Entrepreneurial Motivation in change

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A study on Science Based Entrepreneurs and their levels of motivation

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EXECUTIVE SUMMARY

Due to the increasing importance of entrepreneurship as a key driver to economic growth and technology progress there has been a distinct increase in academic attention to the field (Schumpeter, 1942; Shane et al, 2003; Carsrud & Bränback, 2011). Past entrepreneurial research has often been focused on the discovery of opportunity (Christiansen, 1997) and the environment that venture ideas spur from (Aldrich, 2000). However, recently scholar Shane et al (2003) highlighted that the field often fails to include the importance that there is a human agent evolved in the entrepreneurial process. Since motivation influence the entrepreneurs' decision process and thereby the business opportunity and the growth of a company it is interesting to further investigate Entrepreneurial Motivation and if it evolves during the venture. As the entrepreneur affect the aspirations of the company it is also further interesting to research if there is a relation between the level of motivation and performance. (Shane et al, 2003; Baum & Locke, 2004; Carsrud & Bränback, 2011; Krabel & Mueller, 2009) Lately a new type of entrepreneurs with roots from academia and science has emerged, which in turn has caught the attention of scholars (Mcmillan et al, 2000 in Krebel & Mueller, 2009). Scientifically based ventures have become evident to our society as they are not only pursuing new industries like nanotechnology or bio technology but also pushing the development of existing industries (Krabel & Mueller, 2009). A survey was conducted on 94 Science Based founders. The findings from the survey indicate that motivation change during the entrepreneurial process and that income, confidence and occupation change. The results also indicate a relationship between perceived motivational change and perceived performance of the venture. It was not possible to say how strong the relationship was. The findings have contributed to new knowledge within entrepreneurship but future research is needed. How Entrepreneurial Motivation drivers are related to the activities in the venture and the strength of the relationship between performance and perceived motivation is extra interesting to further research.

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1. INTRODUCTION AND PROBLEM DISCUSSION

1.1 MOTIVATION AS A DRIVER IN THE ENTREPRENERUIAL PROCESS

The road to entrepreneurial success is long and full of obstacles. Contributing to economic growth is not said to be easy and entrepreneurs meets a lot of resistance on their journey. In order for entrepreneurs to make it all the way there is several contributing factors one need to keep in mind – Entrepreneurial Motivation being one of them.

Both Denmark and Sweden have some of the best entrepreneurial climates in the world with many policies focusing on easing the entrepreneurial process. As a consequence the number of start-ups in both Denmark and Sweden has increased steadily over the past couple of years (Nordic Innovation Council, OECD). However, even though these countries are experiencing increasing numbers of start-ups, many of these companies are facing significant obstacles and insufficient growth (Børsen, 11/12 2013, Nordic Innovation Council). This seemingly paradoxical situation hinders the economy from reaching its full potential as technological change and innovation is not operating at its full ability (Schumpeter, 1942). Further, entrepreneurial scholar Kirzner (1997) argues that an entrepreneurial gap like this could contribute to an insufficient market as processes fail to allow supply and demand to meet. As money is continuously invested in start-ups positioned in this inadequate entrepreneurial state it is crucial that the mechanisms of entrepreneurship are further investigated in line with findings of the already existing entrepreneurial academic field (Tichy & Devanna, 1986; Shane & Venkataraman, 2000; Carsrud and Brännback, 2011).

Due to the increasing importance of entrepreneurship in the economy there has been a distinct increase in academic attention to the field (Carsrud & Bränback, 2011). Past entrepreneurial research has often been focused on the discovery of opportunity (Christiansen, 1997) and the environment that venture ideas spur from (Aldrich, 2000). However, recently scholar Shane et al (2003) highlighted that the field often fails to include the importance of the human agent perusing the idea. Shane et al argues that both Aldrich and Christiansen fail to involve the human agency, personal traits and characteristics of entrepreneurs' in their theories. They argue that the entrepreneurial process is affected by a person's motivation, which in turn is partly dependent on the decided goals and the possessed skills along with several other drivers, which will affect the decision making in the entrepreneurial process. (Shane et al, 2003) So far Entrepreneurial Motivation has mostly been studied as a factor to why one chose to become an entrepreneur.

(Krebel & Muller, 2009; Shane et al, 2003; Carsrud and Bränback, 2009). However, to fully understand entrepreneurship, motivation should not be neglected as an important factor in the entire entrepreneurial process (Carsrud & Bränback, 2011).

Lately a new type of entrepreneurs with roots from academia and science has emerged, which in turn has caught the attention of scholars (Mcmillan et al, 2000 in Krebel & Mueller, 2009). These entrepreneurs use their scientific research and findings as the foundation for new ventures and ultimately new products and/or processes (Krabel & Mueller, 2009; Shane 2004). Scientifically based ventures have become evident to our society as they are not only pursuing new industries like nanotechnology or bio technology but also pushing the development of existing industries (Krabel & Mueller, 2009). Scientists are becoming more and more proactive in commercializing their scientific findings (Krabel & Mueller, 2009), which is seen in the increasing activity at university Science Parks as well as increasing numbers of realised products on the market (OECD, 2011). What is important to remember is that Science Based entrepreneurs are also facing difficult obstacles on their way towards success and the segment is facing many exits. For Science Based founders the entrepreneurial process is even longer due to the amount of high quality research that is needed. Thus, it is important that Science Based founders stay motivated though out the process. (Baum & Locke; Shane et al, 2003; Carsrud & Bränback, 2011; MvE, 2013; ML, 2013)

Due to the significant contribution entrepreneurs and ventures have on the economy it is important to study and understand the founders behind the ideas. By doing this it is possible to further investigate the underlying issues that contribute to the stagnating growth for start-ups in Sweden and Denmark. Therefore the core objective of this thesis is to research Entrepreneurial Motivation among ventures and investigate how it differs from starting the venture until to today.

1.2 PROBLEM DISCUSSION

Scientist are generally driven by their desire to contribute to academia and science when striving to understand the world (Löfsten & Lindelöf, 2005). Therefore it is very uncommon that scientists peruse ventures and/or a career within management. However, if a person with academic background stills decides to create a company, entrepreneurial theory argues that here are two main factors motivating entrepreneurs: (1) a desire for independence and (2) realisation of a product (Shane 2000; Shane et al, 2003; Carsrud and Bränback, 2013). However, both of these factors are

faced with several obstacles early on in the start-up process. This raises the question of what motivates entrepreneurs to continue to invest their time and money?

Creating a successful and long-lasting company include many stages and activities that is constantly faced with obstacles to overcome. Some of the most important activities to be considerate in the process are: acquiring resources, hiring new personal, strategic planning and hiring external management. None of these activities are easy to pursue and the founders' motivation will most likely at some point be pressured (Shane &Venkatamaran, 2000; Shane et al. 2003). Since Scientifically based companies often require substantial initial investments from venture capitalist to even start up their business, acquiring resources is one of the most crucial activities for them (MvE, 2013). However, as a consequence of new investment most founders loose a significant amount of their autonomy in return for the cash, which in turn pressures the very factor that motivated them to peruse the venture in the first place. Another crucial activity that often creates motivational distress is hiring external management. Entrepreneurial theory argues that it is important that new ventures eventually peruse external CEOs to take advantage of their skills and experience to grow further (Davila & Foster, 2007). However, hiring a new management often contributes to a further decrease in autonomy and power for the founder, which even further pressures his motivation. Even though the founders' power may decrease as the company grows, scholars argue that it is necessary for the founders to stay active in the companies due to their ability to directly inspire and influence the employees by speeches and presentations (Tichy & Devanna, 1986). All in all, in order for a venture to grow successfully the founder need to be able to overcome these obstacles while maintaining a high level of motivation.

The second main motivational factor for founders to peruse a venture is the realization of a product. However, scientifically based companies often require a great deal of research and development before the final product is ready, which often is very time consuming (Kreble & Muller, 2009). This highlights yet another motivational obstacle that founders face within scientific venture (Baum & Locke, 2001). Therefore it is possible toconclude that both primary motivational factors are under pressure within scientific venture, which in turns raises several questions; How come founders continue to pursue their ventures? And what keeps them going? Several scholars (Shane et al, 2003: Carsrud & Bränback, 2011) argue that it is the core entrepreneurial mind-set and its underlying drivers that keeps the founder going and make them pursue with opportunities other would have neglected.

Shane et al (2003) further argue that it is the entrepreneur's level of motivation that makes entrepreneurs undertake these opportunities. Entrepreneurial Motivation is a quite new research filed (Carsrud & Bränback, 2011) and it consists of several complex and dynamic factors. (Baum & Locke, 2004; Shane & Ventataranman, 2000; Carsrud & Kreugur, 1993). Need of achievement and locus of control are just two of the many motivational drivers and they affect how one perceive risk among many things. As the entrepreneur's perception of risk is relatively low they undertake opportunities that others would perceive to be too risky. As Entrepreneurial Motivation is a dynamic and complex framework that affects entrepreneurs' decision process these drivers can explain why entrepreneurs continue to pursue with their ventures. Since motivation influence the entrepreneurs' decision process and thereby the business opportunity and the growth of a company it is interesting to further investigate Entrepreneurial Motivation from a business perspective. I also find it important to extend the existing knowledge of Entrepreneurial Motivation due to the current lack of research (Shane et al, 2003; Baum & Locke, 2004; Carsrud & Bränback, 2011; Krabel & Mueller, 2009). Little is known about what contributes to Entrepreneurial Motivation and how, or if, it changes over time (Carsrud & Bränback, 2011). Entrepreneurs' contribution to innovation and economic growth makes it essential to further investigate Entrepreneurial Motivation as one of the many factors affecting the entrepreneurs and their ventures. Therefore I will, as a business student, further investigate Entrepreneurial Motivation and the drivers.

1.3 PROBLEM STATEMENT

In order to understand the Entrepreneurs in Science Based ventures I will start by investigating the drivers that Entrepreneurial Motivation consists of. I will investigate the importance of these drivers for the founder and determine if they change. The perceived level of motivation when the venture was founded and at a later stage of the venture will, together with the drivers of Entrepreneurial Motivation, be the main focus of this thesis. I aim to investigate entrepreneurs deeper than just observing the reasons for why a venture is created and aim to focus ob the process after the initial decision has been made. The thesis will analyse the perceived values of the different drivers that affect Entrepreneurial Motivation before and after the establishment of the venture as well as the founders perceived motivational change. This will help me analyse the overall research question.

Research question

Do founders, of Science Based start-ups, motivation change between starting the venture and further into the process and how is this associated with their perception of the performance of their company?

Two sub questions will assist answering the above research question:

QA: *Is there an increase or decrease in the level of Science Based founders' motivation? What motivational drivers change from starting the venture until a later stage in the process?*

To answer the first sub question I will investigate how entrepreneurs perceive if their level of motivation has changed as well as how they perceive the different motivational drivers. It is important to ask for the entrepreneurs' perception since it would otherwise not be possible to measure the different drivers (Locke, 2004). To answer the first question I will compare the level of motivation before and after.

How one perceives needs, goals and abilities, affect one's motivation. (Davidson, 1991). And motivations affect our behaviour and actions (Brännback et al, 2007). Thus, one's perception will affect the outcome of our behaviour. If motives affect the behaviour to pursue a goal, it is likely to affect, or be affected by the perceived success of acquiring a goal (Carsrud and Brännback, 2011).Thus, it would be interesting to further research the relation between the founders perceived venture performance and the founder's motivation. This has helped me to develop my second sub question;

QB: *Does the founder's motivation relate to the perceived assessment of the company's performance in specific entrepreneurial activities?*

Two answer my second sub question I will seek if there is a relation between the self-evaluation of the founder's motivation and how he/she perceives the performance of the company. I will also test if there is a relation between the level of Entrepreneurial Motivation and perceived performance.

My research will seek to identify what can increase the entrepreneurs' motivation in order to keep them active in the company and grow their ventures further. My research will draw up on a framework inspired by Shane et al, Carsrud & Brännback, Baum & Locke. This will allow me to analyse what motivates a scientist to grow their companies and if that motivation changes between the beginning of the venture and at a later stage in the process. It will also allow me to analyse if and which activities and/or stakeholders that might influence a change in Entrepreneurial Motivation and allow me to discuss how these insights could be used in order to increase entrepreneurs' motivation to further grow their ventures.

1.4 DEMARCATION AND PURPOSE

Given the scope of this thesis I have chosen to analyse a specific factor affecting the venture in a specific setting, and not focus on the costs and benefits form an economic perspective. The findings of this thesis are based on quantitative results and reflections on Entrepreneurial Motivation. Due to my research question I demarcate myself to focus on two dimensions: (1) focus on the conceptual understanding of Entrepreneurial Motivation as an important factor affecting a venture's outcome. It is important to note that there are an infinite numbers of factors that needs to be considered in order to fully understand what is affecting the outcome of a venture, e.g. the environment and the opportunity itself. It is not possible to assess all factors in the scope of this paper. I have therefore chosen to focus (2) on Science Based ventures active in Science Parks. I have done so because most of these opportunities are found in academia and thereby might have the same characteristics. By researching companies located in Science Parks enables the environment to be somewhat comparable. This thesis will not disclose how motivation affects the outcome of the venture – merely if there might be a change in Entrepreneurial Motivation throughout the process and what motivates entrepreneurs over the venture and if there could be a relation between motivation and performance. I have also desisted myself from analysing the economic effects of motivational factors and how they affect other entrepreneurial processes as the innovation process.

The existing literature on entrepreneurship has mainly focused on the entrepreneurial decision process – the decision if to become an entrepreneur or not. I will however focus on the entrepreneur *after* the initial decision process. I will contribute with more research and knowledge to the existing literature by focusing on motivation *during* the entrepreneurial process. My goal is not to find one specific solution to how to create successful venture. On the contrary I will try to gain insight about

entrepreneurial behaviour and to further investigate what aspects should be considered in the entrepreneurial process, and specifically *if* Entrepreneurial Motivation change. I will investigate entrepreneurs' self-assessment of their motivation when starting a venture and their motivation today.

The first purpose of this thesis is to improve the knowledge of entrepreneurs in the entrepreneurial process and how their motivation evolves. By shedding light on motivation and its drivers and characteristics the understanding of entrepreneurial behaviour is enhanced. With this in mind entrepreneurial environments and incentives for entrepreneurs can be further developed, but to do so is not in scope of this thesis. Gained knowledge of Entrepreneurial Motivation can enable entrepreneurs to stay motivated even though their main drives (Independence and realisation of product) are far away. The previous litterateur has not investigated further on how motivation evolves in science based companies situated in Science Parks. My second purpose of this thesis is therefore to increase the knowledge on Science Based entrepreneurs and their behaviour. Important to note that I will focus on the perceived change of motivation and the Entrepreneurial Motivational drivers and will only catch a glimpse of the founders'road towards success.

1.5 LIMITATIONS

I will in this section describe what I, as an investigator, have felt necessary to exclude from my theoretical framework, data collection and analytical possibilities. I have chosen to study a specific aspect, consisting of several factors, which affect the outcome of a venture. By only investigating this aspect I naturally delimit myself from further investigating other aspects such as the environment and the specific opportunity. I will touch upon how these aspects influence the venture and their importance in relation to entrepreneurship, but only to create a foundation to further understand the complex field of entrepreneurship.

Since entrepreneurship is the engine to innovation and economic growth this thesis is written from a business perspective which is the far most important limitation in this thesis. It is however also one of the strengths of the thesis. The limitation to the business perspective is two folded: firstly my academic background lay within the field of business and not psychology, which would be a natural perspective when studying motivation. I do not have the required knowledge based to analyse the motivational change from the field of psychology. Secondly, I investigate entrepreneurs and their

ventures, which naturally lay within the academic field of business. Using the business perspective can also be seen as a strength and makes this thesis unique. There are little existing research linking motivation and the undertaking of a venture and therefore I will contribute with new research.

How motivation and the underlying motivational factors works is explained in the field of psychology but, as mentioned before they are not in the scope for this thesis Exactly how they affect our behaviour and why they change will be left to further explore by other researchers. The capabilities to further investigate the psychological mechanisms are highly complex and I do not possess the required knowledge for that Investigating the underlying mechanisms of motivation is also highly resource consuming and would require more time and resources then I possess.

By choosing to investigate Entrepreneurial Motivation after the venture was founded I also delimit myself from further investigate in motivation and personal traits before the venture was established. Even though I will not analyse upon this I will review the literature of main drivers and main motives for one to start a company. I believe this will relate to the motivational level required to continue developing the venture.

1.6 THESIS' GUIDE

In section 2.0 the literature review will be presented, which will lay the foundation for the following conceptual framework and analysis. The theory presented is only a small fraction of the existing literature but have been carefully chosen by the consideration and validation to the topic. Section 2.0 will lead to the conceptual frame work framing the field to the research question and narrowing down the basis for the analysis. The hypotheses that will be tested in the analysis will be presented together with the framework. This will be followed by some methodologically implications and restrictions in section 3.0. Section 3.2 will also further explain the design of the collection of data, questioner and some statistical notes and implications.

Following on the design of the questioner the results will be presented in section 4.0. The results will be presented following the order to the hypotheses. In section 5.0 I will discuss the implications of the findings and possible explanations to the presented results. Evaluating the results and discussing other perspectives will also be found in the discussion together with suggested future research. Section 6.0 includes the conclusions of the thesis.

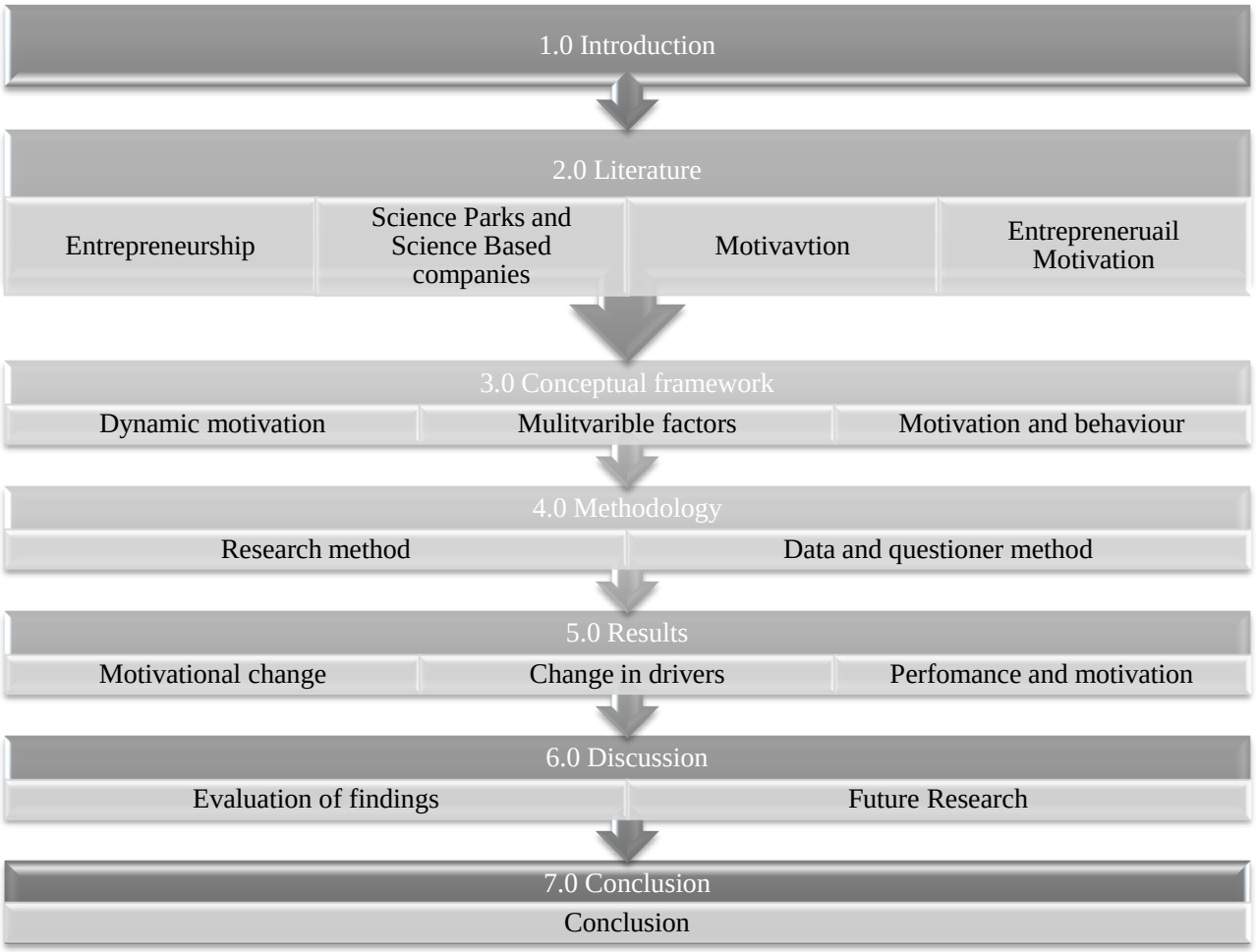


Figure 1.1 Outline of thesis

In the appendix: full questioner, interviews, statistical calculations and demographical of the survey.

2. LITERATURE REVIEW

In this section the existing literature within the field of entrepreneurship will be presented. However, the theoretical field of entrepreneurship is very broad and only the relevant and most important findings will be presented. The opportunity, environment and the entrepreneur will be presented separately since they are important branches within the theoretical framework of entrepreneurship. Following the section of entrepreneurship, the literature of Science Parks will be presented. A review of motivation will thereafter be presented. At last entrepreneurship and motivation will be combined in the Entrepreneurial Motivation section.

2.0 ENTREPRENEURSHIP

With changing markets, technology breakthroughs and with lower market entry barriers there has been an increase in start-ups over the past couple of years (Audretsch, 2003). The cycles of entrepreneurial growth can be found across the globe an in 2012 the Nordic Innovation Council presented a report of entrepreneurial ventures and their growth in the Nordic region. They found that in both Denmark and Sweden many companies are founded every year but only a small fraction of the companies survive or grow (Nordic Innovation Council, 2012). Thus, it is interesting to further investigate the factors that contribute to growth and success of a new company. I will start with introducing the importance of entrepreneurship and thereafter will the origin of the field and the development of entrepreneurship follow. The opportunity, environment and at last the entrepreneur will be presented in the 2.1 section.

The importance of entrepreneurship

Entrepreneurship has had an increasing interest form scholars the past couple of years. Some of the reasons for the increase and the increased importance for more research are: (1), Entrepreneurship is the economic engine that drives technological innovation and change (Schumpeter, 1942; Collins et al, 2004). (2) Entrepreneurship is the process where supply and demand meets (Kirzner, 1997). (3) Entrepreneurship not only generates new knowledge but also converts it into new products and services (Shane & Venkataraman, 2000). (4) Entrepreneurship plays an important part in society and it is need to understand the development of human and intellectual capital (Zahra & Dess, 2001). (5) Entrepreneurship creates new jobs (Audertsch, 2003). As mentioned, the reasons for why entrepreneurship in important are many and several theories have evolved over the years, Schumpeter was one of the first scholars to raise awareness of entrepreneurship. Recently there has however been an increased interest with in the field (Carsrud & Bränback, 2011)

The origin of entrepreneurship

In the beginning of the 20th century Schumpeter, an Austrian economist, introduced entrepreneurship and described entrepreneurship as a process of creative destruction and a central force behind economic development. By finding new opportunities creating new technologies, products and processes entrepreneurs added value economic value to society. Entrepreneurs change the rules of the market and push existing firms out of the market since they commonly do react to the change. Large existing firms are reluctant to change due to their large organisations and existing structure. (Schumpeter, 1942) Entrepreneurs start new firms because large firms are reluctant to change and adapt to the new innovations entrepreneurs create. Thereby the entrepreneurial process entails both the process of creation and destruction – creating new firms, technologies, products and markets and destroying old companies. Schumpeter's early work of entrepreneurship is still influencing the field of entrepreneurship and is used to explain the foundation of entrepreneurship. (Shane, 2001)

The areas of research within entrepreneurship has gone from intense focus on entrepreneurship in large organisation (Schumpeter, 1942) to small businesses (Kirzner, 1997) conducted with a range of various research methods from theoretical to practical research (Shane, 2003) Entrepreneurship has its origin in the field of economics, business and management studies. But with the growing recognition in the past couple of years entrepreneurship has been investigated both from the psychology perspective as well as a sociology perspective. The psychology perspective has mainly focused on what defines an entrepreneur and what characteristics does the entrepreneur possess (Locke, 2004). The sociology perspective has instead focused on how the entrepreneur engages in all the social activities and if entrepreneurship can be pursued individually, in groups and in organisations (Audertsch, 2003). These different types of perspectives have led to have led to a multidisciplinary filed of research. All perspectives bring their insights to the table and they all help to further understand the multidisciplinary field of entrepreneurship. That has never the less complicated the foundation of one unifying framework (Busenitz et al; 2003; Ireland et al, 2005) and has led to a lack of one agreed definition (Baum & Locke, 2004; Shane & Venkataraman, 2000, Shane, 2001; Venkatraman, 1997; Carsrud & Bränback, 2011, Buzenitz et al, 2003).

There have been a few attempts to create a unifying framework for entrepreneurship in order to structure the research and to help researchers to recognize the multitude of the necessary factors that

entrepreneurship consists of (Buzenitz et al, 2003). Shane & Venkataraman (2000) established a framework that explains entrepreneurship as a discovery process of economic opportunities. Audretsch et al (2002) tried to establish the eclectic framework that draws upon Shane & Venkatramans framework also tried to gather insights from several perspectives of entrepreneurship. Audretsch et al does however focus on understanding the determinants of entrepreneurship, which Shane & Venkataraman does not. Both of the frameworks have been unsuccessful in unifying the research of entrepreneurship. There are however, a few reoccurring topics in entrepreneurship. And the literature of entrepreneurship has come to research mainly: (1) why and how opportunities arise. (2) How the environment creates and affects opportunities; and (3) why and how some individuals and no other discover these opportunities. (Shane & Venkataraman, 2000) Also worth to mention is that the field of entrepreneurship has been criticised for mainly focusing on the early phases, mainly the decision process of creating a venture and the dynamics and performance of growth aiming firms. (Auretsch, 2003; Baum & Locke, 2004) Which includes the entrepreneurs' decision process of pursuing the venture or not.

Another reoccurring topic is the view of entrepreneurship as the engine of growth by introducing and changing technologies, products and processes since the Schumpeterian days. That thought have been supported by several more modern scholars (Shane, 2001; Klepper, 1997; Meltcalfe, 1998). Their theories suggest that technology and industries change together in a life cycle model. Klepper (1997) introduces hid Product Life Cycle model who suggest that products and later on industries (See Industry Life Cycle-model) evolve in phases of product entry – a new technology/product/innovation is introduced which leads to entry of many new firms. This is one way in how innovation and entrepreneurship contributes to growth. Since existing firms have difficulties adapting to new technological change (Schumpeter, 1942). Due to their firm structures and processes the entrepreneurial firms become crucial drivers of moving our industries and technology forward. However, even though entrepreneurs can be seen as the drivers of economic growth – it is not an easy road; their way towards success is full of obstacles. (Shane et al, 2003)

Entrepreneurship in this thesis

The most common approach suggests that entrepreneurship consists of the presence of opportunities and innovative individuals creating new ideas and products. Venkataraman (1997) argues that defining the entrepreneur only as an individual does not include the quality of the opportunity and vice versa. Therefore it is important that the definition takes both parameters into consideration.

Excluding the opportunity would neglect the reflection of the variation of opportunities that different people would identify. By defining entrepreneurship as "*the scholarly examination of how, by whom, and with what effects opportunities to create future goods and services are discovered, evaluated and exploited*" (Venkataraman, 1997 in Shane and Venkataraman, 2000) the entrepreneurs behind the venture are included in the definition of entrepreneurship. This is further supported by Shane et al (2003) who argues that entrepreneurs will interpret opportunities differently from each other. One example could be that the levels of the entrepreneurs' confidence affect whether one pursue an opportunity or not- with higher confidence likelihood of pursuing an opportunity increase. Shane and Venkatamaran (2000) argue that firm creation can be part of the entrepreneurial field but does not necessarily have to be included. The authors thereby make it possible to include entrepreneurship in existing firms.

Shane and Venkataraman further argues that their framework complement both the sociological and economic framework because they focus on existence, discovery and exploitation of discoveries; the influence of individuals and opportunities; and creates a framework broader then firm creation that complements the research on the process of firm creation. (2000) Since entrepreneurship is both an economic and social phenomenon, it is important to understand the behaviours of the individuals, groups, stakeholders and investors. All these play an important role in the process of a venture. They can hinder, enable or help to reinforce the ideas and activities. (Shane et al. 2003).

In this thesis Shane and Venkataramans definition of entrepreneurship will be followed as it puts the entrepreneur in centre (Audretch, 2003). I will also do this due to the nature of my research question. I will however not look at entrepreneurship in existing organisations. Nonetheless I will not exclude companies that found their opportunity within another firm and thereafter exited the firm to start their own company.

2.1.0 ENTREPRENEURSHIP - THE OPPORTUNITY, THE ENVIRONMENT AND THE ENTREPRENEUR

In this section a review of the often reoccurring fields of entrepreneurship will be presented. The following part of the 2.1 chapter will present previous research of the opportunity, the environment and the entrepreneur will be the main focus in order to create a solid foundation for the following chapters.

2.1.1 THE ORIGIN AND DISCOVERY OF THE OPPORTUNITY

There are a few different perspectives of the importance and the origin of the opportunity. First of all there is Klepper (1997), Meltcalfe (1998) and Shane (2000) who argues that entrepreneurship rises from a technological breakthrough that stimulates the market and the number of start-ups. These scholars view the technological breakpoint as the opportunity. How these technological breakthroughs are found differ depending on which perspective one chose to use. The literature is divided between two sides; 1) a creation process or; 2) a discovery process.

The creation process views the idea recognition as a social process where opportunities are actively constructed by individuals. Opportunities do not exists prior the individual actively *create* them. The role of the entrepreneur is to formulate an idea, and thereafter gather support to exploit the idea. (Edelman & Yli-Renko, 2010). The idea is executed by entrepreneurs' interaction with their environment surroundings. (Penrose, 1959; Alvarez & Barney, 2005; Baker and Nelson, 2005)
In this perspective the entrepreneur engages in a learning process that might lead to creating a business opportunity.

Shane and Venkataraman (2000) represent *the discovery process* and see the entrepreneur as someone who *searches* for a business opportunity actively. The authors also argue that not all people will find opportunities nor take action due to the different characteristics individuals possess (Shane et al, 2003; Kirzner, 1985). Opportunities rise from inefficiencies in markets, science development, changes in product life cycles or changes in the market. The entrepreneur has to be alert to catch these changes and exploit them. Worth to mention is also that the opportunities in this perspective differ from each other. Not all opportunities are the same and have different economic value. Shane and Venkataraman focus on why, what and how opportunities are discovered as well as who finds them.

That opportunities can rise from science or technology breakthroughs is argued by both the creation process and discovery process. The difference is whether you are actively looking or not. Scientists are involved in these kinds of processes - constantly looking for answers and solutions. Shane et al (2003) argues that opportunities are difficult to characterize since they vary from each other. Since the opportunities investigated in this thesis are rising from science and already taken action upon, I will not further investigate the differences between the discovery and creation process.

Activities in a the entrepreneurial process

A ventures success and performance depends on many different parameters. Scholars have not agreed on several specific parameters. The parameters in theory differ from resources (Barney) to personal traits (Audretch). Several scholars (Aldrich, Wasserman, Oswald, Nelson & winter, Grant, Gartner) have tried to establish stages, activities or criteria that ventures undertake over the process. Depending how well the venture does in these activities will affect the outcome of the venture. In the empirical literature you find several different measure of entrepreneurial performance. Some of the most often used measures are: business ownership rates, new firm start-ups, self-employment rates, number of entries compared to number of exits, turnover and job creation. (Aldrich, 2009) However, there is a focus on early stage start-ups and the measures focusing on the decision to start a venture.

Aldrich introduces an evolutionary perspective where several activities happen over the process. Since it is an evolutionary perspective the activities does not come in a certain order. First of all an organized start-up team is the core essence of how the team will pursue the other activities (Aldrich, 2009). Gathering specific knowledge and resources connecting to the and with an integrated feedback system the firm will make sure they are learning by doing and develop their product further. Getting access to capital is crucial for many firms and especially so in Science Based entrepreneurship where the cash burn rate tend to be high in the beginning (Shane et al, 2003; Stitchcombe, 1965). Getting access to employees as well as hiring employees with the right knowledge and capabilities will also influence the ventures outcome (Aldrich 2000, Bäckman et al, 2007). Formulating a strategy and plan going forward setts the direction of where to go and is another success criteria (Aldrich, 2000).

2.1.2 THE ENTREPRENEURIAL ENVIRONMENT

Scholars have tried to identify how the environmental surroundings affect entrepreneurship and several different possible factors have been investigated. *Political factors* such as legal restrictions and political stability affect the decision to pursue a venture but also the process afterwards. For example; by creating stable or unstable environments entrepreneurs' decision making process is affected. *Market forces* and *resources* are also environmental factors that affect the outcome of a

venture by changing the availability to the needed resources to grow the venture. (Shane et al, 2003) The s*tructure of the industry*, *technological progress* and *matureness in the industry*, *entry barriers* and *market size* are some of the market forces that can influence the process. (Shane et al, 2003; Nordic Innovation Council 2012) Most researchers have agreed that these factors influence the entrepreneurial process in one or another way and need to be controlled and compared when conducting research (Shane et al, 2003)

Latent opportunities and the needed social capital to initiate a resource mobilization process exist in the entrepreneur's current relations. Entrepreneurs find it difficult to leverage the social ties necessary to mobilize essential resources when they reside far away from the needed. That results in one of the reasons why industries are geographically closely located. Physical locations of the holders of the necessary resources needed to create a venture, affects where new ventures appear (Löfsten & Lindelöf, 2005) However, the factors that enable high tech entrepreneurs does not necessarily lead to good performance (Nordic Innovation Report, 2012).

It has been found that one positive effect from physically close located firms is the technological spill over effects of knowledge. In environments where knowledge sharing is easy has a positive effect on ventures located in that environment. (Löfsten & Lindelöf, 2005) Institutional environments are one of many factors affecting the ventures outcome (Baumol, 1990; Busenitz et al. 2000). Depending on the institutional environment, the discovered opportunities vary. This can be explained by different institutions are specialized in different areas and therefore enhance discovery opportunities within those areas. This can also explain why entrepreneurial activity differs between regions and countries. Science Parks are one of several institutional environments that try to decrease the barriers for entrepreneurs. Science Parks tries to establish environments which aim to accelerate the ventures and maximize returns from research that is publicly funded. (Cervantes, 1998; Mowery, 1998) In the section of Science Based Companies and Science Parks I will review existing literature within these fields further.

Nordic Innovation Council report (2012) present that there are six policy areas that are important for the entrepreneurial environment; the regulatory framework, market conditions, access to financing, creation of knowledge, entrepreneurial capabilities and entrepreneurial culture. The Nordic countries do remarkably well in creating the right market conditions, regulatory framework and creating an entrepreneurial culture. However, the Nordic countries do not perform well in

knowledge creation, access to finance and creating entrepreneurial capabilities. Availability of investment capital, skills in human capital, infrastructure and complimentary technology are all resources that need to be present and if there is a lack of them it can affect the venture negatively. (Shane et al, 2003)

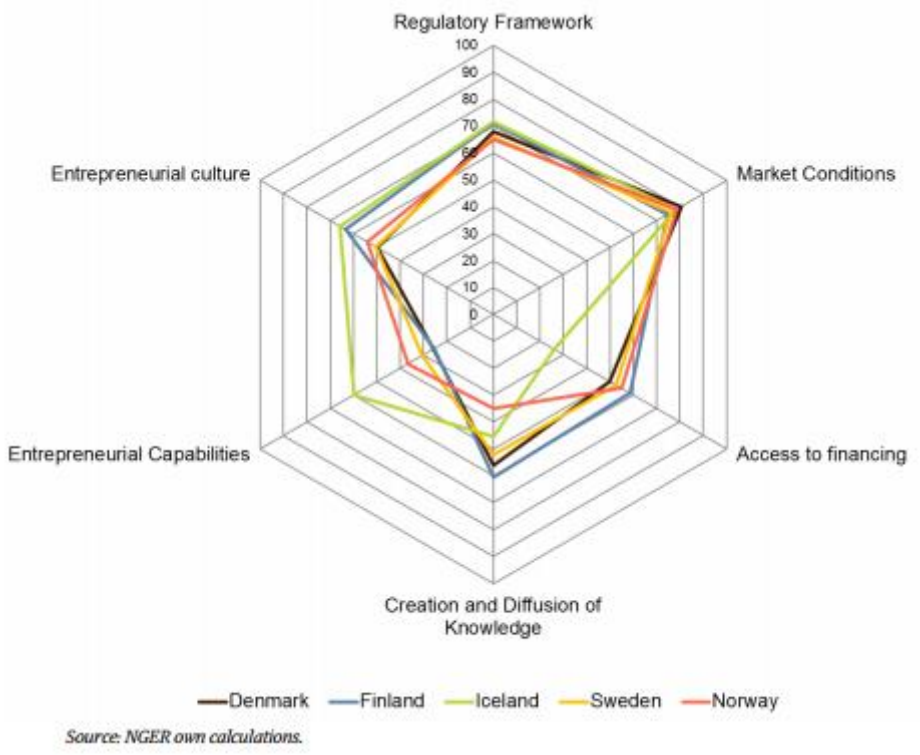


Figure 2.2.2

2.1.3 THE ENTREPRENEUR

As mentioned before the entrepreneur has an essential role as the pursuer of the discovery or opportunity and is therefore interesting to research further. In the prior literature there has mainly been a focus on how to detach entrepreneurs from others by looking into; income levels, educational background, social factors, and psychological factors. Since the entrepreneur/ founder is the focal point in this thesis section 2.1.3 includes an extended literature review in the following section present the existing literature but not primarily focus on how that differentiate entrepreneurs from others but instead focus on how can these factors contribute to the entrepreneurial process.

Personal traits and factors are widely studied in entrepreneurial literature, mostly due to how the traits affect the assessment of risk and rewards over the venture (Tushman & O'Riely, 1996) and

how entrepreneurs differ from others (like Shapero, 1975; Bum & Locke, 2004) The individual factors contributing to starting a venture are several and studied by various scholars (Baum & Locke, 2004). Some of the most important and mostly researched factors are; employment status, educational background & experience, social & cultural and psychological factors. Some previous scholars have tried to find differences between entrepreneurs and others. (Shapero, 1975; Busenitz & Barney, 1997). Shane et al (2003) criticises the scholars that have tried to distinguish entrepreneurs from others. When distinguishing for example managers from entrepreneurs; one must also take the opportunity into account. If this is not done it is taken for granted that managers would have been able to exploit the same opportunities as entrepreneurs, but in reality it is very unlikely that this is the case. The authors argue that it is only possible to examine the propensity of that people will engage in entrepreneurial opportunity if those opportunities are possible for all examiners. (Shane et al, 2003)

Income levels and employment status; Personal income and wealth have been research by several scholars and been mainly focusing on the initial entrepreneurial decision. (Kilhstrom & Laffont, 1979; Blanchflower & Oswald, 1998; Blanchflower and Meyer, 1994) The literature is inconsistent in their findings and the potential relationship between income and performance is low. Scholar Hisrich (1984) finds that there is a relation between women's financial background and the decision to become an entrepreneur. The author finds that there is a positive relation between entrepreneurship and the higher section middle income families. At the same time, Hurst & Lusardi (2004) find no relation. Hisrich does however only research female entrepreneurs in US and Peurto Rico which can have an effect on the results. There are also mixed findings in how employment affects entrepreneurship. However several scholars find a positive relationship between unemployment and undertaking entrepreneurship (Bates, 1990; Blanchflower & Meyer, 1994; Storey, 1994). One reason for this positive relation could be that the entrepreneurs opportunity cost are low to become an entrepreneur.

Educational background and experience; Education and experience can affect the process by pursuing knowledge that can enhance the entrepreneurs to tackle different situation and obstacles. (Finkle, 2009) The effects of education have been researched by several scholars (Van der Sluis et al, 2008; Kloervid, 1992; Stuart & Abetti, 1990) several of these scholars' hypotheses on that education affect the outcome positively, but the results are inconsistent. Stuart and Albetti do on the other hand find a negative relation between entrepreneurship and higher education. Even though

there is inconsistency in the results, scholars have agreed upon that education and experience matters in one extent or another (van der Sluis, et al, 2009). However, Kloverid (1992) interestingly finds that prior higher education is positively significant with growth aspirations. Entrepreneurs with growth aspirations tend to succeed better than entrepreneurs lacking growth aspirations (Baum & Locke, 2004; Shane et al, 2003). The growth aspirations increase the level of persistence and therefore the entrepreneur does not give up easy. (Shane et al, 2003)

Several studies have showed that previous experience with entrepreneurship or education within entrepreneurship can help individuals to identify the opportunities as well as increase the performance in the start-up phase (Ucbasaran et al. 2009; Sexton et al, 1997; Finkle 2009) The prior entrepreneurial experience is said to influence both the decision process and the performance in a venture (Agarwal et al, 2004; Shane, 2000). Dahl & Reichstein (2007) shows for example that spin offs have a general competitive advantage due to the founders prior work experience. Venture Capitalist highly value the prior experience of the founders and (Macmillan, 1986; McGrath, 1996; Stuart and Albetti, 1990) evaluate the team, their experience and knowledge within the field to decide whether to invest or not. (Sahlman, 1997)

Social and cultural factors have also been mentioned in the entrepreneurial research. Acceptance by family and friends, parents that were entrepreneurs has been researched with various articles. Mueller et al (2002) finds that national culture has an effect on entrepreneurial performance. Shane et al (1991) also finds that the reasoning behind the selection process differ between countries. There are several studies indicating that other cultural factors affect entrepreneurship (dissatisfaction with society; Hofsted et al, 2002). However the findings vary and further research is needed to better identify what and how certain factors influence entrepreneurship.

Psychological factors are important to understand for policy makers and scientist to create a greater understanding of entrepreneurs (Baum & Locke, 2004). Increasing the understanding of entrepreneurs can help policy makers to promote entrepreneurial activities. The psychological factors also affect and are affected by other individual traits. Low & Mcmillan (1988) argues that there are mixed results for how psychological factors affect entrepreneurs and non-entrepreneurs. As mentioned before, some scholars argue that there is a difference between entrepreneurs and other people (Sharperio, 1975; Busenitz & Barney, 1997). Busnetiz & Barney (1997) review a large

fraction of the literature and finds that there is a difference in the decision process between entrepreneurs and managers. Mangers are more likely base their decisions on personal characteristics – this because entrepreneurs simplify the decision process to be able to pursue the opportunity. As Shane & Venkataraman (2000) argues – entrepreneurs must act quickly when finding opportunities and a simplified decision process enables them to act fast. The author also finds that entrepreneurs are more optimistic and overconfident. Cooper et al (1988) agrees with the optimistic factor as well as Gartner (2005) also support that the overly optimistic factor. The quick decision process and a judgment affected by the opportunism and thereby not able to evaluate the situation or decision accurate are argued by Gartner and Buzenitz & Barney, to be the explanations for why entrepreneurs are bad manager. (Bad mangers also supported by Davila and Foster).

The most common psychological traits that have been studied in prior literature are motivation, intentions and ambitions (Locke& Bandura, 2003). Shane et al (2003) argues that motivation is an important field within this area as it affects the entrepreneur's decision process and thereby the entrepreneurial process. The authors suggest further research on the topic which Carsrud and Bränmark (2009) supports. Baum and Locke (2004) also mention motivation as an important entrepreneurial psychological trait that might affect the outcome of the venture. Following on Shane et al, Carsrud & Bränback, Baum & Locke Entrepreneurial Motivation will be the focal point of this thesis and I will return to the topic once I have establish a theoretical foundation of Motivation, Science Based companies and Science Parks.

2.2 MOTIVATION

In this section I will review the literature of motivation. I will start by presenting the history and background of the field and the move on to how it has evolved the past couple of years. I will also highlight some of the most established theories of motivation in order to create a foundation of the field.

2.2.1 THE ORIGIN AND BACKGROUND OF MOTIVATION

Feeling activated, driven, incentivised, inspired or an impulse to be moved to do something can be explained as someone being motivated. Someone who feels no inspiration, incentive or driver to be moved to do something is characterized as unmotivated. (Ryan & Deci, 1990) Thereby, motivation is a desire to overcome a goal or value (Locke, 2000; Ryan & Deci, 1990; Crumbaugh & Maholick,

1964). The motivational process is something that happens every day and everywhere as is it part of natural processes in the brain. In every decision or action the brains subconsciously evaluates the opportunities and motivate a decision or action. Everyone who work or socialise with others are motivated, though the question remains how motivated they feel for certain tasks. Everyone face the task of fostering or more or less motivation in oneself and those surrounding them. Motivation is a broad and complex field with many various theories. (Ryan & Deci, 1990) Scholars have classifed motivation as a "unitary phenomenon" (Ryan & Deci, 1990, p. 54) that varies from low levels to greater levels. Motivation can be traced back to Freud's early work on instincts. Instincts drive behaviour towards a goal where the drive is motivation. To survive, succeed, avoid failure are all goals to instincts. In previous research motivation have been studied to answer why and what makes a person chose one thing over the other or why people respond differently to the same stimuli.(Carsrud and Brännback, 2011)

Motivation is important to study because it includes the decision of what and why we do something and how hard we try. Locke (2000) explains the key concepts of motivation as; needs, goals, values; and emotions. Locke (ibid) further clarifies that needs help one to choose a value; a value give rise for deciding a goal and the goals direct the action. These concepts affect our actions in three ways; *firstly*; what we *choose* to act on. By prioritizing goals and values a direction of the action is decided. *Secondly*, goals and values are used to decide the *intensity* of the action. By evaluating how important the goals and values are; the effort of the behaviour is decided. One will put more effort into important goals than the trivial ones. Intensity of the action is also decided by the difficultness of the action; more difficult goal – more effort. *Thirdly*; the *persistence* of the behaviour is affected by the goals and values. The persistence will increase with the importance or difficultness. (Locke, 2000; Green, 1994; Locke and Latham, 2004; Perwin, 2003)

The earlier scholars in motivation can be divided into three areas of motivation: Humanistic psychology, existential psychology and cognitive psychology. The *humanistic psychology* spurs from Rogers (1965) theories of human psychology. The human is seen as a natural phenomenon that can be explained from natural science and cultural theories, a behaviouristic understanding of motivation that is influenced by external factors. *Existential psychology* explains motivation as preferences of peoples values (Frankl, 1985). From this perspective humans must find their "why" to find their inner motivation. Inner motivation has been widely discussed from a business perspective as inner motivation is created when we process information (Baumol, 1990). What is

interesting with the existential psychology is that all people can be motivated by different things and that it changes over time. The *cognitive approach* is even more individualistic and focus on the difference between the goals decided for ourselves and the behaviour to pursue a goal. Since humans are constantly trying to decrease the distance between our goals and behaviour motivation processes is constantly active (Miller & Bollnick, 2004).

The field of motivation have also been divided between economic and psychology academia because the scholars have not been able to agree. (Bruno, 2013). The theories do mainly differ in two areas. Inner or Intrinsic motivation (Intrinsic motivation will be further explained below), being the first. From an economic stand point intrinsic motivation is part of the pro-social behaviour, which it is not in the psychological scholars. Secondly, effects of rewards differ. Economists are interested in the simultaneous effect on behaviour and performance whereas psychologists are more interested in the individuals' evolution of behaviour. The psychological theories explain motivation as a dynamic framework instead of the economic viewpoint which is much more static. Economic researchers often use the psychological perspective when explaining motivation (Bruno, 2013) as this perspective view the reward as something temporary. This is more in line with empirical psychology than economy who sees rewards as something static (income f.ex.). It is also very difficult to make a distinction between different types of motivations since some are unconscious and some are not. (Bruno, 2013) Recently a common framework, both psychological and economic, was created and it is called Temporal Motivational theory (Carsrud & Bränback, 2011).

The theories of today can be divided into drive and incentive theories. *Drive theories* are when someone is reacting to inner stimuli where the person is pushed towards the goal. Avoiding fear or eating when hungry is examples of such a goal. Motivation is here the need to reduce the temptation (fear, hunger). *Incentive theories* have a goal which acts as an end point for what need to be acted on. The goal has more of a pull effect within this theory. This is somewhat similar to intrinsic and extrinsic motivation that are two different motivational types that will be further explained. Since my background lies within the economic field of theory I will apply the economic perspective. I will however also use the psychological perspective to explain motivation as a dynamic process. The economic view of motivation is to static and would not be in line with my research question.

2.2.2 EXTRINSIC VS. INTRINSIC MOTIVATION

Locke and Latham, (2004) suggest that motivation is driven by intrinsic and extrinsic factors to impel and induce action. Extrinsic are those that arise from outside of the individual and often

involve rewards such as trophies, money, and social recognition or praise (Ryan & Deci, 1990). Intrinsic motivations are those that arise from within the individual, such as doing something complicated purely for the personal satisfaction of solving a problem. (Bruno, 2013) The field of entrepreneurship has especially been interested in intrinsic motivation due to the nature of the entrepreneurial definition. Engaging in activities that are challenging and rewarding in it whilst enhancing competence, is what much of the entrepreneurial process is about (Shane et al, 2003, Amabile, 1998).

2.2.3 BEHAVIOUR AND MOTIVATION

To clarify the link between motivation action and behaviour, Ryan & Deci (1990) explains our goals are as a conscious formulation of a future outcome or behaviour that a person will attempt to achieve or perform. If a person does not believe that the desired outcome can be fulfilled or achieved – he will not engage in the intentional action. This goes for both external behaviour and internal behaviour (feelings). As mentioned before, a person perception of the goal will decide that persons action/ behaviour. This is how motivation affect behaviour – but internal behaviour can also affect our motivation and thereby our behaviour. Emotions are strong internal forces that mediate the intention related processes. However, I will not further investigate the topic of emotions since it is a highly complex field of theory. But the importance of emotions influence on behaviour remains and it is important to keep the awareness. (Ryan and Deci, 1990)

2.2.4 MOTIVATIONAL THEORIES

Motivation is partly subconscious and therefore difficult to measure. As it consist of several underlying factors that is subconscious and it is difficult to provide the information needed, it is not possible to access the information stored in our subconscious. (Locke and Latham, 2004) To make the situation more complex different types of motivations are entangled, for example Bruno (2013) argues how intrinsic motivations is entangled with level of achievement. Even though it is a complex field that is difficult to access the need for more research and further understanding is large since all tasks need motives. It doesn't matter if they are consciously or subconsciously made. (Carsrud & Bränback, 2011) It would not be possible to present the entire prior literature and I have therefore carefully selected some of the most important and popular theories within motivation. Some of the popular will be presented in this section. These theories have been commonly referred to in business and management scholars and are some of the most popular theories used in management (Fisher, 2009). The theories have been chosen depending on their relation to the scope

of this thesis. The theories presented are in this thesis are; Maslow, Herzberg, McClelland and then a theory on Social needs and goals.

Maslow's Hierarchy of needs

This theory suggests that there are five levels of needs - Physiological, security, social, ego and self-actualization. A person will be motivated by needs that correspond to the level they are at. A level that is dependent on what you have accomplished before. However, this level may change and can vary depending on the situation. (Maslow, 1954) What is interesting about Maslow's hierarchy of needs it that it is built as a pyramid and the lower levels of needs need to be met before the higher levels kick in. (Lewis et al. 2001) Therefore it is important that you identify what level you are at and what your specific needs are. (Fisher, 2009)

As a critique to Maslow's hierarchy of needs is Locke (2000) that argues that there is no evidence for any built in need hierarchy. Locke does however mention that people prioritise their needs depending on values and that these values differ over time.

Herzberg's motivator- hygiene theory

Similar to Maslow, Herzberg also have the humans need as a focal point in his theory. However Herzberg suggests that there are only two different types of needs that are motivational factors. These factors can be divided by hygiene factors and motivators. The hygiene factors are related to dissatisfaction. That is related to benefits, salary, policies, working conditions and relationships. These are thereby the factors that decide the level of dissatisfaction. (Herzberg, 1974) Personal growth and self-actualization relates to job satisfaction and are motivator factors that Lewis et al (2001) points out increase satisfaction. (Fisher, 2009)

To simplify the theory – it suggest that different factors create dissatisfaction and satisfaction. The hygiene factors are dependent on how good or poorly you are treated. Those factors are linked to the dissatisfaction level. On the other hand, what make us satisfied are the motivator factors. These factors related to activities and the achievement felt when undertaking these activities. These factors are also linked to one's responsibility, growth and advancement. People become motivated by the possibility to grow and achieve more (Fisher, 2009) when they become motivated they feel energized to act which result in an outcome and feeling pleased. (Ryan & Deci, 1990) Herzberg

argue that when the motivator factors are present or when there is possibility for them to occur people will be more satisfied. (Herzberg, 1974)

McClelland's tracheotomy of needs

This theory suggest that people are motivated by three needs; power, affiliation and achievement. This theory is not as hierarchical Mazlow's and suggests that all people are motivated. The levels vary and even though all drivers are active, one single driver will be the main motivating driver. (Fisher, 2009) This leads to that people who have different needs will be motivated by the different drivers and will perform differently. People motivated by their affiliation needs often perform best when they feel accepted and avoids rejection.

Equity or Social comparison Theories of motivation

According to this theory motivation spurs from comparing personal performance, both internal and external, with the performance of others. Weiner (1991) argues that the comparison towards others is the underlying motivational factor and in a turbulent environment this occurs more often. Increased transparency permits comparisons and thereby guides one's behaviour. (Fisher, 2009) As a critique to the Social context theory Baum & Locke (2004) argues that a social context that are controlling and do not provide involvement of significant others is in risk of undermining one's self-determination, and thereby threating the satisfaction of basic needs and involvement of one self. Entrepreneurs social relationship thereby plays an important role in the motivational process and needed to gather the needed resources to create organizations (Shane and Cable, 2002).

Goals and objectives as motivational theory

This is another popular theory within the field of motivation and often used in organisational contexts (Baum and Locke, 2004; Locke& Bandura, 2003; Shane et al, 2003) where to motivate with clear goals and objectives for the individual and organisation. When the individual and the organisation are aligned, a higher level of motivation is established which will increase the benefit for both. (Fisher, 2009) The same reasoning is found in the agency theory problem; The individual/ employee/ agent acts in its self-interest and thus need to have motives created to act in line with what is beneficial with the organisation. (Eisenhart & Schoonhoven, 1996) When the goals for the organisation and the individual are congruent the level of effort of employees are higher and the likelihood that the employee will act in befit of the organisation is higher. It is also important to ensure buy in from all stakeholders in order to align the entire organisation (Lewis et al. 2001)

The literature in this chapter has created a theoretical foundation of motivation with short explanations of how people are motivated by different factors depending on used perspective. In the next chapter the existing literature will be presented on Science Based Companies and Science Parks to increase the understanding and knowledge of my target group that I aim to research.

2.3 SCIENCE PARKS AND SCIENCE BASED COMPANIES

Since my aim is to research motivational change of founders in Science Based located in Science Parks the prior research will be presented in this section.

2.3.1 SCIENCE BASED COMPANIES

Recently there has been an increased interest for Science Based companies and the reason behind it is that commercial products and technologies have become more science based. Science Based companies have become evident in entrepreneurship due to its contribution to industries like nanotechnology and bio-medicine. These industries have had an extensive growth during recent years. (Henrekson & Rosenberg, 2000; Krabel & Mueller; 2009; Shane, 2004) For example; the Bio-medicine industry where scientist has been of great importance contributing with new research leads to new opportunities and new entrepreneurial ventures. (Shane, 2004; Krabel & Mueller; 2009) Firm founding has been one of the more common ways to commercialize scientific research and findings. (Krabel & Mueller; 2009; Henrekson & Rosenberg, 2000) These industries are highly complex and specialized and therefore in need for high quality research as a foundation for entrepreneurship.

Science Based companies have some special characteristics and needs due to the nature to their venture idea (Shane and Cable, 200). To launch a Science Based star-up three different sets of resources are needed. (1) New technology or a new idea is needed. (2) Resource based companies need employees with highly specialized human capital with a high level set of skills. (3) Start-ups need capital! When building a new organization, you are in need of a broad array of resources and commitments (Stinchcombe, 1965). Science Based companies have a high burn rate due to the advanced research they undertake in the beginning of the venture. (Ahmad & Hoffman, 2008) One common way to acquire the needed capital is Venture capitalist who helps to finance the companies in exchange for a part of the company. Access to capital is a critical factor for start-ups performance and growth (Audretch, 2003; Ahmad & Hoffman, 2008; Stinchcombe, 1965) and entrepreneurs are often reluctant on capital from risk capitalist due to the high burn rate in the beginning of ventures.

Entrepreneurs seldom get capital from banks due to the high risk and therefore seek capital from venture capitalists (Audretch, 2003).

2.3.2 SCIENCE PARKS

Being the founder of a company one will meet many obstacles on the way towards commercialisation. Science Parks are one way of helping entrepreneurs to overcome the obstacles they meet. A Science Park is property based organizations that has administrative offices who focus on the acceleration of their tenets, knowledge agglomeration and resource sharing. (Phan et al., 2005) By facilitating services within financing, management support, resources for continuing R&D, marketing and sales support Science Parks tries to assist ventures on their journey. It is important to assist the entrepreneurs' in this process since it can enable them to focus on evolving their core business. (Löfsten & Lindelöf, 2005)). It has over time become evident to give the researchers the support they need since they are crucial for driving the industries forward. (Löfsten & Lindelöf, 2005) Phan et al (2005) has reviewed the literature on Science Parks and criticize the existing literature as there are no systematic framework to understand science parks and that there is a failure in understanding their dynamic nature and the dynamic companies within the Science Parks. (Monch et al. 1988)

Sharing resources and access to resources are one of many thing Science parks assist with (Pham et al, 2005). They have often had good connections to investors and try to locate and connect to enhance the ventures access to investors and capital. Science Parks also possess experience in the dialogue and cooperation between venture and investors as it is not an easy relation. The investors take different roles in the venture, both active roles and less active. Many investors take a hands-on approach and give the entrepreneurs access to more than capital when they have fulfilled some goals. Valuable competences, access to networks, customers and experience in management are some of the VC's valuable resources the founders get access to. (Busenitz et al. 2004) Davila and Foster (2007) contribute to the research with the downside of venture capitalist funding. Receiving capital commonly means losing shares off the company and implementing control systems. When dealing with innovation, control is argued to have a negative effect as it forces the process in a direction when it might be more beneficial to go in another direction. In a later study Davila et al finds that implementing the right control systems have a positive effect on the performance of ventures. Incentive schemes and organisational structures are some of the control systems with

positive impact. (Davila et al, 2009) Not to forget is that there also is informal investors; family, friends and business angels which all play an important role in the seed stage. Investments can be divided in three different stages; seed, start-up and expansion.

There are two types of firms in Science Parks; University Spin outs – academic researchers take their findings out from the laboratory into the Science Park to form their own venture or; Corporate Spin outs – where existing companies find a new opportunity and take it out from the company to further develop the technology/product. The link between the Universities and Science Parks are crucial since it give entrepreneurs access to employees, new findings and research facilities. Since Universities are also seen as a source of technology development (Mowery et al., 2001) the link is also important for the Science Park – otherwise they wouldn't get any tenants. (Löfsten & Lindelöf, 2005) Science Parks are especially important for Science Based ventures and new technology based firms due to their high need of resources and research facilities. (Löfsten & Lindelöf, 2005; Monck et al 1988). Löfsten and Lindelöf (2005) also discuss the importance of providing network capabilities within the Science Parks. By gathering important customers, suppliers, researchers and a close connection to University entrepreneurs can extend their network and get access to important resources for the start-up or expansion period. Science Parks can be considered as a place where social and institutional process can emerge and be further developed. As Science Based entrepreneurship becomes evident in the modern economy the understanding of the entrepreneurs pursuing these ventures also becomes apparent. (Krable & Muller, 2009)

2.4 ENTREPRENEURIAL MOTIVATION

After presenting the basics of motivation in the former 2.3 section I will know shed light on Entrepreneurial Motivation. I will start by arguing why Entrepreneurial Motivation is important which will be followed by a brief introduction of the field and thereafter an introduction to each of the drivers in Shane et als' framework.

Recently motivation increased in popularity among entrepreneurship scholars as one of several driving forces behind entrepreneurs and their ventures (Amabile et al, 1996). The interest of entrepreneurial traits has also increased among psychology based researchers (Baum & Locke, 2004). Due to its importance researchers has examined a number of factors influencing the outcome of the venture (Collins et al, 2004) and Motivation is argued to be one of these factors (Carsrud &

Bränback, 2009). The growing interest from scholars on Entrepreneurial Motivation has mainly been focused on entrepreneurs' personal characteristics as predictor for new venture success.

Entrepreneurial Motivation is important to further investigate due to three main reasons. *Firstly*; Peoples actions and motivational differences influence the entrepreneurial process (Shane et al, 2003; Baum & Locke, 2004; Carsrud & Bränback, 2011) and thereby influencing an important engine of our economy. (Schumpeter, 1942; Shane et al, 2003; Collins et al, 2004) For example people tend to vary in perception of risk and opportunities (Shane & Venkataraman, 2000). It is likely this will affect the important decision making entrepreneurs do in the beginning of a venture. (Shane et al, 2003) *Secondly*, Entrepreneurship is not a highway towards success, and the probability for positive outcome is low. It is interesting to see why some people pursue these opportunities and some people don't. Entrepreneurs who pursue these opportunities with low probability for success, is perhaps more opportunistic and have higher self-efficacy then people choosing not to engage the same activity. (Carsrud & Bränback, 2009) *Thirdly*; the willingness and abilities one have to pursue an opportunity, is dependent on one's motivation and differ between individuals because of the variation in personal traits. The willingness and ability does not only affect who act on an opportunity but also what happens later in the process. (Shane et al, 2003) However, recent entrepreneurial research has showed that there is a variation in willingness and ability due to several non-motivational drivers; Opportunity cost (Amit, Mueller & Cockburn, 1995) access to financial capital (Evans and Leighton, 1989) access to investors (Aldrich & Zimmer, 1986) bad previous career experience (Carroll & Mosakowski, 1987).

The prior literature within motivation and entrepreneurship is broad and diverse (Carsrud and Bränback, 2009). However, the previous research on Entrepreneurial Motivation is limited when using the definition of Shane & Venkataraman (2000) with entrepreneurship as a dynamic process that transforms resources to a product/service with higher value. Carsrud & Bränback (2009) further claims that the field of Entrepreneurial Motivation is limited due to several factors: lack of including the opportunity, definition of entrepreneurship, lack of meta-analysis, incorrect motives, and lack of indirect effects. Shane & Venkataraman (2000) argues that the importance of understanding the motives behind the entrepreneurs in order to increase or understanding of entrepreneurship. It is important to further research the entrepreneur because the process involves human agency that will affect the decision taken during the entrepreneurial process. (Shane et al, 2003)

When examining Entrepreneurial Motivation one must take the opportunity into account this has not always been done (Shane et al, 2003). The financial reward when creating a venture spurs from opportunities that generate profit that exceeds the opportunity cost as a reward for bearing the risk and making the effort which leads to variations in the level of motivation (Shane et al, 2003). One must also take the opportunity in to account when researching entrepreneurship as the characteristics of the opportunity; the nature of the opportunity and size will most likely influence the entrepreneurial process. When measuring the effects of motivation, one must control that variation of opportunities since the magnitude of the force of the opportunity (entrepreneurs opportunity cost) will affect the individual motivations on the entrepreneurial process (Shane, 2000). How can motivation be examined then? By investigating identical, similar opportunities, or in a controlled simulation, using a sample from same industry and region, or using a third party to evaluate the value of the opportunities.

Shane et al (2003) review the literature and have created a framework that suggests 12 drivers that affect the entrepreneur during the venture. The framework is developed in an attempt to increase the knowledge of entrepreneurs. The drivers included in Shane et al's framework are; Need for achievement, Locud of control, Vision, Desire for independence, Passion, Drive, Goal setting, Self-efficacy, and the cognitive factors; Vision, Knowledge, Skills and Abilities. In this thesis Shane et al's framework have created the foundation for what drivers I aim to include when researching founders' motivation. I have also included the drivers Income and Occupation in my framework as these are claimed to have grate impact on motivation and outcome of the venture (Baum & Locke, 2004; Carsrud & Bränback, 2009). In the following section there is a brief review of the existing literature on the motivational drivers.

Need for achievement

One of the more popular motivation drivers that have been presented in prior literature is the need of achievement (nAch) and is built on different levels of aspirations. (Baum & Locke, 2004) The concept was developed in the 1950's by McClelland and Achievement has traditionally been conceptualized as a character that motivates someone to face challenges in exchange for possible success and excellence (Deshpande et al., 2013). People with high nAch are also more likely to engage in activities that require future planning and demand high responsibility for the future outcome (Collins et al. 2004). Activities that involve skill and effort provide clear feedback and also

involving challenges or risks are other activities that are likely to be pursued. (McClelland, 1961 in Collins et al. 2004).

Collins et al (2004) criticise McClelland's study, and suggest it should be done on a micro level due to the many factors influencing achievement. In a meta-analysis conducted by Collins et al. (2004) the authors found a significant relationship between the theory of achievement motivation and both the entrepreneurial decision process and the performance. (Shane et al, 2003). Baum & Locke (2004) bring an interesting finding to the field that nAch, locus of control and risk taking has a weak correlation according to previous researchers (Aldrich and Windenmayer, 1993) however, the relation was not null. (Baum & Locke, 2004)

Locus of control

The next motivational driver that Shane et al adds to their framework is "locus of control". Locus of control refers to a person's belief in if a desirable outcome is contingent on the one' behaviour. (Shane et al, 2003) Thereby it relates to a person's expectations of the outcome and allows one to predict if a person will take action (Rotter, 1966). Locus of control can be divided in internal and external locus of control. With external control means that individuals believe they can't affect the outcome and vice versa with the internal control. So people who believe that their actions directly affect the outcome of an event have internal locus of control. (Rotter, 1966) Referring back to the personal trait, nAch, where a high level is equally with the preference of being responsible which can be compared with internal locus of control – believing that individuals have impact. Since people with internal locus of control prefer to be in charge it is likely they will seek themselves to entrepreneurial opportunities. (Krueger& Brazeal, 1994)

Vision

Vision is a communicated goal where the leader wants to go or see the venture in a period of time. Since it is a distant goal it becomes motivational over a long time. The vision helps to align the goals for the employees and co-founders. People with a clear and strong vision will communicate it (Baum &Locke, 2004). This driver is about one's ability to communicate the future and to influence other to go in that direction. Before coming to that one must be able to see a path going forward and how to do so. Entrepreneurs with clear vision are helped in their decision process and when progressing their venture forward. It also helps the entrepreneur to be more persistent (Locke, 2001).

Desire for independence

The need for independence is an important trait for entrepreneurs as it entails taking the responsibility for one's actions and judgment (Shane et al, 2003). In the entrepreneurial role it is needed in several occasions. Entrepreneurs pursue an opportunity that did not exist before – if you were not independent you would not make the decision to take that opportunity. Secondly, as mentioned before, entrepreneurs prefer to be responsible for their results and are so in entrepreneurial activities. Therefore one could argue that people who aim for independence will become entrepreneurs. (Shane et al. 2003) what is interesting with independency is that it can both be a reason why people become entrepreneurs and work as a characteristic during the process. Desire for independence has also been seen as one of the main drivers for someone choosing to become an entrepreneur. (Hisrich, 1985, Carsrud &Bränback, 2009, Shane et al, 2003)

Passion

Building a venture is not easy and it requires a lot of work. To cope with all the challenges entrepreneurs find, they are likely to really love their work and be passionate about it. (Baum et al, 2001; Baum and Locke, 2004) Egoistic passion means that someone is passionate about their work, which refers to the love of the work. (Shane et al, 2003) it might be that one love the entrepreneurial process of creating something. Being passionate about your venture is crucial to be able to hold the high effort over a long period of time. Shane et al (2003) mentions the importance of being egoistic passionate. It relates to being independent and walking your own way. And by being egoistically passionate about you venture makes you motivated to do what is in your own interest. (Shane et al, 2003; Baum et al, 2001)

Personal drive

Drive is the willingness to extend one's effort both the effort of thinking and the effort to realise one's ideas. Ambition, goals, energy and persistence are all four different characteristics of the drive and can differ between individuals. Ambitions relate to the degree of which entrepreneurs seek to create something when pursuing an opportunity. The higher ambition the greater, more important and significant the opportunity becomes. It thereby transforms into ambitious goal setting for the venture. In order to reach the high goals a high level of energy is needed and persistence to pursue the opportunity is crucial. Failing will happen sometime over the venture and then it is important one will be able to overcome it. Previous literature has found some relation between nAch and personal drive. (Shane et al, 2003; Lock and Latham, 1990)

Goal setting

As mentioned in the literature review of motivation, goals have a vicious role in motivation. Perwin (2003) define goals a desire of how something could be in the future and is the link between action and intention. Lawson (1997) further links achievement, goals and motivation in the theory of hierarchy of goals. Goals are divided to different levels and depending on the perception of the goal, it will be decided whether it will lead to action or not. (Carsrud & Brännback, 2011)

In the entrepreneurial literature there has been found a significant relationship between goal setting and the performance of the firm. (Baum et al, 2001) By being able to influence your own goals the motivation to fulfil them increases. (Locke& Latham, 1990) Carsrud & Brännback (2009) present goals as a tool to adjust to our surroundings and situations. By being able to change goals, intentions and motives one can adapt to the external changes. Changing situations frequently occurs for entrepreneurs, due to the dynamic process they are involved in, and they therefore change their goals and motives over time. How the environment and context affects motivation needs to be further investigated. (Carsrud & Brännback, 2011) Shane et al suggest that that challenging goals lead to higher performance, by increasing the entrepreneur's motivation more than no goals, or less challenging goals. Carsrud & Krueger, (1993) indicates that goals are one of the most important factors in venture success.

Self-efficacy

Self-efficacy is one's belief in one's ability to fulfil certain tasks. A person's efficacy expectations affect the person's behaviour and thereby affecting the outcome (Banudra, 1977). The level of self-efficacy also determines how much effort one will make. Self-efficacy plays a central role in evaluating changes and risks that leads to avoiding or fulfilling behaviour (Rotter, 1977) and also determine how long it will be sustained if facing obstacles. (Bandura, 1977) Within the entrepreneurial process the tasks of getting resources, skills and competencies to proceed with the venture are some of the activities that are affected by ones' self-efficacy. The differentiator in this personal trait is the self-confidence. People with strong personal belief in their ability to perform a task will affect the outcome. This can be used to explain why people with the same ability perform differently. High self-efficacy leads to being more persistence through setbacks, exerting more effort for a longer period of time, increased ambitions, and development of better plans and strategies for how to pursue the task. (Shane et al, 2003). Having high confidence that one have the capabilities required, one is more likely to become an entrepreneur (Baum and Locke, 2004).

Entrepreneurs that are more confident with their abilities will be more likely to achieve more growth. Chen et al (1998) finds supporting evidence that high self-efficacy is a distinct characteristic of entrepreneurs.

Cognitive factors

Shane et al follow up on Locke's (2000) research that there is interdependence between cognitive factors and motivation. Locke (2000) presents vision, knowledge, skills, and abilities as factors that influence the entrepreneurial process and that all actions are a result of motivation and cognition combined. (Locke, 2000) When establishing a venture one will need specific knowledge about the industry and technology relevant to the venture. The opportunity perhaps will not rise without the specific knowledge. The entrepreneurs' skills are also a critical cognitive factor. Needed skills may vary between ventures and entrepreneurs and can be needed in any of the activities in the life cycle of a venture. The next cognitive factor that Shane et al (2003) argues affect the entrepreneurial outcome is the required abilities, including intelligence. With abilities Shane et al (2003) refer to the entrepreneurs capabilities. The required abilities might change over time but entrepreneurs must be able to have the ability to pursue the necessary skills and knowledge. (Shane et al 2003, Locke 2000)

Income and occupation

Striving for an increased income has been mentioned as one of the better drivers for ventures success as well as motivational drivers. The income works as a goal and the entrepreneur's becomes motivated by striving towards it. (Stitchcombe, 1965; Shane et al, 2003; Hessle et al, 2008)Sahlman (1997) suggest that there is nothing as addictive as a pay check and therefore the need for a high income can be a hindrance in the decision process.

Current occupation can also be of hindrance in the decision process but works as a motivating factor later in the process as failure means losing once occupation. Entrepreneurs scared of losing their occupation will be more eager and motivated to become successful. (Shane et al, 2003; Baum & Locke, 2001; Carsrud & Bränback, 2009)

Interdependence between drivers

As presented in the theory review above many scholar suggest that theses drivers and interlinked. Many of the drivers also are somewhat similar and can be difficult to divide or investigate individually. (Shane et al, 2003, Baum & Locke, 2004)It is important to be aware of this when

moving forward. I have created a table overview of the presented drives and their definition. In the left column the driver used in the survey is presented.

Table 2.4

Theory	**Definition**	**Format**	**Scholar**
Need for achievement	Face challenges in exchange for possible success and excellence	5-point scales*	Baum & Locke 2004, McClelland, 1961, Collins et al, 2004Deshpande
Locus of control	Contingent of ones' actions & behaviour for reward, Desire for control	5-point scales*	Rotter, 1966, Krueger& Brazeal, 1994
Vision	A distant general goal of what a leader wants to achieve	5-point scales*	Baum, Locke and Kirkpatrick, 1998
Desire for independency	Taking responsibility for one's actions rather than relying on others	5-point scales*	Hisrich, 1985, Carsrud &Bränback, 2009, Shane et al, 2003
Passion for work	Passionate about their work, which refers to the love of the work	5-point scales*	Locke, 1993, Shane et al, 2003 Baum et al, 2001
Drive	The willingness to put forth effort (ambitions, goals, energy and stamina	5-point scales*	Locke & Latham, 2004, Shane et al, 2003
Goal Setting	A target on where to be in a period of time. Setting specific and high goals	5-point scales*	Perwin, 2003, Lawson, 1997
Self Efficacy/ ability	Perceived personal ability to execute target behaviour. Task related self confidence	5-point scales*	Bandura, 1977, Baum & Locke 2004
Vision	KSA enables the entreprenerus to create a vision	5-point scales*	Shane et al 2003, Locke 2000
Knowledge (K)	Knowledge of the industry, product, task	5-point scales*	Shane et al 2003, Locke 2000
Skills (S)	Needed expertise to know what to do	5-point scales*	Shane et al 2003, Locke 2000
Abilities (A)	An entrepreneurs capabilities	5-point scales*	Shane et al 2003, Locke 2000
Income	One's importance of income	5-point scales*	Stitchcombe, 1965; Shane et al, 2003; Hessle et al, 2008
Occupation	One's desire of a secure occupation	5-point scales*	Shane et al 2003, Shane & Venkataraman, 2000

*** 5-point scale ranging from 1(not important at all) to 5 (very important)**

I will take part from Shane et al's framework of Entrepreneurial Motivation and investigate whether there is a change in specific drivers of motivation. The authors have reviewed both qualitative and quantitate studies of Entrepreneurial Motivation. They have thereafter developed a framework that is consistent with their definition of entrepreneurship. However, important to mention is that the authors have not agreed on the relation between opportunities and motivation.

2.5 THEORETICAL CONCLUSION AND RESEARCH GAP

In the introduction I argued that more research is needed to further extend the knowledge of entrepreneurs and entrepreneurial processes. In the literature review I have introduced and

presented the existing theory of Entrepreneurship, Motivation, Science parks, Science based companies and lastly Entrepreneurial Motivation. All areas have identified that more research is needed and entrepreneurship, motivation and science parks are all lacking one common definition. I have however established that entrepreneurship consist of an entrepreneurs that acts on a discovered opportunity and that the process is dynamic and risk full. I also presented motivation as a dynamic and highly complex field that change and consist of several drivers. In this thesis motivation is viewed as something that initiates someone to do something and the result is action. Science based companies and Science parks have also been introduced since they are part of my research question and limitation. Lastly Entrepreneurial Motivation was introduced as a framework that tries to unify the theory with different drivers that together create the Entrepreneurial Motivation. Shane et al's framework was introduced in order to introduce a framework to investigate Science Based founders' motivation. The existing theory within Entrepreneurial Motivation is not extensive and further research is needed.

I have identified a research gap in the existing literature in entrepreneurship. As Carsrud & Brännback, Shane et al, Baum & Locke argue there is a lack of research of Entrepreneurial Motivation and how it evolves during the process of the venture. I have therefore chosen to further research and contribute with new research within the field. I have decided to narrow the gap by gaining insights of Entrepreneurial Motivation, in Science Based companies and if the motivation change over the venture. By investigating this topic further I aim to create further understanding of the entrepreneur as a central in entrepreneurship as the engine of growth. In order to answer my research question and to fill the research gap I have developed a conceptual framework.

2. 6 CONCEPTUAL FRAMEWORK

Searching for answers to my research question I have reviewed different theoretical concepts that have created a multidisciplinary foundation for my empirical assessment. While in the previous section I reviewed the contributions within this research area, in the following section I will elaborate, integrate and combine several scholars' work on Entrepreneurial Motivation and the related motivational drivers. By integrating and combining several theoretical approaches, I will propose a framework that will support the development of my hypotheses and structure of analysis. This section has been structured in three sub sections; 1) Motivational progress; 2) Differences in motivational drivers; 3) Performance and motivation. The following section aims to highlight the

key findings of combining the different theoretical approaches in a framework for analysing entrepreneurs' motivation.

2.6.1 MOTIVATIONAL PROGRESS

In the literature review in section 2, all of the core concepts of entrepreneurship, science based ventures, science parks, motivation and Entrepreneurial Motivation have been presented. The focus is now narrowed down to Entrepreneurial Motivation in order to answer my research question. In the section of motivational progress I will present theory and argue for that motivation change and the argumentation will lead to the development of my first hypothesis.

In the previous entrepreneurial literature the human agency aspect of entrepreneurs has been neglected (Shane et al, 2003). The dilemma of human agency is that people are driven by their own incentives, and people are driven by different incentives. To incentivise someone to do something is the same as creating a reward for someone in order to pursue them to do something they otherwise would not have done (Eisenhart & Schoonhoven, 1996) which is very similar to motivating someone. As founders have different traits and characteristics the things that triggers motivation varies as well as what incentivise someone differ. This implies that when starting a venture the effects of entrepreneurial incentives – commercializing a product, increasing independence, increase income will vary among different founders.

Entrepreneurs have subjective perceptions of opportunities and the perception works as catalysts that motivates entrepreneurs to act on the idea through cognitive processes, social interactions and mobilization of resources. Over the venture the founder's perception of the opportunity might change due to the challenges they face. (Edelman & Yli Rako's, 2010) Since perception is a catalyst for the entrepreneur's motivation, the motivation will change if the perception changes. During the venture the entrepreneurs will face challenges which might affect their perception of the venture. Extreme uncertainty (product, markets, industry and lack of information) resource shortages (financing, knowledge, operating, and human) surprises and rapid change are a few example of possible challenges. It is impossible to foresee the entire entrepreneurial process since it is dynamic and different for each venture. (Baum and Locke, 2004) Challenges rise from both internal and external factors. These factors are seen as triggers for the entrepreneur's willingness to act on them, in other words; motivation to act. Depending on what challenges the venture has met under its' process the motivational level has been affected by how they have performed. (Shane, 2000)

Motivation is explained as a dynamic factor that describes behaviour toward an objective in psychology and is also explained as the process that initiates, guides and maintains goal-oriented behaviours. (Rogers, 1965; Bruno, 2013; Lawson, 1977) As people are constantly trying to decrease the distance between their goal and their present state, motivation is a dynamic process that changes over time. (Baum & Locke, 2004) When goals change due to internal or external factors, the effort to get closer also changes (Elvfing, 2008; Carsrud & Brännback, 2011). Elvfing (2008) further argues that the link between goals and actions are dependent on each other. If one of them changes due to external or internal factors such as product failure or insufficient resources, the other will automatically change. Initial success also changes ones' goal by lifting the aspirations and confidence. (Carsrud & Brännback, 2011)

Maslows' hierarchy of needs consists of levelled needs, but in reality they are related. The physiological, safety, love, esteem, and self-actualisation is crucial to motivate a person to fulfil their needs. As one need is fulfilled, a person moves on to the next level of need. As the need change, so do the level of motivation. (Maslow) In a venture the entrepreneurs will perform activities that will either decrease or increase the distance to the basics needs. The level of motivation will there for be affected. However, this level may change and can vary depending on the situation. What is interesting about Maslow's hierarchy of needs it that it is built as a pyramid and the lower levels of needs need to be met before the higher levels starts to motivate. (Maslow, 1954) Relating Maslow's theory to entrepreneurs this implies that when entrepreneurs have fulfilled their basic needs new aspirations are created.

It is important that one looks at entrepreneurship as a dynamic process because many of the activities are not long lasting and are only done once or twice. Little previous research has considered that motivation have different effects in different steps in the process (Shane et al, 2003; Carsrud & Brännback, 2011) and most studies use a static perspective trying to distinguish entrepreneurs from others, neglecting that motivation might change over time. (Shane et al, 2003) The previous arguments have led me up to my first hypotheses:

H1: There is a change in the entrepreneur's motivation (comparison of starting day and today)
H1a: Entrepreneur's Motivation decrease over time
H1b: Entrepreneur's Motivation increase over time

The data obtained from Hypothesis 1 will be used to further test the other hypothesises. In order to investigate motivation further it is important to understand the characteristics of the different drivers of Entrepreneurial Motivation and how these might change.

2.6.2 CHANGE IN MOTIVATIONAL DRIVERS

In this section I will depart from my first hypothesis that motivation change and further integrate and combine the key concepts from Entrepreneurial Motivation.

Maslow (1954) suggests that several different drivers create motivation, more precisely different needs to fulfil. To achieve full potential and to be creative are motivational factors within the highest level of need. (Fisher, 2009) As the venture keeps on evolving the founder will feel the desire to fulfil different types of need. (Maslow, 1954) Gathering resources is a social process (Aldrich et al, 1997) which can be related to both the security level of needs as well as the social needs. Developing a successful prototype can trigger the fourth level of ego needs. Since the activities change over time and will trigger different needs, the level of fulfilment at the different levels of needs will change. In line with Herzberg and the entrepreneurship as something evolutionary, the needs might not be stacked as Maslow suppose. It is the core concept that our needs are divided into different groups, triggered by different factors and that they change that is interesting.

This logic can also be found in the entrepreneur's selection process. The possibility of an increased future income appeal many founders. (Shane & Venkatamaran, 2000; Shane et al, 2003) Choosing to pursuit with a venture can however mean that they will not have a secure income at first, but still be motivated by the income and decide to pursue the opportunity. According to Maslow, the physiological needs need to be fulfilled before one move one to the next stop of needs which is opposite to how many entrepreneurs act when pursuing with their venture even though they have not fulfilled their security or physiological needs.

The entrepreneurial activities lack a certain order (Aldrich et al, 1997) and the motivational drivers might be affected differently by these activities (Shane et al, 2003). Following the Entrepreneurial Motivation framework by Shane et al (2003) motivation consists of several different drivers/motivations that are affected by different triggers or activities. The concept of each driver

was presented in section 2.4. As these drivers are triggered by different sets of activities, which the entrepreneurial process involves; the levels of the drivers are likely to change. For example the level of responsibility and nAch is likely to decrease when the founder is facing challenges or the desire for independence might decrease if Venture Capital is offered.

The 12 drivers from Shane et al's framework and the income and occupation drivers together create the level of the founder's motivation. Since the level of Entrepreneurial Motivation consists of all the previous mentioned drivers a change in one of them affect the whole. Departing from the above presented theories a second hypotheses have been developed. The theories above have showed that motivation consists of several different factors; that these factors vary in level and that motivation is a dynamic process. The developed hypotheses relates to the theories and their suggestions. Therefore I conclude on the following hypothesis.

H2: There is a change in the level of different motivational drivers
H2a: The motivational drivers increase over time
H2b: The motivational drivers decrease over time

2.6.3 PERFORMANCE AND MOTIVATION

In this section I will present theory on the relationship between Performance and Motivation and develop my third hypothesis.

As the literature review indicted motivation is a very complex and multidisciplinary field. What scholars have been able to agree on is that motivation is what makes us act, to take action on our intentions (Carsrud & Bränback, 2009; Locke and Latham, 2004, 2002). Being motivated leads to more action and being unmotivated leads to less action. This reasoning establishes a link between performance and motivation. Locke (2001) argues that by setting high goals and having a strong will to reach these goals performance is affected. People with high self-efficacy will be motivated by difficult goals. Instead of making one act, motivation is how hard one try. If one are motivated he will try harder and thereby performing better. Banduras concept of self-efficacy has also showed motivational effects on performance of tasks. (Bandura, 1997)

Rewards and reinforcement are universally recognized as a crucial determent of performance of skills and knowledge (Rotter, 1966). Rotter further argues that people perceive rewards differently and therefore they will react differently to them. The behaviour is dependent on the person's ability

to see a relationship between his behaviour and the reward. Gundry and Welch (2001) also make an interesting link between motivation and success. The scholars found that engaged and motivated entrepreneurs had better performance and higher growth because they are more determined to reach the goal than others.

When investigating the individual drivers that motivation consist of (Shane et al, 2003) one find that there is a relation between once ability to use one's skills and performance as well as there is a relation between self-efficacy and performance. This implies that increased ability and self-efficacy results in better performance (Locke et al, 1984). Collins et al. (2004) find a relationship between needs of achievement and performance, so does Johanson (1990) as well in his review of the achievement motivation literature. McClelland (1965) further argues that need for achievement is related to performance since people with high nAch are more likely to engage in the important activities necessary for entrepreneurial success. High level of nAch makes one more likely to overcome obstacles due to being more persistent (Collins et al, 2004).

There are also several Scholars that find a link between growth and motivation. For example Baum & Locke argue there is a relation between situational specific motivation (vision, self-efficacy and goals) and venture growth. (Baum & Locke, 2004) The scholars Gundry and Welch (2001) further explains how growth and performance are dependent of the entrepreneurs' motivation. Erikson (2002) elaborates on Gundry and Welch argument and argues that there is a multiplicative relationship between Entrepreneurial Motivation and their competency in creating a venture. Carter et al (2003) follow the approach of the importance of motivation and finds that self-realisation, financial success; roles, innovation, recognition and independence are motivational variables that affect the venture.

In the past section I have presented theories that suggest that there is a link between performance and motivation. Depending on theory the relationship varies. Some scholars argue that performance is dependent on motivation and some scholars argue that motivation is dependent on performance. Several scholars have found a link between performance and motivation. The relation spurs from goals that determine how hard one try and by trying harder perform better. This section assists me in the development of the last hypothesis;

H3: There is a relationship between the entrepreneur's perception of the ventures performance and the entrepreneur's change of motivation.

If hypothesis 3 cannot be rejected, I expect that there is a relationship between the entrepreneur's perception of their performance and their motivation.

In order to test my three hypotheses I will use a modification of Shane et al's Entrepreneurial Motivational framework. I have added two drivers; income and need for occupation. These 12 drivers will be used to answer my overall research question; if a science based founder's motivation changes during the entrepreneurial process.

3.0 METHODOLOGY

This chapter presents the research method followed throughout this thesis, including an introduction of the empirical data gathering, a section on sources and their validity and a reflection on my role as an investigator. This chapter will elaborate on the methodology applied to answer my research question and illustrate the method used to conduct a empirical study in order to gain substantial knowledge and insight to the phenomenon of Entrepreneurial Motivation. The methodological reflections have their point of departures in Moses & Knutsen, (2007) and Saunders et a (2009).

3.1 THEORY OF SCIENCE

The thesis will theoretically be structured and argued using Moses and Knutsen's perception of the naturalistic methodology with focus on statistical research models. The naturalistic methodology generally tries to impartially examine the real world independent of men, collect empirical evidence about it and analyse the result in order to gather knowledge and draw conclusion about the patterns in the world. The naturalistic methodology seeks to draw conclusions on past events in order to predict events in the future and establish new universal laws. In order to understand the naturalistic view on ontology, the naturalistic methodology uses four different epistemological scientific methods to gather knowledge, which can be ranked after their scientific accuracy (of how accurate and efficient they are in establishing general conclusions about the independent world): (1) experiment, (2) statistical research, (3) comparative analyses, and (4) deductive case study (Moses & Knutsen, 2007). The experimental research method is seen as the ideal way to collect data and make universal laws, while other methods are deemed less accurate or powerful and subsequently ranked lower. Experimentation is supreme due to its ability to control data and arrange casual and essential relationships. Experimentation allows the researcher to find correlations and associations

between two or more variables, but also allows the researcher to manipulate the experimental environment in which the variables are tested. This assures that the concluded correlation is real and not the result of some accidental occurrence (Ibid). However, sometimes the experimental research model is insufficient, or too complex, to use for a given problem and the researcher is forced to use a simpler scientific method like statistics. In terms of my thesis it would be too time consuming to measure several Science Parks and all start-ups founder's motivation under several different time periods and still hold everything else constant. This would have been ideal and necessary if I had used an experimental research method. However, in the scope of a Master thesis this is not applicable due to time and cost constraints. One can also discuss the possibility of holding everything else constant – the environment and industry is likely to change anyway. Instead this thesis will use a statistical research method to draw conclusions, using a sufficient data set to reduce the risk of accidental circumstances. Statistics does not give the same opportunity to manipulate the contextual environment as an experiment but can still help us draw conclusions through its dataset. It would have been ideal to make a longitudinal study but this was not possible in the time frame of a master thesis. I have instead merely investigated snapshots of the founders' self-perceived motivation at the time of the start-up and now.

3.1.1 PURPOSE OF RESEARCH

As I have established a method to analyse my research question, I am yet to determine my argumentative approach to answer the research question. Exploratory, descriptive and explanatory are three different research purposes commonly used in the research methods literature (Saunders et al, 2009). This thesis is primarily exploratory since there is limited of research available and my obtained insights from the statistical method will contribute with new findings and perspectives.

3.1.2 NATURALISTIC ONTOLOGY

The fundamental ontological notion of the naturalistic social science, established through interpretations of the works of Hume and Locke, is that the world is objective, real and exists independent of men and their perception of it (Moses and Knutsen, 2007). Differing from the constructivist approach the naturalistic methodology does not believe that a person's perception of the world defines it. Based on this ontological understanding naturalists have constructed a simple definition of the truth: A theory or a statement is true, if what is says corresponds to reality. This means that the independent world is the base of all knowledge and knowledge cannot be true if it does not correspond with the independent reality. This is known as the correspondence theory

(Moses and Knutsen 2007). When a truth is established it must be seen as a universal law until proven otherwise. According to Hempel, a universal law is an absolute regularity in the real world, meaning that when X occurs, Y will always occur (Hempel, 1969). If the thesis is unsuccessful in supporting its hypotheses, the naturalistic methodology would claim that the results are (not matter how questionable) an independent and a general truth until proven otherwise.

It would be naïve and impossible to argue that entrepreneurship and Entrepreneurial Motivation would have existed independent of mankind. However, the naturalistic ontology would argue that no man's perception of entrepreneurship defines it but rather that entrepreneurship corresponds to reality and therefore exists. Entrepreneurship should not be seen as a reality but rather as a condition.

3.1.3 NATURALISTIC EPISTEMOLOGY

The naturalistic epistemology is based on two fundamental ideas: (1) knowledge about the patterns of nature is obtained through systematic observations of regularities in the real world. Natural laws are, in other words, established through identifying patterns between different factors in the real world. This suggests that the ultimate purpose of science is to reveal ever-lasting regularities in order to establish them as natural laws. (2) The empirical epistemology of naturalism ultimately means that human knowledge grows over time through continuous accumulation of new regularities and natural laws. This accumulation is reflected in the increase of more accurate theories that corresponds with the ontological notion of truth through the correspondence theory. (Moses & Knutsen, 2007)

Testing a natural law or attempting to find one can be conducted in two ways: through a falsification or verification model. Both models share the implicit understanding that the real world is constructed with numerous patterns that can be revealed by a naturalistic observer. Starting by looking at pure facts with an open and objective mind, which lays the foundation for an inductive reasoning and eventually a general claim about how the world is organized. Inductive reasoning is exploratory and more open-ended. One could also use a deductive reasoning in which the researcher establishes a hypothesis about the general claim, which he/she then tries to verify by investigating the world through scientific testing (experiment, statistics, comparative analysis or case study).the result of the testing is then the general truth until proven otherwise. Hypothesis testing is a deductive method but the reasoning of how to use the results can be inductive if not used as a general claim but more as an indication. (Saunders et al, 2009)

The verification model allows the researcher to look at the independent world and base a general claim on his/her findings, which the researcher then tries to verify. The theoretically important aspect is that the verification model does not start with a hypothesis but general facts in society, which builds up to claims and later a hypothesis and/or theory which is the approach I will apply in this thesis. Even the most extreme naturalist recognizes that it is impossible to begin an empirical study without any theoretical expectation or reason for starting it (Moses & Knutsen, 2007). I will further use inductive reasoning as I will try to verify my findings but I will not hold them as the only possible truth but merely as an indication of how things are.

3.1.4 A STATISTICAL RESEARCH MODEL AND INDUCTIVE CASE STUDY

I have chosen theories and literature that are relevant to my research study on Entrepreneurial Motivation. The research area is entered with my personal preconceptions of the topic, but with limited detailed knowledge. In order to test Shane et al's framework (2003), make claims and contribute with new knowledge this thesis will be using an inferential statistical analysis to test my hypotheses. When the ideal naturalistic research approach (the experiment) is not a realistic choice, naturalistic scholars tend to use the second-best approach, the statistical method, just as this thesis will do. This method tries hard to duplicate the basic design of experiments and compensate for its inabilities to manipulate the experimental environment. Generally there are two different types of statistics: (1) Descriptive statistics, which is more frequently used as a supplement to narratives. Often used as smaller data and number references as complements to a larger description. (2) Inferential statistics, which is a much more ambitious statistical framework. It surpasses the descriptive statistics in its attempt to conclude claims about the characteristics of a population. I will use an inferential approach since I will use statistics as an ambitious foundation from my claims and attempts to test my research question and hypothesis.

The negative aspects of statistics

Even though statistics is a highly ranked scientific method among naturalistic scholars, constructivists argue that statistics contain three main shortcomings: (1) Statisticians views the world in terms of dependent and independent variables with no problems of changing its focus from its original context to other different approaches (Moses & Knutsen, 2007). In that sense, the statistical approach exclude the human touch and the humane, meaning that it is in itself insensitive to ethics, morality and politics when deciding and investigating its variables. Since motivation is relation to personal traits and heuristics, ethics, moral and by its very nature the humane the

statistical approach would perhaps not be the first method to use. However I will be using a business perspective and not a psychological perspective which is a valid method and used by many pervious scholars. (Locke, 2001)

The general topic in which my research questions and hypotheses are built from is Shane et al's existing framework and activities from the entrepreneurial literature. However, I am aware of the thesis limitation when using explanatory variables. I also acknowledge that there are many demanding and controversial assumptions that must hold for the statistics to function. However, even though the framework is based on a simplified version of reality it still serves a purpose in my attempt to explore and contribute with new findings.

3.2 SOURCES

In order to conduct a fair analysis I have used primary sources and secondary sources. The primary sources include the questioner abducted by myself and the secondary sources are assembled from the theories and literature.

3.2.1 PRIMARY SOURCES

As primary sources I have used a data set conducted from a survey. The Survey have been designed and formed by the author taking part from existing theory. I will further explain the design and the collection of data in methodological section of the survey. Also used as primary sources are several interviews. The interviewees found my research problem interesting and relevant. They therefore have assisted me in both sending out the survey as well as being interviewed. I have conducted several semi- and un-structured interviews with Founders, CEO's of Science Parks and new CEO's. These interviews have been conducted for two reasons. First, in order to get information from people with first-hand experience dealing and helping founders towards success. Secondly, I will test whether the theories are applicable in the scientist world. By doing these interviews I did not only get expertise knowledge I also was able to compare the interviewees' view and thoughts. The interviews have mainly been done to Shane et al's framework and to design the questioner.

To be sure I gathered relevant information and asked the right questions I prepared myself by gathering in-depth knowledge on the subject in question and tried to ask as open and undirected questions as possible. The most important factor was that the interviewee answered in her own words and not mine. By using open questions gave, me as investigator, more insight into the

complex situations and processes and I could thereby ask even better questions in the following rounds (Saunders et al, 2009). Also by using open questions I was able to follow the interviewees thinking process and not leading them towards an already pre-defined answer. However, important to mention is that all answers are subjective and has a risk for being biased even though I tried to be precautious. The interviews can be found in the appendix. However, the most important primary source is the data set conducted from the questioner. This will be further explained in section X.

Overview of interviews

Table 3.2.1 include an overview of the interviews that have been conducted. The list is structured by date, name, organisation/company and position. They appear in the order that I have conducted them.

Table 3.2.1:	**List of interviews**	
Interviewee	**Role**	**Date**
Mikael Von Euler	CEO Akinion Pharmaceuticals AB	10.10.2013
Märit Johansson	CEO KISP	25.10.2013
Mikael Lundin	CEO SISP	29.11.2013
Fredrik Lindberg	Co-founder and Chief Scientific Officer	21.12.2013
Anders Tamsen	Founder Amiri	10.12.2013
Jonas Ranfors	Founder Glimworks	09.12.2013
Johan Lundberg	Founder Alfaso vind	09.12.2013
Fredrik Lindberg	Co-founder and Chief Scientific Officer	20.02.2014

3.2.2 SECONDARY SOURCES

In order to gather the in-depth knowledge required to design the survey and my conceptual framework I have gathered information from both empirical and theoretical aspects. I have researched the topics of entrepreneurship, motivation, company life cycles and entrepreneurial success criteria. I have researched databases as Business Source Complete, EBSCO's multi-search and ScienceDirect for surveys, empirical findings and theories that matched my topic of Entrepreneurial Motivation. All these sources are my secondary sources and I have kept a critical approach since there is always a risk when using search engines. I have questioned the sources and followed upon critique to see the bigger picture. This has been important due to my lack of knowledge with in the theory of psychology and motivation. It has also been important to remain sceptical and critical due to the nature of both entrepreneurship and motivation as being two multidisciplinary fields of research.

3.2.3 EMPIRICAL DATA

In order to carry out my research I need to decide on a method for the empirical data and information collection. I have decided on a quantitative approach, as it coincides with the type of my research question and the methodological choice of a naturalistic philosophical view point. As my data consist of a large data set from a questioner, my main focus will be to generate and test researchable entities that are possible to analyse and interpret in order to answer my research question.

3.3 MY ROLE AS INVESTIGATOR

With my background as a M.Sc.in Management of Innovation and Business development (MIB), the field of entrepreneurship have been exposed to me together with a broad spectrum of theories. MIB laid the theoretical ground for this thesis and helped me in the selection process among topics. Entrepreneurship has been a natural choice due to its interesting theories being part of my curriculum. It gave me the opportunity to further investigate the entrepreneur. The reliability can be threatened by the researchers' viewpoint and perspectives. However, I have used several of resources and in order to test, discuss and validate the data. Results and findings based on statistics should enable other researchers to find similar findings when using the same presented theory as background.

Motivation has not been part of the MIB curriculum even though it has been discussed by various researchers. My lack of knowledge and expertise within psychology and motivation can be criticised in this thesis. In order to deal with this risk I have found existing, well refereed research and based my survey and research on this. I have merely tested the existing research in new settings. Therefore the reliability and validity of my research is strengthening.

3.4 VALIDITY AND RELIABILITY

Validity and reliability is a way to discuss whether I investigate what I think I investigating and whether the measures I use are consistent. Validity can be divided into internal and external validity. The external validity refers to the extent that generalization is possible. The beauty of using statistics is that validity of the research is testable and that the reference point of valid research and non-valid research is predefined by different significance levels. In this thesis a significance level of 95% have been used which is commonly used as a valid level when testing hypothesis. (Körner & Wahlgren, 2012) The external validity in this case will either support or criticise my framework and research by testing them statistically.

The way the study have been designed and conducted refers to internal validity. This thesis has been carefully designed taking part from existing theory. By using Shane et al's framework of Entrepreneurial Motivation combined with the income driver and the need for occupation drive, I have decreased the risk of using a theoretical framework that cannot be combined or interpreted. By using a successful and established group of researcher's framework as the foundation of my research I have received expertise help in what to investigate and what not to investigate. By questioning and using a critical point of view I have tried to increase the internal validity.

When using results based on statistics the positive aspect is that it does already take the reliability aspect into account. Reliability refers to the extent of which a test or procedure yields the same result in repeated tests. (Körner & Wahlgren, 2012) However, one must mention is that the survey is based on the respondents self-perception and can therefore vary from time to time. The purpose of the thesis is research if motivation changes over the venture by examining the perceived level of motivation and the level of Entrepreneurial Motivation. The change of self-perception does contribute to the findings. My goal is still to minimize the subjectivity and biases as much as possible. When analysing the results from the survey it is important to have the fact that the respondents have answered from their own perception. It is my job as an investigator to simplify the questions and try to explain them so all respondents understand them similarly. However, since it is an individual survey it is hard to neglect that there is a risk when using a self-perceived method. Baum and Locke (2004) do however argue that this is the best method to use when investigating motivation. Due to its complex foundation researcher will always need to ask the respondents in order to get their insights. It is very difficult to investigate motivation without asking the respondent.

3.5 RESEARCH DESIGN AND THEORY SELECTION

In this section I will clarify what theories I have chosen,´how to test them and that will be followed by the survey design.

3.5.1 THEORIES I WILL TEST

In the previous sections of this thesis I have presented many different theories and due to the scope of this thesis I will only be able to choose one of many theories to test. In order to answer my research question I find that Shanes et al's framework of Entrepreneurial Motivation is best suited. I also find this theory applicable due to its view at entrepreneurship as an evolutionary process. Shane et al (2003) have developed their framework based on many other authors' research. The authors

have gone through the existing literature thoroughly. Brännbeck and Carsrud (2009) also uses Shane et als (2003) framework which gives it credibility. I have also added two drivers to the framework due to its acceptance by other scholars as well as of Shane et al. Income and need of occupation have been added to the framework.

The different motivational theories have been used to establish a thorough understanding of the field. Entrepreneurial environments and the opportunities will not be tested but will be used in the analysis and discussion as possible explanations to the results.

Perceived motivation and Entrepreneurial Motivation

As I explained in the literature review motivation is a complex and dynamic field that lacks a common definition. Also contributing to the complexity is that people tend to perceive the concept of motivation differently. In the survey I have therefore researched motivation in two ways. 1) by directly asking if the founder believe they have change their motivation between when the venture has started and now. 2) I have used the drivers from my conceptual framework to measure the level of motivation and if it changes. I have used these two methods for a numbers of reasons. Firstly, to work around the possibility that individuals might perceive motivation differently. Nevertheless, one can argue that even though respondent would perceive motivation differently, I am measuring the "perceived" motivation and anything else would be impossible. One can also argue that the drivers in my conceptual framework can also be perceived differently among the respondent. Secondly, in order to remain critical I have decided not to only use Shane et al framework as it is not a generally accepted theory in the existing literature. I have therefore decided to test the framework and to compare it with the founders' self-perceived motivation. Moving forward it is important to be aware of that I have treated these two parameters differently.

Controlling the opportunity

In this thesis Science Parks have helped to both evaluate the opportunities and helped to select somewhat similar opportunities. In this thesis the opportunity per se has not evaluated but by only choosing companies that are situated in a Science Park and thereby has the opportunity has been controlled. Companies in Science Parks have been evaluated in order to be part of the Science Park and I do not need to evaluate the individual companies and opportunities. I have also used companies from the similar entrepreneurial regions, Denmark and Sweden (Nordic innovation council, 2012) has been used to differentiate some companies from others and making it possible to investigate the Entrepreneurial Motivation. When measuring the effects of motivation, one must

control that variation of opportunities since the magnitude of the force of the opportunity (entrepreneurs opportunity cost) will affect the individual motivations on the entrepreneurial process (Shane, 2000).

3.5.2 BUILDING HYPOTHESES

To be able to answer my research question I have summoned interesting theories and gathered the needed empirical data from various founders in Science Parks. Introduction and selection between interesting theories have been presented in section 3 together with the conceptual framework where I developed the hypotheses from the existing theory. The theories are explained in detail to help to build the hypotheses that will follow. Testing these hypotheses statistically will allow me to make implications about to what extent motivation change and how they relate to the previously mentioned success criteria. In order to test these hypotheses I decided to apply a statistical and questioner method.

3.5.3 DESIGNING THE SURVEY

In order to research entrepreneur's motivation from a naturalistic and statistic perspective I have chosen to collect my conduct a survey to collect data. The survey has been designed with Science Based founders as the target group due to them being the fouce group in my research question. When designing the questioner I used the drivers from Shane et als's framework to design first what drivers to investigate and then how to design the questions. The questioner has been designed by me though the questions and the motivational drivers departs from Shane et als' framework, I have used control question in order to get a good and correct respondent set.

One of the main challenges when designing the survey was the use of self-perceived questions. In the choice between explaining each motivational drive thoroughly and by only using the name of the driver I decided that the risk to only use the name of the driver was lower. By explaining the drivers in detail I would have interpreted the respondents' perception even more than by only using the name of the driver. The risk of misinterpretation is still present but I did not want to complicate the questions. Using only the drivers were chosen to simplify the questioner. Another reason why not to explain the drivers in detail, where that I rather use data that the respondents have interpreted than me putting words in their mouth. Another risk is the self-perception of something that has happened before. People tend to romanticise the truth and forget how difficult it was. But with regards to time and resources a questioner of this size will always have this risk (Locke, 2001).

Another main challenge that relates to the survey and data set was finding the right respondents as there are various types of start-ups and founders. In order to get help with the selection process of possible companies I contacted the industry organisation for Swedish Science Parks and Incubator (SISP) was contacted. The Head of SISP, Magnus Lundin, (ML), found my research question interesting and helped me to contact the heads of several Science Parks. These Science Parks where sent an information package in late November 2012 and once they had committed to participate in the survey they were sent introduction letter and the link to the survey. The heads thereafter made a selection among their companies. The survey had 3 selection criteria's; 1) the company was Science Based, 2) the company was situated in a Science Park and 3) the founder was still, in any way, active in the company. Some heads of the Science Parks that I contacted was unfortunately not able to participate mostly due to already recently conducted surveys. Due to the time constraint of this thesis I was not able to wait for several Science Parks but had to move one with a smaller data set than what could have been possible. Also worth to mention was that the managers of the Science Parks did not force anyone to do the survey. They sent an introduction text in order to catch the respondents' interest and motivate them to undertake the survey. The fact that the heads sent out the survey put a long distance between me and the respondents. It meant that I could not remind the potential respondents myself which led to a lower respondent rate. However, I value the right data in my data set and therefore chose to undertake the long distance. With a long distance between the author and the respondents, founders where guaranteed full anonymity. The questioner asks for some sensitive information, Such as amount of financing which companies are reluctant to share. Since there was no connection between the author and the respondent the author could not contact the respondent if not explicitly wished to be contacted and submitted their e-mail address. There are always difficulties when not in full control of the data collection and the distance was definitely not always good. Some were simply not interested and some were, as mentioned before, not able to send another survey due to the risk of spamming their entrepreneurs. With more time and resources it would have been interesting to scale the survey up to national level.

3.5.4 DATA COLLECTION AND SELECTION

The survey was carried out in December 2013 and January 2014. The survey was carried out by the webtool Enalyzer. Enalyzer assist in the design process of the survey to assure that the survey is designed properly. I have also studied many other survey schemes in order to gain knowledge. Even

though I received help from Enalyzer I faced some problems with the survey. Many respondents missed to submit the survey due to confusion of when the survey was finished. Luckily the data from respondents are stored anyway. I have decided to include this data, but have carefully gone through all the answers manually. I discovered that many respondents had failed to submit the survey at the very last page, where the text "The survey is now done. Thank you for participating" appeared. Respondents have then not seen the "submit" button at the end of the page. I did receive the most important data even though the process was not ideal.

The survey was answered in full by only 43 % (n=184). 32 % of all respondents (n=184) did not complete the survey but answered the questions regarding motivational change. As previously argued these answers will be used anyway creating a respondent rate of 77 %. However, since some of these respondents had not answered other important questions I had to delete these ending at 93 usable questioners which is approx. 50%.

Excluded data

As mentioned earlier, some of the data had to be excluded from my sample. Not correctly marked survey or surveys that where marked with the same value all the way through have been excluded. Surveys with same value all the way through do not count as a correctly marked survey. I have also excluded data that have been submitted with the same value all the way through.

3.5.5 RESEARCHING VARIABLES

The purpose of the thesis is to research a potential change in entrepreneurs' motivation. In order to research how motivation change from *when* they *started* the venture and until *today.* Important to once again note that it is not a longitudinal study, but instead a comparison of the self-perceived levels of motivation when the venture started and today. The survey respondents were asked to indicate their level of importance of several motivational drivers before and today. The respondents were asked "Please indicate how important the different activities/drivers WERE to you when you STARTED your company" and thereafter; "Please indicate how important the different activities/drivers ARE to you TODAY". To measure motivation I used a 5- Likert scale. The respondents were asked to indicate the importunateness of each driver. Starting with 1 as not important and ending with 5 as very important. In order to remain critical to Shane et al I have chosen to compare Entrepreneurial Motivation with the entrepreneurs' perception of motivation. Therefore the questioner includes a question where the respondent is asked to answer if they have

perceived that their motivation has changed. I can thereafter use the answers to compare the two theories. The drivers in table 3.5.5 where used to answer H1, H1a, H1b and H2, H2a, H2b.

Table 3.5.5

Driver in survey	Theory	Definition	Format	Scholar
Responsibility	Need for achievement	Face challenges in exchange for possible success and excellence	5-point scales*	Baum & Locke 2004, McClelland, 1961, Collins et al, 2004Deshpande
Recognition	Locus of control	Contingent of ones' actions & behaviour for reward, Desire for control	5-point scales*	Rotter, 1966, Krueger& Brazeal, 1994
Creating own decisions	Vision	A distant general goal of what a leader wants to achieve	5-point scales*	Baum, Locke and Kirkpatrick, 1998
To be independent	Desire for independency	Taking responsibility for one's actions rather than relying on others	5-point scales*	Hisrich, 1985, Carsrud &Bränback, 2009, Shane et al, 2003
Enjoy spending time at work	Passion for work	Passionate about their work, which refers to the love of the work	5-point scales*	Locke, 1993, Shane et al, 2003 Baum et al, 2001
Energy and engage	Drive	The willingness to put forth effort (ambitions, goals, energy and stamina	5-point scales*	Locke & Latham, 2004, Shane et al, 2003
Decide goals	Goal Setting	A target on where to be in a period of time. Setting specific and high goals	5-point scales*	Perwin, 2003, Lawson, 1997
Increase confidence	Self-Efficacy/ ability	Perceived personal ability to execute target behaviour. Task related self confidence	5-point scales*	Bandura, 1977, Baum & Locke 2004
Influence way forward and actions	Vision	KSA enables the entrepreneurs to create a vision	5-point scales*	Shane et al 2003, Locke 2000
	Knowledge (K)	Knowledge of the industry, product, task	5-point scales*	Shane et al 2003, Locke 2000
Improve	Skills (S)	Needed expertise to know what to do	5-point scales*	Shane et al 2003, Locke 2000
	Abilities (A)	An entrepreneurs capabilities	5-point scales*	Shane et al 2003, Locke 2000
To increase income	Income	One's importance of income	5-point scales*	Stitchcombe, 1965; Shane et al, 2003; Hessle et al, 2008
To secure occupation	Occupation	One's desire of a secure occupation	5-point scales*	Shane et al 2003, Shane & Venkataraman, 2000
*** 5-point scale ranging from 1(not important at all) to 5 (very important)**				

To test my first hypothesis if there is a change in Entrepreneurial Motivation I simplified the answers. By grouping each respondent's all answers in the motivational section I was able to see if there had been a change. I could thereby also see the average of each respondent.

In order to investigate H3; if there is a relation between perceived performance and motivation the respondents were asked to "Try to assess the company's performance in the following areas" thereby I received their perception of how their venture had performed. The performance variables have also been summed up to one performance variable. The respondent where asked to evaluate

the following activities: developing prototypes, organizing start-up team, agreeing on business plan, receiving sufficient capital, controlling resources, employing an external CEO, using feedback system, hiring employees, Securing IP, implementing reward systems, product testing with customers. These activities have been found in the literature review and are common activities in the entrepreneurial process. The same kind of grouping was made with the success criteria. The non-relevant option was set as N/A in order to not affect the total. The calculation and companions will be explained in detail in section 4.

3.5.6 CONTROLL VARIBLES

Because motivation might be influenced by many other factors affecting Shane et al's framework I have included several dummy control variables. I have also done so to ensemble more information about the sample and to be able to gather respondents with the same criteria. The dummy variables have been based on different factors that might affect the motivational driver. The presence of VC can according to Davila and Foster affect the level of autonomy and flexibility. The control variables I have used are the following; *Founder of company,* in order to make sure the respondents were founders, *management position;* what kind of influences had the founder today and how active were they, *company industry;* make sure it is a Science Based company, *academic experience;* closeness to the Science Park, *industry experience;* closeness to industry; *start-up experience, age of company;* to see that there has been some time for the motivation to change, *number of employees;* to ensure similarity in sample, *innovation phase;* unsure part of the start-up phase, *presence of venture capital: ensure similarity in sample and owner of the initial idea*; due to increasing trend of using others ideas.

4.0 ANALYSIS AND RESULTS

The presentation of results will follow the same order as the conceptual framework; Motivational progress, Motivation as a multifactor and Performance & Motivation.

4.1 RESULTS OF MOTIVATIONAL PROGRESS

H1: There is a change in the entrepreneur's motivation

The first hypothesis predicted that there is a change in the entrepreneurs' motivation and only 41 % believed they had changed their motivation which is showed in figure 4.1a.

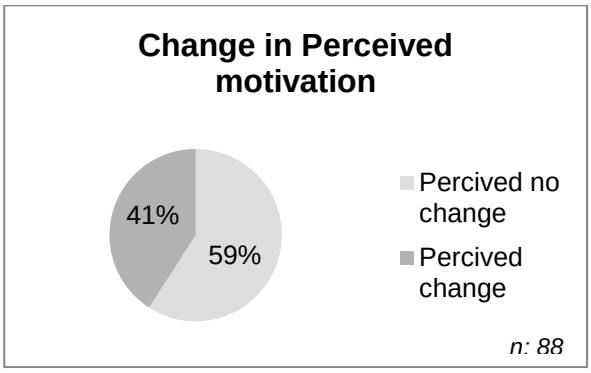


Figure 4.1a.

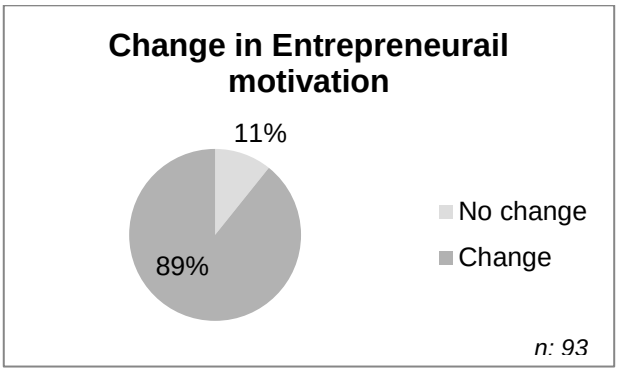


Figure 4.1b.

However, motivation is a broad and vague expression and therefore I used the different motivational drivers to evaluate the Entrepreneurial Motivation. By looking at the sum of the motivational drives from before and comparing them with the sum of motivational drivers now, 89% have changed their level of motivation and the results are presented in figure 4.1b.

Table 4.1a: Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Motivation now	43,7857	84	7,99107	,87190
	Motivation before	42,2857	84	8,09815	,88358

Paired samples correlations

		N	Correlation	Sig.
Pair 1	Motivation now & motivation before	84	,840	,000

Paired samples test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	Motivation now – motivation before	1,50000	4,55621	,49712	,51124	2,48876	3,017	83	,003

A t-test was used to verify the results and to compare the means of motivation before and motivation now and paired samples t-test. The result of the test is a mean of 1.5 and t-value of 3.017 at the significant level 95% which support my hypothesis. All these findings can be found in table 4.1a.

The results from the t-test, presented in table 4.1a, supports that there is a change in motivation. To investigate further it is interesting to see whether entrepreneurs become more motivated or less motivated over the venture and in order to answer the sub research question QA I have tested the hypothesis H1a and H1b:

H1a: Entrepreneurial Motivation decrease over time
H1b: Entrepreneurial Motivation increase over time

I have researched this by comparing the average of motivation before and motivation now. As one can see in figure 4.1c and figure 4.1d , the change in perceived motivation was 26 % positive and 15 % negative. In figure 4.1d 56% had shifted towards being more motivated and 11% being less motivated.

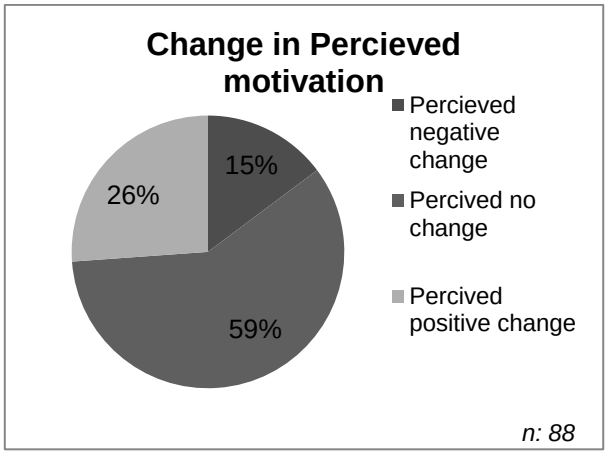


Figure 4.1c

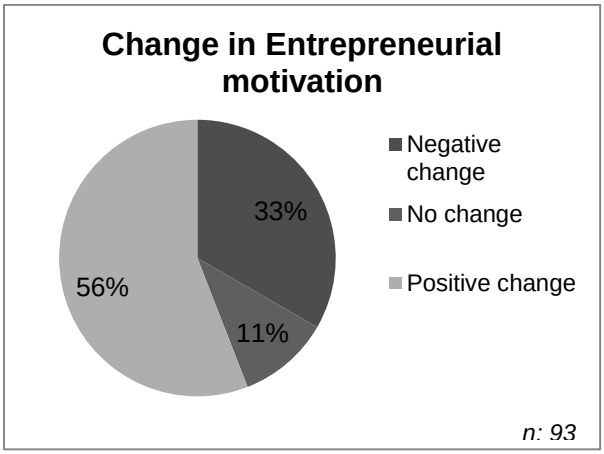


Figure 4.1d

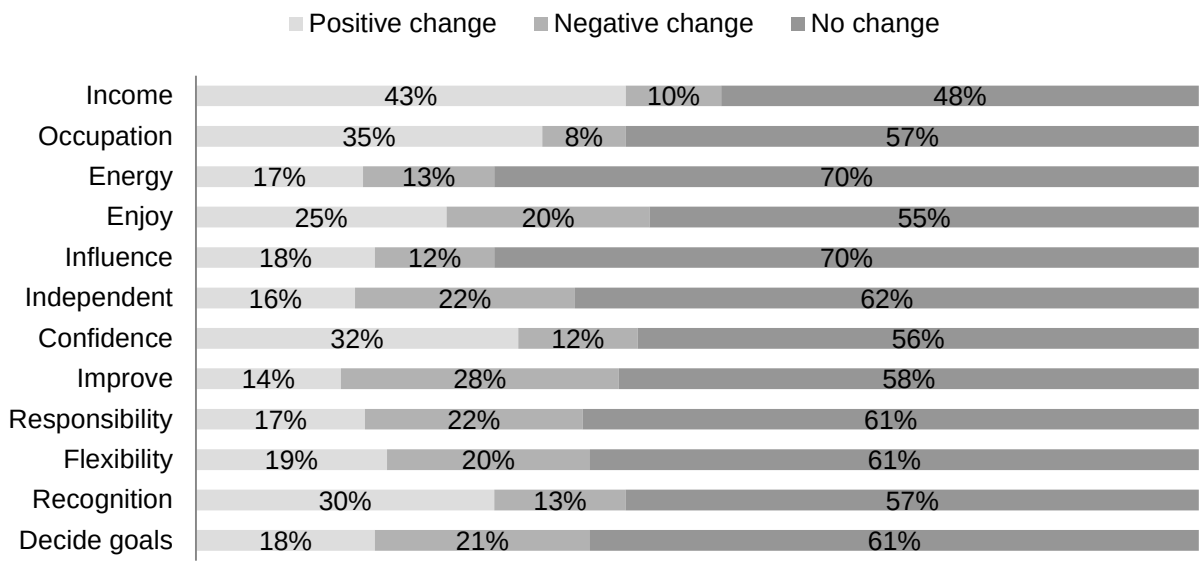
To test if any of these findings are significant I refer back to the Paired sample t-test presented in table 4.1a. which identified a positive value t-value (3.02) that supports a general positive increase in motivation. When the t-values exceed 1.98 the result is significant at the 95% level. This implies that H1a, general negative change, is not supported but that H1b, entrepreneurs are more motivated now than when they started a venture is supported.

4.2 RESULTS OF MOTIVATION AS A MULTIFACTOR

H2: There is a change in different motivational drivers

When testing the H1, H1a and H1b I have presented descriptive statistics of both the perceived change and the "real" change that is a sum of motivational drivers. To gain more insight of entrepreneurs' motivation H2 predicts there is a change in the separate motivational drivers. A demographic overview of the answers are presented in table 4.2a.

Table: 4.2a Change in Entrepreneurial motivational drivers



There is only the income driver where the majority of the respondents have changed. 43% of the respondents have changed towards the positive and 10% towards the negative. The other drives; occupation, energy, enjoy, influence, independency, confidence, improvement, responsibility, recognition and decide goals have at least a majority of the respondents of 55% of no change. However, there is no driver with 100% of no change. Influence is the driver with the smallest share of change; 30% of change. It is also worth noting that the drivers independent, improve, responsibility, flexibility, and decide goals have a larger share of negative change than positive change. In order to further investigate, I will statistically test if there is a change in the separate drivers from before until now with paired sample t-test. The result is presented in table 4.2b.

Table 4.2b: Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error M.
Pair 1	Motivation now	43,79	84,00	7,99	0,87
	Motivation before	42,29	84,00	8,10	0,88
Pair 2	income.2	2,86	84,00	1,33	0,14
	income.1	2,25	84,00	1,20	0,13
Pair 3	decide.goals.2	4,13	84,00	0,98	0,11
	decide.goals.1	4,17	84,00	1,00	0,11
Pair 4	secure.occupation.2	2,39	84,00	1,14	0,12
	secure. Occupation 1	2,02	84,00	1,23	0,13
Pair 5	recognition.2	3,24	84,00	1,35	0,15
	recognition.1	3,02	84,00	1,35	0,15
Pair 6	flexible.2	4,02	84,00	0,99	0,11
	flexible.1	3,98	84,00	1,02	0,11
Pair 7	responsibility.2	3,86	83,00	1,19	0,13
	responsibility.1	3,90	83,00	1,13	0,12
Pair 8	enjoy.2	4,15	84,00	0,95	0,10
	enjoy.1	4,06	84,00	1,06	0,12
Pair 9	improve.2	3,73	83,00	1,19	0,13
	improve.1	3,83	83,00	1,17	0,13
Pair 10	energized.2	4,30	84,00	0,94	0,10
	energized.1	4,25	84,00	1,00	0,11
Pair 11	independent.2	3,79	82,00	1,14	0,13
	independent.1	3,88	82,00	1,23	0,14
Pair 12	influence.2	4,33	84,00	0,85	0,09
	influence.1	4,27	84,00	0,90	0,10
Pair 13	confidence.2	3,07	84,00	1,35	0,15
	confidence.1	2,7381	84	1,30909	,14283

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	Motivation now & motivation before	84	,840	,000
Pair 2	income.2 & income.1	84	,544	,000
Pair 3	decide.goals.2 & decide.goals.1	84	,639	,000
Pair 4	secure.occupation.2 & secure.occupation 1	84	,671	,000
Pair 5	recognition.2 & recognition.1	84	,703	,000
Pair 6	flexible.2 & flexible.1	84	,668	,000
Pair 7	responsibility.2 & responsibility.1	83	,803	,000
Pair 8	enjoy.2 & enjoy.1	84	,542	,000
Pair 9	improve.2 & improve.1	83	,784	,000
Pair 10	energized.2 & energized.1	84	,787	,000
Pair 11	independent.2 & independent.1	82	,658	,000
Pair 12	influence.2 & influence.1	84	,603	,000
Pair 13	confidence.2 & confidence.1	84	,760	,000

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tail)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	**Motivation now – motivation before**	1,500	4,556	0,497	0,511	2,489	3,017	83	,003
Pair 2	**income.2 - income.1**	0,607	1,213	0,132	0,344	0,870	4,589	83	,000
Pair 3	decide.goals.2 - decide.goals.1	-0,036	0,842	0,092	-0,219	0,147	-0,389	83	,699
Pair 4	**secure.occupation.2 - secure. Occupation1**	0,369	0,967	0,105	0,159	0,579	3,499	83	,001
Pair 5	recognition.2 - recognition.1	0,214	1,042	0,114	-0,012	0,440	1,885	83	,063
Pair 6	flexible.2 - flexible.1	0,048	0,820	0,089	-0,130	0,226	0,532	83	,596
Pair 7	responsibility.2 - responsibility.1	-0,048	0,731	0,080	-0,208	0,111	-0,601	82	,550
Pair 8	enjoy.2 - enjoy.1	0,095	0,965	0,105	-0,114	0,305	0,905	83	,368
Pair 9	improve.2 - improve.1	-0,096	0,775	0,085	-0,266	0,073	-1,133	82	,260
Pair 10	energized.2 - energized.1	0,048	0,638	0,070	-0,091	0,186	0,684	83	,496
Pair 11	independent.2 - independent.1	-0,085	0,984	0,109	-0,302	0,131	-0,786	81	,434
Pair 12	influence.2 - influence.1	0,060	0,782	0,085	-0,110	0,229	0,698	83	,487
Pair 13	**confidence.2 - confidence.1**	0,333	0,923	0,101	0,133	0,534	3,311	83	,001

The result indicates that the change in the drivers income, secure occupation and confidence are significant at a level of 95%. The paired samples test is done by comparing the mean of the driver before and the driver now, and test if the differences are significant. The result is shown in table 4.2b. The result also indicates that the drivers with significant change are also the same drivers that in general has the lowest average both in the before variables and in the now variables (marked red in table 4.2b paired sample statistics). The driver goals, flexibility, enjoyment, energy and influence have the highest average. These drivers are marked with green in table 4.2b paired sample statistics and all have an average over 4. The average of the drivers recognition, responsibility, improvement and independent have an average between 3 and 4 (marked with yellow in table 4.2b paired sample statistics).

4.3 RESULTS OF PERFORMANCE AND MOTIVATION

In order to answer my sub research question QB I have tried to identify a relationship between change in Entrepreneurial Motivation and performance as well as a relationship between the perceived change in motivation and performance.

H3: There is a relationship between the entrepreneur's perception of the ventures performance and the entrepreneur's level of motivation.

The last hypothesis expects that there is a relationship between entrepreneurs' level of motivation and how they perceive the performance of the firm. First I tested if there was a relationship between the levels in Entrepreneurial Motivation and performance and the **relationship** was not significant. The result of the correlation is presented in table 4.3a.

Table 4.3a: Correlations

		success	Entrepreneurial Motivation change
Performance	Pearson Correlation	1	-,144
	Sig. (2-tailed)		,182
	N	89	87
Entrepreneurial	Pearson Correlation	-,144	1
Motivation change	Sig. (2-tailed)	,182	
	N	87	89

**. Correlation is significant at the 0.01 level (2-tailed).

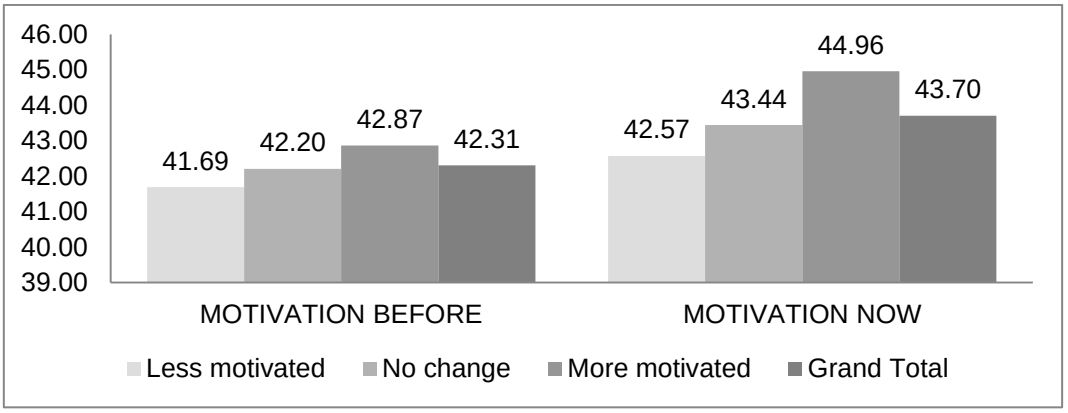
However, the correlation of the respondents perceived motivation and the performance was significant at the1% level. The correlation is positive which means that the two variables move in the same direction. The results are presented in table 4.3b.

Table 4.3b:Correlations

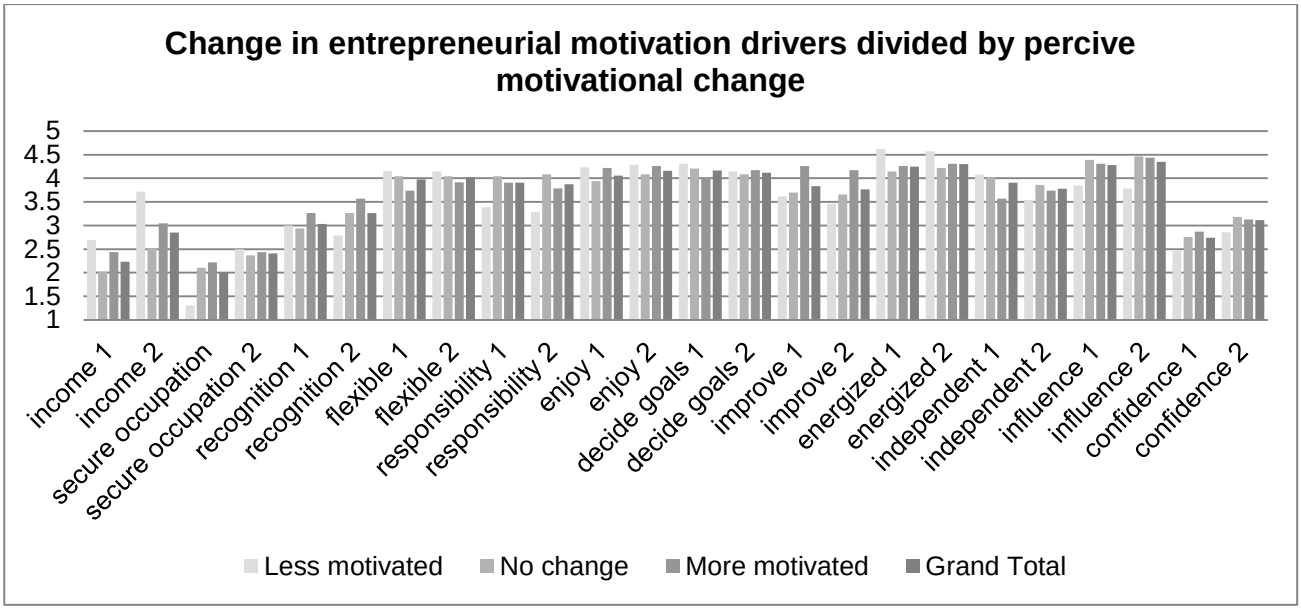
		Perceive motivation change	Performance
Perceive motivation change	Pearson Correlation	1	,320**
	Sig. (2-tailed)		,003
	N	88	87
Performance	Pearson Correlation	,320**	1
	Sig. (2-tailed)	,003	
	N	87	89

**. Correlation is significant at the 0.01 level (2-tailed).

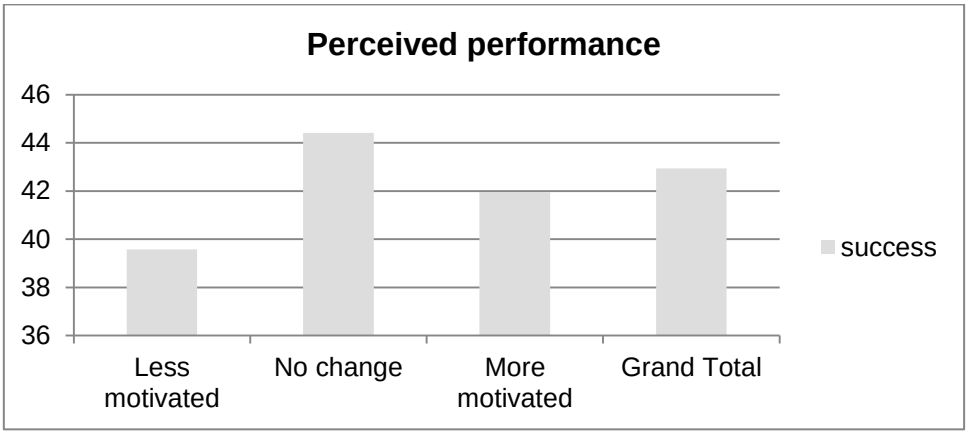
Following the results for H3 I found it interesting to further investigate how the entrepreneurs' perception of motivational changes impacts the Entrepreneurial Motivational drivers. I will therefore present the descriptive results of the Entrepreneurial Motivation before and now, as well as the Entrepreneurial Motivation drivers. The results will be divided by two those who perceived motivational change and those who did not perceive change or perceived they became less motivated.



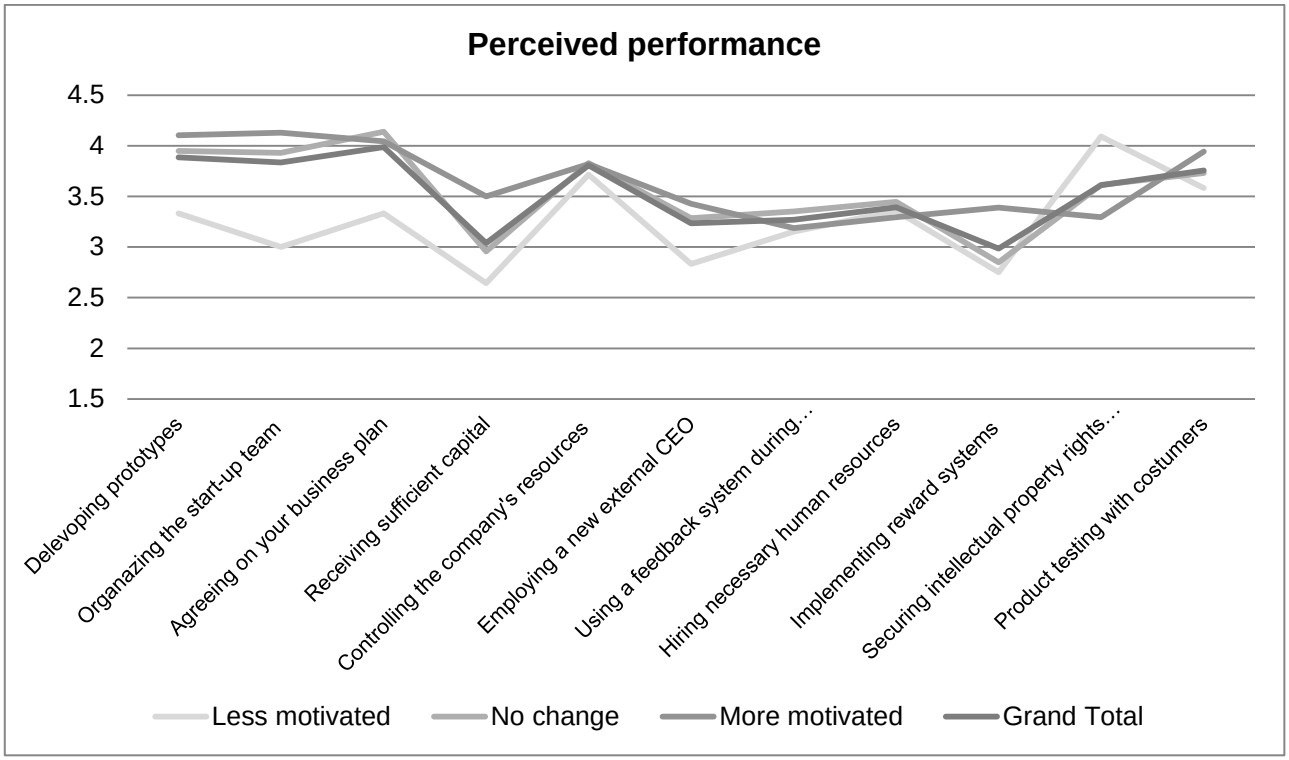
The descriptive statistics indicates that those that have perceived that they have become more motivated have increased their level of Entrepreneurial Motivation, they were also more motivated when they started the venture. In average, the founder perceiving he has decreased his level of motivation; have increased the level in motivational drives.



In the split over motivational drivers, the results that those who perceive they become less motivated has ranked importance of energized the highest, as well as income.



What is interesting is that the results indicate that those who have perceived no change in their motivation evaluate their companies' performance the highest. Less motivated have the lowest evaluation points and more motivated are in between.



Viewing on the results of each performance driver; one will find that founders who perceive themselves becoming less motivated evaluate the performance lower that the others on most of the drivers, but higher when it comes to securing IP rights. The founders who perceive their motivation have changed have evaluated the company's' performance higher on most of the activities, and especially venture capital.

More descriptive results can be found in the appendix.

4.4 SUMMARY OF RESULTS

In above section I have presented the results from testing the three hypotheses. The results supports the first hypothesis, there is a significant change of Entrepreneurial Motivation. H1a is not supported but since the change is positive, ie. increasing, H1b is supported. The drivers income, secure occupation, and confidence are the drivers with significant change. There is no significant relation between Entrepreneurial Motivation and performance. There is however a significant relation between the founders perception of motivational change, meaning that in the direct question where they were asked believed their motivation had changed, and perceived performance.

5.0 DISCUSSION

In this section I will discuss the findings from my analysis and relate the theories to them. I will also discuss some other relevant explanations to my findings.

5.1 MOTIVATIONAL CHANGE

As my findings have shown there is a significant change in motivational levels. This was expected and corresponds to findings of several other scholars. This was mainly expected due to the many views of motivation as a process or dynamic factor composed by many underlying factors (Bruno, 2013). The relationship between the dynamic entrepreneurial process and motivation would be interesting to further research. As my results indicate the motivation change over time, but would it change differently depending on where in the process the venture is? As Shane et al (2003) argues motivations affect our behaviour, but eventually wont our behaviour affects our motivation? Frankl (1985) for example sees motivation as a process that is influenced by external factors and as these factors change so will the perception of them. More exact motivation is explained as a process depending on information processing. The values and incentives also change over time, which results in change of goals. The results is supported by Frankl's thesis that it change over time – however it is not possible to say if it is the external factors that contributes to the change or something else.

Shane et al (2003) also argues that motivations are affected by the environmental conditions as well as the characteristics of the opportunity. The scholar further argues that depending on in what stage you are, different motivations will affect you differently. As no opportunity is exactly as the other (Baum et al., 2001) one could assume that these opportunities react differently to environmental changes such as technology and research breakthroughs. Since the founders' motivation is entangled with both the environment and the opportunity founders is believed to react differently to the changes and their venture stage. My findings further supports that there is a connection between the environment and motivation.

Since motivation makes one act, and it is an ongoing process, motivation will change over time. As the opportunity and surroundings change so will the entrepreneur (Edelman & Yli Rako, 2010). This is also in line with my findings but when researching motivation it is really difficult to measure the impact of the opportunity, which would be ideal to fully measure motivation. The scholars Shane et al (2003) further argues that depending on what stage you are in, different motivations will affect you differently. As argued the entrepreneurial process is dynamic and the entrepreneur will

go through different stages in the venture. It would be interesting to further investigate and research how high the different motivational drivers are in the specific stages. One could assume that founders who value their independence would be affected differently than those entrepreneurs' who does not value their independence in the same level. One could also question how our needs change over the venture and how this affects our motivational level. As Maslow argues, once the need change so will the motivations.

As a venture evolves over time some new goals created but the overall goal, to create a successful venture, I assume, is to some extent the same. How does the closeness to success and goals affect motivation? Does one become more motivated or less motivated? It would be further interesting to compare founders' motivation when just about to complete their venture with founder just started their venture. However, as shown in my results I have researched founders from different stages in the venture and I cannot find any significant proof that there is a difference the closer you get to your goal. It is important to remember closeness can be questioned as the process is dynamic and activities are not done in a certain order and are sometimes done several times. But looking at the differences in Entrepreneurial Motivation in the different stages one will find that the founders located in the stage "searching for solution" has increased their Entrepreneurial Motivations the most. They also have the highest average in the Entrepreneurial Motivations. This group of founders have however the lowest average on perceived performance. That could however be explained by the fact that they have not yet had the chance to perform well in these activities. The founder that executes/standardise the solution has both the lowest Entrepreneurial Motivation before and now – but they do however perceive that they have performed well since this is the group of ventures that has the highest performance average. This indicates that the motivation changes more towards the positive in an early stage and that there is little indication of becoming more motivated closer to the goal.

The gap between the perceived motivation and Entrepreneurial Motivation in the descriptive statistics is also interesting to further discuss. One reason for this could be that when answering if the founder believed that their motivations have changed it is more difficult to assess whether that is the case or not. It might be easier for the founder to take a stand and evaluate the separate motivational drivers. As the results indicate - even though the founder have not perceived a change in motivation, the change in the motivational drivers contribute to a change in the sum of the Entrepreneurial Motivations. It would be interesting to further investigate how the founders

perceive the motivational drivers and what does "motivation" imply and mean to them? I will further discuss the different motivational drivers in the next section of the discussion.

5.2 INCREASING MOTIVATION OVER THE VENTURE

When comparing the result of the perceived increased change (26%) and the positive change in Entrepreneurial Motivations (56%) one realizes that the gap between the two is quite extensive. As discussed in the previous section there can be many different reasons for this, the most dominant one being the founders' different interpretation of motivation. The fact that the results only reflect input from ventures in Science Parks could also be an affecting factor. One could argue that science parks enables an environments where entrepreneurs feel engaged and get assistance and support when needed. Further, due to the fierce selection criterion to be admitted to Science parks, the sample size will only reflect ventures with opportunities and motivated founders (ML,2013; MvE, 2013; MJ; 2013). Therefore it would be interesting to further research ventures not related to science or science parks. The great entrepreneurial environment in Sweden and Denmark will also affect the sample. Lastly, since the survey was optional there is a chance that only motivated (or unmotivated) entrepreneurs answered they survey which would distort the result to a degree. Even though here is a possibility for selection bias my research is still valuable. It still indicates which drivers are high and where one can focus to increase the overall Entrepreneurial Motivation and help disengaged entrepreneurs to become motivated.

It was nevertheless surprising to see that motivation increased over time. I expected a decrease of motivation due to several reasons. The first one being that their main reasons to become entrepreneurs are quite often distant. Secondly, I suspected a decrease since, according to MvE (2013) and ML (2013) entrepreneurs become unmotivated and therefore leave their company if their VC does not push them out and new personnel with better managing experience. Thirdly, the decrease was also expected since the survey is done in Science Based companies where ideas are founded within science and often within the walls of Universities (Dasgupta & David, 1994). Scientists are motivated by autonomy to research what they want and the higher they get within the scientific world the more autonomy they are given (Davis et al; 2009). I expected a decrease since the scientists in these companies does not have the same autonomy and especially not with the presence of venture capitalists making demands and controlling the path forward (Davila & Foster, 2007 ; MvE, 2013; ML, 2013). The forth reason was that Davidson (1989) further supports a decrease in motivation due to the presence of venture capitalist. There can be several explanations

for why I have found that motivation increase over the progress of the venture. Important to note is that I have only researched founders still active in their ventures. The ventures have not exited the market. These two factors could have affected the outcome of the survey towards the positive. The fact that I limited myself to ventures in Science Parks might also be an explanation of the increased motivation. Founders might become more motivated as they are assisted by the personnel at the Science Parks to overcome their obstacles.

Another interesting finding is that the founders *without* VC funding have a higher level of motivation early in the venture (Descriptive statistics, Appendix). However the group of founders with the highest motivation later in the venture are the ones with VC funding but without an active VC. One of several explanations for the increase in the motivation could be that the Venture Capitalist investing in Science Based companies gives the ventures more autonomy then other Venture Capitalists. Science Based companies in Science Parks are often still searching for their final solution before they can become fully commercialised and the VC's might be aware that it is difficult to push a research period and therefore has a higher autonomy. VC might instead of interfering with the research focus in important strategic choices. (MvE, 2013; ML, 2013)

The companies in the data of the thesis are mainly choosing between several solutions

The difference between perceived motivation and Entrepreneurial Motivations has another interesting angle. The founders in my research are most of them scientist from the beginning that are now on a journey towards becoming entrepreneurs and managers. This might not be the case for all of them but it is for many. The majority is still active in a management role in their ventures (Descriptive statistics, Appendix). I do believe that this is interesting since as the ventures evolves there will be many changes. When changes occur the motivation tend to be high in the beginning and after a while the motivation decrease. This normally happens when a founder face their first or second real obstacle. After having overcome the first obstacles motivation tend to increase even higher than before. Some of the founders with decreased perceived motivation might just have faced a few obstacles. This reasoning and dip is called the Death Valley of change and has been introduced in Organisation literature and used when dealing with human change. P.David Elrod II and Donald D.Tippett are two of the scholars that has reviewed the literature on change and introduced the model to many business management schools. It would be interesting to research how this curve would apply on entrepreneurs and if they follow the same curve as other people. The question is how this can assist the founders when they feel unmotivated?

5.3 CHANGE IN MOTIVATIONAL DRIVERS

That there was a change in the different drivers was expected, mostly because several drivers that are affected by many other underlying factors compose Entrepreneurial Motivation. Exactly how the underlying factors behind the motivational drivers have not been in scope in this essay, more research on the underlying factors and how they relate to each other and how they relate to the entrepreneurial process is needed. Such a research would bring further understanding to the field and enlighten us further on how Entrepreneurial Motivations change over time. Meanwhile the learning from my results can be used. The findings are consistent with motivational theory where (Herzberg,1974; Mccellend, 1965) change in different drivers have been discovered.

As presented in the results there was a significant change in the drivers: Income, Secure occupation and confidence. What is further interesting about this is that both income and secure occupation are two of the drivers with lowest importance between starting a venture and now. Many of the other drivers are consistently high whilst these two are not. The drivers income and secure occupation are also the two drivers that increase the most and therefore has the significant change. The fact that the drivers are so low rated is important especially since these are the drivers that I have added to the framework advised from the theory. One could question if these are the correct drivers to include in the framework and what would happen to the overall results if these where to be excluded? One might also wonder how the overall Entrepreneurial Motivational change would be if these where excluded? It is also important to question whether the drivers Shane et al has proposed are the correct ones? As the results indicate, theses drivers are all rated quite high and do not change much between starting the venture and now. I find this interesting since the entrepreneurs are in a very dynamic and changing process and therefore I believe that the change in drivers could be found in several of them. The dilemma here is two folded; at one side one could argue that the change is low since the entrepreneurs are highly motivated when starting a venture as well as later in the process; that would mean that they are motivated all the way through which is good. On the other hand, on could argue that the low fluctuation in these drivers is an indication on that we have the wrong drivers as if the drivers would be even more relevant to the entrepreneurial process they might change more. More research is needed within this field in order to increase our understanding.

The confidence driver also showed a significant change, which is one of Shane et al's drivers. A founders' confidence might not be as high in the beginning of the venture, but as the venture evolves so does the founder's confidence. For those founders lacking start up experience there will

be many new tasks and activities that the founders have not done before which might affect the confidence. As the venture proceeds, the founder evolves in the role as an entrepreneur and might be able to handle many of the more managerial activities with better confidence. Also the question in the survey asks the respondent to evaluate the importance to a certain driver. The results further indicated that the founders might perceive that confidence is less important in the beginning of the venture but as the venture proceeds confidence is more important. Once again it would be interesting to do a longitudinal study to follow the founder over the venture and research their motivational levels at the different stages/ activities. It would also have been further interesting to know if the respondents where applying this question to their skills as founder or scientist as they are a mix of both of these profiles. Whether it was academic skills or managerial skills would also be interesting. Having confidence in academia might be difficult as it takes extensive research too be certain on something.

The result from the drivers independence, responsibility and flexibility are ranked around 3 which indicates they are not the most important drivers nor the least important. One could question if there is a relationship between these drivers and the presence of venture capital. One could argue that with venture capital the founder's independence and responsibility is decreased, which is what the founders have given up in order to get funding. I am also curious if there could be a relationship between the low ranks of these drivers and science based founders. It is especially interesting that the independence driver is ranked low since this driver is argued by several scholars (Stichcome, Shane et al, Baum & Locke) to be one of the main reasons why someone decides to become an entrepreneur. This leads me to question 1) is the independence driver one of the main reasons for why one decide to become an entrepreneur? or 2) is it that the science based founders are motivated and driven by different drivers than other entrepreneurs?. Here it would be interesting to follow up on different types of entrepreneurial groups instead of comparing entrepreneurs to others. I am also surprised that the responsibility and flexibility is ranked low. Could it be that the scientists already beforehand have a high degree of responsibility and flexibility and not being motivated at the same extent as other entrepreneurs? One could also argue that other entrepreneurs coming from large companies with much bureaucracy might think these drivers are important than others.

The theory that income's effect on motivation and on the outcome of the venture is inconsistent (Kihlström & Laffony, 1979). The results do not show any relation between income and success criteria. The general theories about income and entrepreneurship make the connection to the

entrepreneurial choice – to become an entrepreneur or not. In this thesis it is part of the motivation, which is in line with Shane (1997) who states that entrepreneurs with income as a goal are more motivated and more successful than entrepreneurs not aiming to improve their income. Increasing the importance over time supports MvE (2013) and ML(2013) thoughts on other companies as inspiration and the founders are influenced. Another explanation could also be that the founders now have experienced a larger pay check then before and got used to it – there is nothing as addictive as a pay check (Sahlman, 1997).

5.4 PERFORMANCE AND MOTIVATION

The relation between performance and motivation is very complex, not yet clear and very interesting. The theory presented in the literature review presented a mix of findings on how these two are related. In this thesis the relation between the entrepreneurial drivers and performance as well as the perceived motivation and performance has been researched. The results indicates a positive relation between perceived motivation and performance but it was not possible to validate how strong the relation where. Could it be that how the respondent perceives motivation that gives us this result or it could also be that how the respondents perceive the different performance activities. In which way the relation goes can be further discussed one could question if it is the good performance that is motivating or if it is the high motivation that leads to good performance. This relationship needs more research and can be really valuable to extending our knowledge on entrepreneurs and the entrepreneurial process. Bandura (1997) and Locke (2001) are two of the scholars that argue that motivation leads to performance. Again here it would be interesting to follow several founders over the venture and compare their motivational levels during different stages. This could however be very difficult since the researcher would have to validate what stage the ventures would need a full overview of the ventures and this would require a lot of resources. Gundry and Welch (2001) adds with some thoughts on that it is the planned behaviour and determination towards goals that leads to better performance. Again I was not able to validate this theory. One could also question if science based companies have different and more difficult goals to fulfil than other founders. In order to extend or knowledge it would be necessary to evaluate the goals the founders have and see the impact the have on the behaviour and performance.

Very interesting is the relationship between performance and founders with venture capital. When dividing the results by the groups founded by venture capital and not supported by venture capital

the later group has a performance score. This is quite interesting since one could assume that with the additional resources that VC would bring in to the firm the performance would increase. One could question if VC's discuss these questions more and make the founder more aware of their performance and how they feel.

It is also important to stay critical to this approach of both the relation between performance and perceived motivation as well as the impact of motivation. One can raise question to if we as humans are motivated by achievement or if we are motivated by success? Or is it the temptation of success that we want to achieve? How much does these two interlink and how are founders as well as humans affected by challenges in the entrepreneurial process?

The results also indicate that the entrepreneurial motivational progress differently depending on which stage the venture are (See appendix, Overview of Motivation before, now and performance, Stage in venture). The founders that are still searching for solutions had the lowest average of motivation before. They do how ever have the highest motivational average in motivation now. They also evaluate their companies' performance really low compare to the other stages. The group of founders that evaluating solution has the highest motivational average before and also has a high average in motivation now. Important to note is that these founders have maybe changed stage during the venture. Therefore one could question how the specific motivational drivers are affected by the stages? And what if a ventures stay at one stage for a very long time, how does that affect the motivation but also the performance? The descriptive statistics also indicates some great variances in the evaluation of the activities depending on what stage the venture are in. This is expected since the ventures that has not been through so many stages might evaluate their performance lower.

In the previous discussion I have discussed my findings and possible reasons for the results of my survey. I have tried to remain critical towards the theories and my conceptual framework. From the discussion I can conclude that much more research is needed and especially in Perceived motivation vs. Entrepreneurial motivation, Motivation in the specific entrepreneurial stages as well as the relationship between performance and motivation.

6.0 CONCLUSIONS

This final chapter will summarize and conclude my findings from the former analysis with a focus on answering my two sub questions (QA, QB) and my overall research question.

Denmark and Sweden are both world leading nations within innovation and creating environments for start-ups. Many efforts are done to ease entrepreneurs' journey towards creating a successful venture. The overall research objective of this thesis has been to investigate *if the motivation of founders of science based start-ups change between starting the venture and further into the process and how is this associated with their perception of the performance of their company?* I have further developed two sub questions to 1, delimit myself and 2, specify my research question. Before presenting my final conclusion I will outline the main findings from the presented results.

QA: *Is there an increase or decrease in the level of Science Based founders' motivation? What motivational drivers change from starting the venture until a later stage in the process?*

I have analysed data from 94 different entrepreneurs based in Science Parks. The data was collected by a survey that aimed to investigate the founder's motivation. To investigate motivation I adjusted Shane et al's Entrepreneurial Motivation framework and built a conceptual framework supporting my research question and the development of my hypotheses. I found that entrepreneurs in general changed their level of motivation. A change between when the venture was created and a later stage in the process was found. The results indicate that the motivational level increase, which is not what was expected. The statistics also show that income, securing occupation and confidence were the Entrepreneurial Motivational drivers with a significant change. These drivers also had a generally low average importance.

QB: *Does Entrepreneurial Motivation relate to the perceived assessment of the company's performance in specific entrepreneurial activities?*

I have analysed the data from the survey and found that there is a relationship between the perceived motivational change and perceived performance. The relationship was positive and supports that more motivated founders perform better and therefore have a higher success rate. It does however also support that the better the founder perceive the performance of the company the higher is the likelihood that he/she also has become more motivated over the venture. I found no correlation between Entrepreneurial Motivational change and perceived performance.

When finally concluding on my overall research question I draw upon the findings from my sub questions. The aim of the thesis was to answer the overall research question:
Does founders', of Science Based start-ups, motivation change between starting the venture and further into the process and how is this associated with their perception of the performance of their company?

The aim of the thesis was two folded; 1, investigating Entrepreneurial Motivation to gain insight about the entrepreneurial behaviour in order to help ventures grow and 2, contribute with new research. I have with this thesis introduced several new findings and insights; such as the Science Based founder becomes more motivated over the venture. One can use the learning from the entrepreneurs that increased this motivation – what motivated them and use that in other areas. My results contribute to an extension of the field of Entrepreneurial Motivation and increase our knowledgebase on what can motivate entrepreneurs throughout the venture. It is however important to remain critical as these results are only an indication of how the world is constructed.

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8. APPENDIX

Appendix: Table of Contents

Motivational Survey

Welcome!

Dear participant,

You have received this e-mail because you are invited to participate in a survey regarding motivation in start-ups. The survey consists of three main sections and takes approximately 10-15 minutes to complete.

The survey is undertaken in connection with a master's thesis project at the Copenhagen Business School. The aim of the project is to put focus on the importance of founders' motivations to start a business and to shed light on how those motivations may change during the course of the early years of a start-up business.

The survey is undertaken in both Sweden and Denmark. Your responses will be treated with full anonymity.

Provided that you are interested in seeing the results of the survey, they will be sent to you in early 2014.

OBS! the survey is not finished until you push the "end survey" button.

Thank you for participating!

1. You are among those who initially established the business in which you are currently working
(State one answer only)

Yes - Go to 4	No - Go to 25
❑	❑

2. If your are not a founder please specify your position at the company
(State one answer only)

Employee	Manager	Board Member	Technician
❑	❑	❑	❑

Other, please specify

_ _

_ _

_ _

3. Would you like to receive the results of the survey? If so, please type your e-mail address below. - Go to 24

_ _

_ _

_ _

4. What is your current position within the firm?

(State one answer only)

CEO	CTO	CCO	Advisor	Board Member
❑	❑	❑	❑	❑

Other, please specify

_ _

_ _

_ _

5. Please indicate which industry your company serves within

(State one answer only)

Life science	Cleantech	Information and communication technologies	Other high-tech industry
❑	❑	❑	❑

6. Have you had a professional academic career before your current employment?

(State one answer only)

No	Yes

❑ ❑

7. Do you have previous experience from the industry you are currently working in?

(State one answer only)

No	Yes
❑	❑

8. Did you have any start-up experience before you started/joined your current company?

(State one answer only)

No

❑

Yes, Please specify

_ _

_ _

_ _

9. Is the company:

(State one answer only)

A spin out	A walk out	A new venture
❑	❑	❑

10. How many years has it been since the company was founded?

(State value)

❑ _ _ _ _ _ _

11. What is the number of employees within the company?

(State value)

❑ _ _ _ _ _ _

12. Which of the following categories best describes the innovation phase that your company is currently in?

(State one answer only)

Searching for possible solutions	Evaluate different possible solutions	Selection solution and further development	Standardization of solution	Acquiring resources

❑ ❑ ❑ ❑ ❑

13. Have you received any Venture Capital?

(State one answer only)

No - Go to 16

❑

Yes, and please specify how much

_ _

_ _

_ _

14. How many rounds of funding have you received?

(State value)

❑ _ _ _ _ _ _

15. How many rounds of funding have you received?

(State value)

❑ _ _ _ _ _ _

16. Does your Venture Capitalist have an active role in your company?

(State one answer only)

No	Yes
❑	❑

17. The idea behind the venture was:

(State one answer only)

My own	Someone else's	Collaborative
❑	❑	❑

Important activities when you started the company

18. Please indicate how important the different activities/drivers WERE to you when you STARTED your company

(State only one answer per question)

	(Not important) 1	2	3	4	(Very important) 5
To increase my income	❑	❑	❑	❑	❑
To be able to decide my own goals/requirements at work	❑	❑	❑	❑	❑
To secure occupation	❑	❑	❑	❑	❑
To get recognition for my performance at work	❑	❑	❑	❑	❑
To be able to be flexible and make my own decisions	❑	❑	❑	❑	❑
To have a high degree of responsibility and take the praise or	❑	❑	❑	❑	❑

blame when it comes					
To enjoy spending time at work	❑	❑	❑	❑	❑
To continuously improve my personal and work skills	❑	❑	❑	❑	❑
To feel energized and engaged in the work I do	❑	❑	❑	❑	❑
To be independent	❑	❑	❑	❑	❑
To be able to influence how to move forward and what actions to make	❑	❑	❑	❑	❑
To increas my confidence in the work I do	❑	❑	❑	❑	❑

Your current motivation

19. Please indicate how important the different activities/drivers ARE to you TODAY

(State only one answer per question)

	(Not important) 1	2	3	4	(Very important) 5
To increase my income	❑	❑	❑	❑	❑
To be able to decide my own goals/requirements at work	❑	❑	❑	❑	❑
To secure occupation	❑	❑	❑	❑	❑
To get recognition for my performance at work	❑	❑	❑	❑	❑
To be able to be flexible and make my own decisions	❑	❑	❑	❑	❑
To have a high degree of responsibility and take the praise or blame when it comes	❑	❑	❑	❑	❑

To enjoy spending time at work	❑	❑	❑	❑	❑
To continuously improve my personal and work skills	❑	❑	❑	❑	❑
To feel energized and engaged in the work I do	❑	❑	❑	❑	❑
To be independent	❑	❑	❑	❑	❑
To be able to influence how to move forward and what actions to make	❑	❑	❑	❑	❑
To increas my confidence in the work I do	❑	❑	❑	❑	❑

20. Have your level of motivation changed since your started the company?

(State one answer only)

Yes, I feel less motivated now	No, my level of motivation has not changed	Yes, I feel more motivated now
❑	❑	❑

21. If possible, please explain why your level of motivation has changed

_ _

_ _

_ _

22. Try to assess the company's performance in the following areas:

(State only one answer per question)

	Not at all satisfied	Not satisfied	OK	Satisfied	Very satisfied	Not relevant
Delevoping prototypes	❑	❑	❑	❑	❑	❑
Organazing the start-up team	❑	❑	❑	❑	❑	❑
Agreeing on your business plan	❑	❑	❑	❑	❑	❑
Receiving sufficient capital	❑	❑	❑	❑	❑	❑
Controlling the company's	❑	❑	❑	❑	❑	❑

resources						
Employing a new external CEO	❑	❑	❑	❑	❑	❑
Using a feedback system during product development	❑	❑	❑	❑	❑	❑
Hiring necessary human resources	❑	❑	❑	❑	❑	❑
Implementing reward systems	❑	❑	❑	❑	❑	❑
Securing intellectual property rights (patents)	❑	❑	❑	❑	❑	❑
Product testing with costumers	❑	❑	❑	❑	❑	❑

23. Which Science Park are your current company situated in?

(State one answer only)

KISP	Ideon	ALMI	Chalmers	SP Jönköping	VMINOVA	LEAD	SCION	Symbion	INCUBA	NOVI	Not situated in a Science Park	COBIS	Other 3
❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑

24. Would you like to receive the results of the survey? If so, please type your e-mail address below.

(State one answer only)

No

❑

Yes, please provide e-mail

_ _

_ _

_ _

25. May we contact you in case we have follow-up questions? - Go to 45

(State one answer only)

No

❑

Yes, please provide e-mail

_ _

_ _

_ _

Thank you for participating!

Thank you for taking your time to answer this survey!
Findings will be presented in the end of January.

Please contact fidr11ab@student.cbs.dk if you have any further questions.

Best regards,
Filippa Dracke

Overview and summaries of interviews

Interviewee	Role	**Date**
Mikael Von Euler	CEO Akinion Pharmaceuticals AB	10.10.2013
Märit Johansson	CEO KISP	25.10.2013
Mikael Lundin	CEO SISP	29.11.2013
Fredrik Lindberg	Co-founder and Chief Scientific Officer	21.12.2013
Anders Tamsen	Founder Amiri	10.12.2013
Jonas ranfors	Founder Glimworks	09.12.2013
Johan lkundberg	Founder Alfaso vind	09.12.2013
Fredrik Lindberg	Co-founder and Chief Scientific Officer	20.02.2014

Interview with Mikael von Euler (MvE),

MvE has for the past years been involved in bringing around 15 new pharmaceutical to the market. He has been working as CEO for several of the companies that he has brought to the market, but it has not been his own companies that he has led. MvE has been Vice President Clinical Development, Chief Medical Officer and Medical adviser at several of Karolinska Developments portfolio companies.

MvE starts of by telling about his career and how he got to where he is now.

The companies MvE is involved in now are all in there test phase and has a burn rate between 20 – 150 msek.

Characteristics of founders:

MvE mentions that the founders find their opportunities quite random. The founders find something in their research and chose to act on it. At KISP they are directly given a start-up team and thereafter they start the testing phase.

Scientist and entrepreneurs' are driven by different things. Scientist is mainly driven by their curiousness and willingness to contribute to new findings. The scientist MvE have been working with have in their early years started to research a topic that they found very interesting and kept within that filed until they found their opportunity. None of the researcher MvE has been working with have had entrepreneurship or becoming an entrepreneur as their goal. Other things that are important for a scientist are;

- Recognition; that they mainly get from publishing findings and articles.
- Relations to patients.
- Contribute with something new.
- Later in the entrepreneurial process the scientist starts to become interested in income and the possibility to build a fortune. Some of their previous colleagues have started companies that have been sold for over 100 million dollars.
- Freedom – the higher you climb within the research career the more freedom you get. So thereby they are awarded by freedom.
- Power – the higher you climb in you academic career - the higher up the more power. This does however come quite late in their career.
- Achievement – also important. Good to get feedback. The results and the activities scientist do are closely related which makes it easy to get fast feedback. And the closeness is motivating because they get a direct result.
- The personal progress is important – but it with time the scientist becomes biased if he does not constantly question himself. The scientists are used to constant question himself because that is what you need to do in order to produce valuable and correct research. But when a scientist is leaving academia they start to bend the rules a little bit. The precise of VC helps to highlight the risk and decrease the biased.
- Independence is also very important. The research is built from the researchers own ideas and findings which is highly motivating. Scientists are hired to bring new ideas and findings and therefore are asked to be independent.

One of the problems that MvE have been facing is that scientist are not very good leaders. The scientist is expert within their field and not always good at being a leader or manager for those that are working within their company. They are not motivated by leading people but want to focus entirely on their research. The scientist that becomes an entrepreneur often gets carried away by the field of Entrepreneurship. That affects their decision process and they based their decisions on how they want things to be and not on reality.

Venture Capital

How the founder is affected by Venture Capital is very different between venture capitalist firms. Many of the firms that MvE has been working with are used to working with scientist and do not interfere much. They do help out with more strategic issues but tries not to suffocate the founder. The investors are however in need of control over the companies since they invest a lot of resources. The resources are highly needed since the burn rate is very high in these types of companies. The burn rate tends to stay high over several years. MvE emphasizes that xxx.

The venture capitalists enforce control by reporting, chairs in the board. The VC's also having some demand on them. They need specific details and controls over the financials since they are part of a group of companies; sometimes they are part of a fund and therefore need to present in detail the progress of the company. The demands are not also that investments are nor done all at once. In order to get more investment or the next round of capital the founders need to show a progress in the development of the product. In the companies that MvE work, the board met every second/ third week to discuss the progress. But some other investors pay all at once and ask for an update twice a year since it is difficult to decide on milestones in the early phases.

The founders are affected by the presence of VC's by firstly loosing share of their companies; secondly, the VC being more firm and controlling then the founder had expected. Especially this is difficult for many of the founders. The accruing resources process and searching for investors is particularly learning for founders. It helps them to specify their product and force them of structure the development process. It is a very good learning – but a very difficult one.

The researchers then to be highly motivated- especially in the beginning. But over the years it decreases due to many reasons. Controlling VC's, lack of resources, lack of progress or lack of direction and not being able to focus fully on their research are some of the things that demotivates the scientists.

MvE also highlights that in all the companies that he has been working there is only founders left in one company. They tend to sell and quit because they do not find the job amusing or stimulating. New CEO's are hirer that possesses the ability to lead a company. However, these new leaders often make the mistake of not creating incentives or motivation for the employees or for founders that decides to stay in the company. The founders have an extra ordinary ability to motivate the employees due to their passion of the subject. This is mostly done within any intention of motivating. MvE also emphasises that communication in these companies are essential. That is the most common tolls used and is help to structure, report and motivate.

Interview with Märit Johanson (MJ) CEO KISP

MJ is the CEO at KISP in Stockholm. She has a PHD in innovation and has been with KISP for about 10 years at various positions. In our interview MJ where aske to talk about the ventures at KISP and their potential struggles. We also discussed the selection process of what companies that is selected in house and at last the transition from scientist to entrepreneur.

At KISP many companies struggle after a couple of years since the road towards a finalized product is very long. Extensive amount of resources are needed which is why almost all companies have VC capital. This affects the founders somewhat different even though most of the VCs are neither particularly pushy nor active in the ventures. Most founders struggle with focusing on many of the administrative issues and strategically issues. They are scientists that are not used to driver companies. They are motivated by other things such as fame in the scientifically world.

The founders change during the ventures and many of the transform into more similar to other entrepreneurs. But some does not, and those that do not learn to manage the venture or to enjoy the founding dealing with more issues than just their researched they tend to leave their company and go back to research. Most of the companies at KISP have inactive founders and they have left the company. They are not motivated and have difficulties steering the company. They tend to be active until the right solution is found.

We have a network of scientists that are connected to us and when they have a breakthrough, depending in the breakthrough, these scientists are taken out from the university and get a team and then transferred to KISP. The process is quite quick and sometimes the founder is not really aware of what is happening. They still see their job as scientists and not as founders. Sometimes these founders are more pushed and it is their active choice. KISP monitors quite many researchers and the companies that are chosen has good opportunities inn succeeding to a product. Later on many of the companies are bought buy larger medical firms. KISP helps to facilitate contacts to VCs and have access to great facilities with research labs and the needed equipment. KISP does not help to make strategic decisions or managerial support for the ventures.

MJ see the motivations an important driver and means that there is a problem in both motivating the founders and at the same time the employees.

Interview with Mikael Lundin (ML) CEO SISP

ML is the CEO of Swedish Incubators and Science Parks which is an organisation for all the Incubators and Science Parks in Sweden. I contacted him in order to get help to send out the survey and to increase my knowledge on Science Parks. We discussed the topics; Science Parks, Founders' motivation and employees.

ML has been CEO for several Science Parks and now heads SISP.SISP is an organisation that tries to create a good environment in all of Sweden for any start-ups. However, they have seen an increase in the importance of science based companies and their increasing importance for our society. They have been bringing the industries a great leap forward over the past couple of years. SISP have also seen an increasing amount of companies that move to US and in order not to lose more companies they have initiated a project to evolve the start-up environment in Sweden for science based companies. Science parks have a very important role in these projects as they have the connections to the founders, the facilities and can assist the founder in the process. It is however important that the Science Parks makes a good job and assist where help is needed. Some of the Science Parks do not really know what to focus on and therefore fails in assisting the founders when they are facing difficulties. ML also states that many founders tend to leave their companies early due to several reasons. Sometimes that is for the best and sometime that is a great loss for the venture. The founders have an essential role in the ventures as role models but mostly it is their extensive knowledge about the research or product that is essential. The founders play and very important role for the ventures.

Founders that leave the companies tend to do so because they are not happy with what they do or they are forced out from the company by the VC. When they leave by themselves it is mostly due to that they do not work with what they want to work with. They are asked to focus on many other things than their research. ML also argues that the founders are not motivated by the same things as other entrepreneurs. At least not in the beginning – sometime they become more managers but that tend not to be the case. They are motivated by contributing to new knowledge and science. Also climbing in the ranks in the profession is very motivating for them. Focusing on finding one solution can be very de motivating and difficult.

The employees also struggle in many of the ventures. They are not motivated by the right things and quite often their managers (the founder) fails to communicate what their tasks are or where they are going. The entrepreneurial spirit of getting everyone on board is not something the general Science based founder possesses. These founders have difficulties in managing their employees. The employees are often key in these small teams and after working with the founder they are also vital to the venture as they possess key knowledge. It is very important to keep the employees motivated and right now there is a lack of knowledge in how to do so.

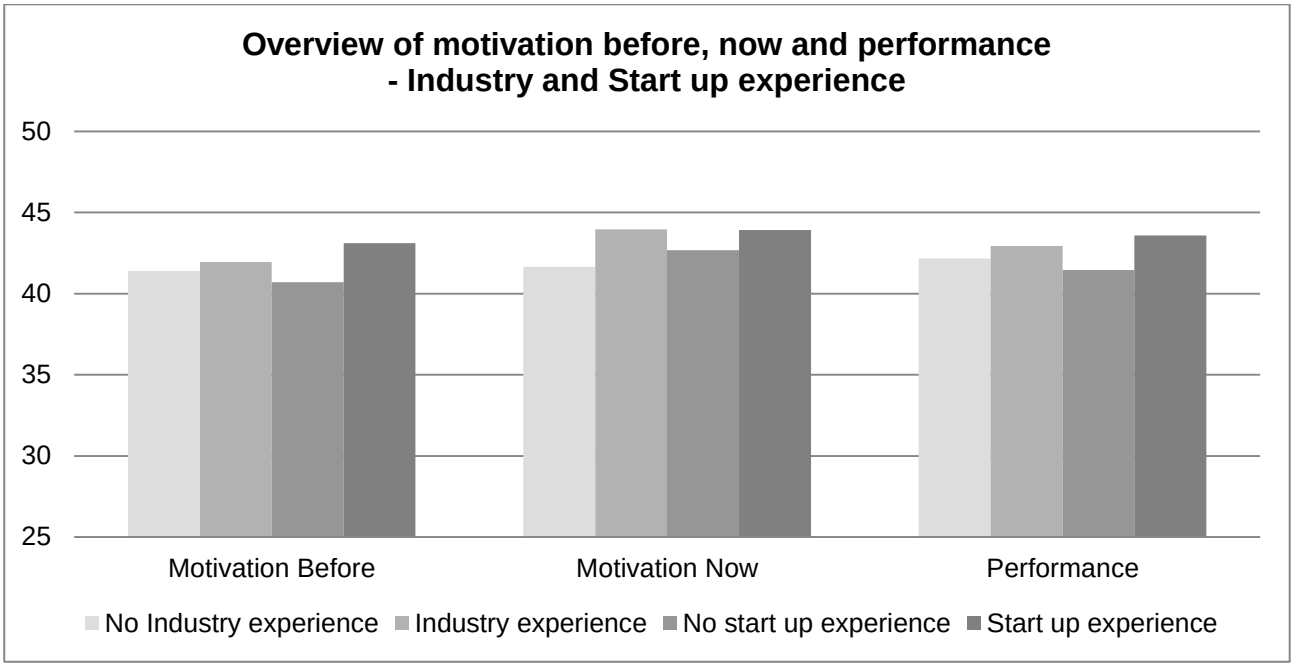
Interview with Fredrik Lindberg (FL) 1 CO-FOUNDER X

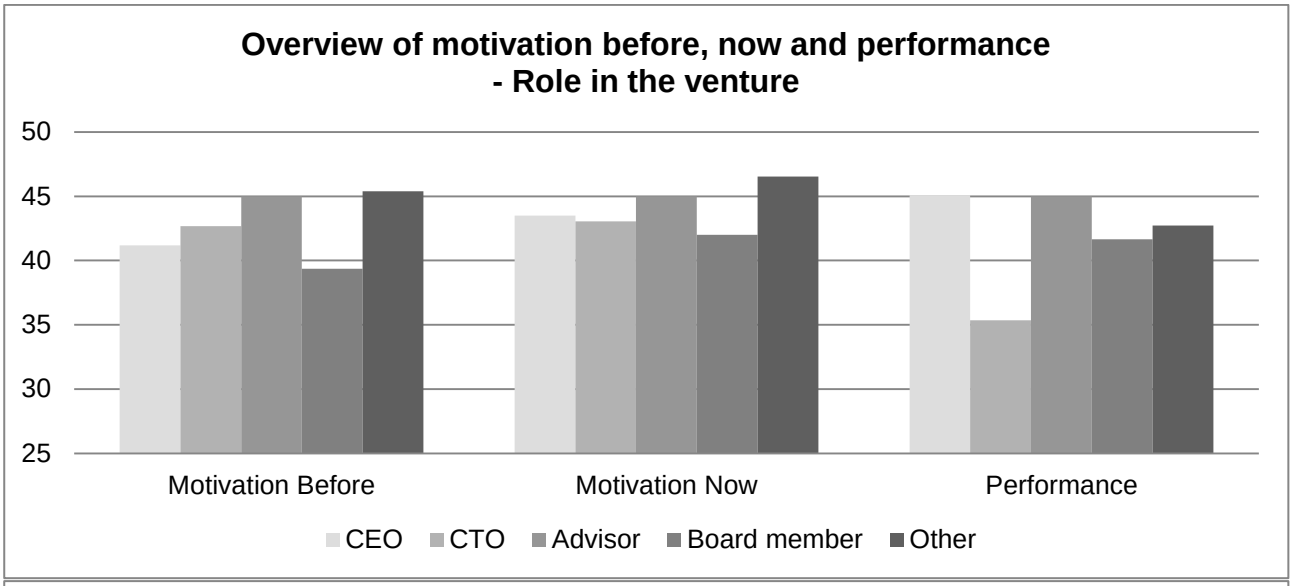
Fredrik Linberg is cofounder of a life science firm that is currently transferring to US, They founded this company 13 years ago and they had a large breakthrough 5 years ago. Due to various reasons FL does not want the name of the company mentioned. During the interview FL was first asked to tell about his journey as cofounder and the battles he has been fighting. And thereafter we discussed motivation.

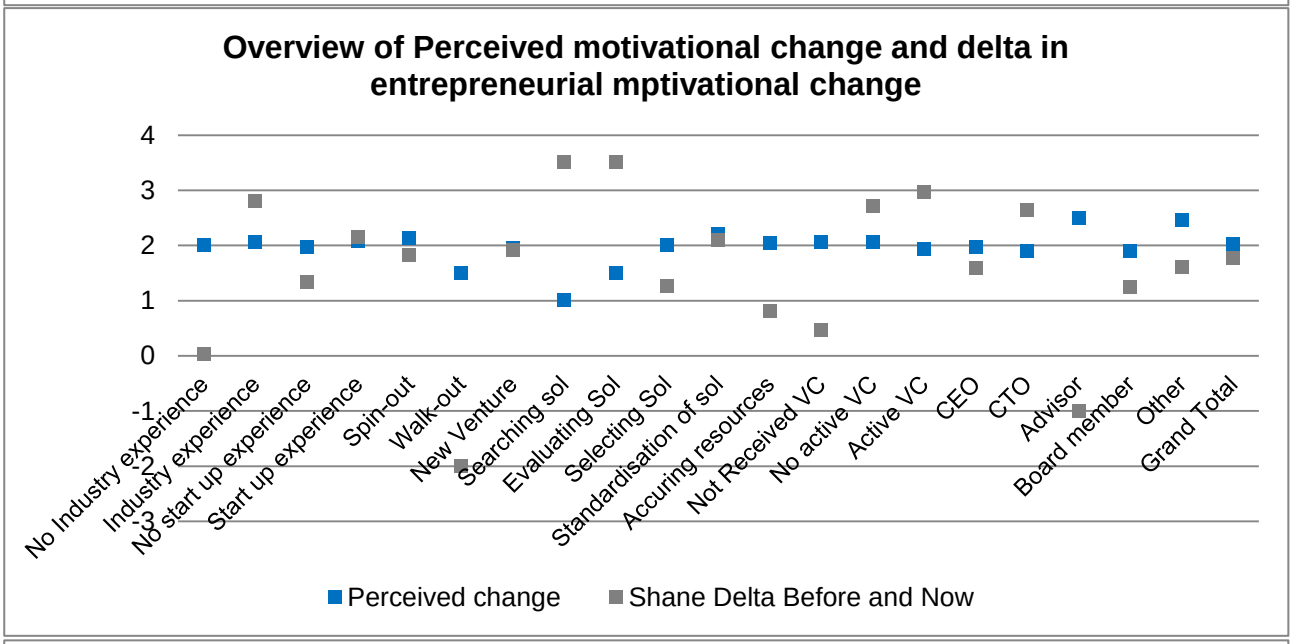
The journey as cofounder has been long an intense. Starting of as a scientist and with several fellow colleagues had a breakthrough and they created their company. The venture was moved to a Science park where and they got a team of 3 people to assist them in their progress. They received venture funding already from day 1 in the science park. Since they were a team of scientists they had different roles in the venture. FL was the one that perhaps took the transformation and change easiest. He became in charge of dealing with the board and manages the company. His fellow researchers had difficulties getting use to the pressure from external forces. After a couple of years with slow progress

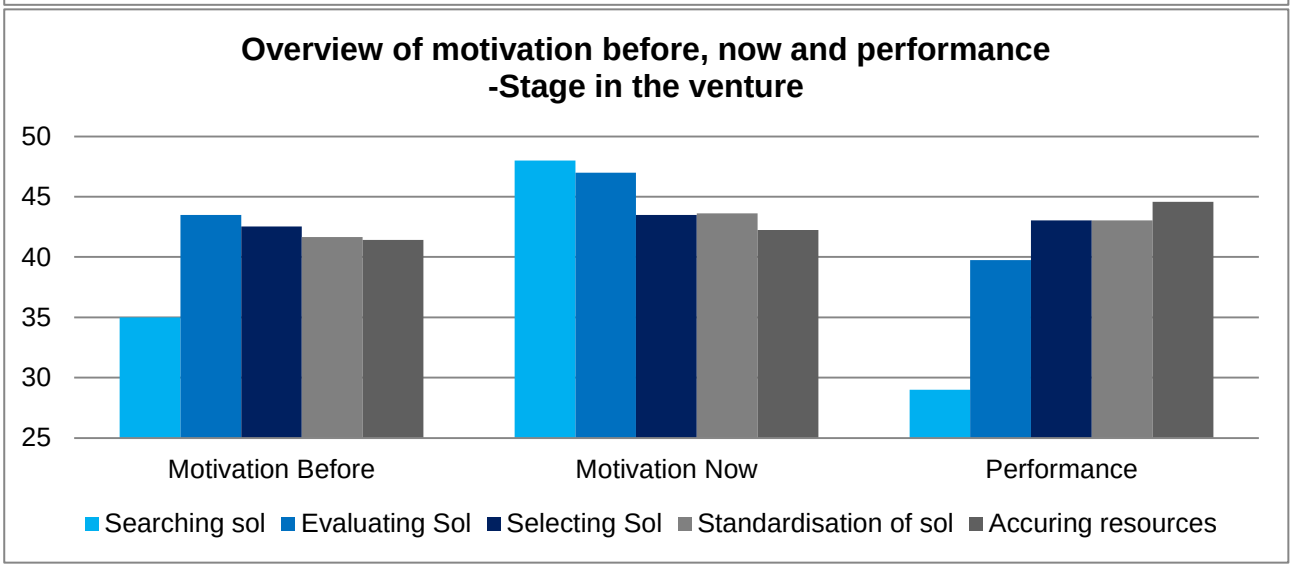
Results from survey divided by control categories

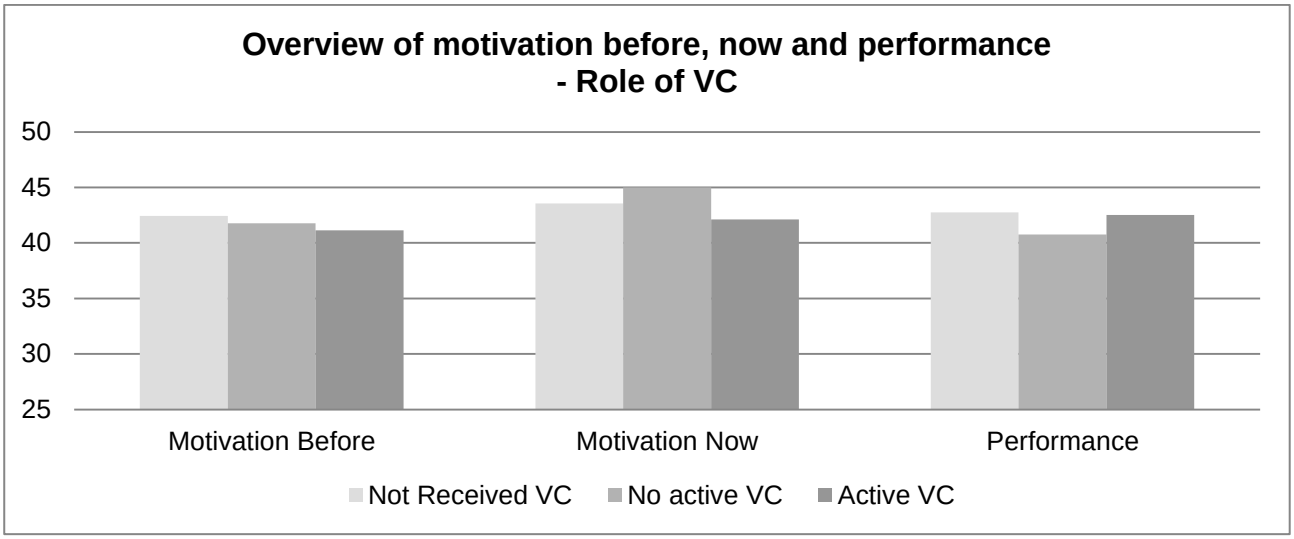
Overview of Entrepreneurial Motivation now, before and performance

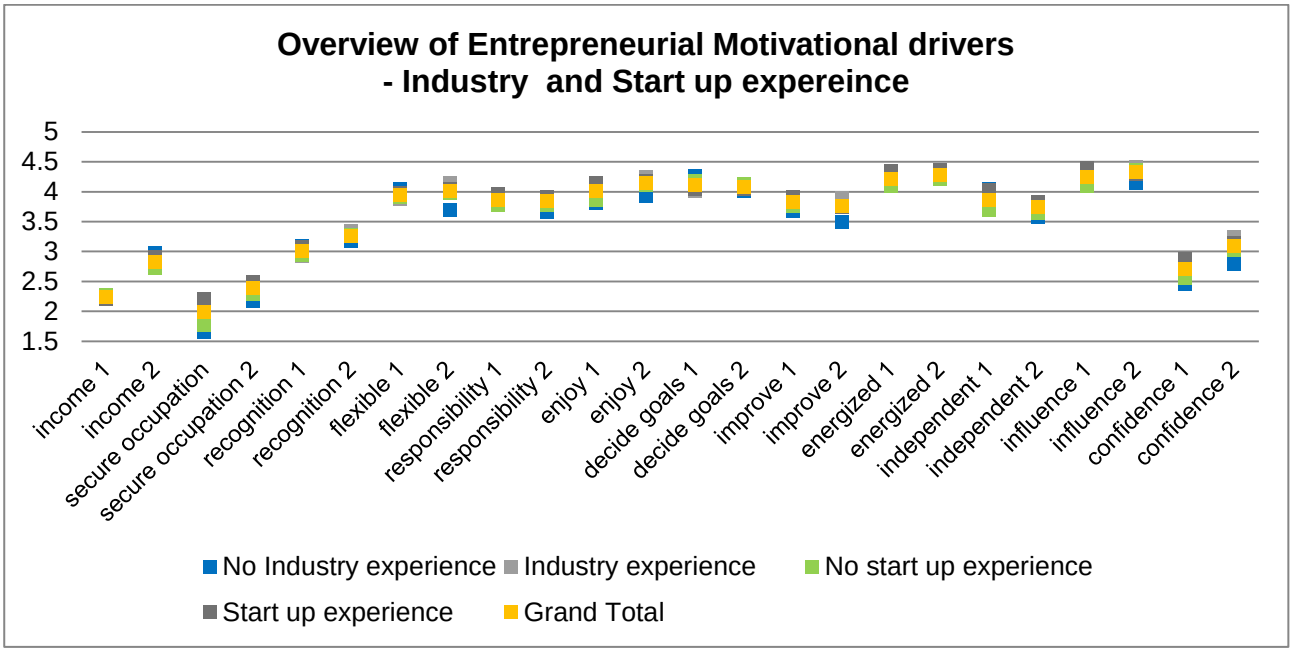


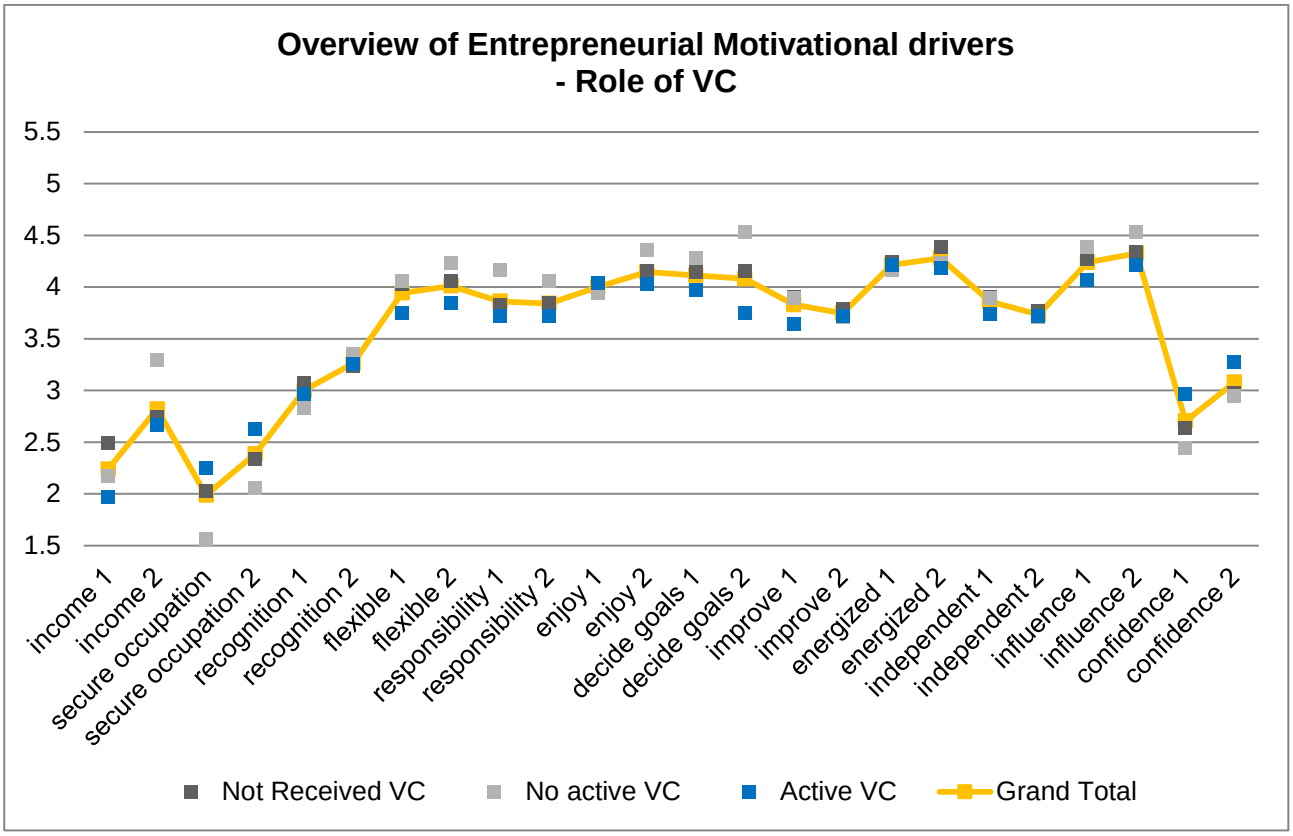

Overview of motivation before, now and performance
- Role in the venture
50
45
40
35
30
25
Motivation Before
Motivation Now
Performance
CEO
CTO
Advisor
Board member
Other

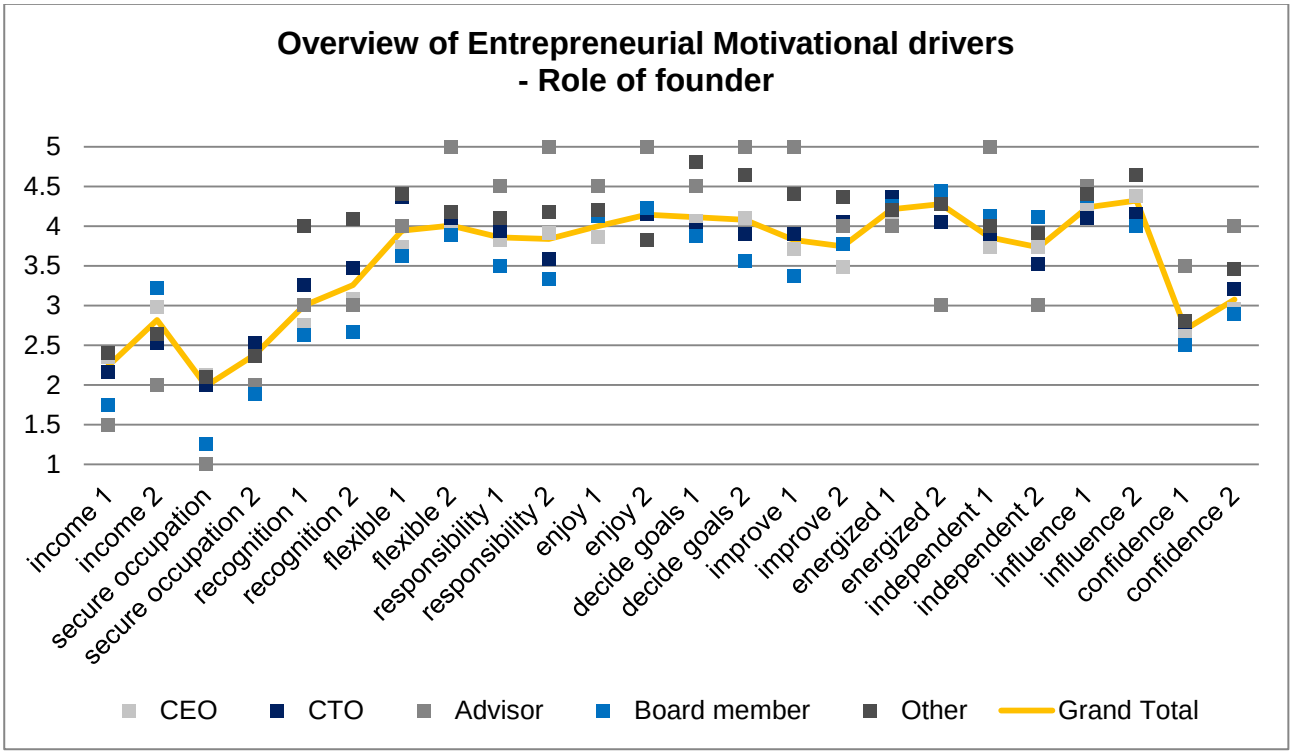

Overview of Perceived motivational change and delta in entrepreneurial mptivational change
4
3
2
1
0
-1
-2
-3
No Industry experience
Industry experience
No start up experience
Start up experience
Spin-out
Walk-out
New Venture
Searching sol
Evaluating Sol
Selecting Sol
Standardisation of sol
Accuring resources
Not Received VC
No active VC
Active VC
CEO
CTO
Advisor
Board member
Other
Grand Total
Perceived change
Shane Delta Before and Now

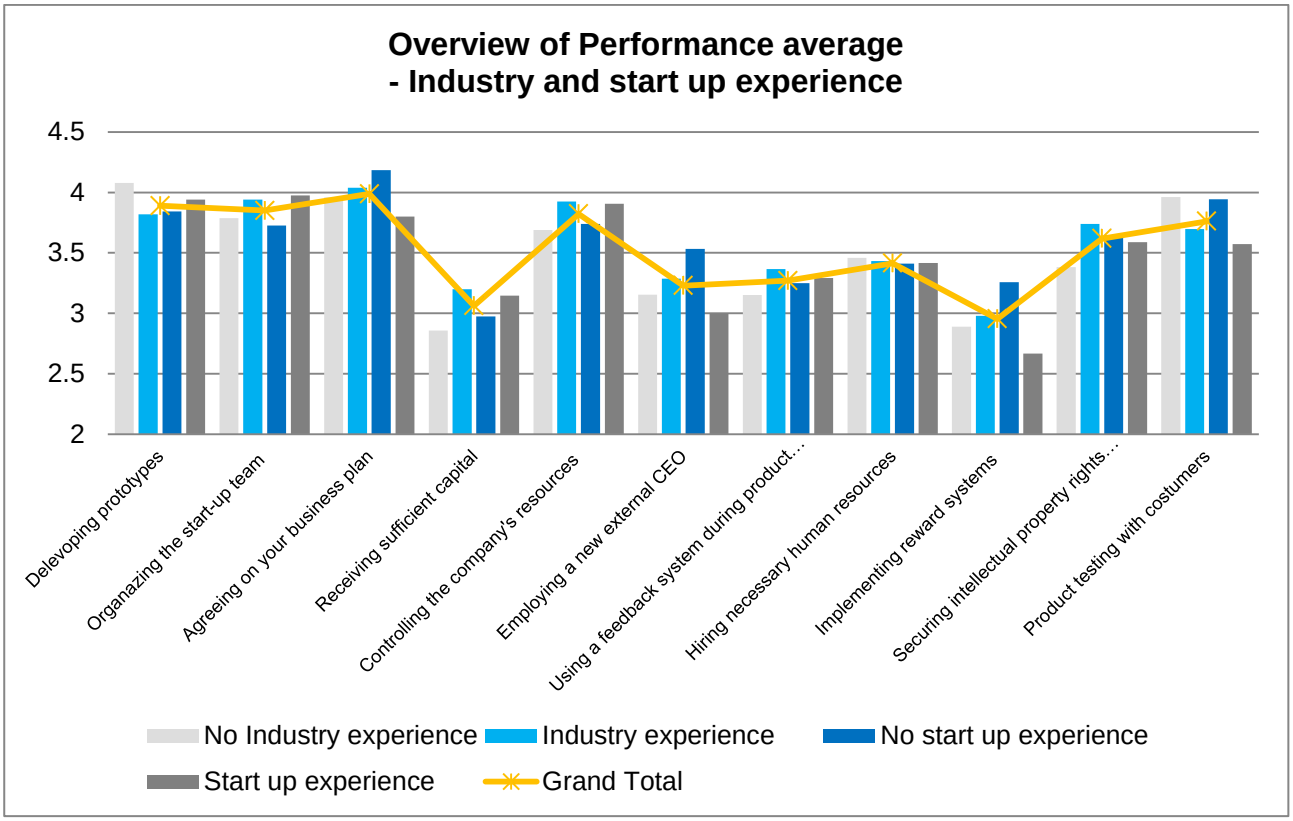

Overview of motivation before, now and performance
-Stage in the venture
50
45
40
35
30
25
Motivation Before
Motivation Now
Performance
Searching sol
Evaluating Sol
Selecting Sol
Standardisation of sol
Accuring resources

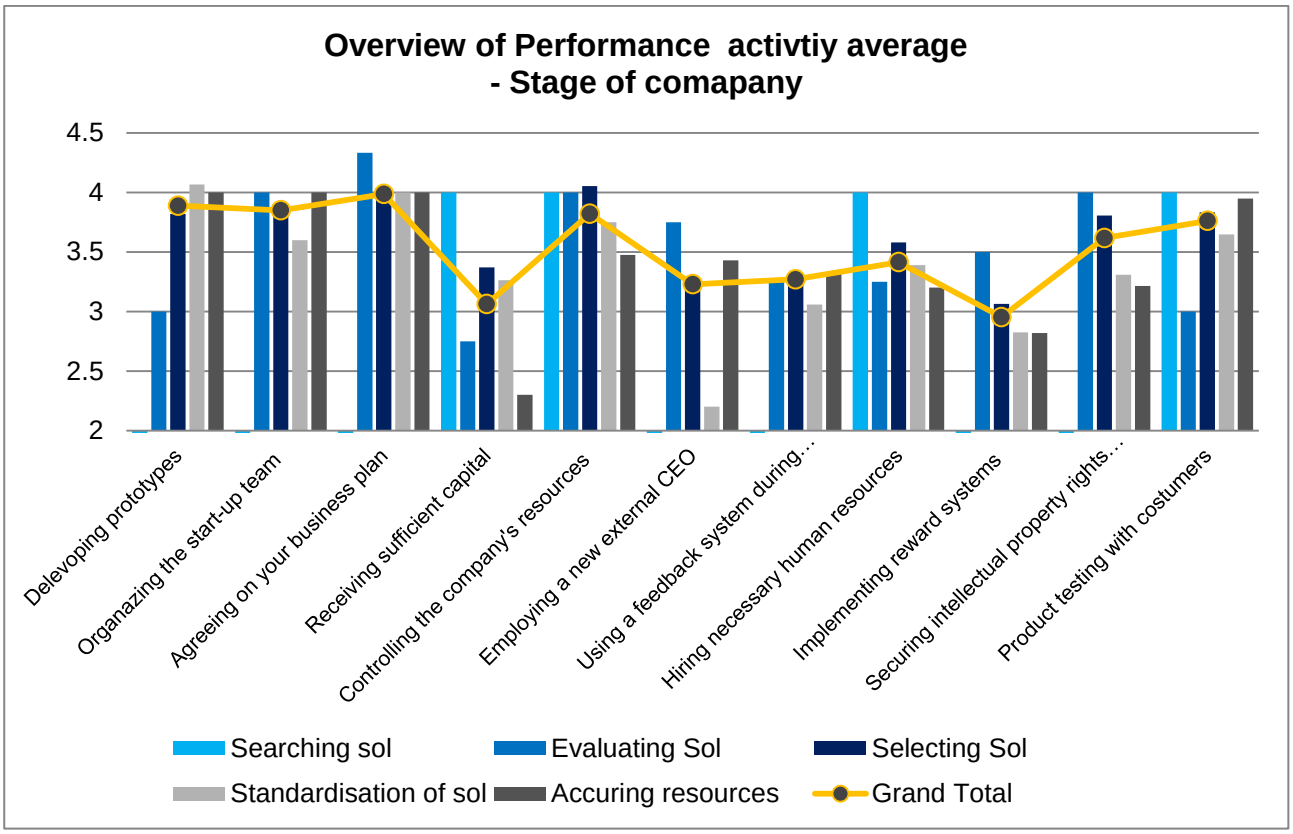

Overview of motivation before, now and performance
- Role of VC
50
45
40
35
30
25
Motivation Before
Motivation Now
Performance
Not Received VC
No active VC
Active VC

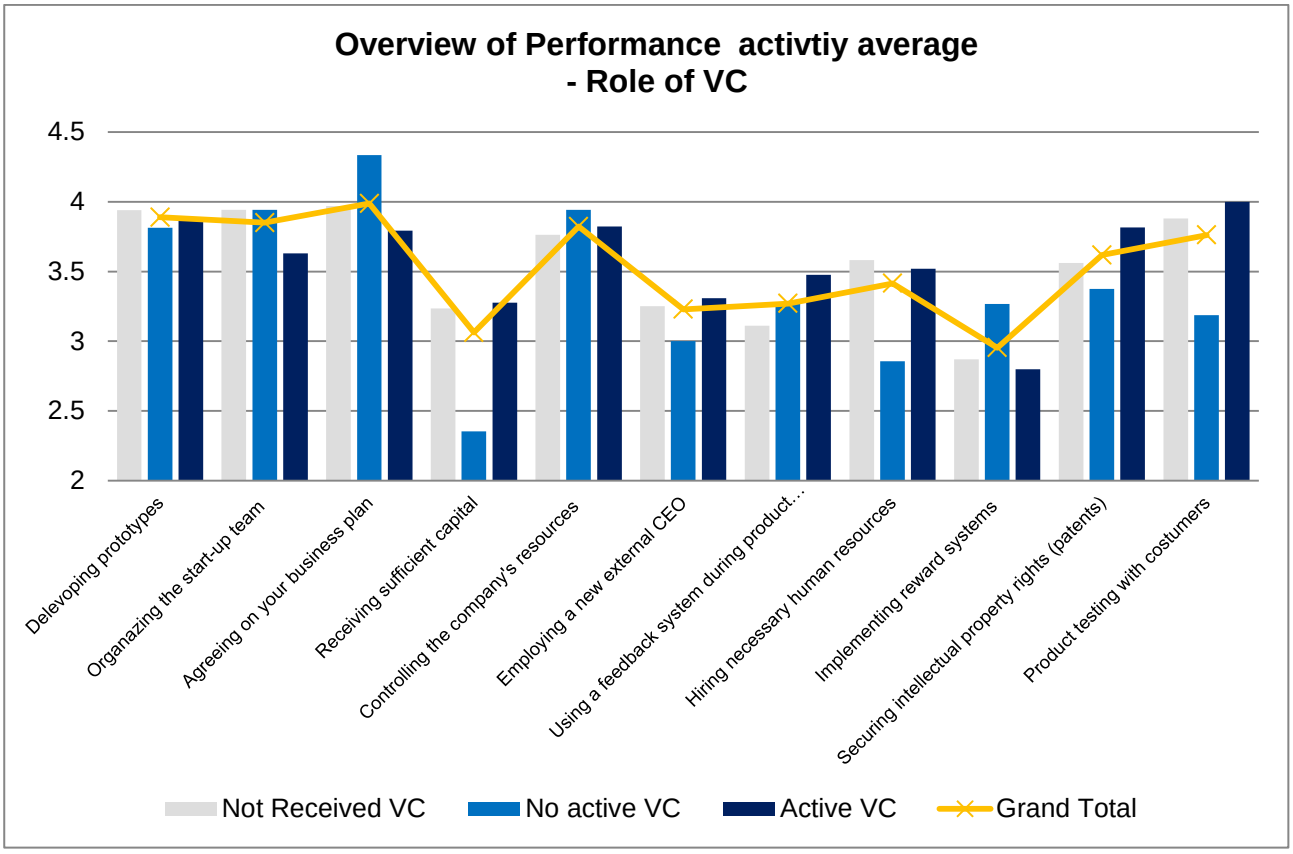

Overview of Entrepreneurial Motivational drivers
- Industry and Start up expereince
5
4.5
4
3.5
3
2.5
2
1.5
income 1
income 2
secure occupation
secure occupation 2
recognition 1
recognition 2
flexible 1
flexible 2
responsibility 1
responsibility 2
enjoy 1
enjoy 2
decide goals 1
decide goals 2
improve 1
improve 2
energized 1
energized 2
independent 1
independent 2
influence 1
influence 2
confidence 1
confidence 2
No Industry experience
Industry experience
No start up experience
Start up experience
Grand Total

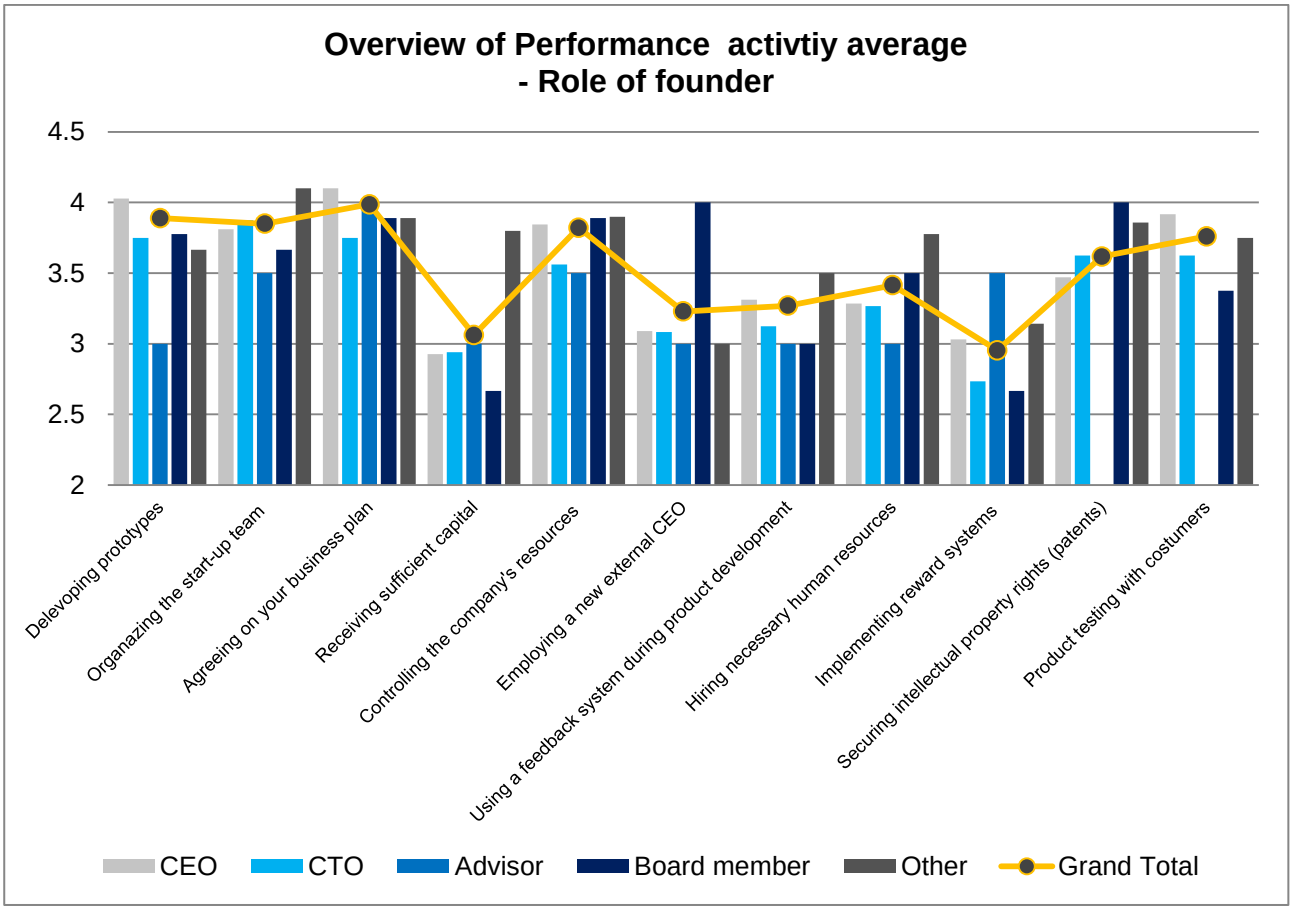

Overview of Entrepreneurial Motivational drivers
- Role of VC
5.5
5
4.5
4
3.5
3
2.5
2
1.5
income 1
income 2
secure occupation
secure occupation 2
recognition 1
recognition 2
flexible 1
flexible 2
responsibility 1
responsibility 2
enjoy 1
enjoy 2
decide goals 1
decide goals 2
improve 1
improve 2
energized 1
energized 2
independent 1
independent 2
influence 1
influence 2
confidence 1
confidence 2
Not Received VC
No active VC
Active VC
Grand Total

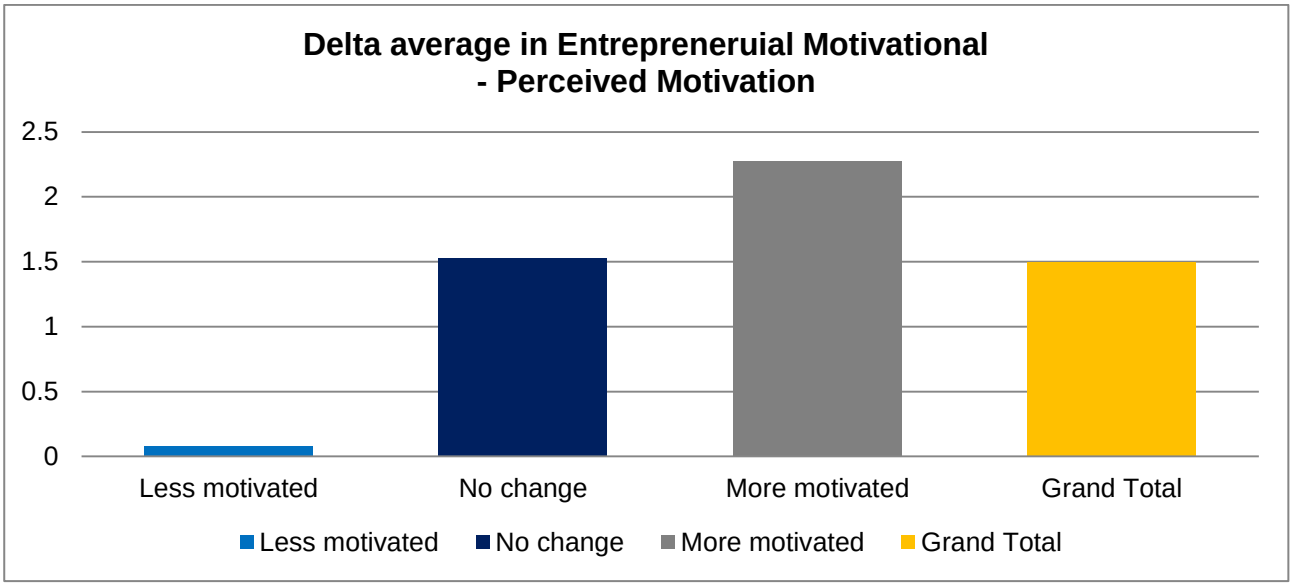

Overview of Entrepreneurial Motivational drivers
- Role of founder
5
4.5
4
3.5
3
2.5
2
1.5
1
income 1
income 2
secure occupation
secure occupation 2
recognition 1
recognition 2
flexible 1
flexible 2
responsibility 1
responsibility 2
enjoy 1
enjoy 2
decide goals 1
decide goals 2
improve 1
improve 2
energized 1
energized 2
independent 1
independent 2
influence 1
influence 2
confidence 1
confidence 2
CEO
CTO
Advisor
Board member
Other
Grand Total

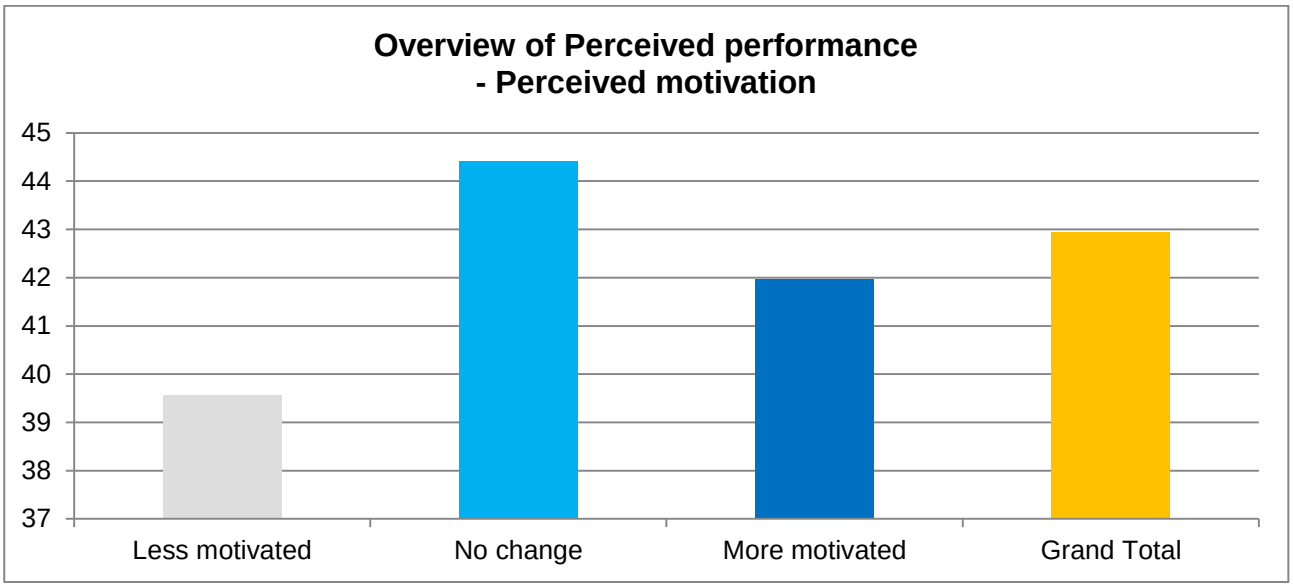

Overview of Performance average
- Industry and start up experience
4.5
4
3.5
3
2.5
2
Delevoping prototypes
Organazing the start-up team
Agreeing on your business plan
Receiving sufficient capital
Controlling the company's resources
Employing a new external CEO
Using a feedback system during product…
Hiring necessary human resources
Implementing reward systems
Securing intellectual property rights…
Product testing with costumers
No Industry experience
Industry experience
No start up experience
Start up experience
Grand Total

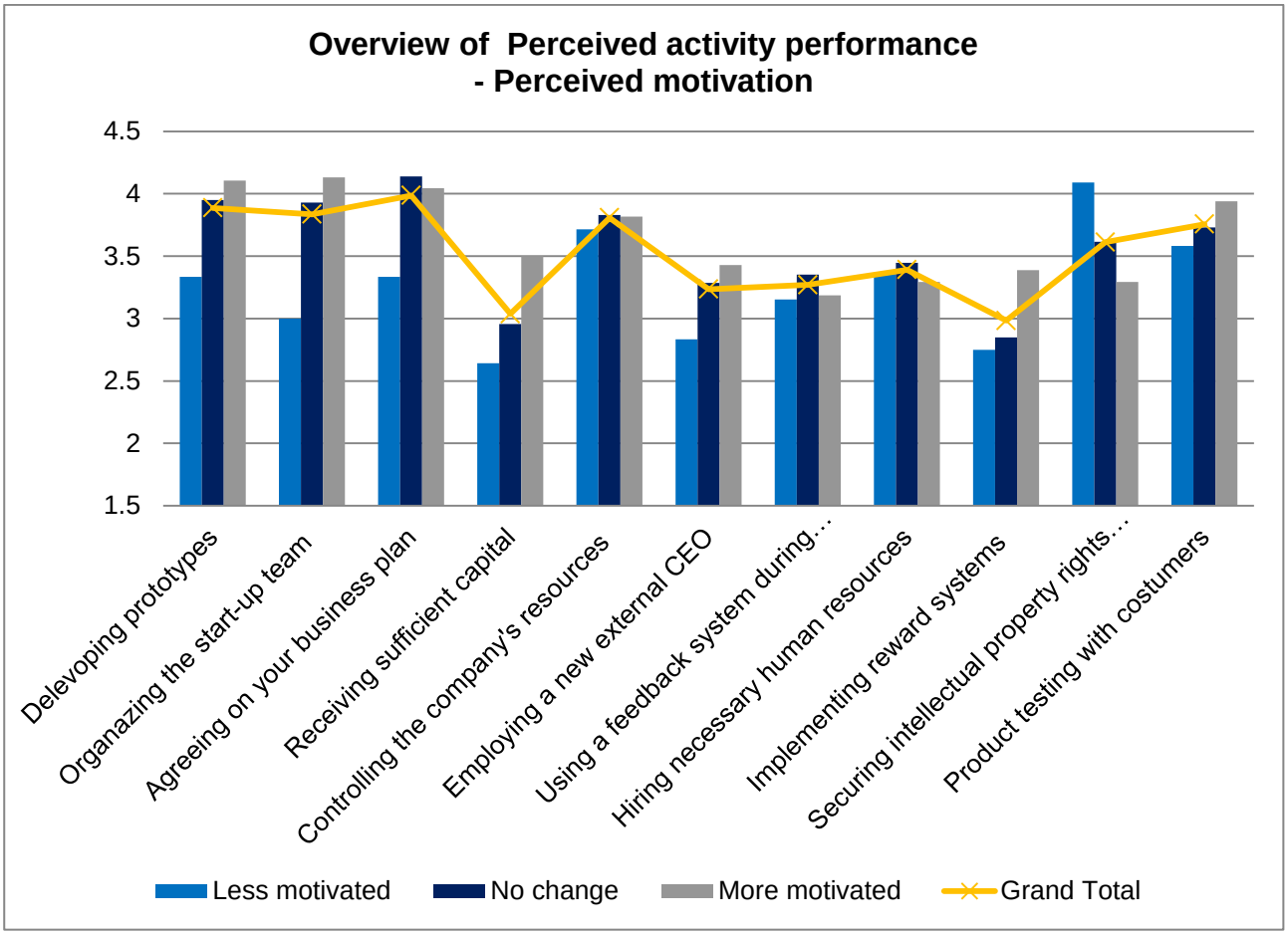

Overview of Performance activtiy average
- Stage of comapany
4.5
4
3.5
3
2.5
2
Delevoping prototypes
Organazing the start-up team
Agreeing on your business plan
Receiving sufficient capital
Controlling the company's resources
Employing a new external CEO
Using a feedback system during…
Hiring necessary human resources
Implementing reward systems
Securing intellectual property rights…
Product testing with costumers
Searching sol
Evaluating Sol
Selecting Sol
Standardisation of sol
Accuring resources
Grand Total

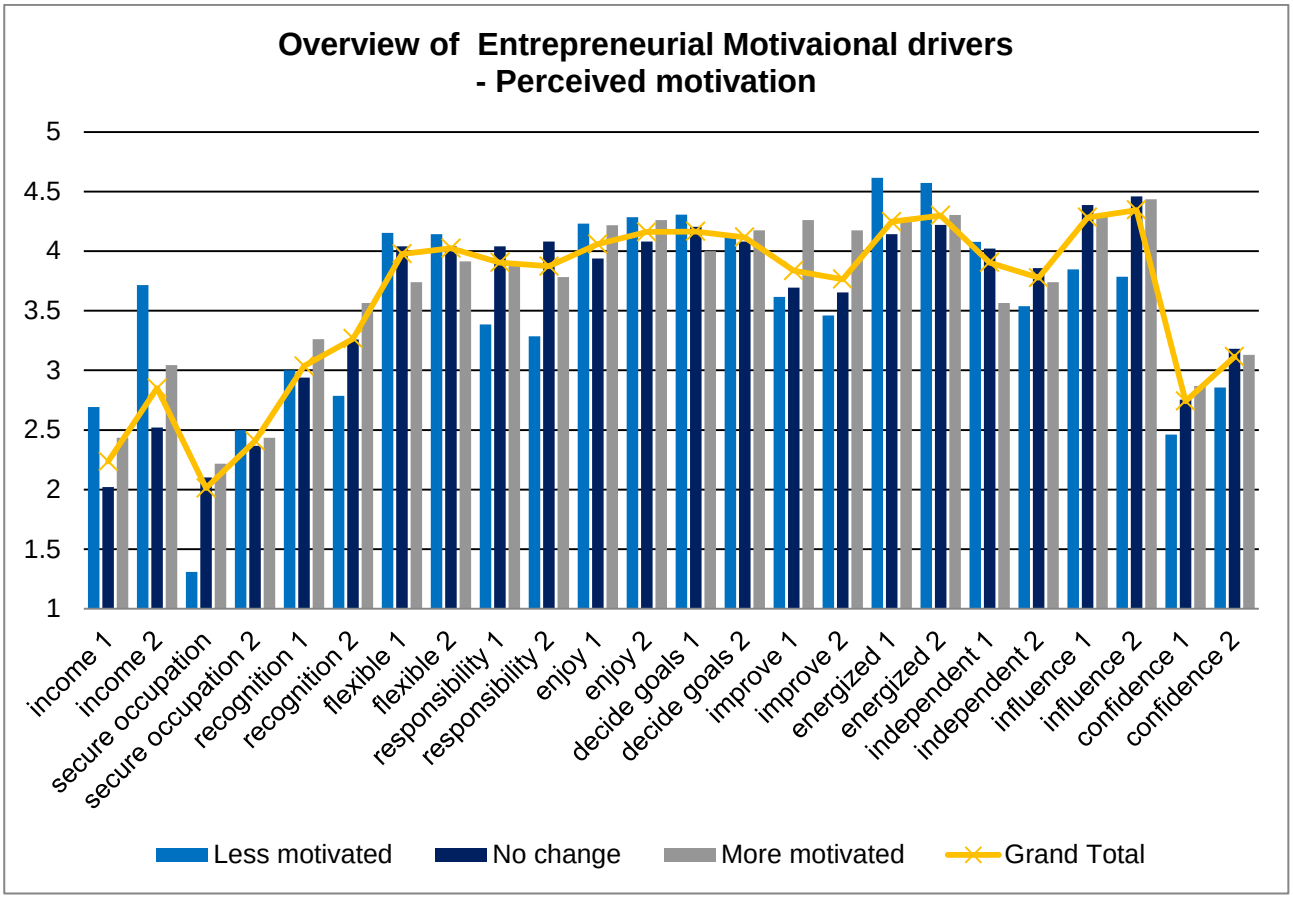

Overview of Performance activtiy average
- Role of VC
4.5
4
3.5
3
2.5
2
Delevoping prototypes
Organazing the start-up team
Agreeing on your business plan
Receiving sufficient capital
Controlling the company's resources
Employing a new external CEO
Using a feedback system during product…
Hiring necessary human resources
Implementing reward systems
Securing intellectual property rights (patents)
Product testing with costumers
Not Received VC
No active VC
Active VC
Grand Total


Overview of Performance activtiy average
- Role of founder
4.5
4
3.5
3
2.5
2
Delevoping prototypes
Organazing the start-up team
Agreeing on your business plan
Receiving sufficient capital
Controlling the company's resources
Employing a new external CEO
Using a feedback system during product development
Hiring necessary human resources
Implementing reward systems
Securing intellectual property rights (patents)
Product testing with costumers
CEO
CTO
Advisor
Board member
Other
Grand Total


Delta average in Entrepreneruial Motivational
- Perceived Motivation
2.5
2
1.5
1
0.5
0
Less motivated
No change
More motivated
Grand Total
Less motivated
No change
More motivated
Grand Total


Overview of Perceived performance
- Perceived motivation
45
44
43
42
41
40
39
38
37
Less motivated
No change
More motivated
Grand Total


Overview of Perceived activity performance
- Perceived motivation
4.5
4
3.5
3
2.5
2
1.5
Delevoping prototypes
Organazing the start-up team
Agreeing on your business plan
Receiving sufficient capital
Controlling the company's resources
Employing a new external CEO
Using a feedback system during…
Hiring necessary human resources
Implementing reward systems
Securing intellectual property rights…
Product testing with costumers
Less motivated
No change
More motivated
Grand Total


Overview of Entrepreneurial Motivaional drivers
- Perceived motivation
5
4.5
4
3.5
3
2.5
2
1.5
1
income 1
income 2
secure occupation
secure occupation 2
recognition 1
recognition 2
flexible 1
flexible 2
responsibility 1
responsibility 2
enjoy 1
enjoy 2
decide goals 1
decide goals 2
improve 1
improve 2
energized 1
energized 2
independent 1
independent 2
influence 1
influence 2
confidence 1
confidence 2
Less motivated
No change
More motivated
Grand Total