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Does an action-based entrepreneurship education mean action heroes?

Impact assessing an action-based
entrepreneurial venture creation program

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Does an action-based entrepreneurship education mean action heroes?

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How can we strengthen our understanding of an entrepreneurial venture creation program's impact on students and graduates through the well-established measures of entrepreneurial self-efficacy, entrepreneurial intentions and entrepreneurial activity?

Preface

This master thesis is the work of Morten Ansteensen. The author is currently pursuing a M.Sc. degree in Entrepreneurship at the Norwegian University of Science and Technology (NTNU), attending the NTNU School of Entrepreneurship (NSE). This thesis is based on research conducted in the period January – July 2015.

I wish to acknowledge and thank my supervisor, Professor Lars Øystein Widding at the NTNU Department of Industrial Economics and Technology Management, for invaluable support, feedback and for teaching me that "one can never be too narrow. One can be too thin, but never too narrow". Professor Widding has provided me with vital guidance throughout conducting this research, helping me shape my research and, from the start of my time at NSE, believed in me. I would also like to thank Marius Tuft Mathiesen for encouragement, input and off-topic guidance, as well as Professor Lars Kolvereid for showing me that hard way to do entrepreneurial impact assessment.

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Morten Ansteensen

Abstract

Entrepreneurial venture creation programs (VCP) stand out from traditional entrepreneurial education programs with its high focus on action-based activity and learning through venture creation. The high demand for resources needed to operate VCPs is forcing program directors to frequently have to prove program relevance and impact to stakeholders. While researchers have done well on unveiling program obstacles and design, little research has been done on how students and graduates are affected by a VCP. Through establishing an impact assessment scale, measuring entrepreneurial self-efficacy (ESE), entrepreneurial intentions and entrepreneurial impact, then testing it on students and graduates from a VCP, this study takes an important step towards enhancing our understanding of a VCP's impact. In particular, the findings in this thesis have implications for the VCP program directors and policy makers as the results show specific areas of improvement and theoretically grounded effects of the programs. In addition, future program evaluations are suggested to perceive VCPs as an arena for testing the robustness of entrepreneurial intentions, rather than a mechanism for increasing intentions.

Sammendrag

Blant de ulike utdanningsprogrammene som tilbys innen entreprenørskap skiller såkalte venture creation programs (VCP) seg ut fra resten med sitt sterke fokus på entreprenøriell læring gjennom selskapsetablering. Grunnet programmets høye ressursbehov er programansvarlige stadig nødt til å forsvare programmets relevans og innvirkning for å opprettholde driften og tilrettelegge for videreutvikling av programmene. Mens forskere har fokusert på å avdekke designkarakteristikk og barrierer for etablering av slike programmer, er lite forskning blitt gjort på hvilken påvirkning VCPer har på studenter som fullfører programmet. Gjennom å etablere et rammeverk for konsekvensutredning, ved å måle entreprenøriell mestringsfølelse, intensjoner og aktivitet, tar denne masteroppgaven et viktig steg mot å styrke vår forståelse av VCPer. Funnene i denne masteroppgaven har spesielt implikasjoner for VCP-programledere og beslutningstakere ettersom den avdekker spesifikke forbedringsområder og teoretisk forankret effekt. I tillegg foreslår funnene at fremtidig programevaluering av VCPer heller ser på VCper som en arena som tester robustheten til entreprenørielle intensjoner, og ikke som en mekanisme for å øke disse.

Keywords: *Entrepreneurship education, venture creation program, entrepreneurial self-efficacy, entrepreneurial intentions, entrepreneurial activity*

Introduction

Among the different types of entrepreneurship education programs a special type of program, referred to as venture creation programs (VCP) (Lackéus, 2013), stands out from the rest with its high focus on experiential learning through venture creation and action-based activities. A study by Mwasalwiba (2010) shows that many scholars support this discipline of action-based programs due to the increased value creation compared to traditional entrepreneurship programs. Honig (2004) and & Greene (2011) argue that programs and models based on experiential learning, that provide hands-on experiences, are able to successfully develop and enhance entrepreneurial skills and activity.

Despite this, only a few such programs exist (Lackéus et al, 2011) where some reasons are the high cost of running such programs and difficulty to align the curriculum and activities with regular university systems (Mwasalwiba, 2010). The scarce number of VCPs limits the research done on impact assessing such action-based programs, even though stakeholders and program managers need results to further expand and develop the existing programs (Rasmussen & Sørheim, 2006; Lackéus et al. 2011; Lackéus, 2013). Through a few single-case studies of programs, and a couple multiple-case studies, researches have gone deeper into unveiling the importance of external networks, program characteristics and obstacles for VCPs (Laukkanen, 2000; Rasmussen & Sørheim, 2006; Thursby et al., 2009; Meyer et al., 2011; Berggren, 2011; Ollila and Williams-Middleton, 2011). Lackéus et al. emphasize the limited amount of research in this field by stating *"descriptions and references to these types of programs seem to be limited, with extremely few contributions before the turn of the millennium."*(Lackéus et al., 2011, p.3). The existing research is reflecting the young and still evolving nature of VCPs, focusing on VCPs with the perspective from program directors looking for developing similar university programs and their need to understand the programs on a system level (Rasmussen & Sørheim, 2006; Ollila and Williams-Middleton, 2011; Lackéus et al., 2011; Warhuus & Basaiawmoit 2014). More noticeably, little research have been done on what effect these programs have on the students that undergo and graduate from them (Lackéus, 2014), recognizing a *gap* in the literature where we know little about the characteristics of candidates and graduates from VCPs.

The aim of this study is to increase our understanding how VCP impact students by exploring the programs' effect on students' and graduates' entrepreneurial self-efficacy,

intentions and entrepreneurial activity. In doing so, the case of NTNU School of Entrepreneurship is drawn upon, utilizing both current candidates and alumni. Continuing, background information of the case program is presented.

Contextual background

NTNU School of Entrepreneurship is a two-year master's program within entrepreneurship and business development. The program administrators state the program's vision is "to develop the best business developers in the world". By this, the program directors aim to educate individuals able to act as change agents in the society, either as entrepreneurs or business developers in existing firms. The program can be characterized as an action-based venture creation program due to their high focus on students learning through involvement in value and business creation. Since 2003 NSE is said to have educated more than 200 business developers and the last three years over 50% of the graduates start in their own start-up after finishing the program.

NSE's recruitment process uses a combination of academic results and interviews where personal motivation and entrepreneurial intentions are key factors for evaluating whether or not the person is admitted. While the curriculum throughout the years has kept the same academic format, NSE made a major change in its recruitment policy in 2011 by allowing candidates with other academic backgrounds than engineering to further enhance interdisciplinarity.

Throughout the two years at NSE, the candidates have the opportunity and are strongly encouraged to engage in a commercialization project. The business idea can emerge from different sources such as technology transfer officers, different research communities and student-generated ones. The first semester is dedicated to feasibility studies of different business ideas, while the last three revolves around commercialization activities based on how far the project is moving. NSE focuses on teaching the students to become entrepreneurs and to act entrepreneurial through venture creation and subjects challenging them especially in the topics of idea generation, opportunity recognition, marshalling of resources and teamwork.

Due to the program's dependencies on external stakeholders and resources the faculty staff is continuously working on improving the program content and results. In this continuous process of improvement there has been identified a lack of tools for impact assessing its activities outside the constructs of companies created and student satisfaction.

Existing impact assessment done on NSE has been done with the underlying philosophy of improving both program structure and content, but also proving the program's relevance. The

work has been focusing on finding "success factors", student satisfactory and job opportunities after graduating from the program. These results have been used for applications, for internal policy-making and comparisons with collaborating VCPs. From an academic point-of-view, there is untapped theoretically grounded potential in impact assessing a VCP like NSE.

So far, we have pointed out the gap in the literature concerning our understanding on how VCPs affect students and that program directors of such program have a need for proving VCPs relevance in order to secure resources. Some researches are still debating whether or not entrepreneurship can be taught (Fiet, 2001), but despite this, entrepreneurship education programs exist today – VCPs being in the forefront of the action-based approach. Even though some researchers support the effect and development of action-based entrepreneurial education (Honig, 2004, Neck & Greene, 2011), we still have work to do on documenting this and especially in the context of VCPs. In order to do so, this thesis draw upon widely popular constructs such as entrepreneurial self-efficacy and intentions to contribute, not only to VCP program stakeholders, but also to research concerning entrepreneurship education. The theory chapter gives the reader an introduction to these constructs, as well as theory on VCPs and impact assessment.

Theoretical framework

The framework I will use to discuss impact of VCPs draws upon well-established theories of entrepreneurial self-efficacy and entrepreneurial intention. The framework in this thesis uses the connection between how entrepreneurial education can develop and enhance *task-specific ESE*, which in turn leads to stronger entrepreneurial *intentions* and finally result in entrepreneurial *action*. An illustration of the framework and the contribution focus are illustrated in figure 1 below. First, theory on VCPs and impact assessment is presented, followed by theory on entrepreneurial intentions and self-efficacy.

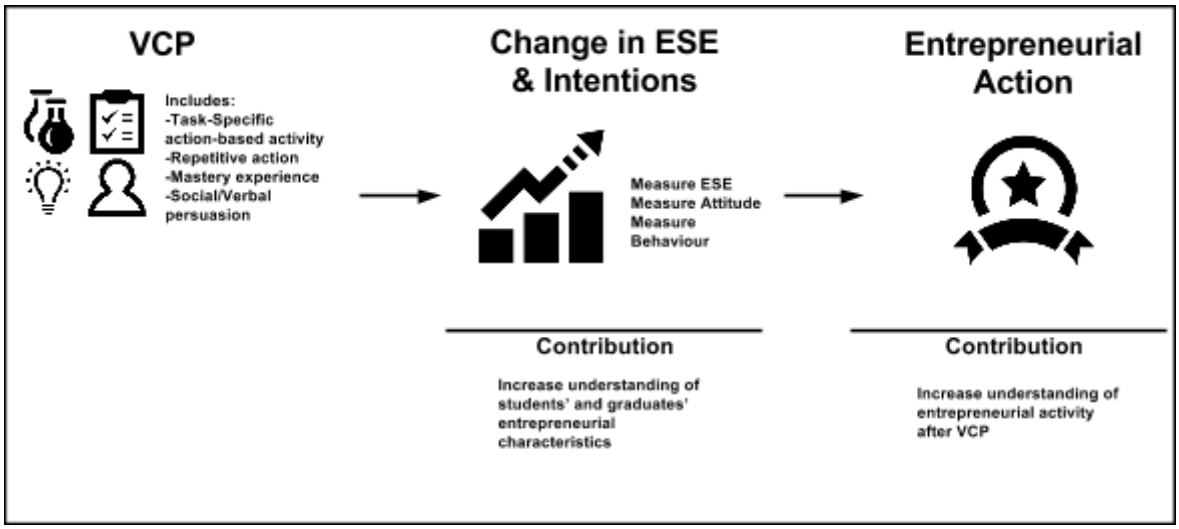

Figure 1. Theoretical framework and contribution

Action-based entrepreneurship education

The range of different entrepreneurship education programs is wide (Kuratko, 2007) and is by some researchers divided into three categories: education (1) *about*, (2) *for* and (3) *through* entrepreneurship (O'Connor, 2013; Hannon, 2005). *About* represents the traditional class-room format where students learn entrepreneurship through explanation of the concept entrepreneurship, *for* aims to instil the necessary skills students require to be and act entrepreneurial and *through* cultivates the concept of learning through experiential entrepreneurial processes also referred to as action-based (Lackèus, 2013). In recent years entrepreneurship programs have become increasingly more action-oriented and as a result an increase in impact assessment of such programs (Fiet, 2001; Lee et al., 2005; Rasmussen & Sørheim, 2006; Rodrigues et al., 2012). This development is supported by researches stating that there is value in introducing hands-on entrepreneurial activities in entrepreneurship education, since such activities build a better understanding of the necessary and important skills required when performing entrepreneurial activities (Moberg, 2014). Although action-based entrepreneurship educational programs are rare, and the majority of them are newly established (Lakéus and Middleton, 2011), researchers are arguing that learning-by-doing is essential for achieving important learning outcomes, such as tacit knowledge and self-awareness (Cope & Watts, 2000; Mwasalwiba, 2010). VCPs in particular teach students practical steps towards starting a business and develop multiple entrepreneurial skills (Liñan, 2007). Politis (2005) suggests that learning-by-doing is effective as the repetitive and experimental approach to problem solving can boost the entrepreneur's confidence in start-up-related action.

Bae et al. (2014) conducted a meta-analysis of 73 studies and found "a significant but a small correlation between entrepreneurship education and entrepreneurial intentions." The finding also showed that this correlation is greater than that of business education. This corresponds with the findings by Kolvereid and Moen (1997) showing that graduates with an entrepreneurship major are more likely to start a new business and have stronger entrepreneurial intentions than other graduates. Peterman and Kennedy (2003) found that entrepreneurship education programs could significantly change the entrepreneurial intentions of participants. In comparative multi case study of VCPs Rasmussen & Sørheim (2006) goes further by saying that: *"in addition to the direct effects of entrepreneurship education programmes through new start-ups, the participants may repeat the entrepreneurial process many times during their entire working career, by starting new companies, new business areas in existing companies, by running their businesses more competently, or by assisting other entrepreneurs*" (Rasmussen & Sørheim, 2006, p.186)

On the other hand, Bae et al. make an interesting remark at the end of their meta analysis study: *"after controlling for pre-education entrepreneurial intentions, the relationship between entrepreneurship education and post-educations entrepreneurial intentions was not significant"* Bae et al. (2014, p. 217). In other words, entrepreneurship education does not seem to change a person's intentions towards being entrepreneurial if he/she from the outset had high intentions. This limitation has previously been mentioned considering impact assessing entrepreneurial education's impact on nascent entrepreneurs and small business owners (McGee et al., 2009). McGee et al. describe nascent entrepreneurs as *"individuals who have yet to start a new business"*(McGee et al. 2009, p.971) and state that this is a typical characteristic of students enrolled in entrepreneurship courses. This interesting finding makes impact assessing a VCP different from other entrepreneurial education programs, as we can look to the phenomenon of nascent entrepreneurs to explain deviants in intention development. While researches impact assessing traditional program have focused on entrepreneurial education programs effect on raising entrepreneurial intentions, VCPs might not necessarily follow this same positive trend because students enrolling to such programs have high entrepreneurial intentions from the outset.

So, what differentiates VCPs from other entrepreneurial programs? Lackéus divides entrepreneurship programs into four categories where the creation of valuable artefacts is the differentiating factor. VCPs is characterized by keeping the venture operating after the

educational program is over, creating valuable artefacts for external stakeholders and organizing value creation through venture creation. This kind of classification has been criticized for the differentiating factors not being mutually exclusive (Dwerryhouse, 2001). In addition, Otterborg (2011) criticizes the classification for classifying entrepreneurship programs with a too narrow focus, making it seem like it is all about financial results and generating revenue. Another problem is the focus on venture creation in order to make a successful business, while some could say that if you focus on merely the *creation* of a venture the framework unnecessarily excludes programs. On a mission of impact assessing VCPs these critics give valuable input, emphasizing that there is more to a VCP's impact than pure numbers of companies created.

Extracting some of the key findings from the leading papers in the field of VCPs (Rasmussen & Sørheim, 2006; Lackéus and Middleton, 2011; Ollila and Middleton, 2011; Lackéus, 2013; Warhuus and Basaiawmoit 2014) research and characteristics of a VCP is summarized as the following (Ansteensen, 2014):

- Objective to develop competent entrepreneurs with the ability and skills to develop new ventures through real-life experiences and new venture establishment
- High focus on sustainable and progressive student venture development
- Resource heavy compared to traditional entrepreneurial education programs making them highly dependent on external stakeholders
- High focus on student involvement
- Emphasize the importance of developing entrepreneurial ecosystems that facilitates boundary-spanning activities, including universities, schools, regional actors and alumni
- Interdisciplinary in skill-set development and knowledge sharing

VCPs need for impact assessment

There is a growing need for impact assessment in entrepreneurship education and it has received a lot of attention from various stakeholders such as university management and program directors in the recent years (Mwasalwiba, 2010; Duval-Couetil, 2013; Warhuus & Basaiawmoit, 2014). The complexity of choosing success indicators for an entrepreneurial education program has proven challenging (Fayolle et al., 2006; Pittaway & Cope, 2007; Mwasalwiba, 2010), due to the necessity each program has to stakeholders connected to the program and the inconsistency in the course and program objectives and structure (Fiet 2001; Pittaway et al, 2009). Fayolle et al. (2006) describes two key challenges for considering assessment of entrepreneurial education programs as (1) selection of evaluation criteria and their effective measurement particularly

regarding the effect of time, and (2) including contextual variables. Rasmussen & Sørheim (2006) emphasized that it is important for future studies to address the long-term effect of the different approaches to entrepreneurship education.

In a literature review of the most popular and renowned impact assessment methods of entrepreneurship education, there was identified a need for individual VCP impact assessment tailored to match programs goals and needs (Ansteensen, 2014). The papers concludes that a VCP impact assessment should include both numerical constructs and constructs built upon theory from the field of entrepreneurial self-efficacy (ESE). The numerical construct is argued to give possibilities for benchmarking the student's and alumni's entrepreneurial activity level considering creating, liquidating and mentoring start-ups with other entrepreneurship programs. In addition, external stakeholders are more result-oriented in their approach of judging the success of a VCP program. Second, NSE's focus on creating and developing entrepreneurial skills among the students together with the link between self-efficacy, intentions and action (Mauer et al. 2009) could imply that entrepreneurial activity among graduates should be reflected in their task-specific ESE. According to Wilson et al. (2007) a well-designed entrepreneurship education program should provide the student with a realistic sense of what it takes to start a business as well as raising the student's self-confidence level. Further, they argue that implementing ESE as a measurement of entrepreneurship programs can provide educators with better information about areas of improvement. This makes the use of self-efficacy effectively in that program designers can evaluate how the actual process is affecting the student's task-specific self-efficacy and adjust program design. Summarized the use of these two constructs can (1) be linked up to the program's vision by mapping the entrepreneurial activity level, (2) try to give an explanation of deviants through the link of ESE and intentions and (3) give program designers insight and feedback on the VCP learning process.

Entrepreneurial intentions

A widely used model for describing entrepreneurial intentions is Ajzen's (1991) *Theory of Planned Behaviour* (TPB) (see figure 2). The model has been widely used to describe entrepreneurial behaviour (McGee et al, 2009) and intentions is today known as a precursor for behaviour, seen by some as a good predictor for whether or not a person is going to engage in a certain behaviour (Bagozzi et al. 1989; Kolvereid, 1996; Krueger et al., 2000). The theory identifies three antecedents of intention, attitude towards the act, subjective norms and perceived

feasibility. Attitude towards the act is the person's attitude towards the outcome of behaving in a special way, subjective norm reflects how the person perceive how the social environment will respond to the act and perceived feasibility to what extent the person thinks the behaviours is controllable (Krueger et al., 2000). Concerning social norms, Krueger et al. states *"Interestingly, social norms are less predictive of intentions for subjects with a highly internal locus of control (Ajzen 1987) or a strong orientation toward taking action (Bagozzi et al. 1992)* (Krueger, Reilly, Carsrud, 2000, p. 417), a finding which has also been confirmed by Moberg (2014).

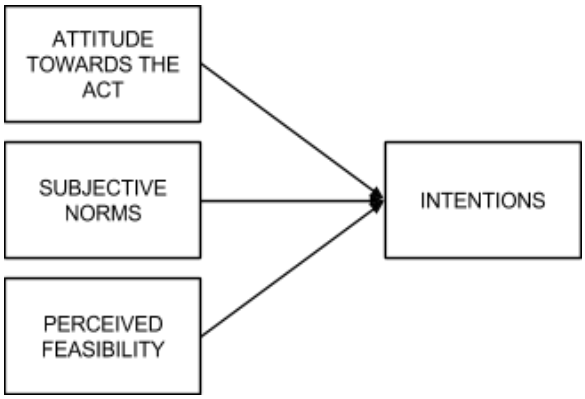

Figure 2. Ajzen's theory of planned behaviour

Entrepreneurial Self-Efficacy

TBT translated into entrepreneurial intentions can be interpreted as the person's belief on what the personal outcome of doing an entrepreneurial act will be, how friends/family/colleagues react and view entrepreneurial activities and lastly how the person views its own ability to perform them, the last being closely related to entrepreneurial self-efficacy.

The task specific measure ESE has become a popular measure in the field of entrepreneurship (McGee et al., 2009) and in assessment studies of entrepreneurship education (Mauer et al., 2009), because it has been demonstrated to have an influence on entrepreneurial behaviour (Krueger and Carsrud, 1993) and a relation to entrepreneurial intentions and self-employment (Kolvereid, 1996; De Noble et al. 1999; Krueger et al., 2000; Kristiansen and Indarti, 2004; Wilson et al, 2007). According to Bandura (1977, 1997) self-efficacy refers to the individual's assessment of their competences and ability to overcome adverse conditions and obstacles and the belief that the future actions will be successful. This puts ESE as a person's belief in its abilities, motivation, cognitive resources and actions to do entrepreneurial activities. In the context of this paper, the underlying rationale using ESE as a measurement for VCP

impact is that entrepreneurship education will enhance students' self-efficacy, which in turn raises entrepreneurial intentions (Bae et al., 2014). Perceptions of task-specific self-efficacy have proven to be a factor that determines whether or not individuals will apply the specific skills they have acquired (Bandura and Cervone, 1983) and to what extent they will persist and become successful in applying their skills (Bandura, 1997). Self-efficacy as a construct is stated to be useful since it takes the person's personality and environment into account (McGee et al, 2009). The self-efficacy measure often includes multiple dimensions, as most tasks require multiple skills (both cognitive and non-cognitive) to be performed successfully.

A high level of self-efficacy is achieved through repeated performance accomplishments and the overcoming of obstacles through effort and perseverance (Wood and Bandura, 1989; Mauer et. al., 2009). Bae et al. further states through the theory of Bandura (1982) that *"entrepreneurship education could enhance entrepreneurial self-efficacy because it is associated with four of its determinants, which are (1) enactive mastery, (2) vicarious experience, (3) verbal persuasion, and (4) emotional arousal"* (Bae et al., 2014, p.220). Zhao et al. (2005) suggest that ESE may be enhanced through training and education and researchers have found that students' ESE has a positive development through training and education (Peterman & Kennedy, 2003; Karlson & Moberg, 2011).

Again contextualizing this into the research field of VCPs one can define the action-based activities within VCPs as repeated entrepreneurial performances and accomplishments that result in a *gradually* increasing ESE amongst its students and graduates. On the other hand, Bae et el. (2014) hypothesized, based on the positive relationship between entrepreneurship education and entrepreneurial intentions, that entrepreneurship education focusing on venture creation would results in stronger entrepreneurial intentions, but found no support for this in their meta-analytic review. Despite this, the established link between ESE and action makes some researches argue that ESE is a measure that should be included in all evaluation studies within the field of entrepreneurship (Moberg, 2014), but will based on the findings by Bae et al. make ESE-comparison between different program types challenging.

There is also evidence that high ESE does not always lead to success (action). Wood and Bandura (1989) differentiate between possessing skills and the ability to utilize them consistently, especially under stressful circumstances. This means that even though a person masters a skill, there is no guarantee that the person will use the skill, especially if high stakes

are on the line or under high stress (Mauer et.al 2009). As remarked by Stern (2000) actions or results perceived as dangerous or risky may stop individuals from carrying out certain behaviours.

Researchers have also not been able to establish a link between ESE and venture performance (Chandler and Jansen, 1997; Chen et al. 1998). Chen et al. (1998) provides several explanations for this, one being that ESE is a good predictor for performance taking action closely in time, but not as good for action in a more distant future. In additions, there are also some researchers that have pointed out that ESE and high levels of optimism can coalesce to inadequate levels of overconfidence with negative effects in a dynamic environment (Mauer et al., 2009), suggesting that entrepreneurship education programs should be responsible for teaching students tools of self-regulation (Hmieleski and Baron, 2008).

Concluding this theory chapter the characteristics of students' and graduates' ESE, attitude and intentions are argued to be suitable representative factors to better understand the impact of VCPs. The need for VCPs to satisfy both external and internal stakeholders' need for results to prove program relevance makes the link between the characteristics and actual action highly relevant. Based on the theory presented in this chapter the following four hypotheses are established.

H1a: *There will be an overall high task-specific ESE-level among the VCP students and graduates.*

H1b: *Task-specific ESE will show significant differences among the current classes of the VCP*

H3: *There is a positive correlation between the high ESE and entrepreneurial intentions among students and graduates*

H4: *Graduates from NSE will show entrepreneurial activity, not only connected to starting ventures, but also liquidating, selling and consulting start-ups*

These hypotheses will serve the purpose of collectively enhance our understanding of VCP impact and server as guidelines for structuring the findings and data in the discussion chapter. The methodology chapter gives detailed insight how I structured the research design, using an untraditional snapshot-method capturing ESE and intention levels based on both new and established scales.

3. Methodology

This chapter describes the approach and implementation of the data collection and analysis, as well as some discuss limitations and weaknesses of the process. First, the research design is described with additional elaboration of each analytical process, followed by presentation of the final research framework.

3.1 Research design

To explore entrepreneurial characteristics and activity in this thesis, and not being able to measure for pre-program characteristics, I designed a research study presenting probes and snapshot among the different case program classes, both current and graduates. This untraditional way of measuring ESE and entrepreneurial intentions gives opportunities as well as obvious restrictions to the data. By comparing different snapshots, I could explore whether or not ESE change significantly throughout the program. Also, as the need for longitudinal studies have been called for as crucial for strengthening our understanding of entrepreneurial education impact (Souitaris et al. 2007), this research design can give some insight in how entrepreneurial self-efficacy and intentions develop over time in a similar population and how it connects to activity.

The rationale for this method being a valid way of measuring and structure is rooted in the nature of the NSE's recruitment process and program content. First, students are required to have a minimum of bachelor degree prior to NSE, also the students of class of 2014, 2015 and 2016 have a similar background mix of around 70% engineering and 30% social science and science students. This strengthens the foundation of the comparisons and can give useful insight of NSE's impact - despite the test not being pre-NSE/post-NSE on the same group. Second, the program goals, structure and content have remained to a high degree similar over the years with recurring activities for every class. NSE's stable and continuous operation dampens obvious errors that would have occurred if any major program changes had been made.

3.2 Design framework

To capture both ESE, entrepreneurial intentions and activity I put together a framework using established items with respect to ESE and entrepreneurial intentions, but, as you will see, wanting to capture more than merely venture creation concerning entrepreneurial activity.

The items I used to establish the ESE scale is based on the items used by Moberg (2014), which again is based on ESE scale based on McGee et al. (2009), DeNoble et al. (1999) and Chen et al. (1998) (see appendix A). The item list fit the thesis' research question as it, in addition to measure task-specific ESE, also includes respondents' entrepreneurial attitude, intentions and social norms. The modifications made by Moberg revolve around the wording of the McGee's scale, as he found that students found it difficult understanding the questions in the original scale (Moberg, 2014), making it more suitable for use on VCP students. The items can be configured to represent task-specific entrepreneurial skills related to entrepreneurial processes such as opportunity recognition, search and creativity, risk and uncertainty management, which is the common configuration among existing ESE measurements (McGee et al., 2009).

The task-specific ESE items presented in Moberg's scale can be represented as five entrepreneurial dimensions associated with entrepreneurial processes: *search and creativity, planning and management, marshalling, managing ambiguity, financial knowledge* (Moberg, 2014). Entrepreneurial intentions are based on questions concerning *entrepreneurial attitude, entrepreneurial behaviours and social norms* and construct for entrepreneurial activity as mentioned in the introduction to this chapter.

Because of the program's vision and goal of educating business developers, an entrepreneurial activity construct was included in addition to an ESE- and entrepreneurial intention scale. Based on feedback from the faculty staff not only venture creation is considered a success at the VCP, but also failures (crashes) and sharing entrepreneurial knowledge with the ecosystem. This inspired me to combine a frequently used activity measure within the world of E-sports where the total of creations, failures and assists constitute an activity measure. Four questions were added to constitute this activity level. The questions were *after NSE, how many start-ups have you been involved with (1) starting, having an active role as a business developer, (2) crashing/liquidating having an active role as a business developer, (3) selling having an active role as a business developer, (4) how many start-ups have you assisted, either as a board member or board of advisory.*

In addition to the ESE-scale, dummy variables was included such as: *age, do you have entrepreneurs in close family, what did you do after finishing NSE, do you currently work in a start-up you, or together with other, started.*

For the task-specific ESE questions the respondents answered on a 7-point Likert-scale and were asked to answer as realistic as possible based on their perceived ability to do different entrepreneurial tasks and how they agreed with the statements e.g. "I can identify ways to combine resources in new ways to achieve goals". The Likert-scale is widely used for measuring attitude and is suitable for placing whether or not a person agreed with a statement, ranging from "disagree" to "agree" (Maurer, Pierce; 1998). Jamieson (2004) points out that since the scale is an ordinal level of measurement, meaning that the value between the rang is not necessarily weighted equally, the mean and standard deviation must be used carefully, and advises that one should use the median or mode as a mode of central tendency as extreme values may skew results. Jamieson (2004) points at the fact that this property of the Likert-scale has been widely ignored by researchers even though using averages and standard deviations on ordinal data will therefore risk drawing wrong conclusions.

Despite this, and advice from one of the leading researchers within the field, I decided to make the assumption of the data being continuous and metric as these assumptions enables the use of analytic tools necessary to evaluate data reliability and give statistical explanation for some of the hypotheses set in this thesis. In addition, calculations considering correlations were done with Pearson-correlations, while Spearman-correlation would be more appropriate with respect to the argument of ordinal data. However, results were not affect by using different methods and are presented with Pearson-correlations.

All survey questions scale translated into Norwegian and tested amongst five students at NSE before it was distributed.

3.3 Data Collection and analysis

The ESE-scale was issued in 2015 to the NSE alumni and current students at the programs. The survey was distributed through the alumni network's Facebook group and by personal emails. Only students that graduated from the program were contacted and their contact information was made available from the faculty staff. Completing the survey was estimated to take five minutes.
A practical challenge with the goal of probing ESE among the entire NSE student/alumni base was getting enough respondents, something I quickly realized when some classes, while being small in population in addition only had 1 response (see table 1). This made me single out the classes and setting a limit for minimum 40% response coverage per class, which left me with data from the class of 2011 to 2016.

Distribution			
Class of	#	Class Size	%
2005	0	9	0.0%
2006	1	12	8.3%
2007	2	13	15.4%
2008	2	8	25.0%
2009	2	15	13.3%
2010	1	11	9.1%
2011	**10**	**21**	**47.6%**
2012	**9**	**21**	**42.9%**
2013	**18**	**33**	**54.5%**
2014	**24**	**32**	**75.0%**
2015	**13**	**31**	**41.9%**
2016	**20**	**32**	**62.5%**

Table 1. Distribution of respondents

In total, 106 responses were registered, within the total population of around 238 (44.5%). Three responses were left out of the analysis due to insufficient answer and not completing the survey. This left 94 responses available for presenting ESE-levels. In table 2 descriptive statistics are presented.

Variable	
Total number of responses usable	103
Gender	
- Men	71.8%
- Women	28.2%
Age (mean)	26.9
Still studying at NSE	32.0%

Table 2. Descriptive statistcs

A Principal Component Analysis (PCA) with Verimax rotation was conducted to validate the data. The initial PCA showed 7 factors, which again was reduced to 5 to match dimensions related to stages of an entrepreneurial process (McGee et al., 2009). Only load factors above 0.5 was considered as meaningful, which left the following 8 items out of the further analysis: Q4, Q10, Q11, Q15, Q16, Q17, Q24, Q25. Further I checked for communality where all items were satisfying (>0.5). Table 3 shows PCA results where items are connected to dimensions.

Items	PCA w/Verimax rotation					
	Managing ambiguity	Financial knowledge	Planning and management	Marshalling	Search and creativity	Communality
Q1	0.331	0.01	0.244	0.317	**0.535**	0.556
Q2	-0.096	0.009	0.069	0.241	**0.788**	0.693
Q3	0.166	-0.066	0.027	-0.011	**0.839**	0.736
Q5	0.371	0.154	-0.117	0.062	**0.609**	0.549
Q6	-0.015	0.232	**0.77**	0.014	-0.038	0.649
Q7	0.003	0.203	**0.687**	0.283	0.072	0.598
Q8	0.157	0.099	**0.819**	0.285	0.044	0.788
Q9	0.06	0.282	**0.829**	0.076	0.048	0.779
Q12	0.141	0.113	0.287	**0.706**	0.11	0.626
Q13	0.248	0.033	0.103	**0.802**	0.103	0.727
Q14	0.147	0.044	0.153	**0.785**	0.174	0.693
Q18	**0.592**	0.226	-0.043	0.273	0.386	0.627
Q19	**0.632**	0.169	-0.061	0.253	0.234	0.55
Q20	**0.752**	0.079	-0.133	0.154	0.096	0.623
Q21	**0.703**	-0.086	0.292	-0.044	0.085	0.596
Q22	**0.822**	0.057	0.115	0.056	-0.099	0.705
Q23	**0.716**	0.183	0.114	0.246	0.21	0.664
Q26	0.092	**0.872**	0.137	0.016	0.028	0.789
Q27	0.166	**0.887**	0.103	0.016	0.027	0.826
Q28	0.064	**0.844**	0.302	0.082	-0.032	0.816
Q29	0.08	**0.823**	0.316	0.144	0.073	0.809

Table 3. PCA factor loading and communalities

Next, to test for reliability I checked the ESE-scale's Cronbach's alpha. Cronbach's alpha is an estimate of internal consistency associated with the score that can be derived from a scale or composite score. Reliability is important because in the absence of reliability it is impossible to have any validity associated with the scores of a scale. The data confirmed reliability (all items above 0.7) of the items as shown in table 4. In addition, I checked for common method bias and got that sums of square loadings for the single factor explained 30.342% (<50%) of the variance, which is sufficient.

Items	Q1	Q2	Q3	Q5	Q6	Q7	Q8	Q9	Q12	Q13	Q14
Cronbach's Alpha if Item Deleted	0.878	0.883	0.883	0.881	0.881	0.878	0.876	0.876	0.877	0.878	0.879

Items	Q18	Q19	Q20	Q21	Q22	Q23	Q25	Q26	Q27	Q28	Q29
Cronbach's Alpha if Item Deleted	0.876	0.878	0.881	0.881	0.88	0.875	0.879	0.878	0.877	0.875	0.873

Table 4. Cronbach's alphas ESE scale

After testing reliability of the ESE-scale, I conducted the same procedure for intentions, attitude and social norms (table 5) to make sure the items measured the same factor. All three measures showed necessary properties.

Attitude	Component	Communality	Cronbach's alpha
Q30	0.845	0.713	0.774
Q31	0.88	0.774	0.714
Q32	0.849	0.72	0.768

Intentions	Component	Communality	Cronbach's alpha
Q34	0.924	0.854	0.786
Q35	0.87	0.757	0.885
Q36	0.918	0.842	0.815

Social norms	Component	Communality	Cronbach's alpha
Q37	0.798	0.636	0.743
Q38	0.826	0.683	0.717
Q39	0.879	0.773	0.581

Table 5. PCA factor loading, communality and alphas for entrepreneurial attitude, intentions and social norms

From this I could form five dimensions for ESE, and one for entrepreneurial intention, entrepreneurial attitude and social norms for class of 2011 to class of 2016 presented through means and standard deviations. The dimensions were labelled in the same manner as Moberg (2014c) namely search and creativity, planning and management, marshalling, managing ambiguity and financial knowledge. The framework is shown in figure 3.

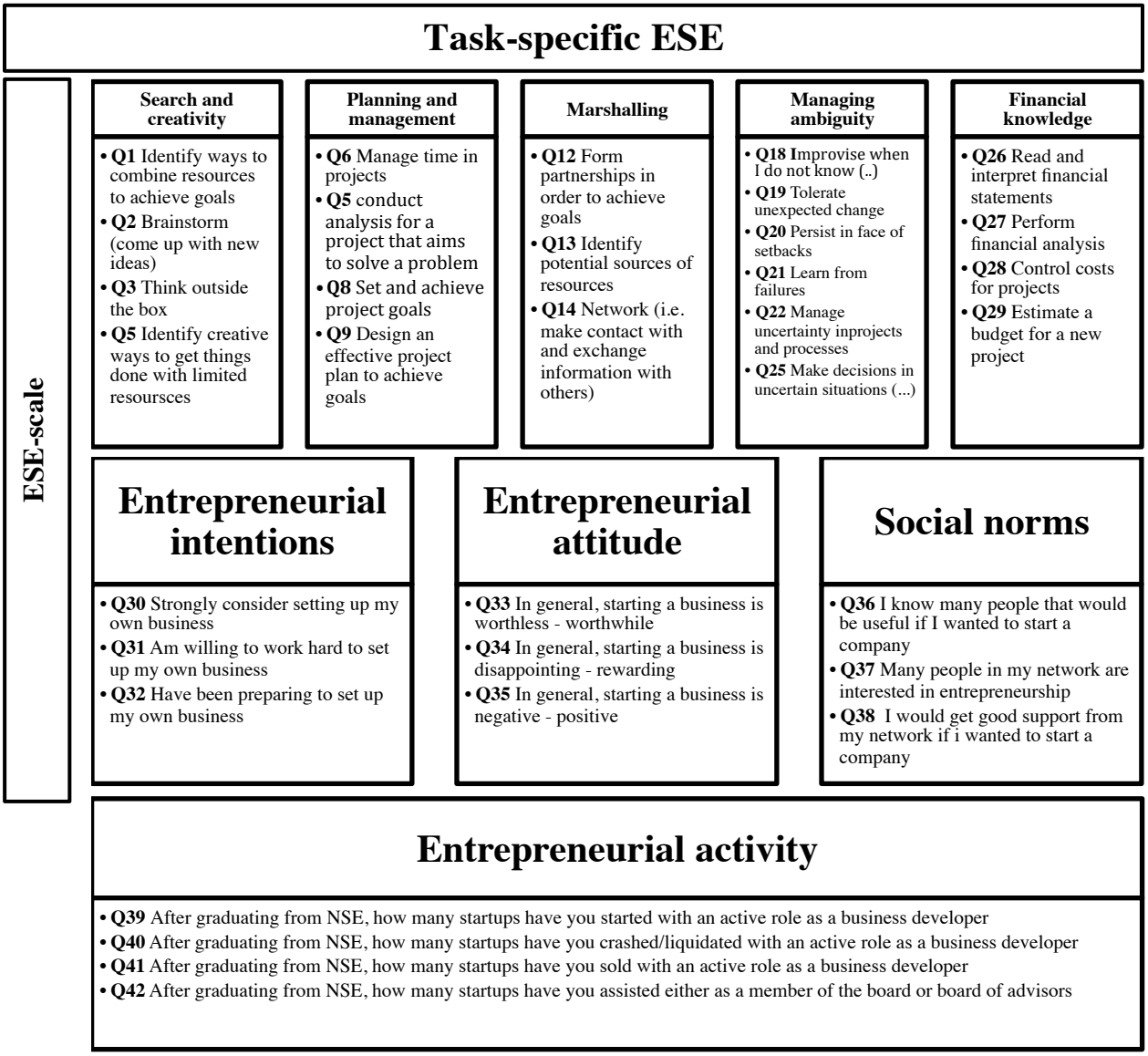

Figure 3. Research framework

The entrepreneurial activity level showed extreme values affecting skewing the means giving better results that what is realistic to assume. Together with the small samples in each class I combined the graduated classes and present them as 1-2 years after graduation (class of 2014 and class of 2013) and 3-4 years after graduation (class of 2012 and class of 2011). This grouping gave a more realistic picture of the overall entrepreneurial activity among graduated.

The next chapter presents key findings from my research design. As the data material and results made me risk opening more doors than I am able to close in a single master's thesis I structured the discussion and presentation of data according to the hypotheses.

4. Findings and discussion

The data presentation, findings and discussion is structured in the order of the hypotheses. First, I discuss findings and discussion concerning ESE-levels and (**H1/H2**), then entrepreneurial intentions (**H3**) followed by entrepreneurial activity **(H4**) and, finally, some concluding remarks.

4.1 Entrepreneurial self-efficacy

4.1.1 Is there an overall high task-specific ESE-level among the VCP students and graduates?

Figure 4 shows resulting snapshots with related statistics (table 6) of the average task-specific ESE from class of 2011 to 2016, class of 2015 and 2016 being the current groups undergoing the VCP. As a reminder, the scale ranges from 1 – Strongly disagree, to 7 – Strongly agree. Overall, task-specific ESE has a high central tendency in perceived abilities among graduates within search/creativity, planning/management, marshalling and managing ambiguity while perceived skills within financial knowledge is noticeably lower (Figure 5). The findings presented in figure 4 and table 6 *supports* **H1a:** *there will be an overall high task-specific ESE-level among the VCP students and graduates*. This finding could correspond with findings by McGee et al. (2009) who conducted an explicitly ESE measurement of nascent entrepreneurs. They showed that nascent entrepreneurs exhibit higher ESE-levels than their counterparts, concluding that nascent entrepreneurs feel more able to engage in entrepreneurial activity, such as opportunity recognition and marshalling.

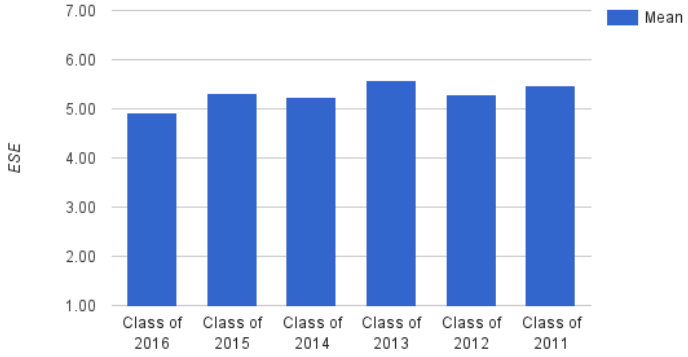

Figure 4. Entrepreneurial self-efficacy

ESE	Mean	sd
Class 2016	4.94	0.80
Class 2015	5.31	0.56
Class 2014	5.27	0.64
Class 2013	5.66	0.16
Class 2012	5.25	0.86
Class 2011	5.45	0.49

Table 6. Descriptive statistics ESE

A breakdown of the different constructs with respect to each dimension is shown in figure 5. According to Wilson et al. (2007) these resulting ESE-levels can be used by directors of this

particular program to emphasize financial skills in the program structure as the central tendency is that the overall population in best case somewhat agrees to master addressing challenges in this field. Within the classes currently undergoing the VCP the most noticeable change is between planning and management, managing ambiguity and financial knowledge. This change in dimensions are reasonable to connect to the VCPs activities on feasibility studies and the process of venture creation where these entrepreneurial skills has a significant role. Managing ambiguity is the task-specific ESE that shows the least change within the population, which could be a common denominator for the students applying for a VCP having a natural entrepreneurial tolerance towards risk and ambiguity McGrath et al. (1992).

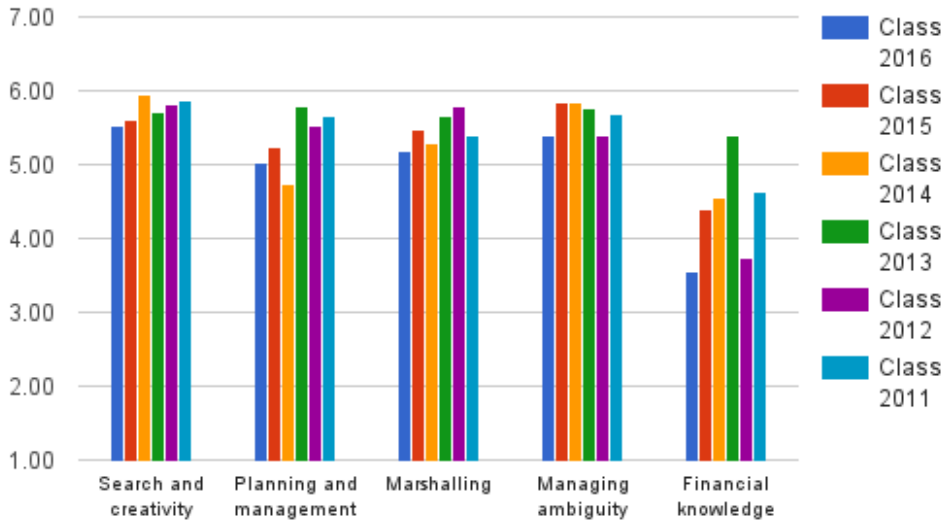

Figure 5. Task-specific ESE

The development of ESE concerning financial knowledge's, which despite being the overall lowest score, seems to be affected by one of the key attributes related to VCP *interdisciplinarity and knowledge sharing.* In 2011 the VCP made changes in their recruitment process allowing candidates with other academic backgrounds then engineering to apply for the program. The sudden spike in perceived financial knowledge may therefore be results of this new academic mix, where students with stronger economic background were introduced.

Looking closer at the newly graduated class of 2014, transitioning from the VCP, show central tendencies which can be described as certain breakpoints between current students and alumni, as seen in their perceived abilities, especially concerning the dimensions search and creativity and planning and management. One explanation to this could be the environmental

frame-of-reference, although no research found in my literature study has been able prove that this should impact ESE. Where the students while still at the VCP are enclosed in a highly competitive and entrepreneurial arena benchmarking themselves with peers, the graduated are using other reference points such as partners or colleagues with no entrepreneurial education or experience.

4.1.2: Are there significant differences among the current classes of the VCP?

Figure 6 show the development in ESE between the classes undergoing the VCP compared to their peers. Along all five dimensions we see an increase in task-specific ESE, the highest differences found between planning and management, managing ambiguity and financial knowledge. To test whether there is significant difference between the two classes mean ESE-level a two-sample t-test assuming unequal variance was conducted. A significant difference between the ESE-level of class 2014 and class 2015 ($t = 1.74$, $p < 0.05$) was found (table 7) *supporting* **H1b.** This finding indicates that the activities in the VCP contain the necessary requirements set by Bandura (1982) to facilitate and stimulate mastering experiences.

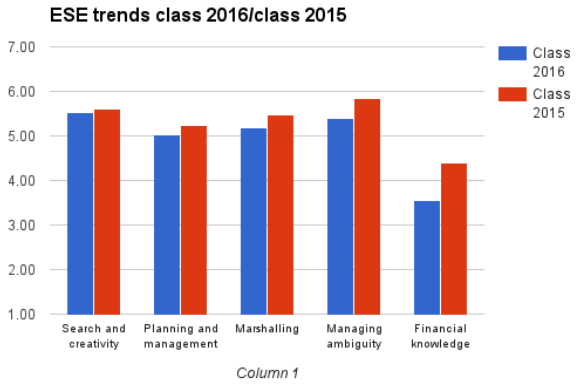

Figure 6. ESE development between currrent classes

t-Test: Two-Sample Assuming Unequal Variances

	Variable 1	*Variable 2*
Mean	5.311538462	4.936666667
Variance	0.2527029915	0.5346959064
Observations	13	20
Hypothesized Mean Difference	0	
df	30	
t Stat	1.744562082	
P(T<=t) one-tail	0.04564986638	
t Critical one-tail	1.697260851	

Table 7. T-test statistics

This finding corresponds with previous theory and findings showing indications that using action-based activity as the primary learning vessel has impact entrepreneurial skillsets (Honig, 2004; Karlsson and Moberg, 2013). As the connection of entrepreneurial action-based activity range from simulating business to launching student businesses (Mwasalwiba, 2010), this result specifically ties the VCP's philosophy of using venture creation as the primary learning vessel to enhanced entrepreneurial self-efficacy. The finding alone merely states that there is an impact, but how the actual development and learning is triggered is not covered. Some researchers have

pointed to emotions as having a big role in entrepreneurial learning (Souitaris et al., 2007), but researchers have only started preliminary work to provide results confirming this (Lackèus, 2014). The significant differences between current classes are however weakened by the low amount of respondents. I would suggest researchers survey a larger sample in addition to also check for pre-/post-ESE to further validate this finding.

4.2 Entrepreneurial intentions, attitudes and social norms

Among the graduated from NSE it was found that there is overall high entrepreneurial intentions (see figure 7), the tendency being on top between the two current classes. The high tendency of entrepreneurial intentions in the current classes seems reasonable to explain by the fact that most of them are in the process of starting up a business in the VCP. The timing of the snapshots may therefore reflect an optimistic and overconfidence associated with entrepreneurs at this stage (Hmieleski and Baron, 2008).

A declining tendency in the way students and graduates perceive the worth of starting up a business as they go through the program is also registered, although there seems to be strong consensus amongst the entire population that starting a business is positive. The impression of whether a business is worth starting is also declining as the students' progress through the program, but shows as overall high among the graduate population. In addition, social norms related to entrepreneurship are gradually increasing and considered high among the graduates.

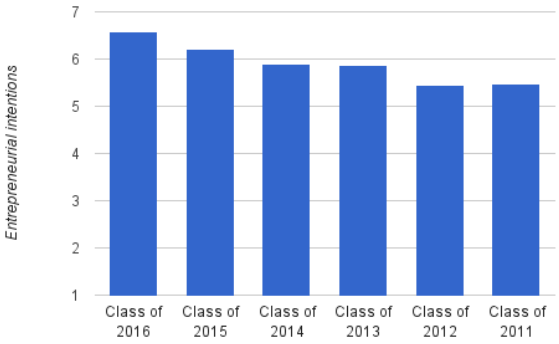

Figure 7. Entrepreneurial intentions

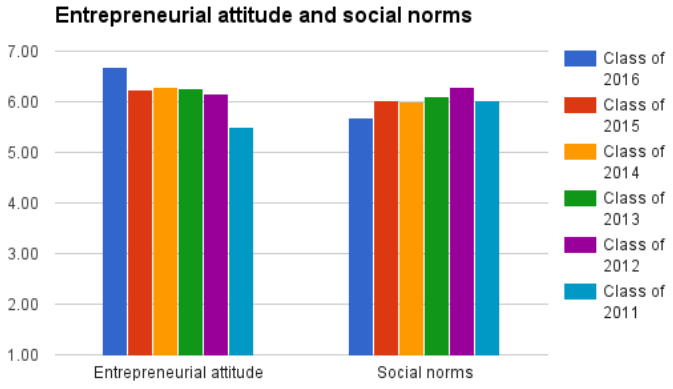

Figure 8. Entrepreneurial attitude and social norms

4.2.1Is there a positive correlation between the high ESE and entrepreneurial intentions among students and graduates?

The results from the survey show a decline in entrepreneurial intentions as we progress through the VCP and graduates from it, which compared with ESE-level, could make one believe that there is actually a negative correlation between the two. However, it was not fond a significant correlation between average ESE-levels and entrepreneurial intentions (table 8) among the VCP students and graduates ($r = 1{,}45$, $p = 1.64$) on which basis we reject **H2**.

Correlations

		ESE	Intentions
ESE	Pearson Correlation	1	.175
	Sig. (2-tailed)		.092
	N	94	94
Intentions	Pearson Correlation	.175	1
	Sig. (2-tailed)	.092	
	N	94	94

Table 8. Correlation table ESE and intentions

As intentions according to Ajzen (1991) are also affected by attitude and social norms, I checked if any of the two constructs showed significant correlations with entrepreneurial intentions (table 9). Here, a moderate correlation between entrepreneurial attitude and intentions ($r = 0.571$, $p = 0.000$) was found and a low correlation between social norms and intentions ($r = 0.23$, $p = 0.026$), meaning that we can only conclude that, if anything, entrepreneurial attitude and social norms seems to somewhat have an impact on the VCP students' and graduates entrepreneurial intentions

		ESE	Attitude	Intentions	Social norms
ESE	Pearson Correlation	1	.226*	.175	.289**
	Sig. (2-tailed)		.028	.092	.005
	N	94	94	94	94
Attitude	Pearson Correlation	.226*	1	.571**	.333**
	Sig. (2-tailed)	.028		.000	.001
	N	94	94	94	94
Intentions	Pearson Correlation	.175	.571**	1	.230*
	Sig. (2-tailed)	.092	.000		.026
	N	94	94	94	94
Social norms	Pearson Correlation	.289**	.333**	.230*	1
	Sig. (2-tailed)	.005	.001	.026	
	N	94	94	94	94

*. Correlation is significant at the 0.05 level (2-tailed).

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

Table 9. Corrolation table ESE, intentions, attitude and social norms

Why do we not find a link between ESE and intentions? First of all, correlation does not imply causation. In addition, the link between ESE and Entrepreneurial intentions can not be used straight forward in the context of VCPs as it is highly likely that students enrolling to such programs from the outset have high entrepreneurial intentions towards starting a business and act entrepreneurial (Rasmussen & Sørheim, 2006). As mentioned in the theoretical framework, limitation like this has also been seen when conducting surveys on nascent entrepreneurs and small business owners. To recap, a nascent entrepreneur is an individual who have yet to start a new business, but have the desire to start a new business (McGee et al., 2009). McGee et al. (2009) points out that individuals who have already started a business will also have a retroactive perception of entrepreneurial intentions, which will give another perspective on ESE than "regular" students. As candidates applying for a VCP could be characterized as nascent entrepreneurs, these finding can contribute to this research as little research has with explicitly including nascent entrepreneurs in an ESE context (McGee et al., 2009). Further, McGee et el. pose the sobering question related to ESE and nascent entrepreneurs: *"does the creation of new venture increase one's ESE, or does high ESE lead one to start a new venture?"* (McGee et al, 2009, p.971). The findings from this paper indicate the former concerning VCP students, putting

them somewhere between nascent entrepreneurs and small business owners based on how far in the program's process they are.

This means that while it could be tempting to conclude that there might a link found in VCPs between development and ESE and entrepreneurial intentions, we can in this study not conclude whether or not this is a result of the VCP since no measurement of students before starting the program was included. Despite this, the positive development of ESE, but declining entrepreneurial intentions may be a result of a lack of dynamic in the established entrepreneurial intention model when used on impact assessing samples having high intentions from the outset. As the high ESE equals high intentions has been proven to be a valid assumption for traditional entrepreneurship programs this does not seem to be the case of VCPs. If we can assume that the students have high entrepreneurial intentions from the outset, the VCP seems to serve more as an arena for testing the robustness of the students' entrepreneurial intentions through program activities. However, this assumption has to be validated through testing candidates prior to starting the VCP.

Psychological cost-of-failure in the forms of embarrassment and fear of having to find alternative employment has also been identified as factors differentiating entrepreneurs with non-entrepreneurs (Campbell, 1992). Bird (1988) also proposes that we can differentiate passive and active entrepreneurs by the way they perceive career, risk and family with venture creation. As students undergo and graduate from the VCP, some might have experienced shifts in cost-of-failure and risk connected to venture creation, affecting their entrepreneurial intentions despite having an overall high task-specific ESE. Future use of entrepreneurial intention models used in a VCP context should recognize this link between the key VCP activities and intention outcome and can therefore not presume a positive correlation between ESE and intentions.

Another factor that has been shown to affect entrepreneurial intentions is inspiration. Souitaris et al. (2007) found inspiration is a program-derived benefit that leads to entrepreneurial attitudes and intentions. These parameters have not been included in this research design. A suggestion would be to more rigidly map social norms as well as inspiration as we have evidence of that these constructs could influence entrepreneurial intentions and self-employment as well (Kolvereid, 1996, Souitaris et al., 2007).

4.3 Entrepreneurial activity level amongst graduates

Even though the results show that entrepreneurial intentions are declining as they graduate from the VCP despite having high ESE, both measurements are classified as high among the entire population. The next step is then to look closer at the entrepreneurial activity level.

4.2.1 Do graduates from NSE show entrepreneurial activity, not only connected to starting ventures, but also liquidating, selling and consulting start-ups?

Among the alumni we find overall entrepreneurial activity and traces of entrepreneurial activity related to all four metrics (figure 10). This finding show that graduates perform entrepreneurial activity in the form of being involved in venture creation after NSE through either starting up new companies, crashing and liquidating or consulting, supporting **H3.** However, the activity is not equally spread among the samples and some individuals are noticeably, and to some extent extremely, more active than others (table 10).

Entprenreurial acitivty	Mean	SD
3-4 years after graduating	2.89	5.34
1-2 years after after graduating	2.21	3.32

Table 10. Descriptive statistics entrepreneurial acities

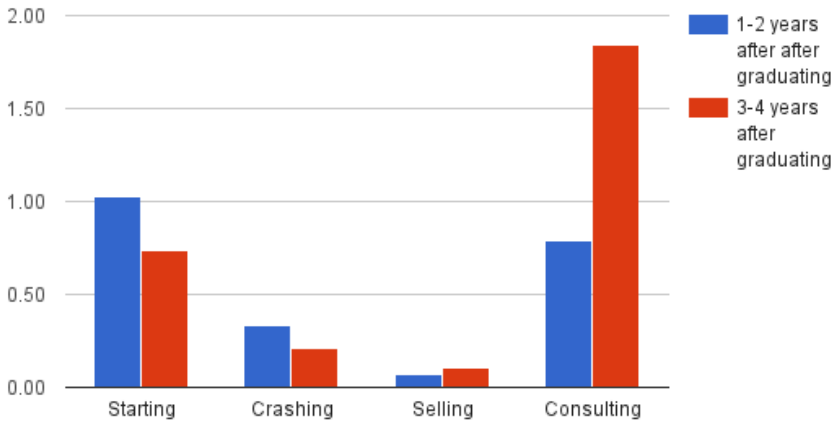

Figure 10. Entrepreneurial activity

Where does this leave us looking back at the theoretical framework? The VCP population show a high increasing ESE, a high and declining entrepreneurial intentions, but keep being entrepreneurial active after the program. Chen et al. (1998) pointed out that while ESE is a good predictor for performance taking action closely in time, it is weaker for predicting action in a more distant future. This may explain how graduates seem to be less involved in venture creation

as active business developers that what one would assume from their high ESE-levels. The most interesting finding here is the activity level of advisory roles as board members or board of advisors that indicates that they are active in contributing to their entrepreneurial ecosystems. Wood and Bandura (1989) states that a person does not necessarily utilize a high ESE consistently, or not at all, under circumstances linked to high stakes and risks. This can help us understand the declining entrepreneurial intentions, but also the development in entrepreneurial activity related to knowledge sharing. The graduates appear to be involved in entrepreneurial activity through the less risky advisory role than being the actual entrepreneur, and increasingly so.

Should we be disappointed by not seeing a higher entrepreneurial activity among the graduates coming from an action-based VCP? As this study has not investigated the different types of start-up-activity and the value of these, we cannot conclude with more than that there is presence of activity among graduates. To put the findings we do have in perspective we can compare these results with findings from the 2013 Global Entrepreneurship Monitor-report (GEM), showing that 34.2% of Norwegians between 18-64 stated that they have the perceived necessary abilities to start business, but only 5.2% had entrepreneurial intentions to start a business within the next 1-3 years.

With this societal perspective, the characteristics of an overall high ESE-level and entrepreneurial intentions among the VCP-graduates may be seen as entrepreneurial capital invested in the population. Considering the increasing need for entrepreneurs in the society and universities to be the responsible organ educating these people (Rasmussen & Sørheim, 2006), these results show that VCP can play a role as such a medium. In this role the VCP instils and develops some of the students' task-specific ESE-level in students, while challenging their entrepreneurial intentions through program activities and make entrepreneurial investments reflected in graduates activity level.

5. Conclusion

This thesis contributes both independently to theory within entrepreneurship impact assessment, but also reduces the gap found in the literature related to understanding characteristics of VCP students and graduates. The findings are especially interesting for program directors and

stakeholders as proving program relevance, timeliness and impact is a crucial part of securing necessary operating resources.

By recognising VCPs' special need for impact assessment, this thesis combines well-established theoretical concepts within entrepreneurial self-efficacy (ESE), entrepreneurial intentions, entrepreneurial impact assessment and entrepreneurial education to explore impact characteristics. By establishing a research framework consisting of modified ESE items, entrepreneurial intentions and activity, key characteristics are shown by comparing snapshots between current students and graduates. The framework showed to have sufficient statistical properties and validity.

In this thesis it was found that students task-specific entrepreneurial ESE are significantly affected by being exposed to VCP activities, most noticeable tasks related to entrepreneurial acts within planning and management, marshalling, managing ambiguity and financial knowledge. Despite the positive overall development of ESE, the students and graduates show declining entrepreneurial intentions, giving ground to challenge the lack of dynamics in entrepreneurial intention models used when impact assessing traditional programs. The thesis did not find a significant correlation between ESE and entrepreneurial intentions, but found that intentions seemed to be somewhat affected by social norm and attitude. Concerning entrepreneurial activity, we found that graduates show clear traces of entrepreneurial activity after the program, the most prominent entrepreneurial activity being consulting and knowledge sharing through either a position as a member of the board or board of advisors.

For program directors in particular, in addition to give a theoretically anchored description of VCPs, the findings in this thesis give indications to what program specific activities should be focused on as well as how the program structure is affecting, and not affecting, students ESE. Program evaluators should take into account the nature of the students enrolling for VCPs, showing tendencies of being somewhere between the nascent entrepreneurs and entrepreneurs. This characteristic challenges the traditional theoretical frameworks used to evaluate entrepreneurship programs, as intentions are not necessary enhanced, but rather challenged. From a societal perspective, this thesis found that VCPs show clear signs of instilling entrepreneurial capital amongst students and graduates, whether or not this entrepreneurial potential is fully realised in the form of venture creation it is still too early to say.

6. Limitations and implications for further research

As the survey was distributed on a time where class of 2016 had already been in the program for 7 months the results will show ESE-levels as they have already been affected by the VCP. This delay may cause the results to be overly optimistic and not give the full insight in how the students are affected and ESE developed. A desirable setup would be to have compared the ESE-level on new students before enrolling to the VCP. The scope of this thesis does not include variables such as academic background, what subjects they specialized in and what type of venture the students engaged in. The lack of these variables may reflect in the result if multiple people in a class were involved in e.g. either the same start-up or having similar roles within the start-up.

The distribution of the survey through online social media where some have personal connections to the author may cause the respondents to fill out the survey more subjectively skewing the graph and giving a more optimistic view than reality. Also, there is possible bias to the answers as the students and graduates might feel like they are obliged to answer positively since the case focuses on their own educational institution. One respondent gave feedback that she would refrain from answering the survey as she felt she had too close connections to the program to answer objectively. As an insider and current student at NSE, the author is also subject to the same critique commonly used against insider action researchers being too close to the data utilized in the studies makes you potentially incapable of giving an objective evaluation of the data (Coghlan and Brannick, 2005, Ollila & Middleton, 2011). Since the data is based on quantitative survey analyses the data discussion is most likely to be subject to this if it were to occur.

When structuring the thesis one of my options was doing a class-by-class comparison between NSE and another VCP like Chalmers School of Entrepreneurship in Sweden. However, the restricted research done within the field of VCPs made the contribution of an in-depth single case study seem to have to highest contribution potential. I must however emphasize that I do believe there is enormous potential in comparing results between VCPs, which has also been mentioned to be a crucial and necessary assessment method for the VCP development (Moberg, 2014).

This thesis serve as a preliminary basis for better understanding of the impact VCPs has on students and graduates and suffers from drawing upon a single-case study of *one* particular

VCP. This may weaken conclusions to be drawn from the findings as other VCPs may show to have fundamentally different characteristics. However, this serves a natural next step in the work of unveiling VCP impact, as similar studies of other VCPs, single case for comparison or multi-case studies, will be able to confirm the findings made here. Further research may use these findings for such comparisons, but also for explaining and exploring the reference-problem raised in this thesis on newly graduated classes.

In addition, researching and determining what program specific activities triggers ESE-development can yield very interesting insight and contribute majorly to how VCPs are run. The work done by Lackéus (2014), connecting emotions to entrepreneurial learning in VCPs would serve as a good starting point for researches wanting to explore this field.

In the case of NSE, controlling for pre-VCP entrepreneurial intention in a longitudinal study following a class is necessary to conclude whether or not ESE-development has an actual impact on entrepreneurial intentions. And if so, further describe the decreasing entrepreneurial intention amongst graduates found in this paper. This also leads to exploring new ways of giving a more dynamic aspect to the entrepreneurial intention models to describe how and why we see this phenomenon.

The specific type and value of the different entrepreneurial activities not being captured in this study also limits conclusions concerning graduates activity level. More in-depth research is needed to get a better understanding of what type of businesses graduates are involved in, also the level of "success" among the graduates continuing with entrepreneurial activity should be linked towards value created both in monetary and societal terms.

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Appendix A

Q1 Identify ways to combine resources in new ways to achieve goals
Q2 Brainstorm (come up with) new ideas
Q3 Think outside the box
Q4 Identify opportunities for new ways to conduct activities
Q5 Identify creative ways to get things done with limited resources
Q6 Manage time in projects
Q7 Conduct analysis for a project that aims to solve a problem
Q8 Set and achieve project goals
Q9 Design an effective project plan to achieve goal
Q10 Lead and manage a team
Q11 Put together the right group/team in order to solve a specific problem
Q12 Form partnerships in order to achieve goals
Q13 Identify potential sources of resources
Q14 Network (i.e. make contact with and exchange information with others)
Q15 Get others to identify with and believe in my visions and plans
Q16 Clearly and concisely explain verbally/in writing my ideas in everyday terms
Q17 Proactively take action and practically apply your knowledge
Q18 Improvise when I do not know what the right action/decision might be in a problematic situation
Q19 Tolerate unexpected change
Q20 Persist in face of setbacks
Q21 Learn from failure
Q22 Manage uncertainty in projects and processes
Q23 Exercise flexibility in complicated situations when both means and goals are hard to establish
Q24 Work productively under continuous stress. pressure and conflict

Q25 Make decisions in uncertain situations when the outcomes are hard to predict
Q26 Read and interpret financial statements
Q27 Perform financial analysis
Q28 Control costs for projects
Q29 Estimate a budget for a new project
Entrepreneural Attitude
Q30 In general. starting a business is worthless-worthwhile
Q31 In general. starting a business is disappointing-rewarding
Q32 In general. starting a business is negative-positive
Entrepreneurial intentions
Q33 Strongly consider setting up my own business
Q34 Am willing to work hard to set up my own business
Q35 Have been preparing to set up my own business
Social Norms
Q36 I know many people that would be useful if I wanted to start a company
Q37 Many people in my network are interested in entrepreneurship
Q38 I would get good support from my network if I wanted to start a company