:* No significant difference in performance, cluster merely related to VC preference Close tracker - Searching for venture management associated with performance problems, strong positive correlation between all measures of performance and negotiating employment terms Moderates - Involvement in strategy and search for management negatively related to performance, and monitoring operations positively correlated to performance Laissez-faire - Managing crises & problems and soliciting distributors & customers negatively related to performance, and building strong professional support groups positively related to performance
Gorman and Sahlman (1989)	Survey to VC	Allocation of time - Percentage of time on portfolio management, involvement in 6 activities, and visits & and telephone contract	*Allocation of time:* VCs spend the majority of their time managing their portfolios, they spend on average 80 hours on site of ventures they hold a board position in and 30 additional hours on the telephone

		11 contributing factors to under performance Details on CEO or management removal	*Critical services provided:* Helping to obtaining additional financing, renewing and helping to formulate business strategy, and filling the management team *Coping with troubled investments* Senior management is the most important contributing factor, second comes delays in product development
Sapienza (1992)	Survey to VC-entrepreneur matched pairs	*VC-CEO interaction:* Frequency & openness of interaction, divergence of perspectives *Context:* Venture stage, innovation, strategy, environmental uncertainty and CEO experience *Value of VC involvement:* VC effectiveness in 8 roles *Venture performance*	VC involvement shows strong positive relation to performance *Positively correlated to value-added:* Innovation pursued, frequency of VC-CEO contact, and open communication *Negatively correlated to value-added:* Divergence in perspectives *No correlation to value-added:* Stage of venture and CEO experience
Ehrlich et al. (1994)	Survey to entrepreneurs with VC and BA investments	*Level of involvement:* 20 items adapted from Macmillan et al. (1989) *Measures of reporting and operational control:*	*Investor involvement:* VCs are more frequently involved than BAs, especially over telephone VCs and BAs are involved in similar activities, namely interfacing with investor group, obtaining alternative sources of equity financing, monitoring financial and operating performance, serving as a sounding board and formulating business strategy

Requirement for various types of reports, frequency of the reports, type of actions taken by investor in relation to reports, and clarity of the performance targets	More involvement is desired in obtaining additional debt and equity financing from both VCs and BAs More involvement from BAs is desired in managing crises and problems, serving as a sounding board and developing professional support groups *Reporting and Operational control:* VCs set higher performance standards than BAs, but also provide more frequent and detailed feedback
Expertise sought from investor: Various types of expertise	*Expertise sought by entrepreneur:* In areas of staffing and financial management

Table 2: Early studies on post-investment involvement

of VC involvement is contingent on the entrepreneurial team's openness to learning, with entrepreneurs with more experience in the venture's industry and longer team tenure in the current venture valuing advice less (Manigart and Wright, 2013). This is in line with Sapienza (1992) who in addition to reporting findings on the degree of involvement, found that the openness of the relationship between VC and entrepreneur positively affects the value of the VC's involvement. From the VC's perspective more monitoring reduces agency problems but also entails larger costs with respect to time allocation (Gifford, 1997; Gorman and Sahlman, 1989; Manigart and Wright, 2013). As the post-investment services are costly but not compensated with periodic payments, VCs who provide more intense involvement have higher ex-ante return requirements (Manigart and Wright, 2013). Additionally, a basic condition for VC involvement to add value beyond financing is an exchange of information to take place in a timely manner. The more frequent the interaction the greater the likelihood that problems and possible solutions are identified in a timely manner (Sapienza, 1992).

In summary, there are many studies on the degree of involvement written since the 1980's, the early studies focus mainly on assessing the relationship between degree of involvement and performance. Despite difficulties in generalizing the conclusions of these early studies due to differences in results on specific activities, overall it can be expected that a higher degree of involvement is related to increased performance. Finally, the early studies on VC are mostly conducted in a US setting, making the outcomes of this thesis with respect to degree of involvement interesting considering the different institutional setting of Scandinavian VC.

2.3.2 Nature of involvement

Nature of involvement deals with explaining how VC involvement impacts performance, and refers to the distinction between a VC attitude with a focus on support and a focus on monitoring & control. More recently, attention has also been paid to the nature of VC involvement both in terms of what type of information is exchanged and how parties interact with one another (De Clercq and Manigart, 2007). De Clercq and Manigart (2007) describe this phenomenon by addressing that by studying *how* VCs get involved they open the 'black box' of the VC-entrepreneur interaction. Gabrielsson and Huse (2002) describe how both

agency theory and the resource theories are often used in the VC literature to explain the involvement of VCs. Berg-Utby et al. (2007) build on this by describing that VC research essentially follows two distinct paths to link post-investment behavior to performance of the portfolio companies. The initially dominant approach is focused on the VC's use of governance mechanisms to control the portfolio company, which is mostly rooted in agency theory (Barney et al., 1996). The second approach focuses on the post-investment contribution of VCs with resource dependence theory (Pfeffer and Salancik, 1978) and the resource based view (Kor and Mahoney, 2004). This perspective views VC as a provider of resources beyond the capital provided and focuses on human capital and social capital as attributes to portfolio firm performance (Fried and Hisrich, 1995; Landström, 1990; Sapienza, 1992; Sapienza et al., 1996). These two streams of research can be used to distinguish between monitoring & control activities and support activities; two complementary roles that are inherently different in the theoretical assumptions (De Clercq and Manigart, 2007).

In the following section I will address both a focus on support and a focus on monitoring & control. Whereas the resource dependence theory and resource based view will be discussed as part of the focus on support, agency theory will be discussed as part of the focus on monitoring & control. These two roles are complementary (De Clercq and Manigart, 2007) and VCs are expected to be involved in both support as well as monitoring & control activities alongside each other.

Focus on support

The importance of serving as a sounding board or confidant has already been acknowledged in the early studies of VC involvement (Ehrlich et al., 1994; Gorman and Sahlman, 1989; Macmillan et al., 1989). Based on the widespread notion that VCs try to add value to their investments (De Clercq and Manigart, 2007; Manigart and Wright, 2013), VCs take a supporting role in the post-investment involvement in addition to the monitoring activities pursued. De Clercq and Manigart (2007); Manigart and Wright (2013); Sapienza (1992) identify three role-types, namely strategic, supportive and networking. Macmillan et al. (1989) find similar roles such as sounding board, financier, contact and management recruiter, but

additionally identify the importance of non-instrumental roles such as mentor, and confidant or friend. The focus of support deals with both instrumental and non-instrumental support activities, as the involvement in both is related to a value creating rather than value protecting perspective.

There are two resource theories that can be applied to the VC-portfolio firm involvement setting in order to explain the involvement in support activities, namely the resource dependence theory and the resource based view. Resource based arguments can be derived from the strategy literature, and they deal with ways of attracting and managing resources needed for firm success (Gabrielsson and Huse, 2002). Firstly, the resource dependence theory takes the view that a firm's survival is contingent on its ability to gain control over environmental resources, as such firms must reach out to their external environment and cooperative relationships to obtain needed resources (Geh, 2011; Pfeffer and Salancik, 1978). Secondly, the resource based view holds that the firm is better explained by differences in firm resources than by other factors. It focusses on competitive advantages generated through a unique set of resources, and the ability of a firm to sustain its competitive advantage through superiority in combining resources (Geh, 2011). The following section will go in detail into both theories.

Resource Dependence Theory Pfeffer and Salancik (1978) are among the early scholars describing resource dependence theory. They state that as organizations import resources from their environments, they depend on their environments. Organizations require resources and acquiring them means the organization needs to interact with the actors that control these resources. When one actor does not control all conditions necessary for the achievement of an action, a situation of interdependence is created. Participants make contributions to the collectivity and receive inducements. Influence and control are negotiated among the participants based on the criticality of the resource to the organization's survival and success. In order to avoid control from outside parties a situation of co-optation is created, the vulnerable organization invites members of the controlling organization to participate in various activities, such as sitting on the board of directors or participating in advisory panels to socialize and commit them to providing assistance to the organization. Hence having control over resources provides one with power, and organizational survival is partially explained by

the ability to deal with environmental contingencies. Organizations are in addition to being coalitions of interest, also markets in which influence and control are transacted. Among the conditions of control are, the criticality of the resource to an organization, the inability to obtain the resource elsewhere, the social actors discretion in allocation, access, and use of the resource, and the focal organization's lack of control over critical resources.

Applying the resource dependence perspective on VC activities Berg-Utby et al. (2007), find at least three contingencies. Firstly, the external volatility and hostility is expected to affect the value of creating links to external stakeholders by the VC. The greater the uncertainty facing the venture, the greater the value added due to VC involvement (Sapienza et al., 1996) and VCs will be most valued when able to reduce critical uncertainties. Secondly, the phase in the venture's life cycle. VCs are expected to be more active and add more value to ventures in the early stages when risk is highest (Sapienza et al., 1996). Finally, the performance of the portfolio company. Prior research has suggested that VC activities are influenced by the performance of portfolio companies, however, the direction of this relationship is not clearly defined. Some argue that VCs may be 'fire fighters' that concentrate much effort on the bad performing portfolio firms, whereas others follow a 'home run' strategy and focus attention on the winners in their portfolio (Berg-Utby et al., 2007; Sapienza et al., 1996).

In summary, resource dependence theory deals with the ability of a firm to gain control over environmental resources. A VC can support their portfolio firms by helping them obtaining these resources. Especially to ventures in an uncertain environment a VC can impact performance through providing assistance. Whereas studies have indicated that VC involvement is related to performance, it is unclear whether a VC will focus on reducing the uncertainties for the high- or low performing ventures.

Resource Based View A prominent, early scholar on the resource based view is Penrose (1959), Kor and Mahoney (2004) provide a review of her theory in the context of the current theoretical field. They identify three important aspects of Penrose's (1959) theory. Firstly, Penrose maintains that firms can create economic value not merely by possessing resources, but due to effective and innovative management of these resources. Intra-industry heterogeneity

due to creative use of resources leads to differences in productive opportunities and financial performance. Secondly, Penrose (1959) links resources to generating productive opportunities for growth and innovation. The experience of managers, and their ability to convert firm resources into capabilities and product applications affects the unique product opportunities available to the firm. Thirdly, Penrose (1959) explains drivers of rate and direction of firm growth. The availability of top managerial and technical talent serves as a bottleneck for firm's growth rate, and the current knowledge bases and underutilized resources determine the direction of firm growth. Not only do these drivers shape the rate and direction of growth, ignoring these limiting factors could also result in inefficiencies and loss of competitive advantage. These factors limit the potential products or services a firm is able to produce, but by expanding the bundle of physical, human and organizational resources over time, the productive opportunity will change accordingly. Penrose (1959) argues that as a firm's resources are specialized, unused resources become available for further growth. The uniqueness of firm's historical knowledge bases leads firms to diversify in directions that utilize their excess capacity of competencies, thereby basing expansion on a high degree of competence and historical knowledge which is characteristic for many of the large firms in our economy today. A resource that receives special attention by Penrose (1959) is the firm-specific experience, as this experience-based knowledge is proprietary and can neither be transferred to new managers quickly nor be purchased. Overall, Penrose's (1959) resources approach is concerned with efficiency, economic profit, competitive advantage, and profitable growth. These are the cornerstones of a resource-based view of strategic management, modern resource based research however mainly emphasizes profit maximization.

In summary, the resource based view argues that a firm's ability to compete is dependent on its effective and innovative utilization of its resources. It is not as much about obtaining resources from the environment, as about internally developing appropriate systems to obtain and maintain a competitive advantage. VC's experience and knowledge on developing companies can thus be be very useful to successfully achieve a competitive advantage with the resources at hand.

Whereas the resource dependence theory and the resource based view differ in some aspects,

both theories have in common that they emphasize the importance of a unique set of a resources for a company. The key differences are a focus on the ability to maintain and acquire resources from the environment to ascertain organizational survival (Berg-Utby et al., 2007), and on optimally using the available resources to ensure competitive advantage respectively. However, and important take-away for the VC-entrepreneur context from both theories is to consider the resources at hand, both internally in the venture as well as in the immediate environment. Many ventures face considerable challenges in gaining access to financial resources as well as knowledge resources such as business know-how, experience and networks, a viable approach for these ventures is to attract VC capital to fill the resource gap (Berg-Utby et al., 2007). Considering that VC investors deliberately promote themselves as active value-adding investors, as well as the literature arguing for the post-investment contributions a VC can add to venture success (Large and Muegge, 2008), VC expertise and reputation within the community can provide ventures with the opportunity to extract and optimally use resources for successful business operations (Sapienza et al., 1996). VC research has shown that portfolio firms utilize both the human capital and social capital controlled by their venture capital providers (Berg-Utby et al., 2007), indicating that overall VCs do contribute resources to the venture from a supporting perspective.

Focus on monitoring & control

In addition to providing a supportive role, a VC will also closely monitor & control their portfolio companies formally by taking a seat on the board of directors (Manigart and Wright, 2013; Rosenstein, 1988), and informally through periodically checking up on day-to-day activities and interim reports (Manigart and Wright, 2013). Kaplan and Strömberg (2003); Rosenstein (1988) state that control over the board is more common with higher business risk or higher agency risk (Manigart and Wright, 2013). Gabrielsson and Huse (2002) also emphasize the importance of being on the board of directors. Monitoring & control activities are commonly described using agency theory (De Clercq and Manigart, 2007).

Agency theory Agency theory originates in the finance literature, Fama and Jensen (1983) are among the early scholars writing about agency theory, emphasizing the risk of agency problems in situations where ownership and control are separated. Agency theory deals with conflicts of interest between an agent, in this case the entrepreneur who seeks financing, and the principal, the investor providing the funds to the venture (Kaplan and Strömberg, 2001). The conflict of interest arises due to the decision making power and risk bearing functions being separated, the entrepreneur is in charge of making virtually all decisions whereas the VC investor bears a significant amount of risk. Hence in line with agency theory a VC investor will require certain mechanisms to provide reassurances against the risk he or she takes.

The risk a VC investor bears is due to two factors, namely information asymmetries and moral hazard. Information asymmetries deal with the fact that in reality a VC investor cannot be completely informed about what is going on. Information asymmetries are present already in the pre-investment phase, as the entrepreneur is better informed about both his or her own abilities as well as the opportunities for the venture, or lack thereof (Kaplan and Strömberg, 2004). This exposes the VC to an adverse selection risk, due to misrepresentation by the entrepreneur. In the post-investment phase, information asymmetries continue to exist as the entrepreneur is always more informed about what it happening inside the venture than the VC. Moral hazard refers to the fact that the goals of a VC investor and entrepreneur are not fully aligned, meaning there are certain decisions an entrepreneur could make that would benefit him- or herself at the expense of the VC investor (Kaplan and Strömberg, 2004). The moral hazard approach introduced by Holström (1979) deals with the concern that the entrepreneur will not work hard to maximize value after the investment is made. A VC requires a very high return on an investment, if an entrepreneur is satisfied with a level of success that constitutes a profitable venture but does not generate the high returns a VC expected, the entrepreneur might not be motivated to run the extra mile to generate additional return.

Combining information asymmetry and moral hazard leads to a situation that enables the agent to use information for his/her personal advantage instead of for the benefit of the venture and/or principal (Osnabrugge, 2000). When considering the approaches to mitigate agency problems in the VC-entrepreneur context as proposed by Kaplan and Strömberg

(2004); Wright and Robbie (1998), in general we can conclude that both the careful screening and due diligence can be valuable to screen out unprofitable ventures and bad entrepreneurs before agency problems arise. Furthermore, the mechanisms a VC can use during deal structuring are useful to both create incentives for entrepreneurs and obtain control rights like board seat(s) and veto-rights as well as enable monitoring activities. However, it is not possible to fully contract away agency risks (Osnabrugge, 2000), making the third mitigation mechanism, monitoring the venture, necessary. This is organized in the contract and enables the VC to monitor behavior, outcomes and progress. Fama and Jensen (1983) already proposes monitoring systems to assure returns are maximized. Sapienza (1992) furthermore complements the theory that monitoring activities are conducted in order to mitigate risks, and finds that for more developed and thus less risky ventures the VC generally is less involved in monitoring activities.

Agency theory is very much focused on the firm's internal environment such as board-management relationships, director involvement in decision processes (Gabrielsson and Huse, 2002), and other information systems for external equity holders to monitor executive behavior and reduce information asymmetry. However, Gabrielsson and Huse (2002) recognize that due to the complexity of the VC-entrepreneur relationship, agency theory may be inadequate to fully explain this relationship. A VC is generally involved in both monitoring & control as well as support activities, and as the literature on agency theory clearly explains, only the involvement in monitoring & control activities is justified by agency theory.

In summary, in the section above I have introduced the distinction between a supportive versus a monitoring & controlling attitude of the VC. The supportive attitude, which is associated with value creation and providing the entrepreneur with knowledge, access to resources and guidance on how to best use the resources at hand are in line with the resource dependence theory and resource based view. The monitoring & control activities on the other hand, are executed from a value protecting perspective and in line with agency theory. The following section will address the dependent variable in this thesis.

2.4 Performance

The goal of an investor when getting involved in a portfolio firm is to influence the value of that venture by supporting the venture's growth and development. It is however not reasonable that all ventures where an investor gets involved experience significantly higher performance, nonetheless on average investor involvement should translate positively into venture performance (Sapienza, 1992). In the following section I will describe the findings with regards to performance firstly of the early studies on degree of involvement and then of the contemporary studies on nature of involvement.

2.4.1 Early studies on degree of involvement

Macmillan et al. (1989) was the first study to relate the post-investment activities to performance, earlier studies did research the roles VC played in addition to providing capital, but they did not address the correlation between involvement and venture performance. Later research commonly addressed the relation between involvement and venture performance but generalizing the outcomes of several studies is difficult as outcomes on various involvement activities are inconclusive and even contradictory (Berg-Utby et al., 2007; Macmillan et al., 1989; Sapienza, 1992; Sapienza et al., 1996; Sweeting and Wong, 1997). For example, Macmillan et al. (1989) find negative correlations for searching for members of the management team, whereas Gorman and Sahlman (1989) identify filling the management team as a critical service provided by VC.

Large and Muegge (2008) find that five out of twenty studies in their literature review explicitly support the association between VC post-investment activities and venture performance, twelve more support this relation implicitly. Indicating that generally, most studies agree on the existence of a correlation between involvement activities and performance. However, as mentioned before, generalizing the outcomes of these studies is difficult as there is no consensus on the value-adding effect of specific post-investment activities.

2.4.2 Contemporary studies on nature of involvement

The more recent studies on post-involvement activities, focusing on how VC involvement works, take a slightly different approach, as in opening this "black box", moderating factors on the involvement-performance relationship are often taken into consideration. Niemann (2011) finds an overall negative correlation between the frequency of interaction and venture performance, which he states could potentially be due to endogeneity, meaning that unobserved venture problems lead to abnormally high interaction frequency and hence potentially bias the results (Macmillan et al., 1989). In addition to testing the involvement frequency, Niemann (2011) also tested the effect of strategic and operational support as a moderating factor. These were both found to positively impact the interaction-performance relationship, indicating that high interaction frequency between VC and portfolio company allows investors to build deep industry and business knowledge and therefore improves their value-adding activities (Ferrary, 2010). Macht (2011) studied BAs and distinguished between soft or people-centered and hard or task-centered activities and considered the relevance of the BA's resources in studying this relation. She concludes that depending on the BA's expertise, involvement in hard activities could be counterproductive, whereas involvement in soft activities can positively impact venture performance even in the case of an inexpert BA. Thereby supporting Niemann (2011) statement that the industry and business knowledge impacts the involvement-performance relationship.

Wijbenga et al. (2007) asses the impact of support and monitoring activities on venture performance using control mechanisms as well as incentive and reward systems as moderating factors. Both support and monitoring activities are positively related to incentive and reward systems, and they furthermore conclude that when cost systems are in place, support activities contribute to the portfolio companies' performance. However, when cost systems are in place, monitoring activities are negatively correlated to performance. Wijbenga et al. (2007) suggest this could be due to VCs overestimating agency risks, thereby introducing monitoring mechanisms that merely duplicate the effects of existing ones and instead of protecting the investment's value they incur excessive agency costs and possibly even adverse effects through the lost of trust. Hence, Wijbenga et al. (2007) conclude that VCs should not engage too

much in monitoring when sophisticated control systems are in place as this can lead to negative performance effects, instead by aligning support activities to the cost control systems, VCs can positively impact the portfolio firm's performance.

In summary, many studies have related post-investment involvement activities to venture performance, leading to a broad spectrum of results. The variance in outcomes makes it difficult to generalize what activities positively impact performance, however as Large and Muegge (2008) found that 17 out of 20 studies in their literature review implicitly address a relation between involvement and performance we can reasonably expect a correlation between the two. Additionally, the more recent studies on how VC activities impact venture performance, address the effects of both monitoring & control activities as well as support activities on performance. Niemann (2011) reported that regularly providing strategic and operational support has a positive impact and Macht (2011) addresses the value of non-instrumental support activities. Finally, Wijbenga et al. (2007) also found that support activities positively impact performance, and additionally warns for the counterproductive effects of too much monitoring & control activities.

2.5 Contributions

There is an impressive body of research on VC post-investment involvement, initially assessing the involvement-performance relationship and currently the research focuses on assessing the nature of VC involvement. Firstly, this thesis builds on the exploratory research on the nature of VC involvement. Niemann (2011) addresses that it is still under researched how value creation is delivered to ventures. Wijbenga et al. (2007) furthermore state that although there is general consensus on which activities VCs provide to their portfolio firms, there is still little agreement on the extent these activities influence the entrepreneurial firm's performance. Berglund (2011) also states that less is known about how VCs actually interact with their portfolio companies, including their behavior, the roles they assume towards their portfolio firms and how this relates to their value added. Macht (2011) brings up a similar gap in the BA literature, and she argues that the passive-active distinction does not posses any exploratory power regarding the critical link between relevant capital and perceived value

of the involvement activities. She therefore challenges this commonly used active-passive distinction proposing that it may be outdated. Similarly, Manigart and Wright (2013) addresses the lack of clarity in explaining how value is created by stating that the majority of research has treated the value-adding process played by VCs as a black box. The exploratory research done by Macht (2011); Niemann (2011); Wijbenga et al. (2007) among others have started to open this black box, and the progressive literature studies by De Clercq and Manigart (2007); Manigart and Wright (2013) have build theoretical frameworks on the nature of involvement, however more research is needed. This thesis will build on the exploratory research by using the distinction between support and monitoring & control activities made in these studies in combination with the degree of involvement to conduct a quantitative study.

In addition to the theoretical gap, this thesis will also address an empirical gap in the literature, namely the institutional context of the study. As addressed in the section about VC in Scandinavia, this region is under researched which makes Scandinavia a suitable region to study within the current body of literature. Besides that, Scandinavia is among the most attractive markets for VC in Europe, which makes it an interesting region to study as well.

In summary, this thesis will combine the early studies on degree of involvement with the contemporary studies on nature of involvement in order to contribute to the theoretical gap assessing how VC involvement impacts performance in the Scandinavian context. In doing this, a distinction between a focus on support and a focus on monitoring & control will be made. Hence this thesis will be able to make implications not only on the distinction of active-passive but also on a focus on support or a focus on monitoring & control and how this impacts performance.

2.6 Theoretical framework and hypotheses development

So far I have touched upon the research explaining the active involvement in both support activities and monitoring & control activities by VC investors in their portfolio firms. Based on the theory on both the degree of involvement, as well as the nature of involvement, I created the theoretical framework presented in figure 3. This framework will be the basis of the analysis in this thesis, as the post-investment involvement activities of each investment

can be placed in this grid.

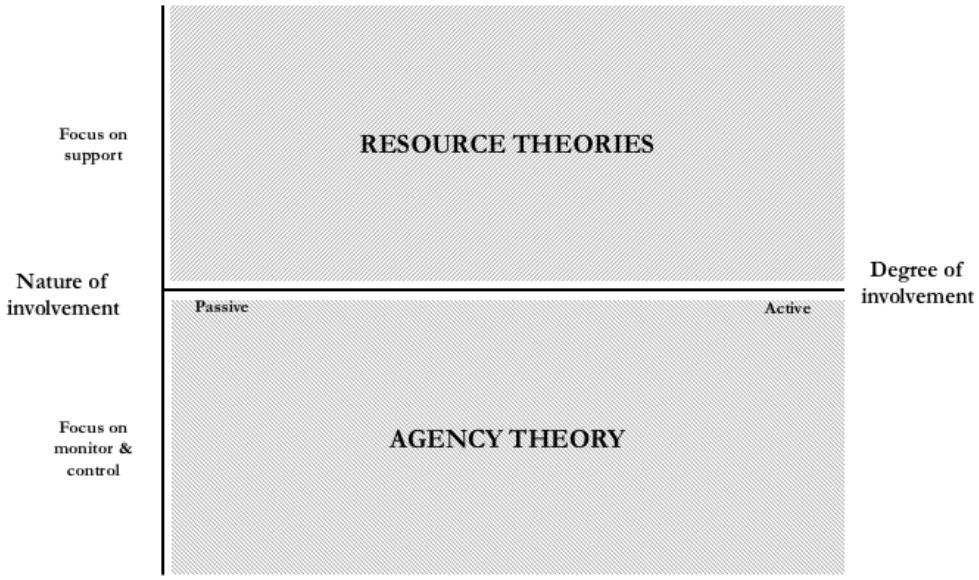


Figure 3: The theoretical framework

Firstly I discussed the degree of involvement using the early VC post-investment literature, whereas these studies are inconclusive in assessing the effect of individual post-investment activities, the notion that generally active involvement is positively related to performance leads me to hypothesize the following:

Hypothesis 1: A higher degree of Scandinavian VC involvement is associated with higher performance.

Secondly, I discussed the distinction between a focus on support explained by resource theories and a focus on monitoring and control explained by agency theory. Agency theory and the resource theories have different views on the role of a VC, however these perspectives are complementary when explaining the reasons for VC involvement (De Clercq and Manigart, 2007; Gabrielsson and Huse, 2002). The supportive attitude, is associated with value creation and providing the entrepreneur with knowledge, access to resources and guidance on how to best use the resources at hand are in line with the resource dependence theory and resource based view. These theories argue for the benefits of having a superior set of resources, meaning in the VC context the access a venture gets to VC resources during involvement in a supportive manner can positively impact the venture's competitive advantage. The monitoring and

controlling activities on the other hand, are executed from a value protecting perspective and in line with agency theory. Agency theory focuses on avoiding excessive information asymmetries and moral hazard, thereby limiting the downside risks of a VC but is not occupied with adding value to the venture. Based on the theoretical assumption that support activities are driven by value creation and aim to add value to the venture, whereas monitoring activities are driven by value protection and merely aim to minimize downside risks (Wijbenga et al., 2007), I am hypothesizing the following:

Hypothesis 2: Scandinavian investor involvement with a focus on support is associated with a higher performance compared to investor involvement with a focus on control.

In order to hypothesize on the implications various combinations of degree of involvement and nature of involvement have on performance, the theoretical framework presented in figure 3 is divided in a grid with four groups, which can be seen in figure 4.

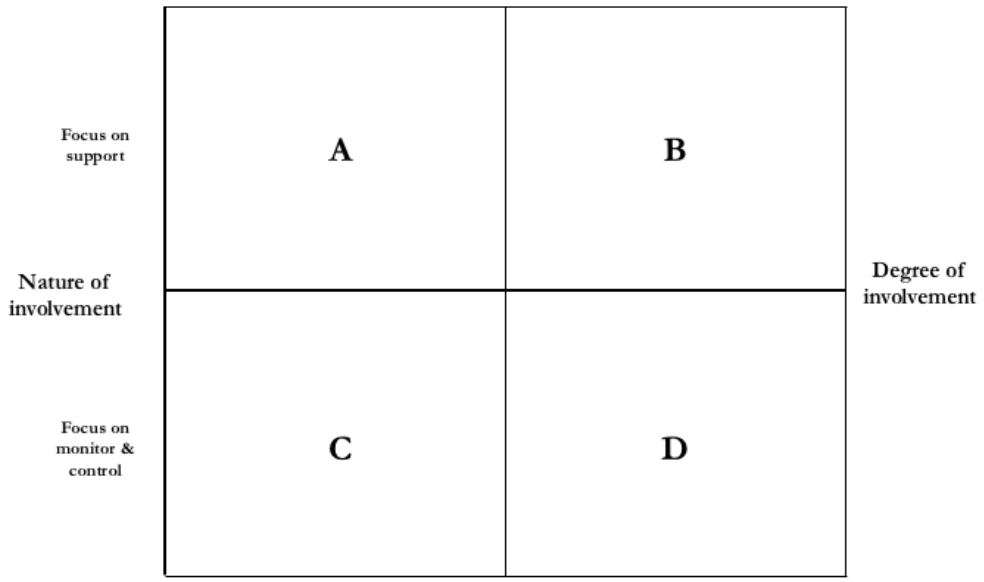


Figure 4: Group division in theoretical framework

Based on resource theories, the support activities are expected to add value to the venture by providing additional resources and strengthening the venture's competitive advantage, thus positively impacting performance. More involvement is hence related to providing more resources to the venture, thereby having a bigger impact on competitive advantage compared to a less involved VC. I am hence hypothesizing the following:

Hypothesis 3a: A closely involved Scandinavian investor with focus on support, ie. group B, is associated with higher performance compared to a remotely involved Scandinavian investor with focus on support, ie. group A.

Considering investors with a focus on control, these are mainly driven by the notion to minimize risks and limit the damage in the case of under performance. Hence, an investor that is exercising a high degree of involvement with a focus on control for a particular investment, will most likely do so as the risks in this particular venture are high or as there are indicators of under performance. Furthermore, as Wijbenga et al. (2007) found, excessive monitoring and control is counterproductive. In their study, monitoring activities, were found to negatively impact performance when control systems were already in place. Hence, when considering investors with a focus on control, high involvement is associated with lower performance, which led me to hypothesize the following:

Hypothesis 3b: A closely involved Scandinavian investor with focus on control, ie. group D, is associated with lower performance compared to a remotely involved Scandinavian investor with focus on control, ie. group C.

2.7 Limitations

This thesis will provide unique and interesting insights into the post-investment involvement of VC and the impact of involvement on venture performance. However, the conceptual setting of this study also imposes limitations. Firstly, this study will focus on Scandinavia as this is an interesting and under researched institutional context, but differences in institutional context may impact value-adding behavior (Manigart and Wright, 2013). Hence, the ability to generalize towards other institutional contexts is limited. Secondly, as this thesis is based on a survey of VC investment managers, this thesis inherently suffers from the limitations of survey research (Niemann, 2011; Wright and Lockett, 2003). However, as this study focuses on the nature and degree post-investment activities between VC and venture, the survey method is most appropriate to capture accurate findings (Bottazzi, 2008; Niemann, 2011). Finally, despite the argument of several studies to include more moderating factors in future studies (Niemann, 2011; Wijbenga et al., 2007), this thesis focuses on the involvement-performance

relationship and does not address specific moderating factors into the conceptual model. Similar to Wijbenga et al. (2007) this thesis accounts for moderating factors as control variables in order to avoid an overly complex conceptual model while still accounting for the effects of moderating factors when studying the relationship of involvement and performance.

3 Methodology

The following chapter will go into the methodology of this thesis. I will first discuss the research design. Secondly, I will discusses the data analysis, followed by the limitations of this study.

3.1 Research Design

This study aims to identify relations between post-investment activities and venture performance. In assessing this relation, a survey will be conducted which is based upon the studies discussed in the literature as well as the results from the pre-study. The overall research design in this thesis takes a deductive approach combining qualitative and quantitative research methods. Firstly, I have conducted an exploratory literature review which is presented in the previous chapter. Secondly, I have conducted a qualitative pre-study which consisted of five in-depth interviews with VC investment managers to contribute to the theoretical insights with practical considerations. Based on input from both the literature review and pre-study interviews, the main, quantitative study was designed.

Throughout this process integrity has been emphasized and all participants were granted full anonymity and confidentiality. Furthermore, ethical considerations as well as objectivity in analyzing the data have been valued highly.

3.1.1 Literature review

The purpose of the literature review was to assess the current state of the literature and obtain a complete overview of studies related to the topic of this thesis. Various databases such as Business Source Premier, EBSCO, JSTORE and ABI inform global were used to identify relevant literature. All literature was screened on relevance. An important element of this screening process was assessing the reference lists to ensure no relevant literature was missed. Special emphasis was placed on finding literature on post-investment activities for Scandinavian VCs. In order to avoid an unmanageable amount of studies, after the initial screening, several articles were chosen as the main literature to base this thesis on. These

studies can be found in table 1 in the literature review. However, other articles were used in addition to complement the main studies and create a complete picture of the literature on both degree and nature of involvement.

3.1.2 Pre-study

The method used in this thesis included a pre-study in order to derive at the main study conducted. The pre-study interviews dealt with the value-adding characteristics of all phases in the investment process and were meant to shed light on possible discrepancies between theory and practice, and identify which steps in the process are most important for VCs. The pre-study coincided with the early phase of the literature search, and was instrumental to narrowing down the exact topic of this thesis. A final issue addressed in the interviews was confidentiality, as this is a common problem when collecting data in the VC industry. Participants were asked what information they would and would not be able to share, in order to ensure an appropriate survey design. A qualitative pre-study provides several benefits in relation to the qualitative context addressed. VCs explain their reasoning and provide explanations around quantitative answers, furthermore as the practical perspective was assessed before deciding on the main study design the practical relevance of this thesis is heightened.

The VCs interviewed came from various VC firms, namely Creandum, Industrifonden, Northzone, Rite Ventures and SEB Venture Capital. In selecting the interview participants, I decided to focus on generating a high variety sample to include multiple perspectives as well as consider whether the differences should be considered as control variables in the main study.

- The sample includes both public and private VCs
- The VC firms vary in firm size and number of employees
- Both male and female VC investors
- One VC firm did not use a fund structure
- Various industry focuses were considered, where both specialists on high-technology as well as pharmaceutical investments and generalists

The interviews lasted around 45 minutes to one hour, and were semi-structured in order to be adaptive to topics the VC brought up as important aspects of the investment process and value-adding efforts of their work. Afterwards the interviews were transcribed and coded, a summary of the pre-study results is presented in appendix 1.

3.1.3 Main study - Data Collection Method

Similar to the methods used in previous studies, a survey was used as the primary data collection method. There are certain advantages to using a survey as a method. First of all, a survey yields practical benefits. It is easy to distribute electronically, thereby making it easily accessible for a large sample and respondents are offered flexibility as to when and where to fill it in. Secondly, it fits within the time and resource constraints of this thesis and the results are easy to code and analyze. In addition to the practical considerations, a survey also limits interviewer effects and hence biases in the results due to the interviewer. Additionally, a broad range of data can be collected fairly easily. However, survey as a method also has disadvantages. Firstly, the survey must be designed and phrased clearly as unclarity can bias the results. In order to avoid this bias, the survey was presented to several test respondents before being widely distributed. Secondly, a survey cannot capture tacit knowledge and whereas correlations between certain activities can be confirmed merely based on quantitative data it is difficult to draw conclusions based on the underlying assumptions of certain behavior. Hence, the pre-study is a valuable addition to this thesis, as it can be used to complement the survey results with possible explanations.

3.1.4 Main study - Survey design

The survey will focus on the effects of post-investment activities on performance, thereby assessing the value-adding characteristics of these post-investment efforts. The survey will include three elements, post-investment activities, performance measures and background information. In designing the survey, I have used two studies as the main guidance. Firstly, Macmillan et al. (1989) being one of the most prominent studies on the topic that has been replicated often was used as a guidance to develop the questions and measures. Secondly,

Large and Muegge (2008) address in their literature review the methodologies of various studies and propose a categorization of post-investment activities. This study was valuable firstly due to the proposed categorization and secondly as a control to include possible advances in the literature since Macmillan et al. (1989). The choice for Large and Muegge (2008) as a categorization guideline, is due to three characteristics of this categorization. Firstly, it is inclusive, it uses varied findings from 20 years of literature and seeks to include all categories and variables found in the empirical literature. Secondly, it is precise, the categories are carefully created to categorize a long list of suggested input variables in different well formulated categories. Finally, it is parsimonious, similar concepts are consolidated and logic is applied in combining similar variables. These three characteristics lead me to believe that this categorization comprehensively summarizes the existing literature without excluding important elements. Out of the 8 categories proposed by Large and Muegge (2008) only legitimization was excluded as this is a passive process that does not require any active involvement from the VC. Concerning venture performance variables, two general approaches have been taken by researchers on the issue of VC value added, either looking at early stock returns for initial public offerings of VC-back and non-VC-backed firms or survey entrepreneurs and venture capitalists on their perceptions of value-added (Sapienza, 1992). This study will use the second approach, as this increases the sample to include investments that are not yet exited or were not exited through an IPO. Additionally this limits selection bias as this study does not compare VC-backed to non-VC-backed firms but instead focuses on firms that all successfully underwent the selection process. Several measures of performance are considered, which is in line with Macmillan et al. (1989), to avoid arguments about which criteria is appropriate they also employ multiple measures of performance. Considering background information, the purpose of collecting data was firstly to identify whether the sample is representative for the population and secondly to obtain data on alternative factors influencing the post-investments activities' impact on performance. Hence, I collected data on portfolio firm, VC investor and VC fund characteristics as well as on the VC-entrepreneur relationship, VC value-adding ability and VC confidence in the management team.

In order to do statistical analysis, both inputs and outputs need to be quantified. In line with previous studies, I will hence use a Likert scale (Large and Muegge, 2008) as this enables to

quantify data whilst not raising concerns with respondents about anonymity and confidentiality associated with real data. The choice for a Likert scales as a measurement method is based on this method being universally known and acknowledged, which makes it easy for the respondents to understand it and thereby limits potential bias. Furthermore, considering the surveys in similar contexts, Likert scales are widely used. Among the studies using Likert scales are Ehrlich et al. (1994); Macmillan et al. (1989); Niemann (2011); Sapienza (1992); Wijbenga et al. (2007). A second benefit of using Likert scales is the ease to quantify and code data. However, a difference to the before mentioned studies is the amount of points on the scale. Various researchers argue for either an uneven or even amount of points on the scale, and whereas the studies mentioned above use a 5-point scale this thesis employs a 6-point scale. Kulas et al. (2008) are among one of the authors who discuss the ambiguity of the mid-point on an uneven scale by stating that the mid-point can serve as an option for respondents who are indifferent or unwilling to commit to a definite response, and is seen as the option indicating ambivalence rather than being one option along a continuum. As the overall research debates this point of view, the choice for an even or uneven Likert scale is a judgment call. I decided to use a 6-point scale in the survey, forcing the respondents to tip their response towards either side of the scale. In order to avoid false responses, the survey included N/A options for questions if needed and the electronic survey tool was enabled to allow leaving a question blank.

An additional consideration relating to the statistical analysis, is obtaining sufficient results within the relatively small sample population. The survey deals with data on specific investments, asking VCs about the post-investment activities pursued and performance outcomes for specific portfolio companies. To increase the sample generated through the survey, each respondent was given the option to fill in the survey for multiple investments, meaning the exact same questions were asked two or three times pertaining to different portfolio companies. Only the information related to the investor characteristics and VC fund characteristics were asked once. Additionally the survey included a comment section to provide the respondents with the opportunity to provide a comment or feedback if they wished to do so. The survey can be found in appendix 2.

3.1.5 Main study - Sample & Respondents

In the literature review, I have already commented on the choice to focus on Scandinavian countries due to the similarities in their regulative, normative and cognitive institutions, which limits potential biases due to institutional differences. The sample population was identified based on the membership data from the Swedish Venture Capital Association (SVCA), Danish Venture Capital Association (DVCA) and Norwegian Venture Capital Association (NVCA), corporate VC as well as private investors and buyout capital funds were excluded. This resulted in a distribution of the survey to 237 VCs. 64 responses were received, indicating a response rate of 27%. Comparing the response rate to similar studies, this response rate is in line with typical response rates for VC surveys (Gorman and Sahlman, 1989; Macmillan et al., 1989; Niemann, 2011). As respondents had the option to include multiple investments, the responses resulted in data for 81 portfolio companies. However, two were excluded due to too many unanswered questions. From the other 79 responses, missing values were imputed using the expected maximization(EM) method in SPSS.

3.2 Data Analysis

In this thesis, I will use statistical analysis to test the hypotheses developed in the literature review. Following Large and Muegge (2008); Macmillan et al. (1989); Niemann (2011); Wijbenga et al. (2007) I will use multiple regression analysis. For the various post-investment variables I will run a set of regression analyses using various performance measures. Beta coefficients will be used to report effect size parameters for the regression analyses. Additionally, in line with Gorman and Sahlman (1989); Large and Muegge (2008); Macmillan et al. (1989); Sapienza (1992) I will report the mean of responses in order to establish differences between the distinct groups using t-tests to establish significance. The next chapter will present the results on these statistical tests.

Descriptive statistics Firstly, I will present the descriptive statistics, reporting the mean and standard deviation from the variables in the questionnaire.

Factor analysis Secondly, I will introduce several factor analyses to reduce the amount of variables to be used in the regression models. The dataset analyzed in this thesis contains many measures for both post-investment activities and performance, and including all of these as individual variables in a regression model leads to a high risk of multicollinearity. Intuitively it is likely that an investor that is highly involved in one activity is actively involved in multiple activities but it is unclear which activities correlate to one another. A factor analysis describes the variability observed, and the created factors combine the effect of correlated variables. For the purpose of this thesis, I have conducted three maximum likelihood oblique rotated factor analyses. For all three factor analyses, the amount of factors generated was based on the requirement of an eigenvalue > 1. Additionally, the factor loadings presented are based on a suppression of coefficients smaller than .30 in order to increase the clarity in the presentation. Firstly, I have conducted a factor analysis using all post-investment variables, the result of this analysis yields 6 factors for post-investment and it shows which variables are correlated. Secondly, I have conducted a factor analysis for the six performance measures, yielding two factors. Finally, I conducted a factor analysis using the control variables with a statistical significant correlation to performance in order to limit the amount of control variables in the regression analysis. This yields four factors.

Multiple Regression Analysis Thirdly, several multiple regression analyses were carried out to identify the correlation between independent variables and the dependent performance criteria. As the survey included many variables for independent, dependent and control variables, careful considerations have led to a focus on the following variables for the regression analyses:

Dependent variables

- *Revenue growth* Measures the VC perception of whether the revenue growth of the portfolio firm has or has not exceeded the expectations, both 3 and 5 years after investing, based on a 6-point Likert scale (-2.5, -1.5, -0.5, +0.5, +1.5, +2.5). Manigart and Wright (2013) stated that VCs tend to focus on stimulating growth rather than improving profitability. This is in line with the importance VCs place on scalability in

assessing a company as the high return requirements of VCs call for significant growth in the venture.

- *Profit* Measures the VC perception of whether the profitability of the portfolio firm has or has not exceeded the expectations, both 3 and 5 years after investing, based on a 6-point Likert scale (-2.5, -1.5, -0.5, +0.5, +1.5, +2.5). This measure has been included based on the historical use of profits as a measure for company viability and success.
- *Return on Investment* Measures the VC perception of whether the return of investment(ROI) of the portfolio firm has or has not exceeded the expectations, both 3 and 5 years after investing, based on a 6-point Likert scale (-2.5, -1.5, -0.5, +0.5, +1.5, +2.5). This performance measure focuses on the performance of the investment from the VC perspective, ROI as a measure is important to the VC but not key to the entrepreneurs.
- *Performance factor* Using a factor analysis, two factors were identified explaining the overall variance in performance measures. The first factor, called "Factor year 3" is loaded with the three performance measures three years after investing, and the second factor called "Factor year 5" is loaded with the performance measures for five years after investing.

As a regression cannot have nominal data as a dependent variable, data on the exit was excluded as a dependent variable.

Independent variables I ran regression analysis using several different (sets of) independent variables, I will briefly describe each of them.

- *Degree of involvement* This variable constitutes the overall score on degree of involvement and is measured using the sum of all post-investment activities from the survey. Based on a total of 30 items, each with a score of 1 to 6, the scores for degree of involvement range from a minimum score of 30 to a maximum score of 180.
- *Focus on support* This variable constitutes the overall score on supportive attitude and is measured using the sum of all post-investment activities related to support from the survey. These are the activities from the categories mentoring and consulting activities. Based on a total of 10 items, each with a score of 1 to 6, the scores for focus on support

range from a minimum score of 10 to a maximum score of 60.

- *Focus on monitoring and control* This variable constitutes the overall score on monitoring and controlling attitude and is measured using the sum of all post-investment activities related to monitoring and control from the survey. These are the activities from the category mandating activities. Based on a total of 10 items, each with a score of 1 to 6, the scores for focus on support range from a minimum score of 10 to a maximum score of 60.

- *Post-investment factor* Using factor analysis, six factors were identified explaining the overall variance in post-investment activities. These factors are labeled "Post-investment factor 1-6" with the numbers corresponding to six factors identified. An overview of the factor loadings of each factors and thus the implications of each factor in relation to the post-investment activities can be found in the section on factor analysis in the results chapter.

- *Individual post-investment activities* A final regression analysis was conducted using all 30 post-investment activities measured in the survey as separate variables, an appropriate description related each post-investment survey item was chosen.

Control variables Considering the control variables, including all items from the survey would yield too many variables and negatively impact the significance as well as multicollinearity of the regression model. Hence, I have used the Pearson correlations to the various performance measures tested in these regressions to assess which variables to include. The table containing the Pearson correlations can be found in appendix 3. All control variables that were statistically significantly correlated to at least one of the performance measures were hence included in a factor analysis to derive four factors that combine the impact of these measures.

- *Control factor 1* This factor is loaded by the two of the survey items related to the VC-entrepreneur relationship. Firstly, the friendliness of the relationship and secondly the frequency of interaction outside of work related functions.

- *Control factor 2* This factor is loaded by two of the venture characteristics, firstly venture age and secondly whether subsequent investments were done.

- *Control factor 3* This factor is loaded with the three items corresponding to VC confidence in the management team, namely, product/service knowledge, industry experience and sales and marketing knowledge.
- *Control factor 4* This factor is loaded with the three items corresponding to various elements of the VC value adding abilities, namely, product/service knowledge, industry experience and sales and marketing knowledge.

To draw conclusions from the regression data, the F-test and associated significance is reported as well as the significance for all beta coefficients. The significance level was set at $p<0.05$ for all variables, meaning conclusions on the beta coefficients can only be used if the p-value of this variable is below 0.05.

T-tests Finally, in order to identify the differences between the various groups as hypothesized, I used t-tests. The t-tests were used to identify statistically significant differences between two groups. A significance level of 0.05 was also used for these tests, meaning that conclusions can only be drawn if a p-value below 0.05 was reported.

3.3 Robustness checks

In order to test the validity and reliability of the analyses, I conducted several robustness tests. For the factor analyses, I tested the reliability of constructs using Cronbach's alpha. Testing the reliability of constructs means that the test measures whether the items included in the test are measuring the same concept. For example, when testing Cronbach's alpha for revenue growth, profitability and ROI the test will indicate whether these measures are indeed all contributing to measuring performance. Considering the factors related to post-investment activities, the reliability of constructs indicates that the various post-investment activities loaded in one factor are part of a behavioral pattern. Cronbach alpha's above the critical value of .700 indicate reliability of constructs. Considering the first factor analysis, values of .802, .771, .863, .901, .905 and .773 for post-investment factor one to six respectively were reported. For the second factor analysis, values of .847 and .910 were reported for performance factors related to 3 and 5 years after investing respectively. Finally, for the control factors,

Cronbach alphas of 0.765, -.952, .602 and .717 were reported. Despite one factor being below the critical value and one factor being negative, considering that it concerns a control variable it is not very problematic. However, if conclusions are drawn based on control factor 2 or 3, the results from this test should be considered when interpreting results. Additionally, I have checked that all commonalities for the factor analyses exceed the critical value of .200 and all Kaiser-Meyer-Olkin measures of sampling adequacy exceed the value of .500.

In terms of robustness tests for the regression analyses, I analyzed the variance inflation factors (VIF), to account for multicollinearity. Unfortunately, but expected the VIF of some of the regression models testing all individual post-investment activities resulted in few variables exceeding the critical value of 10 with a highest reported value of 14.745. Hence the results from this regression must be interpreted with caution. In response to this result factor values for the post-investment activities were used instead resulting in significantly lower VIF values with the highest reported value being 1.932. The other regression models all reported VIF values in a similar range, not exceeding the value of 1.932. Furthermore, as this survey relies on single-respondents, it might suffer from a common-method bias (Niemann, 2011; Wijbenga et al., 2007). However,Harman's single-factor test (Podsakoff and Organ, 1986) provides no evidence of common method variance in the data set as the obtained value of 27.471% is well below the critical value of 50%.

3.4 Potential Limitations

Inherent to any research design, the methods chosen in this thesis also induce several limitations. Firstly, this study relies on a survey using retrospective perceptions risking errors in the survey answers due to faulty memory. However, this does not make retrospective reporting an inviable research method, as long as the measure used to generate the reports are adecuate and valid (Miller et al., 1997). I believe this is the case in my study, as my survey first of all closely resembles the survey conducted by Macmillan et al. (1989), and as the retrospective perceptions asked in the study are general questions about involvement over time rather than details about specific events. Despite Large and Muegge (2008) stating that future studies should focus on directly observable events measured with ratio scales, I

believe that in the context of this master thesis due to practical reasons it is not possible. Niemann (2011) furthermore confirms the appropriateness of a survey as method as he states that despite the limitations inherent to surveys (Wright and Lockett, 2003) it is the most appropriate method to capture accurate findings on post-investment activities. Secondly, the performance measures are based on VC perception rather than real data, meaning they could be biased. However, due to confidentiality issues obtaining real performance data was not feasible. Niemann (2011) furthermore states that lack of objective performance data is an issue that should be addressed in other studies, without addressing this limitation that was already pointed out in previous studies himself. Sapienza (1992) adresses this issue as his study of the VC-entrepreneur dyad enables him to compare VC and entrepreneur's perception of performance. His study concludes that the assessments were highly consistent with one another and he concludes that this increases the credibility and validity for their results. He furthermore contributes the consistency in performance norms within the VC industry to the consistency in perceptions. In line with this argunment, Macmillan et al. (1989) states that VCs only invest in ventures they expect to be highly successful, which in addition to the characteristic of the VC industry requiring high returns for survival signals that VC expectations are consistent among VC professionals. Hence as the population of this study is similar in industry characteristics, I believe it is justified to use ordinal performance data despite the limitations associated with it. Ideally, future research should pursue a longitudinal study using real performance data, however as no other study up till now has pursued this rigorous data collection, I believe in the framework of exisiting literature it is justified to pursue a retrospective and ordinal data collection considering the time and resource framework of this thesis. Thirdly, in order to gain a more fully perspective, previous studies such as Sapienza (1992) have used a matched-pair survey of entrepreneur and VC. I explored this option during the pre-study as this would yield different perspectives on the post-investment activities pursued. However, during the interviews it became clear that this method would yield several major practical difficulties considering the confidentiality concerns and hence the need to keep the survey anonymous. As I was very concerned about not getting enough responses due to the relatively small population, I choose to pursue to method that imposed the least amount of effort for the VC managers which led me to not pursue a matched pair survey. Finally,

the Scandinavian institutional context limits the sample size of this study. A limited sample size can cause problems in obtaining statistical significance. However, strictly adhering to the significance levels when drawing conclusions is needed to limit the risk of Type I (false positive) or Type II (false negative) errors. As my sample size is based on the sample population of all members of the respective VC associations for each country (excluding corporate VC, private investors and buyout) the sample population closely resembles the actual population. Furhtermore, as I have contacted each investor multiple times asking and reminding to fill in the survey I believe I have done everything within my power to obtain the highest sample size possible.

4 Results

In this chapter I will present the survey results using statistical analysis and assess whether the hypotheses are supported or rejected. Firstly I will present the descriptive statistics, then I will continue with the factor analysis, followed by the multiple regressions and t-tests.

4.1 Descriptive statistics

In this section I will present the descriptive statistics, the tables with the descriptive statistics can be found in appendix 4. Firstly I will assess the post-investment activities, followed by the scores for degree of involvement, focus on support and focus on monitoring & control. Then I will assess the descriptive statistics for performance and the control variables.

Table 5 shows the descriptive statistics for the post-investment activities, standing out is that the three lowest scoring activities are related to operational activities. Lowest is operational involvement is product/service development (mean=2.39), secondly comes operational involvement in sales & marketing (mean=2.76) and third is coaching the management team's sales & marketing skills (mean=3.38). The highest scoring activity is being on the board of directors (mean=5.76), indicating the importance of this controlling mechanism. Second highest is searching for board members (mean=5.48) and third is sharing expertise to help gain additional financing (mean=5.42). Considering the averages per type of activity, in line with the expectation operational involvement scores lowest (mean=2.58) whereas strategic activities (mean=4.99), outreach (mean=4.90) and mandating activities (mean=4.77) score highest. These all emphasize the importance Scandinavian VCs place on the control mechanism and the network aspects of their investment as well as the distance Scandinavian VCs keep in their operational involvement as suggested by Berglund (2011). Furthermore, the degree of involvement is on average 134.2, which translates to an average of 4.473 out of 6 per activity. A focus on monitoring & control (mean=47.73) scores slightly above average whereas a focus on support (mean=44.11) scores slightly below average, indicating Scandinavian VCs spend on average slightly more time monitoring & controlling than supporting their ventures. Based on the above mentioned scores, the respondents can be mapped in the grid presented

in the literature review. A depiction of that can be found in the figure below. The figure shows that respondents cluster quite closely around the X-axis with a moderately-high degree of involvement. This shows that most VCs are quite active and balance monitoring & control and support activities, which is in line with the expectation.

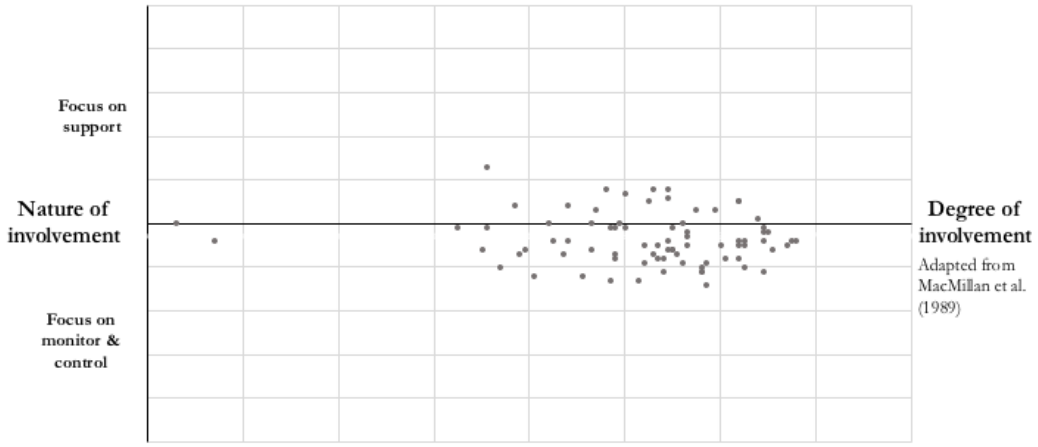


Figure 5: Respondents map of DOI and NOI

Considering performance, the descriptive statistics show the performance is higher 5 years after investing compared to 3 years after investing. The average scores indicate that whereas three years after investing the performance averages are slightly below expectation, five years after investing the scores are slightly above expectations. This increase in performance could be due to survival bias, meaning the bad performing ventures have seized to exist by the 5 year mark and are hence not recorded. However, considering the exit data related to the missing data for year 5, all respondents reported the venture to not be five years old yet. From these 17 responses, 15 have not yet been exited whereas one has exited through an IPO and a second through an acquisition. This indicated that survival bias is unlikely to be the reason for the increase in performance between year 3 and 5. Comparing revenue growth, profitability and ROI, the scores for these activities do not show major differences.

Finally, considering the control variables, VCs report a high ability to add value as well as a high confidence in the management team. The scores on their relationship indicate they keep

the relationship focused on business even though the scores for getting along on a personal level are high.

4.2 Factor analyses

The tables containing the results from the factor analyses are reported in appendix 4, variables with coefficients below .30 were suppressed to increase the clarity of the table. Out of the three analyses pursued the factor analysis about the post-investment activities contains the most interesting result as the factor loadings in each factor indicate that the involvement in each of these activities is related to each other thereby indicating a behavioral pattern. Overall, based on the factors, I can conclude that support and monitoring & control activities are often conducted alongside each other as most factor contain both a mentoring or consulting as well as a mandating activity. These are the main findings for each factor:

- Post-investment factor 1 - The first factor includes five factor loadings, out of which three are associated with a focus on support. In addition to providing moral support, coaching the entrepreneur team and serving as a sounding board for product or service development, this factor is loaded with introducing the management team to contacts and being on the board of directors. This indicates that outreach as well as being on the board of directors is often pursued alongside supportive activities.

- Post-investment factor 2 - The second factor is firstly loaded with obtaining alternative sources of debt financing, and secondly with negative factor loadings for four supportive activities. This indicates that serving as a sounding board for operational and human resource activities as well as coaching the management team in terms of sales and marketing skills is negatively related to being involved in obtaining alternative sources of debt financing.

- Post-investment factor 3 - Factor three is loaded with three recruiting activities, one mandating activity also related to human resource and the mentoring activity of providing guidance to handle crises and problems. This could indicate that when providing guidance to handle crises and problems, a VC also steps in to replace management and

assist in the recruiting process for new candidates.

- Post-investment factor 4 - Factor four contains the highest amount of factor loadings. It contains mentoring, consulting, recruiting, outreach, mandating and strategic activities. Overall, this factor contains multiple loadings associated with financing and and strategic activities from both a supportive and monitoring & controlling attitude. This indicates that involvement in financing and strategic activities often goes hand in hand.
- Post-investment factor 5 - Factor five contains many factor loadings associated with mandating, most of which are operational. Additionally, this factor contains several strategic loadings as well as motivating personnel. This indicates that closely monitoring the operational progress, being involved in strategies from both a supportive and monitoring & controlling perspective as well as motivating the personnel are related to one another.
- Post-investment factor 6 - Finally, factor 6 deals with the operational activities, motivating personnel and stepping in to handle crises and problems. This factor is similar to factor five in relating motivating personnel and involvement on an operational level with one another.

Considering the second factor analysis using performance measures, the results are in line with the expectation that the three performance measures are all indicators for performance and the factor loadings for the factors are grouped based on the measures for 3 and 5 years after investing respectively. Considering the control variables, the clusters confirmed that the measures on VC ability to add value, confidence in the management team and VC-entrepreneur relation are related to one another as they load in the same factor.

4.3 Regression model

In the following section I will discuss the results of the regression analyses. The first regression models contains degree of involvement as an independent variable, and includes the control variables mentioned above. The results can be found in table 3.

	Dependent variables							
	Revenue growth year 3	Profit year 3	ROI year 3	Factor year 3	Revenue growth year 5	Profit year 5	ROI year 5	Factor year 5
Degree of involvement	-.010***	-.014***	-.015***	-.013***	-.009	-.013***	-.013	-.009
	(.037)	(.010)	(.014)	(.008)	(.166)	(0.40)	(.075)	(.067)
Control factor 1	.026	.146	.156	.186	.295	.226	.559***	.239
	(.821)	(.251)	(.261)	(.115)	(.090)	(.189)	(.006)	(.057)
Control factor 2	-.183	-.431***	-.368***	-.360***	-.151	-.431***	-.246	-.209***
	(.082)	(.000)	(.004)	(.001)	(.291)	(.003)	(.132)	(.046)
Control factor 3	.435***	.332***	.305***	.312***	.430***	.542***	.419***	.359***
	(.000)	(.013)	(.037)	(.028)	(.022)	(.004)	(.048)	(.009)
Control factor 4	.205	.075	.182	.113	.312	.409***	.295	.272***
	(.138)	(.618)	(.271)	(.426)	(.101)	(.032)	(.170)	(.048)
N	79	79	79	62	62	62	62	62
R^2	.208	.270	.213	.324	.259	.360	.336	.341
F-test	3.843***	5.402***	3.946***	5.375***	3.916***	6.293***	5.679***	5.792***
Sign.	(.004)	(.000)	(.003)	(.000)	(.004)	(.000)	(.000)	(.000)

*** significance at p<0.05

Table 3: Regressions degree of involvement(DOI)

Firstly, based on the R^2 values, we can conclude that the model explains between 36.0% and 20.8% of the variance in the performance measure with statistical significance ($p<0.05$) for all models. Furthermore, considering degree of involvement, most models are statistically significant except for revenue growth and ROI at year 5. Based on the beta coefficients for the other models, we can conclude there is a slight negative correlation between degree of involvement and performance with a beta coefficient ranging from -.009 to -.015, which is contradictory to what was hypothesized.

In addition to assessing the degree of involvement and its effect on performance, I will also assess the effects of support and monitoring activities on performance. In order to do so, I have run regression analyses with the score for focus on support and focus on monitoring and control respectively. Similar to the regressions on degree of involvement, I have included the control variables as discussed above and I ran various models based on the different measures of performance. The results of these regressions are shown in appendix 6.

Considering the score for support, the models are all significant ($p<0.05$) with an R^2 ranging from 19.7% to 34.5%. The beta coefficients for support however are only significant in the models with revenue growth, profit and the factor for year 3 as the dependent variables. These coefficients range from -.030 to -.038 indicating a minor negative effect on performance which is contrary to the expectation. Considering the score for monitoring, the models are also all significant ($p<0.05$), with an R^2 from 18.9% to 35.6%. The beta coefficients for the monitoring score are significant in 5 models (revenue growth, profit & factor year 3 and profit & factor year 5) with a range from -.025 to -.039, which also indicates a slightly negative correlation with performance. Indicating the focus on support and focus on monitoring & control have very similar effects on performance. However, in order to draw conclusions on the relative effect of focus on support and focus on monitoring & control on performance as hypothesized, a comparison using t-tests is needed.

Additionally, I have conducted regressions on both the individual post-investment activities and their factors. These regression analyses show that whereas some activities are indeed negatively related to performance in line with the findings for degree of involvement, other activities are positively related to performance. The results of these can be found in appendix

6. Based on the regression analysis using the post-investment factors (table), post-investment factor 2 is reported to be positively correlated to performance with statistical significance in various regression models whereas post-investment factor 3 is negatively correlated to performance across the regression models with statistical significance in only model. Additionally, considering the regression model using the individual post-investment activities as independent variables, the following activities were found to correlate positively to performance:

- Searching for suitable board members (Recruiting)
- Negotiating employment terms with candidates (Recruiting)
- Sharing your expertise to help the management team obtain additional financing (Consulting)
- Coaching the management team to help them develop sales and marketing skills (Consulting)
- Providing moral support to the entrepreneur team (Mentoring)
- Monitoring financial performance (Mandating)

On the other hand, the following activities, were found to negatively correlate to performance:

- Interviewing and selecting management personnel (Recruiting)
- Serving as a sounding board for sales and marketing plans (Mentoring)
- Motivating the personnel (Mentoring)

As these findings do not relate directly to a hypothesis, I will not go further into these findings at this point.

In summary, degree of involvement is found to be negatively correlated to various performance measures. This implies that more active involvement in portfolio companies is negatively correlated to performance. Leading to reject hypothesis 1. However, as the regression analyses on specific post-investment activities show, some activities are positively correlated to performance whereas others are negatively correlated. This implies that whether involvement correlates positively or negatively to performance depends on the individual activity.

4.4 T-tests

As introduced in the section on the theoretical framework, the responses to the survey can be divided into four groups, in the following section I will discuss several t-tests used to compare groups to one another.

The first t-tests compare group AB and group CD, AB standing for the respondents with a focus on support and CD representing the respondents with a focus on control. As the table shows, the means for the performance measures are higher for group AB for all measures, however only the results for revenue at year 3 are significant. This indicates that only the difference in means for the revenue year 3 measure can be attributed with statistical significance to the grouping of the sample, in line with hypothesis 2. As the other variables are not statistically significant no conclusion can be drawn from them, meaning they neither confirm nor reject hypothesis 2. Hence, based on the t-test for the revenue year 3 I can conclude that my results support hypothesis 2.

	Revenue growth year 3	Profit year 3	ROI year 3	Factor year 3	Revenue growth year 5	Profit year 5	ROI year 5	Factor year 5
Mean group AB	0.22***	-0.45	-0.14	0.13	1.02	.58	0.88	.36
N	20	20	20	12	12	12	12	12
Mean group CD	-0.28***	-0.51	-0.31	-0.03	.038	.02	0.45	-.09
N	59	59	59	50	50	50	50	50
Sign.	(.047)	(.836)	(.582)	(.619)	(.118)	(.197)	(.379)	(.147)

Table 4: T-test comparing performance group AB to group CD

The second t-test compares group A to group B, group A being VCs with a focus on support and low involvement and group B being investors with a focus on support and high involvement. Considering the means, especially for the performance measures for year 5 group B obtained a higher mean than group A which is in line with the expectation. However, as none of the results are statistically significant, I cannot derive conclusions based on these results. Hence, I reject hypothesis 3a.

	Revenue growth year 3	Profit year 3	ROI year 3	Factor year 3	Revenue growth year 5	Profit year 5	ROI year 5	Factor year 5
Mean group A	0.40	-0.40	-0.30	0.32	0.67	0.50	0.50	0.15
N	10	10	10	6	6	6	6	6
Mean group B	0.03	-0.50	0.02	-.06	1.36	0.66	1.26	.58
N	10	10	10	6	6	6	6	6
Sign.	(.385)	(.846)	(.581)	(.565)	(.332)	(.827)	(.312)	(.437)

Table 5: T-test comparing performance group A to group B

The third and final t-test compares group C and D, group C representing VCs with a focus on monitoring and low involvement and group D representing VCs with a focus on monitoring and high involvement. Comparing the means of the two groups, we can see that group D's mean is higher for almost all performance measures. Similar to the first t-test only the test for the revenue growth at year 3 is statistically significant, hence this measure will be used to confirm or reject the hypothesis. Based on this test, hypothesis 3b should be rejected.

	Revenue growth year 3	Profit year 3	ROI year 3	Factor year 3	Revenue growth year 5	Profit year 5	ROI year 5	Factor year 5
Mean group C	-0.64***	-0.59	-0.27	-0.02	0.35	-.015	0.35	-0.16
N	22	22	22	20	20	20	20	20
Mean group D	-0.07***	-0.46	-0.33	0.04	0.40	0.13	0.51	-0.04
N	37	37	37	30	30	30	30	30
Sign.	(.026)	(.670)	(.866)	(.945)	(.895)	(.485)	(.720)	(.672)

Table 6: T-test comparing performance group C to group D

4.5 Overview of hypotheses

In summary, based on the analysis done in this chapter, I was able to support one of the hypotheses as can be seen in the overview in table 7. The hypothesis confirmed deals with the higher performance associated with support compared to control. The ability to draw conclusions was limited as the small sample size impacted the significance of the tests and variables thus not being able to confirm whether the observed effects are due to coincidence in the sample or reflect tendencies in the population. This was especially the case for hypothesis

3a, even though all T-tests had limited significance for the various performance measures. A detailed discussion of the results as well as the implications these results have for the VC industry and VC literature will be presented in the following chapter.

	Hypotheses	Confirmed or rejected
Hypothesis 1:	A higher degree of Scandinavian VC involvement is associated with higher performance	Rejected
Hypothesis 2:	Scandinavian investor involvement with a focus on support is associated with a higher performance compared to investor involvement with a focus on control	Supported
Hypothesis 3a:	A closely involved Scandinavian investor with focus on support, ie. group B, is associated with higher performance compared to a remotely involved Scandinavian investor with focus on support, ie. group A	Rejected based on insignificance
Hypothesis 3b:	A closely involved Scandinavian investor with focus on control, ie. group D, is associated with lower performance compared to a remotely involved Scandinavian investor with focus on control, ie. group C	Rejected

Table 7: Overview hypotheses

5 Discussion

In this section I will firstly present a discussion of the results. Then I will discuss the implications these results have both theoretically and practically, followed by my suggestions for future research, liminations of this study and concluding remarks.

5.1 Discussion of results

The purpose of this study is to answer the research question "How do the degree and nature of Scandinavian VC involvement in post-investment activities impact performance of their portfolio companies?" In order to answer this question, nature of involvement has been divided into two investor attitudes, namely a focus on support and a focus on monitoring & control. Using statistical analysis, I concluded that contrary to the expectation, degree of involvement is negatively related to performance with a very weak but statistically significant beta coefficient. Niemann (2011) found similar results, and attributed them to endogeneity. Macmillan et al. (1989) also addressed this phenomenon, describing it as the impact of an unobserved venture problem that leads to an abnormally high interaction frequency that biases the results. This could be a possible explanation for the negative correlation in this study. Especially when considering the t-test results, which showed that the high involvement groups outperformed the comparable low involvement groups. Comparing these results to the study by Berglund (2011), he states Scandinavian VCs in general get actively involved but remain at an arm's length, this could imply that active involvement positively impacts performance up to a certain level, but getting too closely involved is counterproductive. Busenitz et al. (2004) addresses the possible explanation that the limited operational experience of Scandinavian VCs limits the positive contributions they can provide in operational involvement activities. Considering that operational activities reported the lowest average mean supports the notion that Scandinavian VCs prefer to keep their distance. The negative correlation between degree of involvement and portfolio firm performance furthermore supports that for Scandinavian VCs there is a possibility to be too involved.

Considering the results on the various involvement activities, the results on post-investment

factor 3 are particularly interesting, this factor deals with a combination of providing guidance to handle crises and problems, stepping in to replace management and providing assistance with several recruiting activities, including negotiating employment terms. As intuitively expected, this factor is negatively related to performance, indicating that involvement in these activities combined is correlated to lower performing portfolio firms. However, considering the recruitment activity of negotiating employment terms independently, this activity is positively correlated to performance. This illustrates the complexity of the relationship between post-investment activities and portfolio company performance, as addressed by both Gabrielsson and Huse (2002); Macht (2011), and underlines the difficulties of generalizing impact of VC post-investment activities on performance across investments due to situational factors as addressed by Berg-Utby et al. (2007); Macmillan et al. (1989); Sapienza (1992); Sapienza et al. (1996); Sweeting and Wong (1997). Considering the meaning of these results on a theoretical level, I can conclude based on the regression results that a higher degree of involvement is not necessarily generating positive results, however there are activities, that positively impact performance such as searching for suitable board members, monitoring financial performance and providing moral support to the entrepreneur team.

Considering the nature of involvement, the regression analyses for both focus on support and focus on monitoring & control report a weak negative correlation, however this could be due to the same endogeneity as the degree of involvement. Considering the t-test results, I found that the VCs with a focus on support perform slightly higher compared to a focus on monitoring & control. This confirms the expectations that a focus on support aids the value creation of VC investors during post-investment activities, in line with Berg-Utby et al. (2007); De Clercq and Manigart (2007); Gabrielsson and Huse (2002); Manigart and Wright (2013). Interesting to conclude based on the individual support activities is that, whereas coaching the management team in terms of sales and marketing skills is positively related to performance, being a sounding board for sales and marketing plans is negatively related to performance. Similarly, sharing expertise to help the management team obtain additional financing is positively correlated to performance whereas the various mentoring activities report both positive and negative correlations. This implies that the whereas the non-instrumental roles of mentoring the venture are debated in terms of contributions to performance, the consulting activities

that clearly contribute resources in terms of knowledge, expertise and skill development to the venture positively impact performance. This implies that whereas the consulting activities directly impact portfolio firm performance with a positive correlation, the mentoring activities are mostly creating value as they influence the creation of the supportive setting in which involvement can positively impact performance and trust is created. Based on these findings the importance of the role of mentor and confidant emphasized by Macmillan et al. (1989); Sapienza (1992) is debated, whereas the coaching role that was found to be inferior to the investor role for Scandinavian VCs (Berglund, 2011) is implied to be beneficial for portfolio firm performance.

Whereas drawing reliable conclusions on the combination of degree and nature of involvement is difficult due to insignificance when comparing individual groups. Considering the mean performance measures for each group, I found that a high involvement with a focus on support yields the best results whereas a low involvement with a focus on monitoring & control yields the lowest results. Group C, displaying low involvement and focus on monitoring & control even reported average performance below expectations. Considering these results, the correlation is proven but causality is unclear, considering the results mentioned above it could be the case that high-involvement leads to high performance, alternatively performance indicators could be taking into consideration when dividing attention across multiple portfolio companies. In explaining strategies used to divide attention across portfolio firms, Berg-Utby et al. (2007); Sapienza et al. (1996) used the "home run" and "fire fighting" strategies. Scandinavian VCs seem to follow the "home run" strategy as the higher performance is associated with a high involvement category whereas low performance is associated with low involvement. This implies that when dividing attention over multiple portfolio firms, Scandinavian VCs focus their efforts on high potential ventures instead of spending extensive efforts trying to improve performance in the low performing portfolio firms. Additionally, when considering the causality for individual activities, it is not certain that involvement in certain activities leads to either under- or over performance, or whether this activity is performed in reaction to under- or over-performance. For example, motivating personnel is negatively correlated to performance. This could be both due to the fact that this activity does not provide any value to the venture and thus does not lead to an increase in performance, however alternatively,

the need to motivate personnel could be higher in ventures that under perform as the under performance demotivates the employees, the need for the VC to get involved in motivating personnel increases. Similar reasoning could be applied to the need for being a sounding board for sales & marketing plans increasing when sales is not taking off as expected.

In summary, this thesis found that a focus on support yields better performance compared to a focus on monitoring & control, which is in line with the value protecting nature of the monitoring & control activities versus the value creating nature of the support activities. Considering degree of involvement, this thesis found a weak negative correlation to performance, however as the individual activities show several post-investment involvement activities do correlate positively to venture performance. Hence the conclusion to be drawn from these results is that a VC investor should not be active across multiple activities for the sake of being active, but rather be selective in which activities to get involved with based on the specific needs and situation of the portfolio firm.

5.2 Theoretical implications

Relating these findings to the theoretical model, it is in line with the theory that the focus on support is showing a stronger correlation to performance. The resource theories indicate that contributing resources to the ventures through supportive activities is a value creating activity that positively impacts performance (Berg-Utby et al., 2007; De Clercq and Manigart, 2007; Gabrielsson and Huse, 2002; Manigart and Wright, 2013; Sapienza et al., 1996). In this process, both the instrumental activities, such as sharing expertise and coaching the management team, that directly contribute resources to the ventures, as well as the the non-instrumental roles of confidant and mentor have indicated to be important, which is in line with the emphasis given to these activities in early studies by Ehrlich et al. (1994); Gorman and Sahlman (1989); Macmillan et al. (1989).

In addition to the focus on support, I studied the focus on monitoring and control. An investor attitude focused on value protection instead of creation, and theoretically supported by agency theory (De Clercq and Manigart, 2007; Holström, 1979; Manigart and Wright, 2013; Sapienza, 1992). Considering the results of this thesis, whereas the regression model assessing

the focus on monitoring & control reported a similar impact on performance compared to the focus on support, considering the individual mandating activities, the impact of control activities on performance seem to be less pronounced. This is in line with the theory, as the purpose of these activities is downside protection, and hence their effect should prevent severe under performance from happening, rather than increasing performance for ventures already exceeding the expectations.

Finally, considering the theoretical implications for Scandinavian VC, the findings in this thesis are in line with Berglund (2011) findings that Scandinavian VCs keep their involvement at an arm's length. Additionally, Berglund (2011) addressed the investor and coaching roles for Scandinavian VC, based on the findings that a focus on support is preferred over a focus on control, the coaching role seems to be the most suitable role for Scandinavian VCs.

The main contribution of this thesis to the existing literature is the use of a model that combines degree of involvement and nature of involvement. Previous studies have argued against the use of the passive-active distinction and this thesis confirms that through merely assessing degree of involvement, very limited conclusions in relation to how VCs impact performance during the post-investment phase can be drawn. Recent studies have focused on the use of agency theory and resource theories to explain the theoretical assumptions underlying the VC behavior during the post-investment phase. However, the combination of degree and nature of involvement in a quantitative study is unique within the existing theoretical framework. The use of this novel model allowed me to conclude that a focus on support is associated with a higher performance compared to a focus on monitoring and control for Scandinavian VCs, especially when degree of involvement is high. This thesis hence builds on the exploratory research on how involvement impacts performance, and through building a model that combines various elements of the existing theoretical framework, the conclusions of this thesis offer interesting opportunities for future research.

5.3 Practical implications

For both practitioners in the VC industry as well as entrepreneurial ventures seeking venture capital, this thesis can be a positive contribution. The main conclusions from the analysis

are firstly, that degree of involvement is negatively correlated to performance, indicating that more active involvement is not always better. Analyzing specific activities individually, I can conclude that whereas some activities are positively related to performance, others are negatively correlated. Hence, when a VC gets actively involved in its portfolio firms, it is important to carefully consider what involvement is appropriate in the particular situation of the investment. Secondly, as this thesis identified that a focus on support is related to higher performance compared to a focus on monitoring & control, VCs should ensure to emphasize the focus on support in their post-investment involvement. Whereas both monitoring and support activities are important, and the theoretical assumptions underlying both are complementary, generally a VC would be better off to focus on support rather than monitoring and control whilst balancing the involvement in both activities. In line with this argument, for entrepreneurs seeking venture capital, being aware of the positive effects of a focus on support, enables an entrepreneur to carefully consider which VC to choose based on the focus a VC displays in the pre-investment stages and initial meetings before choosing which VC to collaborate with.

5.4 Future research

Using a theoretical model that combines the early theory on degree of involvement with the contemporary distinction between support and monitoring & control to assess the nature of involvement, this thesis concludes that whereas degree of involvement in itself is negatively related to performance, a focus on support in executing post-investment activities can positively impact the effect of these activities on performance. As already suggested by Macht (2011), this thesis confirms that future research should move away from the passive-active distinction as this does not have explanatory power. Additionally, the effects of both a focus on support as well as a focus on monitoring and control should be assessed further. Considering focus on support, this thesis identified that the effects of instrumental activities such as sharing expertise and coaching the management team differ from the effects of non-instrumental activities such as serving as a sounding board. However, these differences could be explored further.

Additionally, how the focus on support impacts performance could also be researched further.

An investor with a focus on support will most likely be actively involved in instrumental support activities, meaning the resources contributed through these activities could explain the positive impact on performance. Alternatively, the focus on support and the supportive attitude associated with this, could impact the VC-entrepreneur relationship, and hence improve the manner through which interactions take place. This could impact the effect of other activities such as being operationally involved on performance as well. Following the resource theories, the activities in this thesis identified as neither supportive nor controlling, namely outreach, strategic, operational and recruiting activities are also creating value as involvement in these activities is associated with contributing resources to the portfolio firm. Hence, following the resource theories, I expect that the supportive attitude impacts the "neutral" activities through enhancing the effectiveness of the resource exchange based on improved communication and trust created with the supportive attitude. In further assessing this, control factors such as the VC-entrepreneur relationship (Sapienza, 1992), trust in the relationship (Wijbenga et al., 2007), VC experience (Manigart and Wright, 2013; Sapienza et al., 1996), and VCs confidence in the management team's abilities should also be considered.

A final consideration for future research is to conduct similar studies in various institutional environments. As discussed in the section on VC in Scandinavia , VC behavior may differ depending on the institutional context. Furthermore, due to the focus on the US in the VC literature, our understanding on regional differences is quite poor. In order to increase our knowledge on these regional differences, similar studies should be conducted in various institutional contexts, in order to obtain easily comparable studies describing the effects of degree and nature of involvement on performance in the various institutional regions.

5.5 Limitations

Every study inherently has several limitations, this study is first of all subjected to limitations in the data collection. As stated in the discussion of results, based on the data collected in this study I have been able to report causality between certain post-investment activities and performance, however the data I collected does not report causality. As brought up in the chapter on methodology, ideally the data collection should be longitudinal in order to report

on both changes in performance and post-investment activities over time, however within the time constraints of this thesis that was not possible. Furthermore, this study focuses on Scandinavian VC and due to differences in institutional environments it is difficult to generalize the results for other regions thereby limiting the applicability of these results.

5.6 Concluding remarks

This thesis found that in the Scandinavian context a focus on support yields better performance compared to a focus on monitoring & control. Furthermore, conclusions on both score for degree of involvement as well as involvement in various post-investment activities, a VC investor should carefully consider which post-investment activities can create value based on the specific needs and situation of each portfolio company, as being too actively involved can be counterproductive. Whereas this thesis has contributed interesting findings to the existing body of literature, further research on the complexity of the VC-entrepreneur relationship is needed. Especially research on how a focus on support impacts performance and considerations of control factors could yield interesting results.

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6 Appendices

Appendix 1: Summary of pre-study

The purpose of the pre-study was to gain a practical perspective in addition to the theorethical perspective presented in the literature review as well as to narrow down the exact topic for this thesis. The goals of the interviews were to gain information on the impact of each phase in the investment process on performance and the value-adding activities VCs pursued throughout this process.

The interviees all adressed the importance of selection. The most important elements were:

- Capabilities of the management team(4/5): "The right CEO is the first 100%, we invest in the right entrepreneur"
- Personal fit(3/5):"An investor should be a reinforcer to the entrepreneur and make the entrepreneur stronger. Personal connection plays an important role here"
- Venture and product (3/5): "The opportunities the venture offers, things like market size and growth opportunities. I also value the product, it has to be unique enough, it needs to solve a pain for the customers and stand out from the competition"

The structuring phase was adressed mainly as a means to gain the ability to control. A board position was valued as most important here. One VC said "Usually we also want to have a board seat and veto rights on certain issues."

Additionally, syndication turned out to be very common for Swedish VC. The most important reason is information sharing, meaning each VC needs less control as they help each other. "In essence we still need to do the same work but there are benefits to sharing work and information. It is a good way of hedging risk". Three out of five VCs also adressed that independent of whether they are the lead in a syndication, they always pursue an active role. "... is sometimes the lead investor and sometimes not, but always active as an investor".

Post-investment, the following roles were deemed as most important:

- Strategic role (4/5): "The business plan always needs to be changed and altered on a

yearly basis"

- Networking role (4/5): "One important task is getting the entrepreneurs in touch with experts."
- Hurman resource role (4/5): "Helping the ventures recruit senior people."

Furthermore, several VCs(2) mentioned that which role they pursue depends on the founders, as it is a mutual process. "Our involvement is also dependent on the personal preference of the founders and the amount of help they want and need." Finally, two VCs adressed that in the post-investment phase, the impact on performance is only marginal. VC post-investment efforts cannot impact the difference between failure or success, they can merely soften the blow from a failure or elevate the return of a success. "We believe we cannot make or break them, but what we can do is help them along the way"

Finally, concerning the exit phase, three out of five VCs consider exit possibilities from the start "When we make an investment we always have an exit hypothesis".

In summary, the interviews adressed several aspects of the investment process and the impact these phases have on performance. Whereas the selection phase is the most important phase in selecting high-potential investments, the value-adding activities are enabled in the structuring phase and executed in the post-investment phase. Based on the interviews, it became clear that whereas the selection procedures are relatively established, each investment is tested on similar items and a VC clearly knows what to look for. The post-investment activities on the other hand, are much more dependent on the situation and take place in a much more subjective manner. This subjectivity and situational differences intrigued me, additionally, as these activities are a key element of characterizing VC as a value-adding source of capital, I decided to focus on these post-investment activities and how these activities add-value and thus impact performance of the portfolio firm. The results of my study to answer this question is presented in the following chapter.

Appendix 2: The survey

This survey will deal with the post-investment activities of active venture capital managers. The questions asked are about specific investments. When answering them, please take an investment in mind where the first time you invested was in the period between 2010 and 2012.

You will have the option to fill in the survey about more than one investment, I would very much appreciate if you could take the time to fill in the survey for 2 or 3 ventures. Each investment takes about 5 minutes to fill in.

The answers will be handled confidentially, anonymously and with great care. The questions are formulated in a manner to ensure anonymity. If you have any questions or concerns, please do not hesitate to email Charlotte Teven at 40702@student.hhs.se.

The survey will now start with questions about Venture 1, please take an investment in mind that you invested in between 2010 and 2012.

Venture 1 - Post-investment activities

In the case of Venture 1, to what extent are you involved in the following activities?

	Not at all involved					Very closely involved
Human resource activities						
Searching candidates for the management team (Recruiting)	o	o	o	o	o	o
Searching for suitable board members (Recruiting)	o	o	o	o	o	o
Interviewing and selecting management personnel (Recruiting)	o	o	o	o	o	o
Negotiating employment terms with candidates (Recruiting)	o	o	o	o	o	o
Replacing ineffective management personnel (Mandating)	o	o	o	o	o	o
Serving as a sounding board for HR activities (Mentoring)	o	o	o	o	o	o
Financing activities						
Obtaining alternative sources of debt financing (Outreach)	o	o	o	o	o	o
Obtaining alternative sources of equity financing (Outreach)	o	o	o	o	o	o

Sharing your expertise to help the management team obtain additional financing (Consulting)	o	o	o	o	o	o
Control the decision making about additional financing (Mandating)	o	o	o	o	o	o
Monitoring financial performance (Mandating)	o	o	o	o	o	o
Strategic activities						
Formulating business strategy (Strategizing)	o	o	o	o	o	o
Serving as a sounding board for strategic decisions (Mentoring)	o	o	o	o	o	o
Monitoring the development of the business strategy (Mandating)	o	o	o	o	o	o
Operational activities						
Operational involvement in the development of the product or service (Operating)	o	o	o	o	o	o
Serving as a sounding board for the development of the product or service (Mentoring)	o	o	o	o	o	o
Monitoring the development of the product or service (Mandating)	o	o	o	o	o	o
Operational involvement in formulating sales and marketing plans (Operating)	o	o	o	o	o	o
Serving as a sounding board for sales and marketing plans (Mentoring)	o	o	o	o	o	o
Coaching the management team to help them develop sales and marketing skills (Consulting)	o	o	o	o	o	o
Monitoring the development of sales and marketing plans (Mandating)	o	o	o	o	o	o
Monitoring operational performance (Mandating)	o	o	o	o	o	o
Networking activities						
Introducing the management team to valuable contacts in your network (Outreach)	o	o	o	o	o	o
Problem solving activities						
Stepping in to handle crises and problems to avoid negative outcomes (Mandating)	o	o	o	o	o	o
Providing the entrepreneur team with guidance to handle crises and problems (Mentoring)	o	o	o	o	o	o
Control activities						
Being on the board of directors (Mandating)	o	o	o	o	o	o

Controlling the performance targets (Mandating)	o	o	o	o	o	o
Mentoring activities						
Providing moral support to the entrepreneur team (Mentoring)	o	o	o	o	o	o
Coaching the entrepreneur team (Consulting)	o	o	o	o	o	o
Motivating the personnel (Mentoring)	o	o	o	o	o	o

Venture 1 - Performance

How would you rate Venture 1's performance 3 years after investing?

	Far below expectations					Far above expectations
Revenue growth	o	o	o	o	o	o
Profitability	o	o	o	o	o	o
Return on investment	o	o	o	o	o	o

How would you rate Venture 1's performance 5 years after investing?

	Far below expectations					Far above expectations	N/A
Revenue growth	o	o	o	o	o	o	o
Profitability	o	o	o	o	o	o	o
Return on investment	o	o	o	o	o	o	o

Have you exited the investment in Venture 1?

o No, not yet
o Yes, with an IPO
o Yes, with an acquisition
o Yes, with a liquidation
o Yes, with a share-buyout
o Yes, with another exit, namely ...

Venture 1 - Background

What industry is Venture 1 operating in?

How old was Venture 1 at the time of investment?

o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	more

Did you do subsequent investments in venture 1?

o No, there were no subsequent rounds
o No, there were subsequent rounds but we did not join
o Yes, we invested one more round
o Yes, we invested two more rounds
o Yes, we invested three more rounds
o Yes, we invested in four or more additional rounds

As an investor, do/did you feel you can/could add value to Venture 1?

	Not at all					All the time
Based on your industry experience	o	o	o	o	o	o
Based on your product development knowledge	o	o	o	o	o	o
Based on your sales & marketing knowledge	o	o	o	o	o	o

Do/did you have confidence in Venture 1's management team

	Not at all					All the time
Based on their industry experience	o	o	o	o	o	o
Based on their product development knowledge	o	o	o	o	o	o
Based on their sales & marketing knowledge	o	o	o	o	o	o
Based on their previous leadership experience	o	o	o	o	o	o

How would you describe the the relationship between you and Venture 1's entrepreneur(s)?

	Not at all					All the time	
Purely business relationship	o	o	o	o	o	o	We are friends
We get along on a personal level	o	o	o	o	o	o	We do not get along on a personal level
We never interact outside of work related functions	o	o	o	o	o	o	We often interact outside of work related functions

Investor background

What is the highest level of education you have pursued?

o High school
o Bachelor degree in ...
o Master degree in ...
o Ph.D. degree in ...
o I do not want to answer

What is your gender?
o Male
o Female

How many years do you have experience in the VC industry?
o 0-3 years
o 4-5 years
o 6-10 years
o 11-15 years
o more than 15 years

Are you working for a private or public VC firm?
o Private
o Public

In which country is your VC firm located?
o Sweden
o Denmark
o Norway
o Other, ...

I would very much appreciate if you could take the time to fill in a second investment. In case you do not want to or cannot, please tick the box below and you will be fast forwarded to the end of the survey.

o No, I do not want to fill in a second (third) venture

o Yes, I can continue

The survey will now continue with questions about Venture 2(3), please take another investment in mind that you invested in between 2010 and 2012.

(Survey questions on post-investment, performance and venture background are repeated for venture 2 and 3)

This is the end of the survey, if you have any comments or feedback, please let me know by filling in the box below.

Appendix 3: Pearson correlations of control variables to performance measures

	Revenue growth year 3	Profit year 3	ROI year 3	Factor year 3	Revenue growth year 5	Profit year 5	ROI year 5	Factor year 5
Country VC firm	-.1051	-.185	-.212	-.119	-.077	-.080	.019	-.065
	(.657)	(.102)	(.060)	(.355)	(.550)	(.538)	(.885)	(.617)
Friendliness relationship	.123	.181	.200	.283***	.359***	.345***	.472***	.400***
	(.280)	(.111)	(.077)	(.026)	(.004)	(.006)	(.000)	(.001)
Getting along on a personal level	.047	-.066	.109	-.088	.082	.045	.228	.113
	(.680)	(.562)	(.337)	(.495)	(.526)	(.731)	(.075)	(.383)
Interaction outside work	.139	.086	.210	.132	.341***	.304***	.463***	.381***
	(.222)	(.451)	(.064)	(.307)	(.007)	(.016)	(.000)	(.002)
VC gender	-.019	.034	-.001	-.065	.074	.052	-.048	.045
	(.868)	(.764)	(.995)	(.613)	(.567)	(.686)	(.709)	(.729)
VC industry experience	.049	-.024	-.046	-.036	.082	.152	.046	.111
	(.668)	(.836)	(.668)	(.782)	(.525)	(.238)	(.725)	(.389)
VC firm private or public	-.238***	-.193	-.209	-.266***	-.210	-.269***	-.172	-.240
	(.034)	(.088)	(.064)	(.036)	(.102)	(.035)	(.182)	(.060)
Confidence management sales & marketing knowledge	.252***	.167	.115	.153	.310***	.178	.151	.241
	(.025)	(.142)	(.311)	(.234)	(.014)	(.166)	(.241)	(.060)
Confidence management leadership experience	.149	.091	.018	.064	.236	.156	.181	.204
	(.189)	(.426)	(.887)	(.623)	(.064)	(.226)	(.158)	(.112)
Confidence management product development knowledge	.340***	.209	.200	.210	.283***	.339***	.247	.319***
	(.002)	(.064)	(.077)	(.102)	(.026)	(.007)	(.053)	(.012)
Confidence management industry experience	.257***	.178	.131	.162	.255***	.204	.264***	.251***
	(.022)	(.117)	(.249)	(.209)	(.045)	(.112)	(.038)	(.049)
Venture industry	-.007	-.030	-.078	.000	.253***	.129	.052	.180
	(.954)	(.795)	(.494)	(1.000)	(.047)	(.318)	(.689)	(.162)
Venture age	.140	.364***	.298	.393***	.169	.354***	.250	.271***
	(.219)	(.001)	(.008)	(.002)	(.190)	(.005)	(.050)	(.033)
Venture subsequent rounds	-.324***	-.335***	-.249***	-.348***	.020	-.097	-.058	-.032
	(.004)	(.003)	(.027)	(.006)	(.876)	(.454)	(.656)	(.808)
VC value-adding ability: industry experience	.118	.053	.117	.068	.115	.165	.260***	.175
	(.302)	(.642)	(.306)	(.597)	(.372)	(.200)	(.042)	(.173)
VC value-adding ability: product development knowledge	.072	-.101	.030	-.040	.277***	.153	.205	.241

	(.528)	(.375)	(.795)	(.755)	(.029)	(.236)	(.109)	(.060)
VC value-adding ability: sales & marketing knowledge	.069	-.019	-.045	.074	.247	.267***	.174	.256***
	(.546)	(.866)	(.695)	(.567)	(.053)	(.036)	(.177)	(.045)

*** significance at p<0.05

Table 13: Pearson correlation table control variables to performance

Appendix 4: Descriptive statistics

Variable	Mean	Std. Deviation	N
Searching candidates for the management team (Recruiting)	4.57	1.465	79
Searching for suitable board members (Recruiting)	5.48	1.048	79
Interviewing and selecting management personnel (Recruiting)	3.96	1.660	79
Negotiating employment terms with candidates (Recruiting)	3.48	1.716	79
Replacing ineffective management personnel (Mandating)	4.28	1.739	79
Serving as a sounding board for HR activities (Mentoring)	4.06	1.371	79
Obtaining alternative sources of debt financing (Outreach)	4.30	1.764	79
Obtaining alternative sources of equity financing (Outreach)	5.33	1.258	79
Sharing your expertise to help the management team obtain additional financing (Consulting)	5.42	1.033	79
Control the decision making about additional financing (Mandating)	5.11	1.251	79
Monitoring financial performance (Mandating)	5.38	0.965	79
Formulating business strategy (Strategic)	4.99	1.092	79
Serving as a sounding board for strategic decisions (Mentoring)	5.30	0.992	79
Monitoring the development of the business strategy (Mandating)	5.09	1.028	79
Operational involvement in the development of the product or service (Operating)	2.39	1.181	79
Serving as a sounding board for the development of the product or service (Mentoring)	3.90	1.287	79
Monitoring the development of the product or service (Mandating)	3.68	1.373	79
Operational involvement in formulating sales and marketing plans (Operating)	2.76	1.222	79

Serving as a sounding board for sales and marketing plans (Mentoring)	4.15	1.210	79
Coaching the management team to help them develop sales and marketing skills (Consulting)	3.38	1.274	79
Monitoring the development of sales and marketing plans (Mandating)	4.29	1.370	79
Monitoring operational performance (Mandating)	4.67	1.268	79
Introducing the management team to valuable contacts in your network (Outreach)	5.09	1.253	79
Stepping in to handle crises and problems to avoid negative outcomes (Mandating)	4.22	1.438	79
Providing the entrepreneur team with guidance to handle crises and problems (Mentoring)	4.65	1.396	79
Being on the board of directors (Mandating)	5.67	1.106	79
Controlling the performance targets (Mandating)	5.34	1.036	79
Providing moral support to the entrepreneur team (Mentoring)	5.00	1.098	79
Coaching the entrepreneur team (Consulting)	4.68	1.127	79
Motivating the personnel (Mentoring)	3.57	1.268	79
Average outreach	4.90	1.085	79
Average recruiting activities	4.37	1.177	79
Average mandating activities	4.77	0.885	79
Average strategic activities	4.99	1.092	79
Average mentoring	4.38	0.853	79
Average consulting activities	4.49	0.890	79
Average operating activities	2.58	0.895	79

Table 14: Descriptive statistics Post-investment activities

Variable	Min	Max	Mean	Std. Deviation	N
Degree of invovement	30	180	134.20	23.053	79
Focus on support	10	60	44.11	8.184	79
Focus on monitoring & control	10	60	47.73	8.855	79

Table 15: Descriptive statistics independent variables

Variable	After 3 years Mean	Std. Deviation	N	After 5 years Mean	Std. Deviation	N
Revenue growth	0.07	1.268	79	0.50	1.263	62
Profitability	-0.49	1.105	79	0.13	1.351	62
ROI	-0.26	1.664	79	0.53	1.514	62
Average performance	-0.31	0.947	79	0.40	1.265	62

Table 16: Descriptive statistics Performance

Variable		Mean	Std. Deviation	N
Venture age (in years)		3.10	3.345	79
VC ability to add value	based on industry experience	4.46	1.221	79
	based on product development knowledge	3.67	1.134	79
	based on sales & marketing knowledge	4.26	1.026	79
Confidence in management team	based on industry experience	4.61	1.011	79
	based on product development knowledge	4.59	1.038	79
	based on sales & marketing knowledge	4.24	0.907	79
	based on leadership experience	4.11	1.105	79
VC-entrepreneur relationship	business-friendly relationship	2.89	1.428	79
	getting along on a personal level	4.67	1.268	79
	interaction outside of work	2.21	1.198	79
Average VC ability to add value		4.13	0.905	79
Average confidence in management team		4.39	0.745	79
Average VC-entrepreneur relationship		3.25	0.928	79

Table 17: Descriptive statistics Control Variables

Appendix 5: Factor analyses

Pattern Matrix

	Factor					
	1	2	3	4	5	6
Providing moral support to the entrepreneur team (Mentoring)	1.032					
Coaching the entrepreneur team (Consulting)	.717					
Serving as a sounding board for sales and marketing plans (Mentoring)		-.844				
Serving as a sounding board for the development of the product or service (Mentoring)	.390	-.464				
Coaching the management team to help them develop sales and marketing skills (Consulting)		-.414				
Serving as a sounding board for HR activities (Mentoring)		-.346		.324		
Interviewing and selecting management personnel (Recruiting)			.999			
Negotiating employment terms with candidates (Recruiting)			.809			
Searching candidates for the management team (Recruiting)			.713			
Replacing ineffective management personnel (Mandating)			.620			
Providing the entrepreneur team with guidance to handle crises and problems (Mentoring)			.304	.302		
Obtaining alternative sources of equity financing (Outreach)				.749		
Sharing your expertise to help the management team obtain additional financing (Consulting)				.736		
Searching for suitable board members (Recruiting)				.675		
Obtaining alternative sources of debt financing (Outreach)		.330		.549		
Control the decision making about additional financing (Mandating)				.477		
Serving as a sounding board for strategic decisions (Mentoring)				.477	.300	
Introducing the management team to valuable contacts in your network (Outreach)	.329			.403		
Monitoring operational performance (Mandating)					.782	
Controlling the performance targets (Mandating)					.753	
Monitoring the development of sales and marketing plans (Mandating)					.732	
Monitoring financial performance (Mandating)				.334	.616	
Monitoring the development of the business strategy (Mandating)					.550	
Monitoring the development of the product or service (Mandating)					.510	
Formulating business strategy (Strategic)				.364	.498	
Motivating the personnel (Mentoring)					.493	.328
Being on the board of directors (Mandating)	.310				.328	
Operational involvement in the development of the product or service (Operating)						.831
Operational involvement in formulating sales and marketing plans (Operating)						.770
Stepping in to handle crises and problems to avoid negative outcomes (Mandating)						.409
Variance explained	25.99%	4.44%	14.90%	7.71%	5.91%	4.56%
Cumulative variance	25.99%	30.43%	45.32%	53.04%	58.95%	63.50%

Kaiser-Meyer-Olkin Measure of Sampling Adequacy: .817

Table 18: Factor analysis PI variables

Pattern Matrix

	Factor 1	Factor 2
Profit year 3	1.040	
Revenue growth year 3	.689	
ROI year 3	.611	
Revenue growth year 5		.949
ROI year 5		.846
Profit year 5		.742
Variance explained	47.53%	27.57%
Cumulative variance	47.53%	75. 10%

Kaiser-Meyer-Olkin Measure of Sampling Adequacy: .675

Table 19: Factor analysis PF

Pattern Matrix

	Factor			
	1	2	3	4
Friendliness relationship	1.055			
Interaction outside work	.597			
Venture age		-.991		
Venture subsequent rounds		.343		
Confidence management product development knowledge			.859	
Confidence management industry experience			.607	
Confidence management sales & marketing knowledge			.356	
VC firm private or public				
VC value-adding ability: industry experience				.681
VC value-adding ability: product development knowledge				.680
VC value-adding ability: sales & marketing knowledge				.655
Variance explained	15.08%	11.41%	12.88%	12.72%
Cumulative variance	15.08%	26.49%	39.37%	52.09%

Kaiser-Meyer-Olkin Measure of Sampling Adequacy: .602

Table 20: Factor analysis control variables

Appendix 6: Regression models

	Dependent variables							
	Revenue growth year 3	Profit year 3	ROI year 3	Factor year 3	Revenue growth year 5	Profit year 5	ROI year 5	Factor year 5
Focus on supporty	-.030***	-.038***	-.036	-.037***	-.021	-.033	-.021	-.019
	(.032)	(.014)	(.033)	(.010)	(.255)	(.083)	(.335)	(.162)
Control factor 1	.036	.159	.171	.190	.300	.232	.571***	.244
	(.755)	(.212)	(.225)	(.146)	(.086)	(.181)	(.005)	(.055)
Control factor 2	-.166	-.409***	-.344***	-.344***	.-.141	-.415***	-.231	-.198
	(.110)	(.001)	(.007)	(.002)	(.328)	(.005)	(.165)	(.060)
Control factor 3	.442***	.334***	.299***	.305***	.416***	.523***	.373	.343***
	(.000)	(.014)	(.044)	(.031)	(.027)	(.006)	(.082)	(.013)
Control factor 4	.207	.069	.165	.123	.303	.399***	.242	.258
	(.133)	(.650)	(.324)	(.394)	(.117)	(.041)	(.275)	(.067)
N	79	79	79	62	62	62	62	62
R^2	.211	.264	.197	.320	.251	.345	.309	.324
F-test	3.903***	5.228***	3.577***	5.282***	3.747***	5.912***	5.009***	5.369***
Sign.	(.003)	(.000)	(.006)	(.000)	(.005)	(.000)	(.001)	(.000)

*** significance at p<0.05

Table 21: Regression models focus on support

	Dependent variables							
	Revenue growth year 3	Profit year 3	ROI year 3	Factor year 3	Revenue growth year 5	Profit year 5	ROI year 5	Factor year 5
Focus on monitoring & control	-.030***	-.030***	-.029	-.032***	-.028	-.039***	-.033	-.025***
	(.014)	(.029)	(.050)	(.010)	(.079)	(.017)	(.072)	(.031)
Control factor 1	.009	.133	.145	.186	.291	.222	.559***	.236
	(.935)	(.302)	(.306)	(.156)	(.091)	(.191)	(.006)	(.057)
Control factor 2	-.186	-.428***	-.363***	-.361***	-.155	-.435***	-.248	-.211***
	(.072)	(.000)	(.005)	(.001)	(.274)	(.003)	(.129)	(.041)
Control factor 3	.414***	.285***	.254	.280***	.421***	.522***	.390	.347***
	(.001)	(.030)	(.078)	(.045)	(.021)	(.005)	(.061)	(.009)
Control factor 4	.203	.038	.138	.077	.307	.390***	.262	.261***
	(.131)	(.802)	(.404)	(.578)	(.094)	(.031)	(.209)	(048)
N	79	79	79	62	62	62	62	62
R^2	.227	.251	.189	.320	.275	.377	.377	.356
F-test	4.282***	4.903***	3.401****	5.279***	4.239***	6.778***	5.696***	6.204***
Sign.	(.002)	(.001)	(.008)	(.000)	(.002)	(.000)	(.000)	(.000)

*** significance at p<0.05

Table 22: Regression models focus on monitoring & control

	Dependent variables							
	Revenue growth year 3	Profit year 3	ROI year 3	Factor year 3	Revenue growth year 5	Profit year 5	ROI year 5	Factor year 5
Post-investment factor 1	.095	.092	.186	.020	.110	.132	.225	.112
	(.444)	(.517)	(.228)	(.889)	(.571)	(.500)	(.291)	(.424)
Post-investment factor 2	.297***	.290***	.289***	.350***	.116	.120	-.131	.051
	(.011)	(.030)	(.044)	(.010)	(.516)	(.502)	(.501)	(.689)
Post-investment factor 3	.104	-.177	-.274	-.153	-.143	-.218	-.572***	-.187
	(.408)	(.222)	(.081)	(.279)	(.451)	(.257)	(.008)	(.176)
Post-investment factor 4	-.049	-.156	-.213	-.065	.150	-.011	-.062	.038
	(.691)	(.275)	(.168)	(.627)	(.409)	(.952)	(.755)	(.770)
Post-investment factor 5	-.231	-.040	.010	-.011	-.253	-.266	-.171	-.192
	(.064)	(.778)	(.949)	(.940)	(.193)	(.176)	(.419)	(.174)
Post-investment factor 6	-.082	-.030	-.101	-.036	-.033	.057	.050	.010
	(.494)	(.830)	(.501)	(.797)	(.862)	(.765)	(.808)	(.940)
Control factor 1	.026	.131	.153	.184	.316	.220	.553***	.244
	(.822)	(.333)	(.293)	(.163)	(.077)	(.217)	(.006)	(.060)
Control factor 2	-.117	-.387***	-.333***	-.285***	-.134	-.427***	-.306	-.211
	(.267)	(.002)	(.013)	(.014)	(.376)	(.007)	(.069)	(.058)
Control factor 3	.372***	.341***	.334***	-.297***	.382***	.527***	.465***	.345***
	(.003)	(.015)	(.027)	(.039)	(.049)	(.008)	(.029)	(.015)
Control factor 4	.201	.117	.238	-.174	.295	.390	.288	.258
	(.138)	(.451)	(.157)	(.237)	(.138)	(.053)	(.185)	(.074)
N	79	79	79	62	62	62	62	62
R^2	.321	.310	.278	.393	.311	.388	.425	.382
F-test	3.209***	3.053***	2.615***	3.303***	2.297***	3.236***	3.776***	3.147***
Sign.	(.002)	(.003)	(.009)	(.002)	(.026)	(.003)	(.001)	(.003)

*** significance at p<0.05

Table 23: Regression models on post-investment factors

	Dependent variables							
	Revenue growth year 3	Profit year 3	ROI year 3	Factor year 3	Revenue growth year 5	Profit year 5	ROI year 5	Factor year 5
Searching candidates for the management team (Recruiting)	.084	.067	-.187	.148	-.136	.086	.076	-.026
	(.569)	(.711)	(.265)	(.482)	(.582)	(.740)	(.737)	(.882)
Searching for suitable board members (Recruiting)	-.015	.128	.643***	.047	.851***	.324	.678***	.496***
	(.935)	(.568)	(.003)	(.851)	(.007)	(.299)	(.017)	(.021)
Interviewing and selecting management personnel (Recruiting)	-.076	-.281	-.401***	-.112	-.068	-.281	-.508***	-.179
	(.588)	(.104)	(.014)	(.544)	(.754)	(.225)	(.016)	(.243)
Negotiating employment terms with candidates (Recruiting)	.141	.191	.385***	.122	.185	.301	.303	.209
	(.244)	(.196)	(.006)	(.487)	(.377)	(.177)	(.120)	(.155)
Replacing ineffective management personnel (Mandating)	-.067	-.009	.041	-.306	-.188	-.213	-.085	-.133
	(.503)	(.939)	(.718)	(.070)	(.336)	(.301)	(.635)	(.326)
Serving as a sounding board for HR activities (Mentoring)	-.079	-.043	.035	-.010	.103	-.064	-.063	.008
	(.536)	(.781)	(.807)	(.951)	(.585)	(.745)	(.715)	(.949)
Obtaining alternative sources of debt financing (Outreach)	-.040	-.029	-.138	-.024	-.049	-.076	-.254	-.075
	(.665)	(.796)	(.187)	(.858)	(.758)	(.653)	(.091)	(.502)
Obtaining alternative sources of equity financing (Outreach)	.168	.004	-.084	-.158	-.189	-.184	.306	-.089
	(.399)	(.985)	(.706)	(.590)	(.585)	(.614)	(.339)	(.713)
Sharing your expertise to help the management team obtain additional financing (Consulting)	-.177	.099	-.017	.307	.688	.907***	-.090	.485
	(.507)	(.761)	(.956)	(.386)	(.106)	(.046)	(.813)	(.102)
Control the decision making about additional financing (Mandating)	-.179	-.353	-.257	-.203	-.327	-.276	-.171	-.209
	(.265)	(.075)	(.156)	(.342)	(.198)	(.316)	(.459)	(.236)
Monitoring financial performance (Mandating)	-.009	.360	.337	.242	.198	.337	.698***	.262

	(.960)	(.120)	(.115)	(.376)	(.540)	(.324)	(.024)	(.247)
Formulating business strategy (Strategizing)	.056	-.115	-.155	-.075	-.100	-.047	-.576	-.112
	(.765)	(.617)	(.467)	(.838)	(.818)	(.917)	(.154)	(.710)
Serving as a sounding board for strategic decisions (Mentoring)	.451	.263	-.024	.305	-.469	-.432	-.466	-.358
	(.078)	(.392)	(.933)	(.414)	(.290)	(.353)	(.252)	(.247)
Monitoring the development of the business strategy (Mandating)	-.012	-.192	-.247	.089	-.353	-.203	-.298	-.236
	(.952)	(.416)	(.258)	(.734)	(.261)	(.536)	(.300)	(.279)
Operational involvement in the development of the product or service (Operating)	.012	.062	.249	.071	.015	-.060	.060	.004
	(.944)	(.765)	(.194)	(.738)	(.953)	(.822)	(.795)	(.982)
Serving as a sounding board for the development of the product or service (Mentoring)	-.008	.029	.147	.184	.388	.517	.372	.338
	(.964)	(.895)	(.461)	(.405)	(.142)	(.067)	(.126)	(.069)
Monitoring the development of the product or service (Mandating)	.121	.018	-.008	-.065	-.171	-.351	-.049	-.173
	(.353)	(.908)	(.957)	(.722)	(.427)	(.129)	(.804)	(.251)
Operational involvement in formulating sales and marketing plans (Operating)	-.026	-.099	-.117	-.114	.000	-.029	.031	-.009
	(.870)	(.607)	(.509)	(.560)	(.999)	(.904)	(.884)	(.955)
Serving as a sounding board for sales and marketing plans (Mentoring)	-.544***	-.511	-.804***	-.798	-.441	-.589	-.304	-.369
	(.025)	(.082)	(.004)	(.013)	(.223)	(.125)	(.357)	(.145)
Coaching the management team to help them develop sales and marketing skills (Consulting)	.314***	.209	.339***	.346	.325	.276	.478***	.258
	(.028)	(.222)	(.035)	(.084)	(.164)	(.261)	(.030)	(.116)
Monitoring the development of sales and marketing plans (Mandating)	-.128	.109	.253	.236	.252	.518	.279	.283
	(.477)	(.619)	(.213)	(.346)	(.394)	(.103)	(.306)	(.174)
Monitoring operational performance (Mandating)	-.133	-.026	.130	-.150	-.125	-.140	-.251	-.113
	(.555)	(.925)	(.608)	(.589)	(.703)	(.684)	(.405)	(.619)
Introducing the management team to valuable contacts in your network (Outreach)	-.076	-.179	-.189	-.021	-.106	-.079	-.042	-.065
	(.586)	(.297)	(.232)	(.904)	(.604)	(.715)	(.821)	(.645)

Stepping in to handle crises and problems to avoid negative outcomes (Mandating)	.082	.034	-.077	.100	-.018	.124	-.081	.023
	(.582)	(.853)	(.645)	(.652)	(.944)	(.653)	(.736)	(.900)
Providing the entrepreneur team with guidance to handle crises and problems (Mentoring)	-.115	-.164	-.289	-.059	-.189	-.244	-.412	-.209
	(.385)	(.312)	(.057)	(.791)	(.470)	(.378)	(.093)	(.255)
Being on the board of directors (Mandating)	-.236	-.314	-.228	-.378	-.364	-.413	-.399	-.284
	(.150)	(.117)	(.213)	(.142)	(.228)	(.196)	(.152)	(.179)
Controlling the performance targets (Mandating)	.142	.116	.044	.054	.199	-.214	.224	.024
	(.482)	(.639)	(.846)	(.862)	(.591)	(.583)	(.508)	(.924)
Providing moral support to the entrepreneur team (Mentoring)	.219	.545	.678***	.309	.765	.554	.947****	.561
	(.419)	(.102)	(.029)	(.436)	(.109)	(.264)	(.034)	(.092)
Coaching the entrepreneur team (Consulting)	.024	-.114	.111	-.115	-.275	-.124	-.066	-.134
	(.899)	(.623)	(.605)	(.695)	(.430)	(.733)	(.835)	(.580)
Motivating the personnel (Mentoring)	-.192	-.174	-.382***	-.177	-.302	-.162	-.353	-.212
	(.148)	(.281)	(.012)	(.331)	(.164)	(.473)	(.079)	(.161)
Control factor 1	.075	.146	-.011	.307	.097	.124	.353	.106
	(.636)	(.453)	(.950)	(.150)	(.695)	(.635)	(.127)	(.538)
Control factor 2	-.141	-.348***	-.326***	-.209	-.191	-.366	-.436***	-.225
	(.286)	(.035)	(.032)	(.195)	(.314)	(.073)	(.017)	(.093)
Control factor 3	.400***	.241	.235	-.140	.151	.191	.144	.127
	(.014)	(.212)	(.188)	(.516)	(.554)	(.478)	(.538)	(.475)
Control factor 4	.239	.270	.376	-.198	.427	.591***	.405	.384***
	(.192)	(.225)	(.070)	(.384)	(118)	(.043)	(.106)	(.046)
N	79	79	79	62	62	62	62	62
R^2	.554	.480	.603	.626	.673	.683	.808	.728
F-test	1.544	1.193	1.962***	1.329	1.633	1.71	3.345***	2.131***

Sign.	(.087)	(.288)	(.018)	(.225)	(.097)	(.078)	(.001)	(.023)

*** significance at p<0.05

Table 24: Regression models on post-investment activities