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What Characterizes the Candidate Selection Process at Venture Creation Programs

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How are candidates selected at venture creation programs? Venture creation programs (VCPs) teach students entrepreneurship trough the creation of real-life ventures. Existing research on VCPs is limited and has focused on what happens before, during and after the program. However, the process of how candidates are selected for VCPs is currently an unexplored "black box".

PREFACE AND ACKNOWLEDGEMENTS

ABSTRACT

Purpose - There are an increasing number of entrepreneurship educations at universities and a specific type of education where the students learn entrepreneurship through actual venture creation are called *venture creation programs* (VCPs). Existing research on VCPs is limited and has focused on what happens before, during and after the program. However the process of how students are selected for VCPs is currently a "black box". Thus the purpose of this thesis is to investigate the process with the aim of helping the VCPs improve their selection by answering the research question: **What characterizes the candidate selection process at venture creation programs?**

Method - A literature review of existing research on entrepreneurship education and personnel selection was performed. Empirical data was collected through a case study of two venture creation programs in the Nordic region, which investigated their selection process.

Findings - VCP selectors face unique challenges such as a lack of specific job requirements and that candidates lack experience. The VCP faculty believed that ideal candidates did not exist and were found to assess how candidates fit the program through explicit and implicit criteria that matched the candidate's supplementary knowledge, skills, abilities and other characteristics (KSAOs). However, because ventures created by interdisciplinary teams are a key characteristic of VCPs there also existed complementary KSAOs or criteria that were considered to ensure heterogeneity in the candidate mix. Application forms followed by semi-structured interviews were used as assessment methods at both VCPs to collect information on the criteria. CSE used a mechanical composite, while NSE used a judgmental composite for collecting and combining assessment method data.

Implications - The thesis interprets person-environment fit into a VCP context and enhances our understanding of how the unique challenges and characteristics of VCPs affect their selection process through the development of the Person-VCP concept. The conceptual model presented in this thesis can potentially aid the managers and faculty at VCPs to improve their selection processes.

SAMMENDRAG

Hensikt – Antallet utdanningsprogrammer innen entreprenørskap på universitetsnivå har økt betraktelig de siste 30 årene. Såkalte venture creation programs (VCP) er en spesiell program type hvor studentene lærer entreprenørskap gjennom å starte bedrifter. Eksisterende forskning på VCP-er er begrenset og forskningen som har blitt gjennomført har fokusert på deres karakteristikker, utfordringer ved etablering og konsekvenser. Hvordan programmene velger ut studenter er foreløpig et lite utforsket emne. Derfor er hensikten med denne oppgaven å undersøke programmenes seleksjonsprosess og besvare forskningsspørsmålet: **Hva kjennetegner seleksjonsprosessen av kandidater ved venture creation programs?**

Metode – En litteraturstudie ble gjennomført for å avdekke eksisterende forskning innen entreprenørskaps utdanning og personal utvelgelse. Empirisk data ble hentet inn gjennom en case studie av to nordiske VCP-er.

Funn – Utvelgelsen ved VCP-er påvirkes av at de ikke benytter en detaljert beskrivelsene av oppgavene studentene gjennomfører i programmet og at kandidatene har begrenset arbeidserfaring som gjør det vanskelig å skille mellom dem. Fagstaben ved VCP-ene mente at det ikke eksisterer en ideell kandidat. I stedet vurderte de hvorvidt kandidaten passet inn i programmet gjennom eksplisitte og implisitte kriterier som ble sammenlignet med kandidatens ferdigheter og erfaringer. Som følge av at programmene verdsetter tverrfaglighet vurderte de også hvilke komplementære erfaringer kandidaten tilførte klassesammensetningen. Søknadskjemaer og semistrukturerte intervjuer ble brukt til å samle inn informasjon om kandidatene hos case VCP-ene. CSE benyttet en såkalt mechanical composite for å samle inn informasjon og vurdere kandidatene, mens NSE benyttet en judgmental composite.

Implikasjoner – Denne oppgaven bidrar til å økt forståelse av kandidatutvelgelsen hos VCP-er. Gjennom å etablere et rammeverk for å vurdere hvorvidt en kandidat passer inn i et VCP kan denne oppgaven potensielt bidra til å hjelpe fagstaben ved programmene med å velge ut studenter og til å evaluere sin egen seleksjonsprosess.

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1. Introduction

Entrepreneurship education is described as a fragmented field of research (Mwasalwiba, 2010) in a relatively early stage of development (Duval-Couetil, 2013). Existing research on entrepreneurship educations and its students has focused on entrepreneurial intentions before (Bae, Qian, Miao, & Fiet, 2014; Zhao, Seibert, & Hills, 2005) what is learned during (Karlsson & Moberg, 2013; Lackéus, 2013) and the impact of the programs (Duval-Couetil, 2013; Fayolle, Gailly, & Lassas-Clerc, 2006; Moberg, 2014; Mwasalwiba, 2010). Entrepreneurship education programs have been established at an increasing rate to equip students with the knowledge and competency required to create economic value and jobs (Duval-Couetil, 2013). In fact, the number of colleges and universities that offer courses in entrepreneurship have increased from a few to more than 1600, between 1970 and 2005 (Kuratko, 2005).

Historically entrepreneurship education programs have focused on teaching individuals, however many initiatives have become more action- oriented through emphasizing learning by doing. Such programs have been classified as *action-based entrepreneurship programs* (ABEPs) by Rasmussen and Sørheim (2006). A specific type of ABEPs are *venture creation programs* (VCPs), which were defined by Lackéus and Williams Middleton (2011) as, *"entrepreneurship or business educations at a higher education level with the on-going creation of a real-life venture as their primary learning vessel and thus part of formal curriculum"*. This thesis is limited to focus on VCPs. According to Lackéus and Williams Middleton (2015) there exists limited research on VCPs and thus research on this field is considered to be incomplete. Only brief mentions of how candidates are selected have been found, for instance Warhuus and Basaiawmoit (2014) stated that VCPs can be described as being highly selective, because they have a high number of applicants for a limited number of places in the program. Five out of six VCPs studied by Lackéus and Williams Middleton (2011) followed a multi-stage selection process to select between 20-40 candidates. Half of the VCPs included both a written application and interviews as part of the process. Because there exists limited research on selection in VCP context, the author will draw upon research related to the fields of personnel and human resource selection to illuminate the subject. Personnel selection theory is concerned with selecting applicants for a job and obviously there are some differences with regards to selection for educations. These issues will be addressed

in the discussions chapter of this thesis. To address the lack of research on the selection process at venture creation programs this thesis will seek to answer the research question: **What characterizes the candidate selection process at venture creation programs?**

The research question has been decomposed into a subset of questions that will be investigated through this thesis:

- How do the selectors evaluate if a candidate fits the program?
- How do the VCPs use criteria and in their selection process and how are they related to the individual characteristics possessed by candidates?
- How do the VCPs apply assessment methods in their selection process and how is the information collected used for making selection decisions?

The aim of this thesis is to increase our understanding of how candidates are selected at venture creation programs. It will apply theory from personnel selection research to explain how the unique challenges and characteristics of VCPs affect their selection. Thus fulfilling the identified gap in the research with regards to VCP selection. Based on the existing research a conceptual selection model will be created and tested empirically through a case study of two VCPs. The thesis can potentially have a practical impact through providing the VCP faculty members with a conceptual model to aid their selection decisions and for new VCPs when designing their selection process.

2. Literature review

In this chapter a review of existing research will be presented. First the method used for performing the literature review will be described. Second, literature on venture creation programs will be presented. Third, personnel selection research and how it relates to VCP selection will be explained. Fourth, key concepts from personnel selection research such as individual characteristics, criteria and person-environment fit will be introduced. In addition the person-entrepreneurship fit model will be presented as it combines personnel selection and entrepreneurship theory. Fifth, personnel selection research on common assessment methods used in VCPs will be described. Finally a conceptual model for explaining the VCP selection process is created based on the literature review.

2.1 Literature review method

During the fall of 2015 the author performed a pre-study that served as a foundation for this thesis. Through the literature review in the pre-study the author gained an overview of relevant literature within entrepreneurship and personnel selection research. The collected articles were organized in EndNote, a reference management software. The articles were discovered through recommendations by the author's supervisors (Appendix 1), structural searches (Appendix 2) in the academic search engines Google Scholar and NTNU's Oria library search, in addition to backward and forward snowball sampling (Appendix 3) from articles discovered through structured search and recommendations. The structured searches were not constrained to one academic database, because this would limit the potential number of articles discovered. The disadvantage of this method is that less is known about the research's credibility. To mitigate this factor, the number of times the research had been cited was used to assess which papers were the most credible. For snowball sampling the number of references between the discovered articles were used to assess their credibility and contribution to the research field. Of a total of 211 articles and books that were organized into Endnote, 73 sources have been included in this thesis (List of References).

2.2 Venture creation program characteristics

Recently Lackéus and Williams Middleton (2015) stated that limited research has been performed on venture creation programs. Initially Rasmussen and Sørheim (2006) investigated five Nordic universities and defined the term action-based entrepreneurship programs (ABEPs). Lackéus and Williams Middleton (2011) performed a multiple case study

of ABEPs and defined the concept of venture creation programs, which was classified as a specific type of ABEP. They found that VCPs are rare, because the majority of them have recently been established, which could explain the lack of research on the topic. Subsequent research related to VCPs has been performed on the obstacles with establishing VCPs (Lackéus, Lundqvist, & Williams Middleton, 2011), combining university education with incubation (Ollila & Williams-Middleton, 2011), developing entrepreneurial competencies (Lackéus, 2013), entrepreneurial identity (Ollila & Williams Middleton, 2013), program characteristics (Warhuus & Basaiawmoit, 2014) and impact assessment (Moberg, 2014).

Two multi-case studies showed that venture creation programs typically have different characteristics such as goals, program design and values (Lackéus & Williams Middleton, 2011; Warhuus & Basaiawmoit, 2014), which can be summarized as:

- Teaching students entrepreneurship through the creation of real life ventures.
- A focus on technology-based ventures created by interdisciplinary teams.
- The ventures are intended to continue to operate after the program ends.
- The programs are open to students at a university graduate level, which implies that they hold a bachelor's degree or its equivalent education.
- The majority of VCPs were located at engineering universities.

Each individual VCP's characteristics are important to understand as it impacts their selection process and which candidates fit the program.

2.3 Selection in a VCP context

Because there exists limited research on the selection in VCP context, a literature review of research on personnel and human resource selection will be presented next and later applied to illuminate the subject. Theory related to selecting candidates, so called *personnel selection* was found to be a vast and well-established research field (Ryan & Ployhart, 2014; Schmidt & Hunter, 1998). It is closely related to *human resource selection* as described through a textbook with the same title by Gatewood, Feild, and Barrick (2010) and personnel psychology as described through the *Oxford Handbook of Personnel Assessment and Selection* edited by Schmitt (2012).

Human resource selection can be defined as "*the process of collecting and evaluating information in order to extend and offer of employment*", Gatewood et al. (2010. p. 3). In the context of VCPs, selection can be described as collecting and evaluating information in order

to select a candidate for admission. The case when hiring for a job is often selecting one candidate for a specific position, which has a detailed task description. However this is not the case for a VCP, where there is a not necessarily a specified task description and multiple candidates are selected for multiple positions as seen in the study by Lackéus and Williams Middleton (2011).

Gatewood et al. (2010. p. 11) outlined multiple steps for developing a selection process and next it will be shown how this can be applied to VCPs. According to Gatewood et al. (2010. p. 11) the first step is to perform a *job analysis*, a purposeful, systematic process for collecting information on the important work-related aspects of a job. In a VCP context the first step would be to analyse the VCPs goals, program design and characteristics in order to determine how these affect potential criteria and candidate fit. Lackéus and Williams Middleton (2011) revealed that VCPs have a mix of candidates with interdisciplinary technical educational backgrounds on a bachelor level or higher. The second step would be to determine which knowledge, skills, abilities and other characteristics (KSAOs) should be used as criteria to evaluate candidates and how this information is gathered. The third step would be to examine which assessment methods are used to evaluate the criteria. The fourth step would be to examine how the candidate's data collected through the assessment methods are evaluated or scored. The concepts of KSAOs, criteria and assessment methods will be explained next through a review of personnel and human resource selection research.

2.4 The relationship between individual characteristics and selection criteria

Through a literature review of 100 years of personnel selection research Ryan and Ployhart (2014) found that researchers had focused on answering what should be assessed and how it should be assessed in order to predict a candidate's future job performance. These methods could then be used to select the candidates best suited to perform a given job. It is proposed that each individual possesses "certain *knowledge, skills, abilities and other characteristics* (KSAOs)", (Guion, 2011. As cited in Ryan & Ployhart, 2014.p.698). According to Brannick, Cadle, and Levine (2012) one needs to identify and measure the KSAOs that are the most important for job performance. Gatewood et al. (2010. p.69) defined such a KSAOs as a criterion, *"what is meant by employee success on the job"*, and proposed that one should analyse the tasks performed on the job and which KSAOs were necessary to perform them to identify suitable criteria. Next the criterion or multiple criteria could be measured and used to

select candidates through what Gatewood et al. (2010. p.69) refers to as predictors, but what is commonly known as assessment methods. Brannick et al. (2012) defined the KSAOs as:

- *Knowledge,* which concerns factual, conceptual and procedural material e.g. understanding accounting principles.
- *Skills*, which are closely related to procedural knowledge, as actions are taken in sequences coded in knowledge bases e.g. perform the firm's accounting.
- *Abilities*, which refer to capacities or propensities that are applied to a knowledge or skill e.g. performing mathematical calculations.
- O*ther characteristics,* which refer to the person's personality or more specific qualities related to the job e.g. willingness to work in a high-pressure environment.

Other characteristics is linked to an individual's personality and thus a short review on the role of personality in personnel selection and entrepreneurship research will be described next. Personality traits, especially the Big Five, are most relevant to understanding interpersonal interactions as their ability to predict job performance was found to be weak (Murphy, 2012). Leutner, Ahmetoglu, Akhtar, and Chamorro-Premuzic (2014) had a contradicting view and showed that conscientiousness, and to some degree emotional stability, were related to higher job performance. The relationship between the other Big Five traits, extraversion, openness to new experiences and agreeableness was more context dependent. Personality has also been studied within entrepreneurship research. A meta-analytic study by Zhao and Seibert (2006) showed that entrepreneurs differed from managers with regards to four of the Big Five personality dimensions. The entrepreneurs scored significantly higher in conscientiousness and openness to new experience, lower in neuroticism and agreeableness. A meta-analytic review by Zhao, Seibert, and Lumpkin (2010) found that openness to experience, conscientiousness and emotional stability the opposite of neuroticism, in descending order, were significantly related to entrepreneurial performance.

2.5 Person-environment fit

Ryan and Ployhart (2014) found that the main focus within personnel selection research had been on assessing an individual's KSAOs to determine if the individual was fit for a particular job. However researchers were convinced that there were other factors involved beyond KSAOs that determined job performance, such as the fit between a person's personality and values with an organizations culture. Ostroff and Xhan (2012) define the concept of *person-environment (P-E) fit* as, *"congruence or alignment between characteristics of individuals*

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and those of their environment or organization". A fit can take one of two basic forms, supplementary or complementary (Ostroff & Xhan, 2012). *Supplementary fit* is concerned with the person having homogenous characteristics to other individuals in the environment. While *complementary fit* is concerned with the person having heterogeneous characteristics to the other individuals and thus complementing the environment.

The environment component, "E", in P-E fit can be defined as the characteristics of an organization, its structure or the culture and personal characteristics of a groups members (Ostroff & Xhan, 2012). Research has been performed on multiple types of fit at different analysis levels, such as person-person (P-P) fit, person-job (P-J) fit, person-group (P-G) fit and person-organization (P-O) fit (Ostroff & Xhan, 2012). The majority of the research about fit has been focused on current employees rather than in a selection context (Ostroff & Xhan, 2012), with the exception of person-job fit. P-J fit is concerned with identifying individuals with KSAOs that fit a job's requirements. Of the multiple types of fit, P-O fit was found to be best suited in entrepreneurial markets (Ostroff & Xhan, 2012). *Person-organization fit* is about finding the fit between individual characteristics and those of an organization (Ostroff & Xhan, 2012). Several landmark studies have been performed on P-O fit (Cable & Judge, 1997; Kristof, 1996; O'Reilly, Chatman, & Caldwell, 1991), but according to Ostroff and Xhan (2012) there is a lack of research on its implications on both an organizational and group level (P-G fit).

To integrate P-E fit in a selection process one needs to perform a thorough diagnosis of the organization to determine the relevant elements of the E component (Ostroff & Xhan, 2012). For instance a job analysis can be used to assess the job requirements for use in P-J fit. Ostroff and Xhan (2012) stated that one should compare the P-information collected through assessment methods with the E-elements found from the analysis of the environment. Once the E element have been identified, Ostroff and Xhan (2012) suggests choosing a suitable assessment method to assess the P-E fit. According to Chuang and Sackett (2005), the majority of research on fit has used interviews as the assessment method to collect data. Their study investigated the importance of P-J fit and P-O fit in different interview stages when hiring for a job. They found that the interviewers assessed them to differing degrees, were P-J fit was evaluated the most in single interview processes and in the first round of a multiple step process, while P-O fit was considered the most in the second interview round of the latter.

2.5.1 Person-Entrepreneurship fit

Two characteristic of venture creation programs is that they educate the students in entrepreneurship through actual venture creation (Lackéus & Williams Middleton, 2011) and that the ventures were intended to last beyond the scope of the program. Person-environment fit has been interpreted into an entrepreneurial context by Markman and Baron (2003) through the person-entrepreneurship fit model, which is viewed as well suited to explain individual characteristics or KSAOs within a VCP context.

Markman and Baron (2003) coined the term *person-entrepreneurship fit* (P-Ent) as*; "a match between an entrepreneur's personal characteristics and the requirements of being an entrepreneur, which increases the likelihood or magnitude of success".* Where success is defined as launching a technological innovative product into the marketplace. P-Ent fit is based on the proposition that individual difference factors are relevant for explaining entrepreneurial success (Markman & Baron, 2003).

Individual differences in cognitive abilities, personality, interests and core self concepts have been well established through personnel psychology research as relevant for understanding behaviour in organizations (Murphy, 2012). Whether the individual differences of entrepreneurs matter has been discussed in the entrepreneurship literature. As seen in the literature review undertaken by Dvir, Sadeh, and Malach-Pines (2010), early research on entrepreneurial characteristics (Gartner, 1988; Shaver & Scott, 1991) criticised the link between individual differences in entrepreneurs and venture performance, because only weak effects were found (Aldrich & Wiedenmayer, 1993), and called for a focus on behaviour rather than traits (Gartner, 1988). More recently Baum, Locke, and Smith (2001) agreed that a different approach was needed and thus went beyond traits to study competencies, cognition, behaviour and motivation, which are closer to performance in terms of causality. However Baum et al. (2001) disagreed that individual characteristics are unimportant, arguing that they have indirect effects on venture performance. Brush and Chaganti (1999) suggested that the founder's individual competencies were key for explaining the performance of new ventures. This was further supported by a longitudinal study by Baum and Locke (2004), which showed that entrepreneurs' traits, skills and motivations are significant direct or indirect predictors of new venture performance over a 6 year period.

The *person-entrepreneurship fit* model, as seen in Figure 1, consists of five individual-difference variables where there exists evidence for their link to entrepreneurial success (Markman & Baron, 2003): *self-efficacy* (Chen, Greene, & Crick, 1998; Makhbul & Hasun, 2010; McGee, Peterson, Mueller, & Sequeira, 2009), *the ability to recognize opportunities, personal perseverance* (Makhbul & Hasun, 2010), *human and social capita*l (Unger, Rauch, Frese, & Rosenbusch, 2011) *and superior social skills* (Makhbul & Hasun, 2010). The model can be seen in Figure 1. The five variables distinguish those who create successful ventures from those who do not (Markman & Baron, 2003).

According to Markman and Baron (2003) the P-Ent fit dimensions are open to modification through appropriate training. Therefore they can potentially be enhanced through a VCP. Therefore it will be
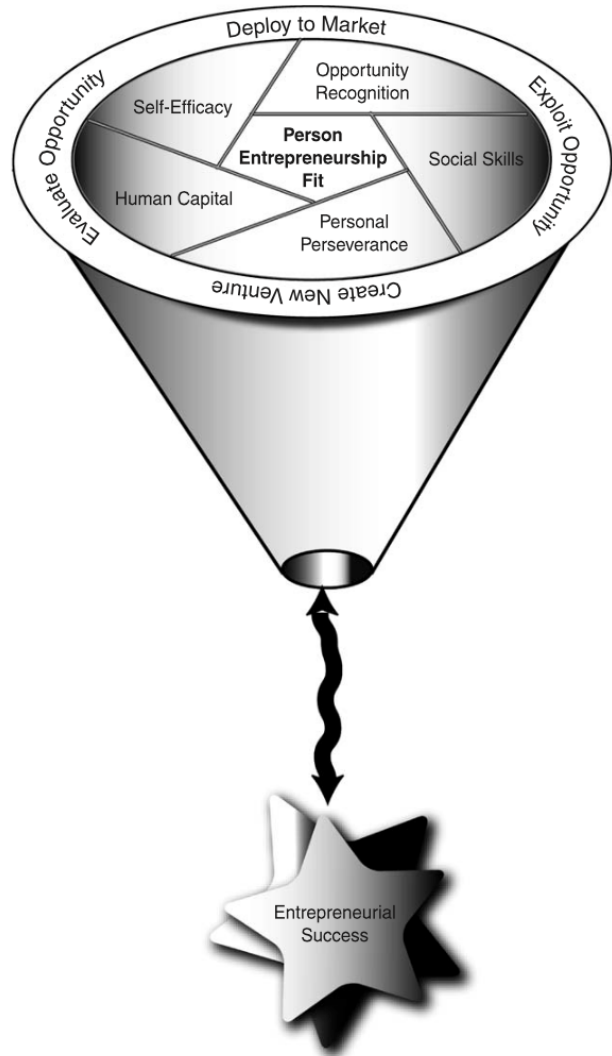
Figure 1. Person-entrepreneurship fit model. Source: (Markman & Baron, 2003)

important to investigate which KSAOs the candidate is expected to possess *prior* to admission and that are thus evaluated, versus what they are expected to learn *during* the VCP. Next the five dimensions or constructs of P-Ent fit will be described in more detail.

Entrepreneurial self-efficacy and its five dimensions

Entrepreneurial self-efficacy (ESE) is a personal attribute and can be defined as a construct which measures a person's belief in their ability to successfully launch an entrepreneurial venture (McGee et al., 2009). It originates from psychology research on *self-efficacy* by *Bandura (1977).* In a exploratory review of the historical development of entrepreneurial self-efficacy Mauer, Neergaard, and Linstad (2009) showed that ESE is a well established field of

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research. ESE is considered to be a strong predictor of entrepreneurial intentions and action to create new ventures (Chen et al., 1998; Karlsson & Moberg, 2013; Krueger, Reilly, & Carsrud, 2000; McGee et al., 2009). Several scales for measuring ESE have been developed (Chen et al., 1998; De Noble, Jung, & Ehrlich, 1999; McGee et al., 2009). Moberg (2014) identified five skills sets, based on the work of Chen et al. (1998), De Noble et al. (1999) and McGee et al. (2009), and combined them into a multi dimensional scale for use on students in entrepreneurial education assessment. The ESE dimensions have been covered in various literature *search/creativity* (McGee et al., 2009)*, marshalling of resources* (Karlsson & Moberg, 2013)*, planning/management* (Karlsson & Moberg, 2013; Mwasalwiba, 2010) *financial literacy* (Henneke & Lüthje, 2007)*, and managing ambiguity* (Bae et al., 2014). There exists an overlap between the literature regarding search/creativity and opportunity recognition, a dimension of person-entrepreneurship fit, which will be covered in the next subchapter. According to Moberg (2014), *"Students with entrepreneurial experience had significantly higher levels of ESE in every dimension, which demonstrates a predictive validity for the measure "*.

Opportunity recognition

According to Venkataraman (1997) opportunities are not simply discovered, they have to be developed and in this process individual differences matter. To recognize and exploit entrepreneurial opportunities an individual must possess both specific prior knowledge (Corbett, 2007; Fiet, 2007; Shane, 2000) in the form of experience and education in addition to cognitive abilities (Corbett, 2007; Shane, 2000). In the literature it is debated whether specific human capital (Ucbasaran, Westhead, & Wright, 2008) or general human capital (Corbett, 2007) is better to discover opportunities and to exploit them (Davidsson & Honig, 2003). Markman and Baron (2003) suggests that entrepreneurs who are better at monitoring and processing information, through cognitive processes, will identify unrecognized opportunities in their environment.

Human and social capital

Human capital can be defined as *"skills and knowledge that individuals acquire through investments in schooling, on-the-job training and other types of experiences"*, (Becker, 2009). Several studies have been performed on multiple aspects of entrepreneurial behaviour, thus linking entrepreneurship with human capital (Marvel, 2013). Specific human capital such as prior startup experience and formal education has been shown to facilitate nascent

entrepreneurship (Davidsson & Honig, 2003), the number of opportunities entrepreneurs identify (Corbett, 2007; Fiet, 2007; Ucbasaran et al., 2008; Unger et al., 2011), venture survival (Bosma, Van Praag, Thurik, & De Wit, 2004) and venture performance (Ganotakis, 2012; Rauch, Frese, & Utsch, 2005; Unger et al., 2011). While general human capital has been shown to increase the number of opportunities entrepreneurs identify (Corbett, 2007). Technical experience was significantly related to pursuing, but not the discovery of opportunities (Ucbasaran et al., 2008). Ganotakis (2012) found that teams with a heterogeneous combination of skills such as education, commercial- and managerial experience perform better. Marvel (2013) called for the development of educational programs where students can develop specific knowledge through working in startups, which is basically what a VCP does in practice. Davidsson and Honig (2003) defined *social capital* as the ability of an actor to benefit from their social network. Social capital, in terms of having close friends or parents who are business owners, was found to be a strong and consistent predictor of entrepreneurial activity and venture success.

Social skills

Social skills or competencies can be defined as, *"an individual's ability to effectively develop, maintain, and utilize social capital",* (Baron & Markman, 2003). Social skills play a key role for the entrepreneur in, effectively acquiring information, attracting key employees and obtaining financing, venture survival (Makhbul & Hasun, 2010) and perseverance (Lamine, Mian, & Fayolle, 2014). The social skill constructs that were tested varied between the studies. Social perception, social adaptability and expressiveness were found to be significantly related to financial success measured in yearly income, while persuasion, emotional intelligence and impression management were not significant (Baron & Markman, 2003). Through a survey of new ventures in China, Baron and Tang (2008) discovered that social perception, expressiveness and self-promotion, a component of impression management, were significantly related to new venture performance. Through a survey of Tunisian entrepreneurs Omrane (2015) found that social skills, such as persuasiveness, impression management and emotional intelligence does have a significant impact on the entrepreneur's financial success and new venture performance. Huffcutt, Conway, Roth, and Stone (2001) examined four social skill constructs measured in employment interviews: 1) communication skills, 2) persuasive ability, 3) leadership skills, 4) interpersonal skills. The latter two were found to have a higher predictive validity than the former two. Interpersonal

skills is defined as, *"a persons ability to relate to, understand, work with and develop rapport with others"* (Huffcutt et al., 2001). It is thus considered to be similar to social adaptability.

Perseverance

Entrepreneurs encounter substantial uncertainty when they create and sell new products and individuals high in perseverance perform more adeptly under challenging circumstances (Markman & Baron, 2003). Gelderen (2012) suggests tenacity as a measure of perseverance, with it being defined as, *"the tendency to persist and endure in the face of adversity"*. However Baum and Locke (2004) found that tenacity was not directly related to venture performance, but it was indirectly related through self-efficacy and directly related to the entrepreneur's ability to acquire new resources. In a longitudinal case study of university spin-offs Lamine et al. (2014) showed that high levels of tenacity along with social skills are needed to overcome adversity, uncertainty and ambiguity to ensure survival in the early stages of new technology-based ventures.

2.6 Assessment methods

Assessment methods is a well covered area within personnel selection as made evident by Schmidt and Hunter (1998) in the meta-analytic review; *"The validity and utility of selection methods in personnel psychology: Practical and theoretical implications of 85 years of research"*. The most important property of a personnel assessment method is its *predictive validity*, the ability to predict future job performance, job related learning and other criteria (Schmidt & Hunter, 1998). According to Schmidt and Hunter (1998) using hiring methods with increased predictive validity leads to a substantial increase in employee performance. The top 10 assessment methods from Schmidt and Hunter (1998) are listed in descending order with their predictive validity score included in parentheses: 1) Work sample tests (0.54). 2) General mental ability (GMA) tests (0.51). 3) Structured interviews (0.51). 4) Peer ratings (0.49). 5) Job knowledge tests (0.48). 6) Training and experience behavioural consistency method (0.45). 7) Job try-out procedure (0.44). 8) Integrity tests (0.41). 9) Unstructured interviews (0.38). 10) Assessment centers (0.37).

KSAOs are difficult or impossible to measure with a single assessment (Van Iddekinge & Ployhart, 2008) and use of multiple assessment methods can increase the validity of the overall selection system (Finch, Edwards, & Wallace, 2009; Schmidt & Hunter, 1998). Five of the six VCPs studied by Lackéus and Williams Middleton (2011) followed a multi-stage

selection process. Finch et al. (2009) modelled how predictor combinations in multi-stage selection affect the expected performance of the selection system. They found that an important factor in the model was the *first stage selection ratio* (SR_1), how many applicants proceed to the next stage. Multi-stage selection processes, which combined biodata (application forms) and structured interviews were found to have a mean predicted performance ranging between 0.515 for a $SR_1=0.15$ and 0.321 for a $SR_1=0.75$ (Finch et al., 2009). Because the majority of the VCPs combined application forms and interviews in their selection process (Lackéus & Williams Middleton, 2011), these assessment methods will be described in more detail.

2.6.1 Application forms

According to Gatewood et al. (2010. p. 337) *application forms* usually contain; "*a series of questions designed to provide information about the general suitability of applicants for jobs to which they are applying*". It is further noted that application forms typically serve the purpose of determining whether applicants meet some minimum requirements and to compare the relative strengths and weaknesses of the applicants. When there are a large number of applicants, the costs of selection becomes an important factor for an organization and thus they require low cost tools such as application forms (Gatewood et al., 2010. p. 4) to reduce the number of applicants. Application forms that are developed and scored to maximise performance is typically referred to as *biodata* within the human resource literature. According to Gatewood et al. (2010. p. 341) meta-analytic evidence assesses the predictive validity of biodata somewhere between 0.30-0.40. This would place it below the validity of a structured interview (0.51) and within the same range as an unstructured interview (0.38) based on the findings of Schmidt and Hunter (1998).

2.6.2 Structured and unstructured interviews

Employment interviews can be either structured or unstructured (Huffcutt, Roth, & McDaniel, 1996). According to Schmidt and Hunter (1998) unstructured interviews do not follow a fixed format or set of questions. There is no fixed procedure for scoring responses, responses to individual questions are usually not scored and only an overall evaluation or rating is given to each applicant based on a summary of impressions and judgments (Schmidt & Hunter, 1998). Structured interviews are the exact opposite on all counts and had the third highest predictive validity examined in the meta-analytic review, the disadvantage is that they are more costly to construct (Schmidt & Hunter, 1998). Structured interviews have a higher predictive validity and are thus valued above unstructured interviews by Schmidt and Hunter (1998), Huffcutt et

al. (2001) and Gatewood et al. (2010). The interview questions in structured interviews are typically based on a careful job analysis (Schmidt & Hunter, 1998). In a meta-analytic study Huffcutt et al. (2001) investigated how employment interviews could be used to measure psychological constructs such as knowledge and skills, social skills, mental capability, the Big Five personality characteristics and organization fit. For determining interview questions and best practices interested readers can review Chapman and Zweig (2005) and Klehe, König, Richter, Kleinmann, and Melchers (2008).

2.6.3 Collecting and combining information from assessment methods

Both the collection and combination of information through the assessment method can be performed either mechanically or judgmentally (Gatewood et al., 2010. p.213). *Judgmental collection* is defined as, *"use of human judgment by the selection decision makers in collecting applicant information",* (Gatewood et al., 2010. p.213) e.g. an unstructured interview. While *mechanical collection* involves *"no use of human judgment",* (Gatewood et al., 2010. p.214) e.g. an application form. Gatewood et al. (2010. p. 216) lists eight different ways of collecting and combining information from assessment methods. According to Gatewood et al. (2010. p. 216) mechanical data collection and combination methods e.g. a *mechanical composite*, has been found to give equal or superior results over judgmental methods e.g. a *judgmental composite*. Mechanical predictor combination involves applying a formula, which uses the collected data as input to calculate an overall score. Deciding on how to weight the different inputs can be difficult, however even when the inputs were weighted equally the mechanical combination resulted in better selection decisions than processes using judgmental combination (Gatewood et al., 2010. p. 216). Gatewood et al. (2010. p. 218) suggests four strategies for combining the different inputs also known as predictor scores, 1) multiple regression, 2) multiple cutoffs, 3) multiple hurdles and 4) Combination method.

2.7 Summary of literature review

Through the literature review it was discovered that entrepreneurship education, is a fragmented field of research (Mwasalwiba, 2010)in a relatively early stage of development (Duval-Couetil, 2013) and that limited research has been performed on venture creation programs (Lackéus & Williams Middleton, 2015). Based on the work of Lackéus and Williams Middleton (2011) and Warhuus and Basaiawmoit (2014) the key characteristics of venture creation programs were described. Because limited research had been performed on VCPs and their selection process was only briefly mentioned through this research, personnel

selection was used to shed a light on the subject. Personnel selection was found to be a well established research field (Ryan & Ployhart, 2014; Schmidt & Hunter, 1998). The concepts of KSAOs and criteria were introduced. However it was discovered that there were other factors involved beyond KSAOs to determine how well a candidate fit a job and so the concept of person-environment fit was introduced. It was discovered that person-environment fit had been interpreted into an entrepreneurial context by Markman and Baron (2003) through the person-entrepreneurship fit model. Finally application forms and interviews, the assessment methods most commonly used by VCPs as identified by (Lackéus & Williams Middleton, 2011) were reviewed in addition to how one can combine the information collected through them to make selection decisions.

Based on the literature review the author has developed a conceptual framework, as shown in Figure 2, for selecting candidates at venture creation programs, which will be explained next. VCPs accept multiple candidates each year, typically through multi-stage selection processes (Lackéus & Williams Middleton, 2011). Each VCP has faculty members that are responsible for running the program and the selection process. According to Gatewood et al. (2010) assessors should perform an analysis of the job to determine its characteristics. Based on this information one should define criteria and choose suitable assessment methods to collect and evaluate information about the candidates. In a VCP context, the criteria would be influenced by the VCPs characteristics, but decided by the faculty members. The faculty would also select the assessment methods that are to be used to collect information and evaluate the criteria. Application forms and interviews were the most common assessment methods amongst VCPs studied by Lackéus and Williams Middleton (2011). Each individual candidate possesses certain KSAOs and the faculty will assess the level of fit between these KSAOs and the criteria. The person-entrepreneurship fit model identified certain individual characteristics that were related to being a successful entrepreneur (Markman & Baron, 2003). Through the review of research on entrepreneurial self-efficacy it was discovered that ESE, could be further broken down into multiple skill sets based on the work of Chen et al. (1998), De Noble et al. (1999) and McGee et al. (2009). As a result the author has compiled a list of eight variables, which can be compared to the KSAOs of individual candidates. It is expected that individuals who possess these characteristics would be considered a good fit for venture creation programs by the faculty members. Finally the faculty members make a selection decision about which candidates are accepted into the program. Next an empirical study will be performed to test whether the conceptual model holds up in reality.
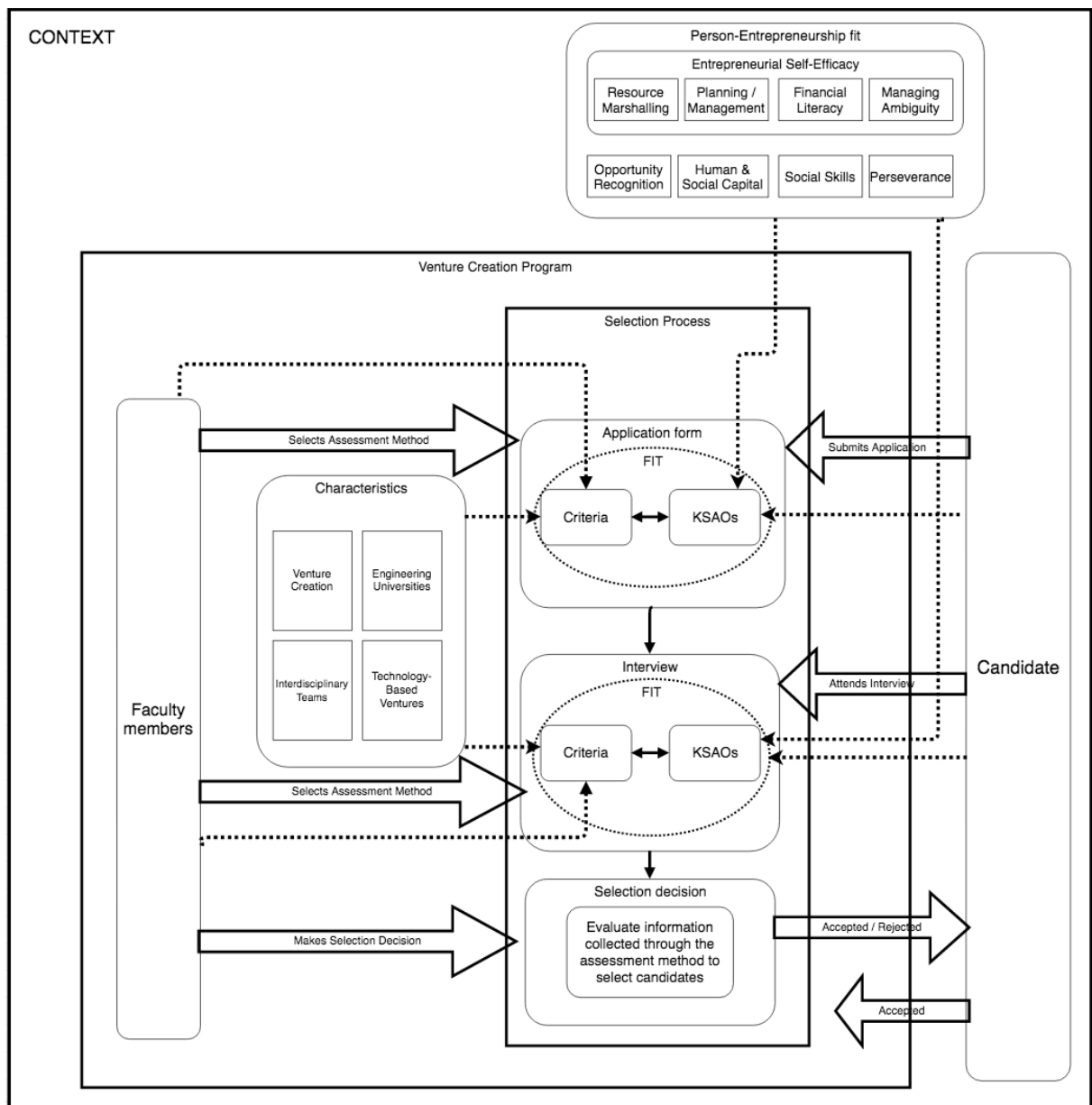
Figure 2: Conceptual Model of the Selection Process at
Venture Creation Programs

3. Method

This chapter describes the method for collecting and analysing data. It consists of multiple parts, research design, case study selection, case presentation, data collection, data analysis and limitations, which will be described in detail.

3.1 Research design

According to Lackéus and Williams Middleton (2011) VCPs are rare and the majority of them were recently established. The phenomenon of how candidates are selected for these programs is currently a "black box" and it was decided to perform an exploratory case study of real life VCPs. This is supported in the light of Eisenhardt (1989) who stated that theory building from case studies is most applicable in the early research stages of a topic, when little is know about the phenomenon or there is a lack of empirical substance to existing perspectives. A multiple case study was selected. This is supported by Yin (2009) who stated that a multiple case study is more robust than single case studies. A qualitative research method was selected, because according to Dalland (2012) the qualitative method allows you to capture and interpret experiences, which are difficult to measure or quantify.

3.2 Multi-case study and case selection

The scope of the case study is constrained by the following criteria:

- The entrepreneurial education program must be defined as a venture creation program, by Lackéus and Williams Middleton (2011) definition. Thus the program must be at a higher-level education, where the students learn entrepreneurship through venture creation.
- A higher-level education is specified as a master or graduate level university, with the program length being a minimum of 2 years.
- The VCPs must be located at universities with engineering faculties, because according to Warhuus and Basaiawmoit (2014), high growth technology ventures are typically created by individuals with a high educational level and a technical background.
- As part of the VCP the students must create ventures in interdisciplinary teams, because fostering heterogeneous founding teams with different academic backgrounds is important (Henneke & Lüthje, 2007). As a result the VCPs must also accept students from different educational backgrounds, beyond engineering.

Through the literature review six potential cases were discovered from Lackéus and Williams Middleton (2011) and four additional cases from Warhuus and Basaiawmoit (2014). As described in the two mentioned papers, the programs differ in their objectives and designs. There were only two programs that met all of the four criteria, Chalmers School of Entrepreneurship (CSE) and NTNU School of Entrepreneurship (NSE). As a result these VCPs were selected as the two case studies in the thesis.

3.3 Case Presentation

Case 1: Chalmers School of Entrepreneurship

Chalmers School of Entrepreneurship (CSE) is a two-year master's degree program at Chalmers University of Technology. The main focus of CSE is to educate students in entrepreneurship through venture creation. CSE follows a structured approach when selecting venture projects and teams, where the students can submit their wishes for both team and idea, but the faculty makes the end decision. The ideas used to create the ventures are typically brought into the program by the faculty from external partners.

CSE differs from NSE in that it consists of four different program tracks: 1) Technology venture creation: The students create new technology-based ventures in cooperation with idea providers from academic research and R&D departments at major firms. 2) Bioscience venture creation: The students learn to create new ventures within the field of Bioscience. 3) Corporate entrepreneurship: The students work with creating innovative products and services within a large corporation. 4) Intellectual capital management: Focuses on teaching students how to evaluate and package intellectual assets from R&D in the academia and industry. Venture creation is not a part of this track. A more detailed description of the four tracks can be found at the program's website www.chalmers.se. The Technology and Bioscience track are the most similar to the program at NSE, as venture creation is a core part of the tracks. Therefore further analysis will be limited to these tracks.

Case 2: NTNU School of Entrepreneurship

NTNU School of Entrepreneurship (NSE) is a two-year master's degree program governed by the Department of Industrial Economics and Technology Management at the Norwegian University of Science and Technology. NSE is an action-based entrepreneurship program, where technology-based venture creation is a key part of the students learning. Through the

program the students start new technology-based ventures from their own ideas, external ideas or by commercializing university research. At NSE the process of selecting venture projects and teams can be viewed as having a lower degree of structure, because the students are allowed to select their own ideas and teams. The faculty sources some of the ideas, but the students are also able to bring their own ideas into the program.

At both CSE and NSE the educational courses are closely related to the venture creation process and in both programs the students write a master thesis in their final semester besides working on their ventures. Further similarities in the programs are presented in Table 1, below.

General Characteristics	CSE	NSE
University	Chalmers University of Technology	Norwegian University of Science and Technology
Start Year	1997	2003
Program Tracks	4	1
Program length	2 years	2 years
Candidate places	Multiple - 55	Multiple - 40
Goals / Objective	Educate through venture creation to enhance entrepreneurial capability	Educate the world's best business developers
Venture project time	1 year	1,5 years
Venture ideas	Provided by faculty	Self selected by students
Venture creation process	Multi-phase from initial evaluation to incorporation. Faculty provide venture projects and select teams. Final go/no go for incorporation at end or post education.	Multi-phase. First idea screening course. Second self selected teams. Third, self selected ventures
Teams	Yes. 2-3 students per team (interdisciplinary) Faculty chooses teams	Yes. 2-4 students per team (interdisciplinary) Students choose teams
Selection process per year	2 (Fall & Spring)	1 (Spring)
Engineering faculties at University	Yes	Yes
Allow Internal and External applicants from different academic backgrounds	Yes	Yes
Allow International students	Yes	No

Table 1: General Characteristics of the Selected VCP Cases.

3.4 Data collection

To strengthen the research the empirical data was collected through two main sources, semi-structured interviews and field observations as suggested by Dalland (2012) and Gioia, Corley, and Hamilton (2013). In addition information from the VCPs websites were used to provide information about the program's structure.

3.4.1 Selecting informants to interview

Key faculty members that were involved in different stages of the selection processes at CSE and NSE were interviewed as part of the primary data collection, because according to Dalland (2012.p. 163) one should select persons of interest with specific knowledge or experiences. In addition it was viewed as key to interview a senior faculty member who had been involved in developing the selection process and a faculty member who was responsible for administrating the current process. The remaining informants were selected based on the criteria that they had to participate in at least five candidate interviews at their respective VCP and that the author was able to observe them performing candidate interviews. At NSE one potential informant was excluded to remove potential bias, as the person is also the author's supervisor for this thesis. At CSE there were three potential informants that the author was unable to observe, as their interviews were held in parallel to the candidate interviews that the author did observe. As a result they were not chosen as informants. This is viewed as acceptable, because according to Dalland (2012. p.165) the qualitative interview is supposed to provide in-depth information, which implies that a high number of interviewees are not necessary. The interviews that were conducted lasted between 40-120 minutes as seen in the Table 2..

Program	NSE	CSE
Informants	7	5
Gender	Female: 1 Male: 6	Female: 3 Male: 2
Former students	Yes: 5 No: 2	Yes: 2 No: 3
Selection role	Process Administration: 1 Application Assessment: 1 Interviewers: 6 Final Selection: 6	Process Administration: 1 Application Assessment: 1 Interviewers: 4 Final Selection: 1
Interview Length	40 - 120 minutes	40-110 minutes
In-person / video interviews	In-person: 4 Video: 3	In-person: 3 Video: 2

Table 2: Overview of VCP Faculty Informants.

Some of the informants are involved in multiple stages of the selection processes at their respective VCP.

3.4.2 Executing field observations

The author wanted to observe the candidate interview process of the VCPs as this enabled the exploration of the selection process from the inside. Therefore the interviewer asked the faculty members of both NSE and CSE for permission to attend as many candidate interviews as possible. This resulted in the observation of 23 interviews at NSE and 11 at CSE. Before observing candidate interviews, the author had to have the candidate and informants' permission. At the beginning of each interview the candidate was made aware of the observer's role, which was to observe the interviewers. In addition the observer kept silent during the candidate interviews. These steps were taken to minimize any influence observer's presence had on the candidate interview.

3.4.3 Executing interviews

The interviews were semi-structured as advocated by Yin (2009) and Dalland (2012), because it enabled the author to both follow an interview guide written prior to conducting the interview, but also to pursue interesting statements with follow up questions. The interview guide (Appendix 4) was created based on the insights gained from the field observations and literature review to find answers to the research question. The same guide was used at both NSE and CSE. This made it possible to compare similarities and differences between the VCPs. The interview guide consisted of two parts. The first contained questions related to the VCP and overall selection process and was therefore used for informants who created and administered the process. While the second contained questions related to assessing candidates and was used for the informants who interviewed candidates. Some informant interviews used both parts, because the informants were responsible for organizing the selection process and interviewing candidates. The interview guide went through several iterations during the interviewing process as the author made new discoveries. Therefore the author sent out emails to faculty members that were interviewed earlier in the process and asked for their opinion on new questions that arose based on subsequent interviews. This is supported by Gioia et al. (2013) who stated that the researcher must persevere the flexibility to adjust interview questions based on informant responses and then backtrack to prior informants and ask questions that arise from newer interviews to preserve data consistency.

All the interviews were recorded with the informant's permission and later transcribed. The author also took notes during the interview. As seen in Table 2, some of the interviews had to be performed over Skype, a video communication service, because of time constraints. The NSE faculty members were interviewed in Norwegian. While the CSE faculty members were interviewed in English.

3.5 Data analysis

Data Analysis Scope

This thesis limits itself to focus on the *selection* process at VCPs and not the *recruitment* process. Gatewood et al. (2010. p. 307) defines *recruitment* as "organizational activities that influence the number and types of individuals who apply for a position". This is not to be mistaken for *selection*, which is the process of choosing between candidates who have applied for a position. What happens prior to submission is a part of the recruitment process, so it does not contribute to answer the research questions. Thus the study is limited to examine what happens after the applicant has submitted their written application and before the final candidate list is sent to the university's admissions office. After this point, VCP faculty members role in the selection process is completed, thus it serves as a natural cut off point.

Executing data analysis

The interviews were uploaded to and transcribed using NVivo, a qualitative data analysis software. The field notes from the direct observation at NSE and CSE were uploaded into NVivo as well. Next the interviews were coded and organized into 1st order categories, labelled as nodes in NVivo, which allowed the author to compare the informant answers on various topics. Next the most important quotes related to the various nodes were selected and presented in the findings chapter of this thesis. Until this point the NSE informants' answers had been preserved in Norwegian, but now they were translated into English. To ensure the anonymity of the informants they are not referred to by name or job role. How the 1st order categories relate to the theoretical concepts identified in the literature review is shown in Figure 3 below.
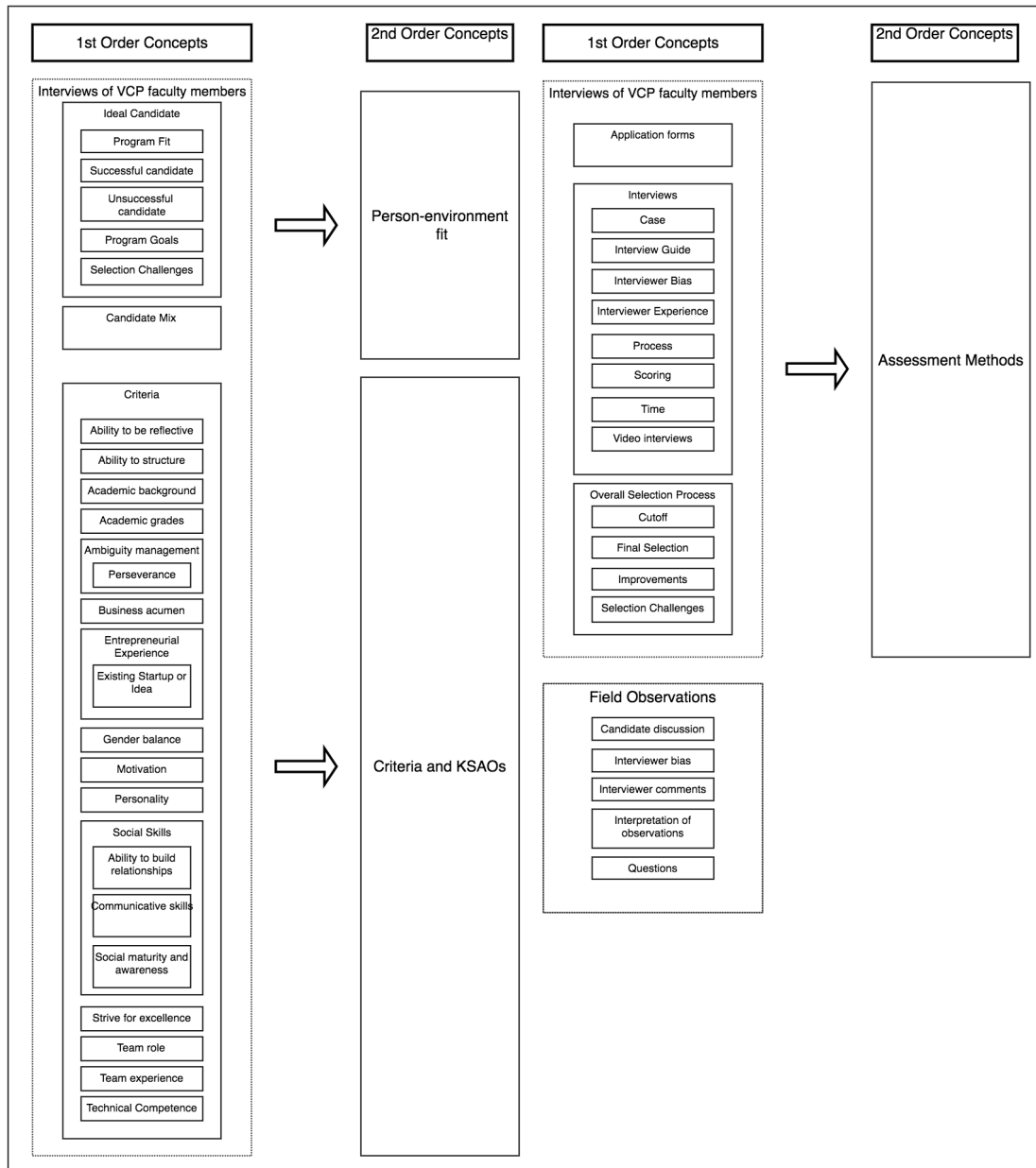
Figure 3: Data Structure

3.6 Method limitations

In this subchapter the limitations related to the method of the thesis will be presented in addition to strategies for mitigating them.

3.7.1 Case selection

One potential weakness of the paper lies in its choice of research design as a multi-case study of only two cases. According to Eisenhardt (1989) it is difficult to generate theory with much complexity and its empirical grounding is likely to be unconvincing if less than four cases are used in the study. A second potential weakness of the case selection is that because the author is a student at NSE it can create bias, which weakens the research's reliability. The advantage is that the author possesses first hand knowledge about the program and has gone through the selection process as a candidate.

3.7.2 Data collection

The author performed the literature review before writing the interview guide. The result being that the author had a preconceived notion of potential assessment criteria, before investigating the selection process. Knowing the literature in too much detail can result in *confirmation bias* (Gioia et al., 2013). This had an impact on the interview questions in the interview guide in terms of which topics the interview objects were asked to talk about. In defence of this method, the author would first argue that this process lead to more data points being discovered than if the author simply asked about how candidates were evaluated and stopped without asking further questions. Because an innate weakness of interviews is that they can contain inaccuracies due to poor recall from the informant (Yin, 2009). Second, the interview guide was revised during the process as new information was discovered and the author backtracked to collect answers to the new concepts to ensure data consistency as suggested by Gioia et al. (2013). Third, measures were taken to reduce potential confirmation bias. Before being asked about specific concepts or criteria, the informants were asked if they could describe an ideal candidate for the program. This ensured that the informants were able to describe what they thought were important about candidates, before being subjected to any of the concepts chosen by the author. In addition the informants were asked whether they followed a list of criteria when assessing the candidates, which triggered responses about how the candidates were assessed.

All of the interviews were transcribed with one exception. During this interview the audio recording stopped functioning five minutes into the interview. As a result the author had to rely on the field notes taken during the interview. To mitigate this issue findings from this interview are less present in the findings chapter.

Because the interviews at NSE were performed in Norwegian, the author had to translate the answers to English before presenting them in this thesis. Thus a potential weakness is that the interviews have not been translated correctly. However the translation was performed at the best of the author's ability, with the intention of preserving the voice of the informant to mitigate potential bias. It was considered that the benefits of performing the interview in the informants and author's shared native language outweighed the cons of translating the interviews.

3.7.3 Data analysis

When interpreting the results of the people leap to conclusions based on limited data (Tversky & Kahneman, 1973). According to Eisenhardt (1989) this implies a danger that investigators reach premature and false conclusion, because of information processing biases. To avoid this the empirical data was organized into 1st order concepts with NVivo. This enabled the author to compare similarities and differences across the selected cases, in line with Eisenhardt (1989). In addition the empirical findings have been presented, in chapter 4, separately from the discussion of the findings in chapter 5. This is to present the findings without the author's interpretation to reduce potential bias.

4. Findings

In this chapter the empirical findings will be presented in the form of quotes from the faculty members at each case to show similarities and differences between the VCPs. Findings from each of the program's will be presented with regards to their use of assessment methods, criteria and how selection decisions are made. In addition the faculty member's views on their respective program's goals, candidate fit, candidate mix, selection challenges and improvements will be described.

4.1 Chalmers School of Entrepreneurship

Chalmers School of Entrepreneurship has two admissions rounds, one in the fall for international and non-Chalmers University students and one in the spring for Chalmers University students. The total number of applicants through the different selection stages can be seen in Table 3 below. The selection process at CSE consisted of multiple stages and was the same for both rounds of admission. CSE had one faculty member who was responsible for organizing the whole selection process. "*It is really important that we have a person, that is not partial, because I need to know everything about the applicant*". This role included choosing which faculty members assessed the application forms and performed candidate interviews.

Selection Statistics 2017	NSE	CSE
Number of candidates per step	Spring	Fall + Spring
Application to Admissions Office	352	387
Written Application	161	185
Selection Ratio (SR$_1$): Application to Interviews	0.71	0.34
Interviews	115	62
Selection Ratio (SR$_2$): Interviews to admitted	0.31	0.66
Admitted	36	41

Table 3: Statistics for the Different Selection Process Stages at the Selected Case VCPs.

4.1.1 Stage 1: Application Form

The first step in the selection process based on the case study scope is considered to be when the candidates submit their application form to CSE. The application form, referred to as an essay by the CSE staff, can be found on CSE's website. The application form consists of five main questions and multiple sub-questions (Chalmers School of Entrepreneurship, 2016). The intent of the questions is for the candidates to describe themselves, their background, past experiences and motivation for attending CSE.

Next, the process administrator organized each candidate's application in a digital assessment form, anonymized their answers and assigned them a candidate number. According to the informant a group consisting of five faculty members and individuals closely related to the program assessed the applications. The assessors were assigned one question each from the application form and then assessed the answers from all of the candidates related to this question. The assessors did not know the identities of the candidates', because only the candidate number was visible for them.

Each of the five application questions are graded quantitatively from 0-10 in addition to a qualitative comment. CSE had a written application assessment guide, which explained the six criteria and their relation to each question. It also contained an explanation of how to score the candidate's answers, which reflects how well the answers fulfil the criteria. The maximum score is 50 points. To progress to the next stage of the selection process, interviews, the candidates must score above a threshold of 30 points on average across the questions and receive a score of five or higher on each individual question. The application assessment guide contained seven criteria: communicative skills, ability to handle complexity and ambiguity, teamwork experience and social skills, social maturity and awareness, responsibility and strive for excellence. The first two were considered to be the most important and as a result they were assessed for each of the five questions. When asked why they were the most important a faculty member stated that*; "(...) they are something that really permeates the entire education, I mean the ability to communicate is essential. (...) And if you can't deal with some kind of uncertainty, you will again struggle"*.

After each candidate application had been assessed the administrator organised the scores and comments into the digital assessment form. After assessing all of the candidates the five assessors had a meeting along with the administrator where they discussed the application

form scoring and questions. Candidates who received four or lower on individual questions were reviewed again and potential adjustments to the scores were made. *"Because we would rather see them at the interview and say no, this was not right instead of judging them earlier",* a faculty member stated. Finally a list of candidates who progressed to the next stage was assembled and invitations were sent out to the candidates.

4.1.2 Stage 2: Interview

The candidates were invited for an in-person interview at CSE, if they are unable to attend the interview was hosted over a video tool such as Skype. The administrator chose the interview pairs and assigned candidates to the interviewers. This was the first time in the selection process the candidate's names were visible to the interviewers. The faculty member stated that; *"Here it is also crucial that if you have had a course and you know this person you need to tell me so that you are totally impartial when you do the interview".* All of the interviews for each admissions round were completed in one day. In total there were seven interviewers consisting of faculty members and alumni's.

30 minutes were assigned for each interview, where about 25 minutes were spent interviewing the candidate and 5 minutes were available if the candidate has any questions for the interviewers. The interviewers had access to a written interview guide with a definition of the criteria that should be assessed and a description of how to score them. Also, it contained interview questions, however the interviewers had freedom to choose which questions to ask. According to a faculty member the interviews are scored the following way: a) +5 points, b) -5 points, c) 0 points or d) No, disqualified. In addition a qualitative comment was written down. To assess the candidates the interviewers relied on four explicit criteria listed in the written interview guide: 1) Communication. 2) Ability to be reflective. 3) Ability to structure (deconstructive, constructive, and reconstructive). 4) Ability to build relationship (social skills).

Field observations of the interviews

Through field observations the following similarities appeared to be consistent between the interviews. Prior to the interview, the interviewers read through and wrote down questions based on the candidate's application. In both interview pairs observed the interviewers typically divided themselves into two roles, a lead interviewer who asked the majority of the questions, while the other took notes of the candidate's answers. After the interview the

interviewers discussed the candidate by looking through the notes and using the interview guide criteria as a frame of reference. A score and qualitative comment about the candidate was written into the digital assessment form.

4.1.3 Selection decision

After all of the interviews had been completed an anonymous ranking of the candidates was made based on their combined application and interview score. With regards to the selection decision a faculty member stated that; *"Basically the ones with the highest score are the ones that get admitted"*. Given that the candidate meets the formal university requirements in terms of having a bachelor's degree or enough educational credits. The selection process ended with the final candidate list being sent to the university's admissions unit.

When asked about how the different selection stages were weighted a faculty member replied that; "*To some extent we make a bigger cut, from the essay part compared to the interview, because to do the interviews take much more time"*. The faculty member further expanded on the topic by highlighting some of the weaknesses of the interview and strengths of the essay; *"Because, the essays are more substantial, there is more text, it is more information, you can extract much more, versus an interview. (…) people can get nervous from interviews. You can easily get biased by interviews (…) It is easy to be more subjective in the interviews compared to the written essays as they are anonymous"*.

4.1.4 Program Goals

When asked about whether Chalmers School of Entrepreneurship had an overall goal with the education a faculty member replied that; *"The overall (goal) is of course to train students to become or act more entrepreneurially by allowing them to learn through entrepreneurship (…) to do it for real as part of their education"*. Another faculty member shared a similar view; *"(…) the primary intention is to educate people through an entrepreneurial process, so they gain entrepreneurial capabilities."* The faculty seemed to agree that ventures coming out of the program were positive, but not the main goal with statements such as; *"(…) the upside is the potential creation of a venture, but that is not the number one priority. It is probably the number two priority"*. And that; "A *positive side effect we have with the tech and the bio track, is potentially new startups coming out (…)"*.

4.1.5 Candidate-Program fit

Through the field observations it became clear that when the interviewers discussed the candidates after the interview they often talked about whether the candidate was a good *fit* for the program. As a result the informants were asked to explain what they meant by this culture or environment that the candidates had to fit into. A faculty member replied that the program goals, educating students through venture creation to develop entrepreneurial capabilities, imposed certain design criteria on the program; *"(...) we are looking for individuals to come into that kind of designed process (...) There is a technical height, it is about developing someone else's idea and taking ownership during that period and that impacts fit, because we are not looking for people that want to start their own company during the education"*. Another faculty member emphasized that; *"(...) some seem to have too much entrepreneurial experience, so they might not necessarily fit in the education"*. However a candidate could also have too little entrepreneurial experience as stated by a third faculty member; *"To be a successful candidate here it is good that you have some entrepreneurial skills. Can you tell me about a situation when you have been entrepreneurial? If you have no such experience it is very difficult for me to understand as an interviewer how they would fit in an entrepreneur environment."*

According to the faculty there also needs to be an alignment of expectations between the candidate and the education; *"I think the other thing about fit, it is not just about what we are looking for, it is also recognizing is this going to be a good experience for that individual (...)"*. The faculty member further emphasized that; *"It is quite a stressful environment (...), so the people that come into this program have to be able to handle a certain amount of pressure (...) They have to be able to make choices, if there is someone that is extremely control oriented, this is not going to be a good environment for them, because it is just too much uncertainty that we can not take away, it is part of the design."*

A faculty member summarized what they were looking for in the following statement; *"So we are looking for teamwork, some kind of self-awareness, social awareness, responsibility taking and maturity, some kind of interest in understanding in terms of technology and innovation. And we are looking for a lot of motivation, because it is not a program that you coast through. And that is kind of the fit"*. While another faculty member added that; *"They are to be a part of team so, you need someone that likes to cooperate with others and that others like to cooperate with. (...) We are looking for people who can drive themselves (...)*

the ability to plan and execute your own agenda as part of a two person team". According to a fourth faculty member; *"There is a culture of sharing, that you want to contribute to the education and you have to show that you are willing to share knowledge with each other".*

When asked to elaborate about how social skills were valued a faculty member replied that; *"I think that is quite important, (...), because it is a technology-height idea, it is not something that they can do completely on their own without attracting and integrating other resources (...) It (social skills) does not have to be fully developed prior to coming into the education, because I think it is one of the main things that people develop during the education as well. And particularly maybe the ability to be persuasive, the ability to sell, the ability to package and present information".* Another faculty member agreed with this view; *"Because when you are working with new things it is really about being able to persuade other people to do things differently".*

4.1.6 Is there an ideal candidate?

Closely related to how a candidate fits into the program was the question of whether an ideal candidate existed. When asked to describe an ideal candidate a faculty member replied that; *"To some extent there is not an ideal candidate, because we work with team-based entrepreneurship, but the ideal candidate is someone who brings something to the mix that the other candidates don't have so the ideal candidate is dependent on the others. But in general a good candidate (...) can show a dedication in the education setting (...) can demonstrate that they have an interest to do, to run the extra mile (...) will also have some additional experience beyond just being a student. I mean that could be experiences from working within the student union. (...) Any kind of working experience is quite relevant for me, because it gives some understanding of reality (...) still you need to have sufficiently good study results".* When asked about academic grades a faculty member stated that; *"We do look at the grades, because it is important that we see that you are willing to not struggle, willing to put an effort in".*

Another faculty member expanded on the ideal candidate topic by stating that there are certain, "baseline qualities*", and that the candidate's, *"don't have to have every single one, but they absolutely have to have motivation".* A third faculty member expressed a similar view in that; *"What I'm looking for is someone that knows what they are getting into and someone that is really committed and will do their best in the education.".* A fourth faculty

member stated that; *"You need someone that can take care of themselves, but can also take care of others (...) they need to be curious (...) rather good in communication (...) having the ability to assess a skill, or a trait or a technical area like a specialist. But also having the ability to act as a generalist to capture several different dimensions (...) also humble comes up".* The faculty member further added that; *"they have something that sticks out (...) are not the average person.* However what made a candidate stick out could vary; *"Maybe they have travelled a lot, or already tried to start a company, maybe they have shown some other quality".*

4.1.7 Candidate mix

When asked about which considerations were taken with regards to the overall candidate mix a faculty member replied; *"None. It is essentially the merit scores that the students get in the process that determines the outcome in the end".* Despite the fact that the candidate mix does not affect the final selection of which candidates are accepted, it does have an impact when assessing candidates earlier in the selection process. This will become clear in the following paragraph. Also, including the CSE faculty's opinions on the candidate mix allows for a comparison with NSE, where it was found to have an impact on the final selection decision.

CSE is an interdisciplinary program and a faculty member explained that the reason is; *"That we are not looking for one type of person, we are looking for some general qualities, but then different competencies (...)".* The faculty member went on to described what they are looking for in the candidate mix; *"We are always looking for a gender mix. We don't want all males, all females, just because there comes another perspective in, typically from gender (...) We are a Chalmers program so we have a quota of a certain amount of Chalmers students. But we want to mix the Chalmers and the non-Chalmers as well (...) we want some diversification even in the type of engineering background and the type of business background".* It was further added that; *"You want a good mixture of those different types of learning styles. An analytical person, a reflective person, just a doer."* And that; *"Because you are working with a certain amount of technical height there needs to be a certain competency around technology and in at least a certain percentage of the students that come in (...)".* Another faculty member stated that having entrepreneurial experience in the mix is important. *"But not all applicants have it so, again it is the good mix in the end. Some will come in with a good entrepreneurial experience, and of course that is wonderful".*

4.1.8 Selection Challenges

Time and resources

With regards to the overall challenges of the selection process a faculty member stated; *"It is multiple steps, it is quite complex and it is different from how almost all other application processes into master programs in Sweden (...) it requires a lot of our staff"*. Another faculty member expanded on this; *"We are dependent on people actually wanting to do this. Now we are using a combination of people employed here at Chalmers, but also bringing in alumni or similar to support parts of the procedure"*.

Assessing candidate fit

Evaluating how candidates fit into the program is viewed as difficult, as a faculty member put it; *"I think there is always a challenge of, because what we are looking for is this fit and how do you define that fit"*. Another faculty member agreed with this view and stated; *"(...) the largest challenge is to understand how the students will finally react to the environment of this school (...) there is a high degree of uncertainty (...) some of them actually react very strong to the uncertainties and are very stressed by the platform"*. The faculty member further emphasized that it is CSE's responsibility when selecting students to make sure that they; *"are not harmed by the platform"*. During one of the field observations there was an interview with a candidate who the faculty interviewers were very unsure of whether would fit well into the education, with regards to this a faculty member stated that: *"It is more doing an assessment of to what extent can the education handle this, because we have limited resources (...) this can't be a personalized education for every single candidate (...)"*.

With regards to evaluating the fit, a faculty member stated that; *"(...) we are looking for certain qualities, (...) that will hopefully mean that the individual fits what we are going to provide them. (...) the people who are reading the written applications and doing the interviews also need to have some kind of understanding of what are different ways to interpret these qualities we are looking for. I think that is why we have the pairs in the interviews as well, so that you get multiple interpretation"* The faculty member also mentioned what they did not consider as a good fit; *"We had this term in the past that we are trying to avoid CV hunters (...) someone who is looking for some kind of line on their CV in order to get a good job (...) we really want people that are going to be dedicated to potentially starting a business"*.

Interviewer bias

A faculty member viewed interviewer bias as a challenge; *"I know that I have certain bias. (…) I'm very sensitive to what I perceive as CV hunters (…) I have to be aware of my own bias in the process and I think other people have to be aware of their own bias as well and that is challenging, because how do you control for them"*. Another faculty member stated that they had tried to be aware of this when designing the selection process; *"We are still individuals and every individual has their own bias and their own prejudice and their own subjectivity. But on the other hand we have tried to counter balance that by having many individuals involved at least to get many subjectivities which can hopefully balance a little bit"*. According to a faculty member CSE continuously take steps to improve their selection; *"(…) we have reduced some of the challenges we had before that you become attached to a certain candidate, because you have read the entire application and you know who it is. Now when we are working with anonymous parts it decreases that challenge"*.

Candidates have limited experience

With regards to commercial experience and business acumen a faculty member replied that; *"They are usually young, so they don't have that much experience"*. This highlights a unique challenge of selection for educational programs, as the candidates typically don't have as much experience as individuals who have worked for several years.

Evaluating personality

Between the field observations of interviews one of the faculty members revealed that they had previously used personality tests to assess candidates in their selection process. A faculty member stated that; *""(…) none of us are trained psychologists or behavioural scientists. So we can't really make an evaluation of the personality of such"*. As a result they had stopped trying to evaluate a candidate's personality and rather accepting that it would be assessed indirectly through other criteria.

Entrepreneurial experience

The faculty members were asked how they valued prior entrepreneurship experience in the candidates. One of them stated that; *"(…) if they are already an entrepreneur, then well they don't really need the education"*. The faculty member further added; *"(…) that (entrepreneurial experience) is what they are here to learn and get"*. A second faculty member stated that; *"(…) you can have a really entrepreneurial person that have not started*

yet, and they could be very good, but is very difficult as an interviewer to understand". The faculty member further added; *"(…) if they have already started a company four times (…) what is that they are really seeking from this education (…) if a person that has those capabilities gets this spot, who are they displacing and would someone else benefit more (…)"*. According to a third faculty member; *" It is good if you have done some kind of project but it does not have to be entrepreneurial"*.

4.1.9 Selection Improvements

At CSE they faced a problem with a large drop-off in candidates between the initial application sent to the university admissions office and the application form sent to CSE. The improvements suggestions were related to how they could improve their communication with the students about what the program was, in order to increase the number of candidates who submit application forms. However this step is part of the *recruitment* process and not selection at CSE. Thus it falls outside the scope of this thesis and will not be covered in more detail.

4.2 NTNU School of Entrepreneurship

NTNU School of Entrepreneurship has one round of admissions in the spring that is open to both students from NTNU and other higher-level educations in Norway. Of 352 applicants, only 36 were admitted as seen in Table 3, in the CSE sub-chapter. The selection process consisted of multiple stages. NSE had one person who was responsible for organizing the selection process and that was also involved with candidate assessment in every stage of the process.

4.2.1 Stage 1: Application Form

The first step of the selection process is considered to be when NSE received the candidate's application form, which can be found on the program's website. The application form collects general background information about the candidate in addition to 10 questions which asks them to tell about their past experiences and motivation for applying to NSE (NTNU School of Entrepreneurship, 2016). Next each candidate is assigned a random candidate number by the NSE faculty.

When asked about whether he was involved in the application assessment, a member of the NSE faculty replied; *"This year it was almost exclusively me who selected everyone that were called in (for an interview)"*. The faculty member added that normally his/her job would be to

organize and prepare the documents for a committee that assessed the applications, but this year the usual committee members had been too busy. At this stage candidates are removed from the process if they don't meet the minimum educational requirements of the university or if they have not filled out the application form completely according to another faculty member who had previously been a part of the committee. The minimum educational requirement was having a bachelor's degree or its equivalent. The remaining candidates, 115 in 2016, were called in for an interview. A faculty member added that; *"The initial selection process was very straightforward this year. Not because I did it, but because I was extremely liberal and only cut the ones that were not really qualified"*.

4.2.2 Stage 2: Interview

The candidates were invited for an in-person interview at NSE, if they were unable to attend the interview was hosted over a video tool such as Skype. There were seven main interviewers from the NSE faculty, however other faculty members filled in as interviewers if necessary. The interviewers were organised into pairs that performed interviews over multiple days. If the interviewers knew the candidate personally, another interviewer would replace them, which was observed by the author on one occasion.

Initially the interviews lasted for 25 minutes, where 20 minutes were assigned for the interviewers to ask questions, while the final 5 minutes were available for the candidate to ask questions. According to a faculty member this was; *"way too long"*. Later in the process, the interview length was cut down to 15+5 minutes. The interviewers had access to an interview guide that contained pre-written questions, however they were free to ask their own questions. They did not necessarily follow it in practice as became clear through the author's field observations. One faculty member stated that; *"We don't really have any written criteria. We, or I wrote down a (interview) policy in advance which was about, the (candidate's) motivation and to filter out those that did not have the background that we wanted"*. Instead the interview guide contained what is referred to as *"information points"*, which were collected through the interview. The points listed in the guide are: age, academic background, gender, grades, personality, technical competence, admissions recommendation, overall assessment and qualitative comment. The interview guide also contained multiple interview cases. According to a faculty member the purpose of the case was to; *"See if they can think on their feet. Their analytical ability and how they react when they get a sudden case thrown at them. Are they stressed our or are they very calm"*.

According to faculty members the interviews were scored the following way: yes, no or maybe. *"The yes candidate's are the ones that we believe should be admitted straight away. Maybe, are candidates that have to be discussed and these are graded on a scale from one to six, where one is the worst. Then you have the no candidates, which are the ones that we don't want to admit and that are not discussed further"*. In addition a qualitative comment was written about each candidate. When asked whether they had a list of criteria that was used to assess candidates a faculty member replied; *"We are not following a specific list of criteria, however there is an unwritten list"*. When asked about the unwritten list the faculty member stated that the candidates had to show that they want it and prove that they were capable. Another faculty member listed the following unwritten criteria; *"(...) how they perform during the interview, (...) grades (...) extracurricular activities (...) academic background (...), during the interview it is personality, and everything associated with personality, charisma and communicative ability, in addition to what role they say that they have in a team"*.

Field observations of the interviews

Through field observations the following similarities appeared to be consistent between the interviews. The interviewers brought and read through physical copies of the candidate's application form, CV and any references prior to the interview to come up with questions. After the interview the interviewers discussed the candidate, which ended with each candidate being assigned an overall score and a qualitative comment that were logged into a digital assessment form.

4.2.3 Selection decision

After all of the interviews had been completed a list of yes and maybe candidates was compiled and a final selection meeting was held between the seven faculty members who were the most prominent in the interview process. *"If we then have forty candidates which are: yes, then it is fine",* and next the list would be finalized according to a faculty member. However if this is not the case, then the list of yes and maybe candidates is reviewed to see if any adjustments should be made. According to a faculty member; *"We wanted to find out if there was someone who got a yes early, (...) where we in hindsight can see that candidates who received a maybe and a score of four or five is better than the candidate who got a yes"*. Before adjustments were made each interviewer pair presented the candidates that they had

interviewed and with the candidate's name and photo projected onto a large screen. About the adjustments another faculty member stated that; *"There might be some of the maybe candidates, that we want to interview a second time or that we look up their references"*.

The faculty emphasized that the overall *candidate mix* of the class was taken into consideration when making the adjustments in the final selection. However it was pointed out by a faculty member that; *"(…) this is more of check that we are not selecting something that is obviously unbalanced"*. Another faculty member added that; *"For as long as I have been a part of the selection, we have never made any real adjustments. Meaning that we have switched candidates that were supposed to be accepted with other candidates, because we wanted a different class profile. It has always solved itself"*. However as the candidate mix is a rather extensive topic that the faculty consider to be of great importance, it will be discussed in a subsection for itself. A final check was made to ensure that the candidates fulfilled the university's formal academic requirements, before the final candidate list was sent to the university's admissions unit. When asked about how the different selection stages were weighted a faculty member replied that; *"The interviews are the most important, however they could not have been performed without the other steps"*.

4.2.4 Program Goals

NTNU School of Entrepreneurship had more of a vision than a goal and according to a faculty member it is; *"To educate the world's best business developers"*. The faculty member added that; *"That is on a top level, then there are both explicit and implicit goals concerning personal development, it is about understanding and mastering the combination of theory and practice (…) we have some of the sharpest input, the students who apply to us. And we have Norway's decidedly largest and best technical university as the foundation to perform technology-based business development (…)"*.

4.2.5 Candidate-Program fit

When asked to describe how candidates fit into NSE a faculty member replied that; *"(…) it might not be totally precise to say that they have to fit in (…) but rather that they are part of creating something. And the culture that is there (at NSE) varies from time to time, and between classes"*. According to another faculty member the NSE culture is; *"characterized by enthusiasm and motivation"*. A third faculty member added that; *"learning is shared between and within the classes"*. The faculty member pointed out the importance of there being an alignment in expectations between the candidate and the program; *"(…) I have to*

feel that the candidate understands what NSE is (…) what NSE's mandate is, what one is trying to achieve". A fourth faculty member described the environment as*; "(…) a group of highly ambitious people (…) That are put under a great deal of pressure".* A faculty member emphasized that it is important to consider if the candidates have shown; *"(…) clear patterns of the way of life until today (…), that is in line with the life we think they will be living at NSE (…) if we think there is a considerable gap, then we have to find out what is going to happen now that has not happened before".* According to a fifth faculty member determining the fit happens quickly during the interview; *"We don't need a lot of minutes with a person to see if it is a good match with a typical NSE student".* It also became clear what was not considered to be a good fit with NSE as evident from the following statement; *"(…) some people view NSE as a good way to kick-start their consulting careers (…) But the point about us as an education is to educate people who want to start their own things. That is why their motivation for attending (NSE) is so incredibly important to me".*

4.2.6 Is there an ideal candidate?

When asked to describe an ideal candidate the faculty members replied with a wide range of answers. One faculty member replied that; *"I don't believe that an ideal candidate exists.".* A second faculty member stated that; *"There are multiple ideal candidates so that it is not completely homogenous".* While a third stated that; *"I think there are different opinions in the faculty* (…) *What I view as an ideal candidate is someone who has shown entrepreneurial action".* A fourth faculty member stated that; "*I try to let the candidates define themselves as the ideal candidate (…) but the ideal candidates must one, be determined to develop themselves and two, be determined to develop others (…) be able to live in an environment that includes uncertainty and risk".* The consensus amongst the faculty appears to be that there does not exist *one* ideal candidate, but rather that there are some factors that each candidate must possess, others that the candidate mix must possess and some factors that makes a candidate unique. A faculty member stated that what the best students had in common were their extracurricular activities; *"A-students that don't have experience from something social, like a student organization or taken initiative (…) like self-employment or started a firm (…) are not the students we want to admit (…) we want students that can show us something, that have been creative and engaged in something besides their studies".*

4.2.7 Candidate mix

The faculty agreed that NSE *"(…) is an interdisciplinary study and one needs a combination of everyone".* Several factors were taken into consideration when evaluating the candidate

mix. The recurring theme amongst the faculty members was that; *"The most important part is to get a diversification of academic background and a reasonable gender balance"*. With regards to the candidate's academic background the faculty pointed out that; *"(...) we want to have a majority of engineering students and the reason for this is that we are focusing on and are best at technology-based business development, so that is the reason we are at NTNU"*. It was added that there are some official NTNU quotas; *"(...) they are somewhat guidelines, that we can't accept forty students from a natural science background (...) The quotas are on technology, social sciences and natural science (backgrounds) in that order"*. Previously NSE was only open to engineering students, however as stated by the faculty; *"(...) the entire reason for why one opened (NSE) up to other educational backgrounds not related to engineering was because one wanted a different, a more diversified class"*. With regards to *gender balance* a faculty member stated that gender was considered in a "non-preferred order". Another faculty member emphasized that; *"We must have a balance, we can not have a class with 80/20 being men. We don't want a class that is 50/50, that is not a criterion at all. We need a balance, but again this has never been an issue"*.

Other criteria that were discussed were grades, entrepreneurial experience, motivation, personality and technical competence. A faculty member stated that; *"We looked at academic grades, when we were uncertain about two candidates"*. Another faculty member added that*; "grades can tell you something about capacity and effort (...) however good grades do not necessarily equal good and bad grades equal bad"*. A third faculty member stated that they looked at; *"Motivation and the candidate's suitability both in terms of personality and background (...) We looked at entrepreneurial experience and being able to show something tangible, because this was considered to be a safer bet than someone who says that they are interested in entrepreneurship, but that can not show something tangible"*. It should be noted that several of the faculty members referred to the candidate's personality, but they were really assessing the candidate's potential team role, which was an information point listed in the NSE interview guide. According to a third faculty member; *"I'm looking for different profiles of what they can do. We want a good portion of classic business developers, people who do not have technical skills. But I believe that we can also now to an increasing extent, because we have so large classes, take in people with a technical skill. Whether they are designers, have an IT background or can build something through product development in some form or another. And that have the commercial understanding or are able to learn it,*

but that are not necessarily CEO material". This was reflected in the team role categories that were assessed: leader, doer and team player.

4.2.8 Selection Challenges

A high number of applicants and evaluating candidates

According to a faculty member with regards to the selection process; *"The largest challenge is that we now have a lot of applicants"*. The faculty member further added that; *"We can't keep interviewing a hundred and thirty, forty people, it is very resource demanding"*. As another faculty member said; *"It is challenging to select candidates who we believe will be good business developers, because there are a lot of factors that affect this. However what we do know (...) is what activities they perform at NSE. So based on that we can select, based on our experience of who fits such a program or not"*. The faculty member further added that; *"After the interviews we might be left with 50 very strong candidates, but only 40 or 30 of them will fit into NSE"*. "

A recurring challenge described by the faculty members is that evaluating candidates is very difficult. In fact, one of them viewed their largest challenge as; " *(...) to separate candidates that are quite similar (...) amongst the ones in the middle there is a line between the ones that are accepted and rejected. It is difficult to set the line and decide who will end up on either side of it."* With regards to what the faculty member meant by similar it was added that; *"They have a very similar (academic) background, where it is more the person itself, that differentiates and this makes for a softer evaluation of their fit for NSE than (...) results and experiences (...)"*. Another faculty member gave a potential explanation for this and emphasized that; *"It is incredibly difficult. Because in contrast to hires in business, where the candidates have experience one can consider against a job specification and actual tasks (...) There are not that many diversifying factors for the students. They are fairly similar to each other. And yes, they may have different grades and experiences, but overall there is not a large gap in neither competence nor background, because they don't have work experience.* In addition the faculty member added that amongst the candidates who were called in for an interview; *"The majority of the candidates are very difficult to distinguish, because they have all been great at what they have done"*. A third faculty member stated that; *"We now have more control on different parameters, but still comparing candidates is a great challenge"*. A fourth faculty member stated that; *"Another challenge is the class mix, should we only accept*

leaders or tech people. We don't know enough about how that mix affects a class (…). That is a challenge when we are at the final selection meeting and need to select people".

Interviewer bias

Another faculty member viewed the most challenging aspect of evaluating candidates to be; *"If one has gut feelings in one corner and strict rationality in the other. Then the largest challenge is to find the balance between them (…)"*. With regards to finding this balance the faculty member said that; *"I don't believe the solution is to have a bunch of parameters that are coded into a spread sheet on a scale from one to six (…) But that one should not fall into the gut feeling trap either"*.

Assessment method weaknesses

Another challenge perceived by a faculty member was that; *"Not everything about a candidate is conveyed through neither the application nor the interview, and the difference between an application and interview can be frightening"*. A second faculty member noted that nervousness was an issue when trying to assess candidates; *"(…) you never know how people act in an interview setting versus when they unleashed at NSE, because we notice that they are very nervous"*. A third faculty member added that; *" (…) many (applicants) know what we are looking for and the right buzz-words to put in the application and which buzz-words one should use in the interview"*.

Entrepreneurial experience

According to a faculty member; "*Some of the candidates that we interview want to bring their own ideas into NSE and test them"*. A second faculty member stated that bringing ideas into the program could potentially be an issue*; "It is a double edged sword (…) more candidates already have a startup that is up and running. On one side this is great (…) we are looking for people who have an entrepreneur in their gut (…) but we see that some become very focused on their own startup (…) We have experienced that it is a small challenge that for instance they have an external team and do not want or that it does not suit them to bring in new team members from NSE"*. A third faculty member put it more strongly; *"I am very critical to candidates who are accepted with very mature projects with well-established teams (…) What I am looking for is if they are open for their idea to not be considered as good enough by their classmates. Are they open to work with something else, and in particular I look at whether their team is locked and ownership distributed (…) We are not an incubator,*

we are an education". A fourth faculty member explained why bringing existing startups into the program could be a problem; *"If you already have a business idea, then it will feel like a waste to spend a half year with us searching for business ideas (…) We need people who can contribute one hundred percent to our environment the first semester to find good business ideas".*

When asked how they valued prior entrepreneurship experience in the candidates, the faculty emphasised that it was a positive factor. A faculty member stated that; *"If a person has prior entrepreneurship experience, it is positive that they bring it with them and share it with others (…)".* A second faculty member agreed with this view; *"(…) it is definitely a big plus".* A third faculty member added that; *"It is not a requirement, but if you have it, it is very positive and then it depends on which type of experience you actually have".* A fourth faculty member emphasised that; *"It is of course highly valued. All types of prior entrepreneurship experience is key and will characterize very good candidates for us (…) it does not have to be commercial either, it could be starting a sports team or a festival (…) but let me underline that it is not a requirement for being accepted, but if you have it, it will strengthen your candidature a lot".*

4.2.9 Selection improvements

The faculty members suggested several improvements to the current selection process. Several of the faculty members viewed the application process as an area that needed improvements as stated by one; *"(…) we had a lot of interviews in this round, so I would have had a better review of the applications before the interviews".* And agreed to by a second faculty member; *"(…) screening of the applications can be improved a lot in the future".* However, as emphasized by a third faculty member; *"(…) we ought to have a better process for selecting which candidates are called in for an interview (…) But it is a principle of safety first, we would rather call in to many for an interview than too few".* According to a fourth faculty member the important part is to make the process more resource efficient; *"We are using an incredible amount of time on this and we need to use it as resource efficient as possible. We have found out that we want to spend this time on candidates we are uncertain about".* With regards to interview time a faculty member shared that; *"We managed to reduce it to twenty minutes, so that was great. Then it goes faster, with so many interviews".* Another faculty member agreed with this view and suggested; *"I think we could reduce the time frame down to fifteen minutes on the interviews".*

4.3 Summary of findings

It became clear that the programs were quite similar in how they set up their selection process, both using application forms and interviews. However they differed in their level of structure as evident by CSE having pre-defined criteria and a mechanical composite for collecting and evaluating the candidate information collected through the assessment methods, while at NSE the faculty followed a judgmental composite. Through the field observations and analysing the subsequent interviews with faculty members it became clear that in addition to the explicit criteria, there existed implicit criteria that were evaluated during the different selection stages at CSE and NSE. The criteria used for evaluating candidates have been summarized and linked to KSAOs in Table 4, below.

KSAO	Criteria	CSE	NSE
Knowledge	Academic background	Implicit through interview	Interview guide Final selection
	Academic grades	Implicit	Question during interview
Knowledge or skill	Business acumen	Not evaluated	Interview case
Skill	Communicative skills	Application guide Interview guide	Implicitly through interview
	Extra curricular activities	Implicit through interview	Application question
	Entrepreneurial experience	Implicit through interview	Implicit through interview
	Teamwork experience and social skills	Application guide	Application question Interview guide
	Technical competence	Implicit through interview	Interview guide
	Team role	Not evaluated	Application question Interview guide Final selection
Ability	Ability to be reflective	Interview guide	Implicit through interview
	Ability to build relationship (social skills)	Interview guide	Implicit through interview
	Ability to handle complexity and ambiguity	Application guide	Not evaluated
	Ability to structure (deconstructive, constructive, and reconstructive).	Interview guide	Interview case
Other characteristics	Motivation and commitment to the education	Application guide	Application question
	Personality	Not evaluated	Interview guide
	Social maturity and awareness	Application guide	Not evaluated
	Strive for excellence	Application guide	Not evaluated
	Responsibility	Application guide	Not evaluated

Table 4: Selection Criteria From the Case VCPs.

It became clear that the faculty members tried to assess how well a candidate fit into the program and that an ideal candidate for VCPs does not appear to exist, rather it is about selecting an interdisciplinary mix of candidates with complementary KSAOs. It was discovered that selection for VCPs have some unique challenges that differ from traditional selection such evaluating the candidate fit and the candidates having similar experiences, which makes it difficult to distinguish them. Also, candidates may have too much or too little entrepreneurial experience to be considered a good fit for the VCP. In addition there were some more typical challenges related to selection such as how to make the process more efficient, reduce bias and increase predictive validity. Key characteristics related to the selection processes at CSE and NSE have been summarized in Table 5 below to allow for a comparison between the programs.

Selection Characteristics	CSE	NSE
Goals / Objective	Educate through venture creation to enhance entrepreneurial capability	Educate the world's best business developers
Multiple candidate for multiple positions	Yes (55)	Yes (40)
Interdisciplinary teams	Yes	Yes
Formal Educational requirements	Bachelor's degree. 180 units for Non-Chalmers students and 150 units for Chalmers students	Bachelor's degree or equivalent education Grade Average not less than C NTNU Quotas
Considers class mix in selection	No	Yes
Predictor information collection and combination	Mechanical composite	Judgmental composite
Specific "job" description	No	No
Focus on Technology-based ventures	Yes	Yes
Majority of students have academic backgrounds related to engineering	Yes	Yes

Table 5: Selection process characteristics of the selected
case VCPs.

In addition the CSE and NSE selection processes are visualized in Figure 4 below. In the next chapter the similarities and differences of the programs will be discussed in the light of the research discovered through the literature review.
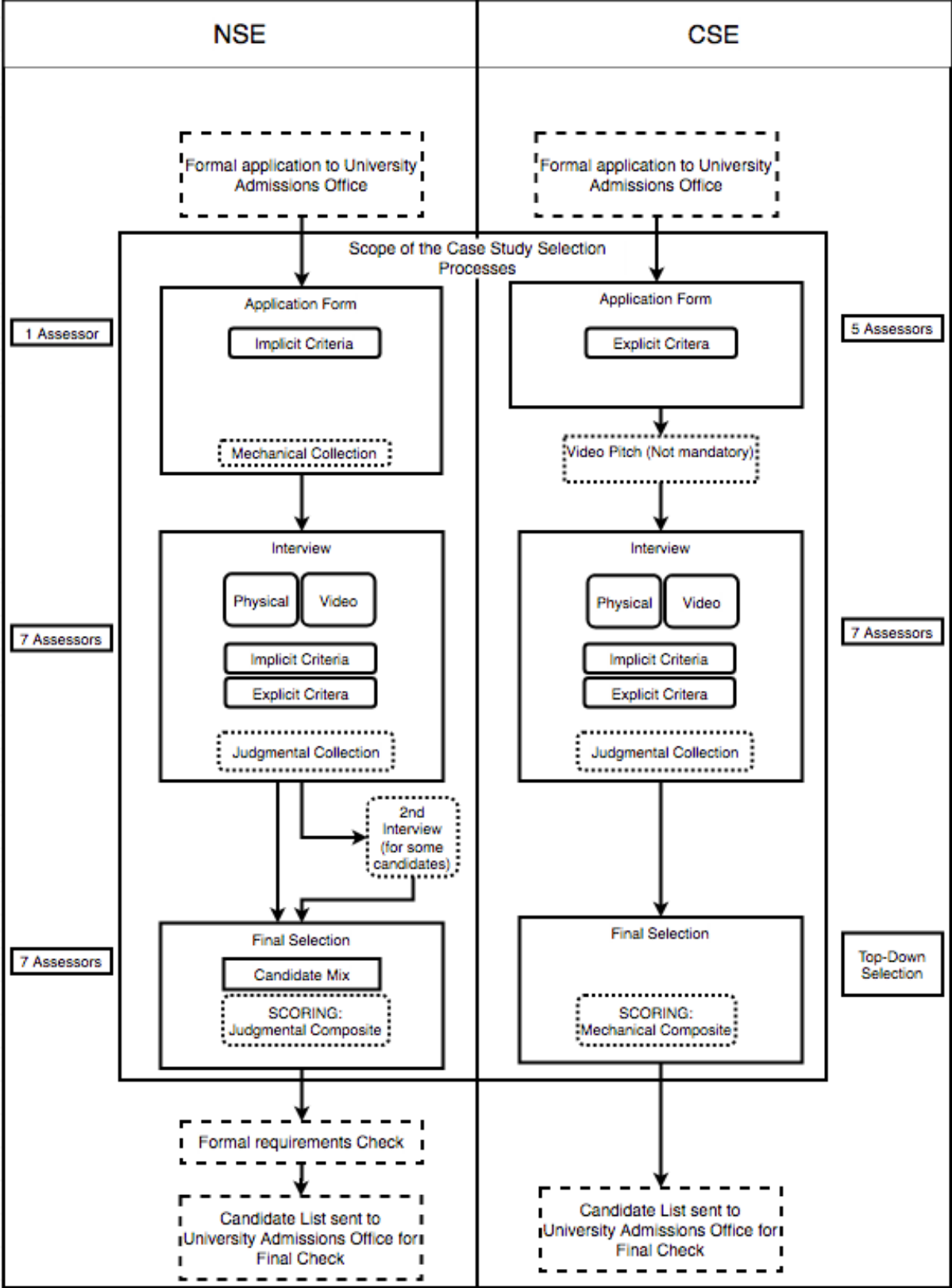

Figure 4: Current Selection Process at NSE and CSE

5.   Discussion

In this chapter the case study findings will be discussed in light of theory from entrepreneurship and personnel selection research to answer the three research sub-questions. First the sub-question of how selectors evaluate a candidate's fit will discussed with regards to person-environment fit. Second, how criteria are used in the selection process will be discussed and compared to the KSAOs possessed by the candidates. Third, it will be discussed how the VCPs use assessment methods to make selection decisions.

5.1 How do the selectors evaluate if a candidate fits the program?

Through the empirical data collection it became clear that faculty members at CSE and NSE were trying to determine how well a candidate would fit into their program. However the selection was performed without any explicit or written definition of the fit and the faculty emphasised that it was difficult to evaluate. At CSE this became evident through field observations, when the faculty interviewers discussed how well a candidate would fit the program. Through the interviews with the faculty members one of them explained their program's goals and design before stating; *"And I explained all of that, because we are looking for individuals to come into that kind of designed process"*. The faculty member added; "(…)*, because what we are looking for is this fit and how do you define that fit"*.

At NSE it first became evident through field observations and discussions with the interviewers, which lead to the following question being included in the interview guide; *"How long does it take you to assess if a candidate fits into NSE during the interview?"*. Some of the faculty members stated that it took them the entire interview, but several had statements similar to; *"Yes, it usually happens within the first 10 minutes"*.

Why defining the fit is difficult can be explained through multiple factors that are unique for selection in a VCP context. First, the VCP selection process differs from traditional job hiring, because there are multiple candidates for multiple positions, which is what Gatewood et al. (2010. p. 212) would describe as a complex selection process. Second, there exists no clear job requirements or task specifications. Third, the candidates being students typically have limited experience and come from similar backgrounds, which makes it more difficult to distinguish between them. When using person-environment fit in a selection process the first step is to consider which level of fit is the most important (Ostroff & Xhan, 2012). For a

traditional job hire the match between a person and the job requirements (P-J fit) would normally be the most important fit level. However, because of the unique challenges with selection in a VCP context as explained above and the VCPs characteristics that will be described next, a person-organization level fit is considered to be better suited.

Through the empirical data collection it became clear that CSE and NSE both have similar and different characteristics with regards to their goals, program design, culture and what they value. Based on the interviews with faculty members, the culture at both of the VCPs can be classified as strong, this is evident through the following statement from a CSE faculty member; *"In the walls there is just a feeling of what will happen over here. And I get the same vibe when I have been to NTNU and the School of Entrepreneurship there"*. This resonates with Ostroff and Xhan (2012) who stated that in organizations with a strong culture, P-O fit could be viewed as the most important level of fit.

Another key similarity is that venture creation is used as the main learning vessel to *educate* students in entrepreneurship. This is evident through NSE vision, which is to; *"Educate the best business developers in the world"*. While at CSE the faculty agreed that; *"(...) the primary intention is to educate people through an entrepreneurial process, so they gain entrepreneurial capabilities*. According to Ostroff and Xhan (2012), P-J fit is less important when "substantial" training is given to the employee by the organization, because the VCPs provide training in entrepreneurship it further supports why a P-O level fit is better suited in a VCP context. A consequence of the primary goal being to educate is that there might be candidates who possess too much prior experience and that would thus have a lower educational benefit from attending the program. This will be addressed later in this chapter with regards to entrepreneurial experience and business acumen.

5.1.1 Person-VCP fit

Based on the findings with regards to person-environment fit in a VCP selection context, the author created the concept of *Person-VCP fit* (P-VCP fit), which is defined as the; *alignment of the candidate's knowledge, skills, abilities and other characteristics with the characteristics of the venture creation program such as, goals, program design, values and expectations.* In a P-VCP fit one is thus seeking a supplementary fit, in accordance with Ostroff and Xhan (2012) this implies selecting individuals who have characteristics that are similar to the other candidates and match the characteristics of the environment. However as

stated by a CSE faculty member; "*the ideal candidate is someone who brings something to the mix that the other candidates don't have so the ideal candidate is dependent on the others.*" What the faculty member described is that the candidate needs to possess some characteristics that are heterogeneous or complementary to the other candidates in the mix. This is what Ostroff and Xhan (2012) would describe as a complementary fit. At CSE these complementary characteristics were only implicitly evaluated during the selection process.

In contrast, the NSE faculty explicitly stated that they take the overall candidate mix into consideration during the final selection meeting to ensure interdisciplinarity. This is assessed through looking at the gender balance of the candidates and their academic background. The faculty emphasised that the former was more of a check to ensure that they do not have a very unbalanced mix and so it has little impact on the final outcome, therefore it is not discussed further. While the latter is to ensure that they do not have too many candidates with the same backgrounds before making the final decision. Thus what NSE looked for is a complementary mix of academic backgrounds amongst the candidates. Therefore it is concluded that in a P-VCP fit one is seeking a mix of supplementary and complementary characteristics in the candidates.

It has been established that VCPs select candidates based on their level of P-VCP fit. However it is unknown whether the characteristics that make up the environment in the P-VCP are actually the best suited for the intended outcome of VCPs, which is to increase the students' entrepreneurial capabilities. As stated by Rasmussen and Sørheim (2006) students attracted to entrepreneurial educations are likely to be predisposed to act entrepreneurially. However they questioned whether entrepreneurs would actually go through an educational program to create ventures or if they would simply do it on their own. This raises the question of whether the VCP students are actually representative of entrepreneurs, which would require further research to answer. But based on the empirical findings it was evident that the candidate's role as an entrepreneur and how it relates to P-J fit was not clearly defined at the VCPs. Through the interviews with the respective the faculty members it was stated that approximately 50% of the students at both CSE and NSE continued in the ventures they created during that program. One could argue that if the P-VCP characteristics were ideal for developing the world's best business developers then all of the candidates would continue in their ventures after graduating. Nevertheless the conclusion is that if one wants to better understand how the ideal VCP should be shaped to fulfil its objectives, then it would be

necessary to better define P-J fit in terms of the entrepreneurial tasks and activities that the candidates need to perform during the VCP. A starting point could be to examine the link between the VCP criteria and the individual candidate characteristics of the candidates, which will be discussed next.

5.2. How do the VCPs use criteria and in their selection process and how are they related to the individual characteristics possessed by candidates?

In the previous sub-chapter it was discussed how the VCPs' characteristics affected the environment component of the Person-VCP fit. Next it will be discussed how the candidate's personal characteristics relate to the "Person" or "P" element of P-VCP fit. The consensus amongst the faculty members at both VCPs appeared to be that there existed "baseline" or supplementary qualities that each candidates had to possess, *"and then we are looking for complementary qualities "*, as stated by a CSE faculty member. Also, it was found that some of the qualities were considered to be key at both programs, while others were only important at one of the VCPs. Based these findings it was possible to link the explicit and implicit criteria identified in the empirical study to the KSAOs possessed by each candidate. These KSAOs have been organized into four categories as seen in Figure 5 below

Key & Supplementary KSAOs	Positive & Supplementary KSAOs
Key & Complementary KSAOs	Positive & Complementary KSAOs

Figure 5: The Types of KSAOs Possessed by Candidates in a Person-VCP

The first category consists of key KSAOs the candidate must have that are supplementary, meaning that they are similar for all of the candidates in the VCP. The second category consists of positive and supplementary KSAOs. They are labelled as positive factors, because they are not considered to be key at both of the VCPs. The third category consists of key KSAOs that are complementary, meaning that they are heterogeneous to the characteristics possessed by the other individuals in the mix and viewed as key at both programs. The fourth category consists of KSAOs that are positive and complementary.

5.2.1 Key and supplementary KSAOs

Motivation for attending the program was described as the single most important factor by the faculty members at both VCPs. A possible explanation for this is that the programs require a high amount of time and effort from the candidates, because they combine work on the venture projects with regular academic courses. Another key finding was that the faculties emphasized that the environment of the program involved a high degree of uncertainty and pressure and as a result candidates needed the ability to handle complexity and uncertainty, otherwise they would struggle. This is referred to as managing ambiguity in the literature and according to Bae et al. (2014) it is related to the degree of a person's uncertainty avoidance and their propensity for risk taking. A high ability to manage ambiguity is required to achieve a high level of skill in resource marshalling (Moberg, 2014), which is key in the exploitation stage of venture projects. Also, there appeared to be a link between managing ambiguity and perseverance as it was discovered that entrepreneurs who showed a high level of perseverance or tenacity performed better during adverse and uncertain circumstances (Lamine et al., 2014; Markman & Baron, 2003);(Lamine et al., 2014). Through the venture creation process, the VCP candidates face many challenges that require tenacity and the ability to manage ambiguity is viewed as necessary because the candidates have to make decisions about their ventures based on limited information.

The CSE faculty listed both communicative skills, the ability to build relationships (social skills), plus social maturity and awareness as explicit criteria. Based on the literature review there appears to be an overlap between these variables as they are social skill constructs. For instance Gatewood et al. (2010. p. 420) and Huffcutt et al. (2001) listed communication, while Baron and Markman (2003) listed social perception and social adaptability as social skill constructs. The ability to build relationships refers to what the literature labelled as social adaptability (Baron & Markman, 2003) or interpersonal skills (Huffcutt et al., 2001). Therefore social skill is considered to be a suitable term, which encompasses the three criteria or constructs. The faculty members shared the view that social skills are important and as a result social skills are included in the key KSAOs, but with a caveat as the faculty emphasised that social skills did not need to be fully developed at the time of admittance, because they could be improved through the education. This resonates with existing literature as social skills has been found to be key for entrepreneurs in acquiring information, employees and financing (Baron & Markman, 2003; Baron & Tang, 2008; Makhbul & Hasun, 2010; Omrane, 2015), which positively affects venture performance (Baron & Tang, 2008; Omrane, 2015).

Structured interviews are recommended for assessing social skills, because Huffcutt et al. (2001) found that this resulted in a high predictive validity. Specifically interpersonal skills had a higher predictive validity than communication skills when assessed through interviews.

Based on the description of the ability to be reflective in the CSE interview guide, it appears to overlap with the term described in literature as self-awareness. According to Gatewood et al. (2010. p. 509) and Omrane (2015) self-awareness can be measured through emotional intelligence. Especially with regards to successful candidates, their ability to reflect on what they had learned was emphasised by the faculty at both NSE and CSE and is thus considered to be a key KSAO. As self-awareness is a term that is covered by existing literature, it is considered to be a better term than ability to be reflective. Because a high degree of self-awareness is expected of all of the candidates, it is considered to be a supplementary characteristic.

A key part of the program design at both CSE and NSE was that the students formed interdisciplinary teams to create ventures. Therefore it is viewed as crucial that the candidates can perform well in teams, as a NSE faculty member stated: *"(…) teamwork is one of our cornerstones"*. This is indicated by the inclusion of questions about the candidate's former teamwork experience during both the application and interviews at both VCPs. The importance of interdisciplinary teams is supported by research, which show that they perform better (Ganotakis, 2012; Henneke & Lüthje, 2007). Teamwork knowledge positively affects team performance (Morgeson, Reider, & Campion, 2005). According to Gatewood et al. (2010. p.518) a meta-analysis study showed that conscientiousness, emotional stability, and agreeableness were found to be predictors of teamwork performance.

5.2.2 Positive and supplementary KSAOs

At CSE an interview criterion is the candidate's ability to structure answers to the interview questions. It is considered to be supplementary, because all of the candidates are expected to possess the ability to structure. However it is not something that is evaluated at NSE and thus it is not considered to be a key KSAO. The author was unable to find explicit mentions of it in the existing literature. However it could possibly be related to cognitive ability. According to Murphy (2012) cognitive ability is related to the performance of tasks that involve mental processing, retrieval and manipulation of information.

Strive for excellence is an explicit criterion at CSE, but is not evaluated at NSE. Although the NSE faculty emphasized that candidates who fit the program were ambitious and showed that they had a high work capacity. Strive for excellence can be linked to conscientiousness, one of the Big Five personality characteristics, because according to Murphy (2012) one of its subcomponents is achievement-striving. Conscientiousness has been found to positively affect performance when working in teams (Morgeson et al., 2005) and to predict job performance (Gatewood et al., 2010. p.516; Leutner et al., 2014).

Responsibility is another explicit criteria at CSE, which is not evaluated at NSE. Thus it is considered to be a positive factor. A possible explanation for why it is considered as more important at CSE, could be that at CSE the students work with external partners that provide the ideas or venture projects. Sometimes this is the case at NSE as well, however at NSE the students are free to create ventures based on their own ideas, which is a possible explanation for why responsibility is considered to be less important by the NSE faculty relative to CSE. Responsibility can possibly be linked to conscientiousness, because according to Murphy (2012) two of its subcomponents are dutifulness and deliberation.

NSE listed academic grades in their interview guide and there was an official requirement that the candidates needed a C-average from their past studies. However it was found that even though the candidates were asked to comment on their grades during the interview, it was not really considered as being of great importance when evaluating candidates. One faculty member emphasised that in contrast to selection processes at all other types of educations, grades were not the most important criteria at NSE. The CSE faculty shared a similar view in that candidates should not barely have passed in their previous education, but that top grades were not necessarily a good thing either. As a result grades were considered to be a positive, but not a key factor. This is supported by the literature, which showed that grades are predictive of future job performance (Roth, BeVier, Switzer III, & Schippmann, 1996), however there are multiple predictors that have a higher predictive validity (Schmidt & Hunter, 1998). Since the programs prefer high over low grades, the candidate grades were considered to be supplementary.

5.2.3 Key and complementary KSAOs

Academic background was the main criteria that NSE used when attempting to achieve an interdisciplinary mix of candidates. This was not the case at CSE, however the faculty emphasised that they attempted to ensure diversity by having candidates from different academic backgrounds, even based on the specific type of engineering and business background. This could be explained through examining the VCPs' characteristics. As a result of both programs being at major engineering universities in their respective countries, the programs focused on technology-based ventures as part of their program design. Also, they viewed interdisciplinary teams as key for creating technology-based ventures. This impacted selection, as the majority of the students came from engineering backgrounds. According to Autio (1997)(As cited in Warhuus & Basaiawmoit, 2014) engineering majors have a disproportional potential to create high-growth ventures in high-technology industries. Both programs value interdisciplinarity and as a result they also accepted students from other universities with non-engineering academic backgrounds to make the candidate mix more heterogeneous. This is supported in light of Henneke and Lüthje (2007) who showed that founding teams with differing educational backgrounds is an important antecedent for creating innovative products. Through education an individual can increase their skills and knowledge (Becker, 2009) within the specific field, or in other words develop human capital. Possessing human capital is important for VCP students, because it can increase their ability to identify venture opportunities. This is supported through existing research, which showed that the number of opportunities entrepreneurs identify can be increased by both general (Corbett, 2007) and specific human capital (Corbett, 2007; Fiet, 2007; Ucbasaran et al., 2008; Unger et al., 2011).

When asked about the ideal candidate, the VCP faculty stressed the importance of the candidate being, "engaged in something besides their studies", in the shape of extracurricular activities or work experiences. However they emphasised that exactly which extracurricular activity the candidate had performed was unimportant. It was more a case of the candidate showing that they are willing to "run the extra mile" and "take initiative". Explicit mentions of extracurricular activities were not discovered through the literature review, however human capital in the form of skills and knowledge can be acquired by individuals through work or other types of experiences (Becker, 2009). Thus candidates who have performed extracurricular activities have most likely increased their human capital. Extracurricular activities were considered to be important as it was emphasised by the faculty at both VCPs as

important. However as the exact nature of the experiences gained through the activities served to distinguish a candidate from other candidates in the selection process it is considered to be of a complementary nature.

5.2.4 Positive and complementary KSAOs

Through the findings it became clear that the CSE faculty did not consider candidates with too much entrepreneurial experience as a good fit for the program, questioning why such candidates would need the program at all. This view can partially be explained through the program's design, as the faculty are responsible for bringing ideas into the program. However the faculty also stated that if the candidates did not possess any prior entrepreneurial experience it would be equally difficult to determine the fit.

In contrast, at NSE the boundary for what is considered as too much entrepreneurial experience appeared to be placed higher, because the candidates were allowed to bring their own ventures into the program. If the VCPs primary objectives were to maximise venture performance, they would be best of with selecting the candidates who are the most capable of starting ventures. This would most likely be candidates who possess entrepreneurial experience as the literature has shown that prior startup experience is positively linked to venture survival (Bosma et al., 2004) and venture performance (Ganotakis, 2012; Rauch et al., 2005; Unger et al., 2011). Why prior entrepreneurship experience is considered to be a positive and not a key factor can be explained by the main goal of the VCPs, which is to increase the students' entrepreneurial capabilities. The issue with candidates who possess a high degree of prior experience is that they would most likely have a lower educational benefit from attending the program. However based on the work of Rasmussen and Sørheim (2006) it could be argued that this issue would solve itself, because individuals with too much entrepreneurial experience would exclude themselves as candidates for the programs as they would rather create ventures on their own.

During the interview the NSE faculty asked the candidates case questions to test their business acumen. As observed through field observations the NSE faculty valued candidates who showed that they possessed business acumen, while candidates who did not scored poorly. CSE did not evaluate business acumen during their selection and thus it is considered to be positive, but not a key factor. The author was unable to find explicit mentions of business acumen through the literature review, but based on the definition of human capital

by Becker (2009) it could be classified as a knowledge or skill obtained through for instance business related work experience or a financial education. It could be argued that business acumen is one of the forms of specific human capital that the students would develop through the education, which could explain why CSE did not considers it to be a key factor for candidates to possess. It is considered to be complementary, because the faculty members value having a mix of work experiences amongst the candidates.

Technical competence was part of the explicit criteria evaluated by NSE, often in relationship to the candidate's academic background. However it became clear through the field observations that some candidates possessed technical competencies that were not necessarily related to their academic background, which explains why it was considered as a separate criterion. At CSE the faculty emphasized that because they were at an engineering university and a characteristic of their program is the focus on technology-based ventures they viewed technical interest as a requirement. However actual competency was viewed as a bonus. A possible explanation for why technical competency is not a requirement is that it is not clear at the time of admittance, which venture projects the candidates will work with. Thus the candidate's technical competencies may turn out to be irrelevant for their venture project. However the faculty at both VCPs emphasised that it is good to have technical competence in the candidate mix, and thus it is viewed as complementary KSAO. The importance of technical competence is supported by Ucbasaran et al. (2008) as it has been found to be significantly related to pursuing opportunities.

In the NSE interview guide, personality was listed as a criteria, however through the field observations it became clear that they were really evaluating the candidate's potential team role. Leader was one of the team roles evaluated. At NSE the students choose their own teams and the importance of leadership abilities is supported in the light of Mwasalwiba (2010) who stated that management is related to the ability to form and manage teams.

At CSE the staff emphasised that they used to evaluate personality as part of their selection process, however they stopped doing so, because it required professional expertise. They did not consider team role to be of great importance, because just as with technical competence, the teams were not clear when the students were admitted. However the faculty did mention that they were looking for a mix of doers and analytical individuals. The literature review revealed that it is debated whether personality could be linked to job performance. Murphy

(2012) claimed that links between the Big Five characteristics and job performance were found to be weak, while Gatewood et al. (2010. p.516) and Leutner et al. (2014) stated that conscientiousness and emotional stability could be linked to higher job performance. In an entrepreneurial context Zhao et al. (2010) showed that openness to experience, conscientiousness and emotional stability had a significant positive effect on entrepreneurial performance. Both personality and team role is considered to be positive factors as they were only evaluated at NSE and as complementary because the faculty emphasised that a mix of different types was important.

The author shares the view of the CSE faculty that personality is challenging to evaluate through an interview without relying on judgment and thus individual biases. However if personality is assessed as part of the selection process then three strategies for mitigating this issue is recommended. Firs, the interview should not be used to assess the complete personality of the applicants, rather Gatewood et al. (2010. p.515) suggested assessing a candidate's social skills and work habits, which reflects their personality, through asking questions related to past behaviour. Second, it is viewed as a necessary requirement to first define exactly which personality characteristics should be evaluated ensure that this definition is understood by all of the assessors. Third, the faculty should administer a personality test with proven validity such as the Personality Characteristics Inventory (PCI) recommended by Gatewood et al. (2010. p.511)

5.2.5 Summary of KSAOs

It has been discussed how the explicit and implicit criteria identified at the two case VCPs are affected by the program's characteristics. In a Person-VCP fit one is trying to evaluate the level of fit between the VCP criteria and the KSAOs possessed by the candidate. Thus the KSAOs that candidates are evaluated on have been organized into four categories as seen in Table 6 below, based on their importance for the VCPs and supplementary versus complementary nature.

Person-VCP fit	Key KSAOs	Positive KSAOs
Supplementary	Managing ambiguity	Ability to structure (deconstructive, constructive, and reconstructive).
	Motivation and commitment to the education	Academic grades
	Self-awareness	Responsibility
	Social skills	Strive for excellence
	Teamwork experience	
Complementary	Academic background	Business acumen
	Extra curricular activities	Entrepreneurial experience
		Team role
		Technical competence
		Personality

Table 6: The P-components of P-VCP Fit

5.3 How do the VCPs apply assessment methods in their selection process and how is the collected information used for making selection decisions?

This sub-chapter discusses how the VCPs evaluate the data collected through the assessment methods. This is important, because most organizations do not practice evidence-based human resource management, which results in underperformance (Lawler, 2007). NSE had 352 applicants, while CSE had 387 as seen in Table 3, in the findings chapter. Also, the faculty members emphasised that they had limited resources in the form of staff and time to perform the selection. Especially at NSE they were looking for improvements to make the process more resource efficient. According to Gatewood et al. (2010. p. 4) when there are a large number of applicants it is necessary to collect the same information about applicants so that comparisons between applicants can be made directly. The main differences between the selection process at CSE and NSE can be found by comparing the level of structure at the different stages of their selection process for how they collect and combine information from the assessment methods.

5.2.1 Application forms

The first assessment method used in the selection process at both CSE and NSE was an application form. There is a stark contrast in the level of structure around evaluating the information collected through the application forms. At CSE the explicit written criteria were linked to each individual question. In addition the interview guide contained procedures for how to score the answer to each question. This fits well with the recommendations suggested by Gatewood et al. (2010. p. 237), as it allows one to check that both the criteria and questions are relevant.

In contrast at NSE, there was no written list of criteria, which left the scoring decision up to the judgment of the assessor. This goes against the recommendations made by Gatewood et al. (2010. p. 337) who emphasized that it is crucial to decide which application data is the most important for selecting successful candidates, because when there are no clear guidelines selection decisions may be based on the personal biases and prejudices of the application reviewer. This could be avoided by having clear procedures for collecting and combining predictor information mechanically, as they do at CSE, which would make the assessment less reliant on the gut feeling of the assessors.

At CSE they had a faculty member who organized the selection process, including the anonymization and that was not involved in the actual evaluation and selection decisions. At NSE in contrast the organiser was involved in multiple stages of the selection process, which could result in the process being affected by the assessor's bias. CSE's decision to anonymize the questions ensured a larger degree of fairness in the selection process. In addition using multiple assessors and having the same assessor answering each question ensured consistency in the evaluation and reduced the chance of potential bias affecting the process. NSE one the other hand followed a much more judgmental evaluation of the applications given that it was only one person that assessed them. This is not supported in the light of Gatewood et al. (2010. p. 237) who suggested that one should discourage assessors from making decisions based on intuition or gut feeling. According to the NSE faculty, they would rather call in a larger number of candidates for interview than eliminating them from the process based on their application. This has a potentially mitigating effect on assessor bias, however a consequence is that it makes the selection process less efficient, because interviews as an assessment method requires more time and resources from the NSE faculty. This is evident through comparing the high SR_1, from Table 3 in the findings chapter, of the selection process at NSE, 71% versus 34% at CSE. The NSE faculty highlighted that performing a high number of interviews was an issue and that the application screening needed to be improved. The author agrees with this view and would recommend following the suggestions made by Gatewood et al. (2010. p. 237), specifying the criteria, their weighting, how to judge them and how to combine their scores. In addition, assessing the applications anonymously as they do at CSE to reduce potential bias.

5.2.2 Interviews

Both VCPs follow what could be defined as a semi-structured interview as they were somewhere in-between the definitions of structured and unstructured interview by Schmidt and Hunter (1998). The VCPs are recommended to use structured interviews in their selection process, because of their higher predictive validity as supported by the findings of Schmidt and Hunter (1998), Huffcutt et al. (2001) and Gatewood et al. (2010). Another advantage of the structured interview is that it is well suited to assess organization fit, social skills and personality (Huffcutt et al., 2001). The disadvantage of structured interviews is that more time and resources from the interviewer is required to create them (Schmidt & Hunter, 1998). However this can be mitigated through reducing the number of candidates called in for

interviews. In addition one can argue that setting up the structured interviews is a one-time event and that the format can then be applied in future selection processes at the VCP.

A potential issue with using structured interviews with pre-defined questions is that over time the candidates can learn the buzzwords or interview questions from previous years. First, increasing the pool of questions related to each criterion could mitigate this issue. Second, it could be argued that the pros of having an interview process with higher validity would outweigh the con of the candidates attempting to trick the process. When formulating interview questions it is important to note that KSAOs are attributes and not behaviours, as a result they cannot be directly observed and have to be inferred from behaviour (Brannick et al., 2012). Thus choosing interview questions that ask the candidates to describe past behaviour would be well suited to evaluate the KSAOs.

Four explicit criteria were defined in the interview guide at each of the programs, in addition questions related to multiple implicit criteria were observed being asked by the author. To maximise the effectiveness of the interview it is recommended that the VCPs implement the suggestions of Gatewood et al. (2010. p. 448) by having two to three pre-defined criteria, linked to multiple questions for assessing each criterion. Another benefit of having an explicit definition of the criteria is that it would enable the assessors to communicate more precisely. The CSE faculty highlighted their interview guide as very useful with regards to this aspect when scoring candidates.

When asked about how strictly they followed the interview guide the faculty members at both VCPs highlighted the importance of having the freedom to ask questions to the candidates, arguing that each candidate is different. This could partially be supported in the light of Gatewood et al. (2010. p. 448) as each of the pre-defined questions must be asked of each candidate to ensure consistency, which was not necessarily the case at neither CSE nor NSE. At each VCP only overall score was assigned to each interview. This is not supported in the light of Gatewood et al. (2010. p. 237) who stated that one should discourage assessors from judgmentally combining scores on selection instruments, because it makes the process more susceptible to bias. Rather one should score each of the KSAOs assessed, but it is not necessary to score the answer to each question (Gatewood et al., 2010. p. 453). The VCPs could potentially increase the overall validity of their selection process by implementing the following recommendations made by Gatewood et al. (2010): 1) Using structured interviews,

2) Having a maximum of three clearly defined criteria, 3) Have pre-defined interview questions related to each criteria, 4) Ask these question all candidates to ensure consistency, 5) Score the candidate on each criteria, 6) Combine the criteria scores mechanically.

5.2.3 Combining assessment method data to make selection decisions

At CSE mechanical data is collected through an application and judgmental data is collected through a semi-structured interview, before the data is combined mechanically using a formula. To mechanically score candidates CSE employed a combination method, of multiple cutoffs and multiple regression. In the evaluation of the application there were multiple cutoffs, the candidate needed to have a score of five or higher on each of the five questions and more than 30 points overall to advance to the interview stage. After the interview stage all of the collected predictor scores were equally weighted and combined using multiple regression into an overall score. Top-down selection was used, meaning that the candidate were ranked from highest to lowest on their overall predictor score, before the number of candidates with the highest scores that match the number of spots in the program were selected. Thus the collection and combination of assessment method information at CSE could be classified as a mechanical composite according to the eight classifications defined by Gatewood et al. (2010. p. 216).

At NSE no written criteria were used for assessing the applications and the interview guide criteria were only loosely followed when assessing the interview. If there were two candidates with the same score during the final selection meetings, their complementary addition to the overall class mix in terms of academic background was used to decide which candidate to accept. Thus the collection and combination of assessment method information at NSE could be classified as a judgmental composite, as the data was collected both mechanically through an application form and judgmentally through semi-structured interviews, before it was combined judgmentally.

According to Gatewood et al. (2010. p. 216), following a mechanical composite for collecting and combining information from different assessment methods is superior to a judgmental composite. The reasons for this are overconfidence amongst decision makers, human errors when combining information from different assessment methods, and that over time historical data can be used to improve the accuracy of the mechanical model (Gatewood et al., 2010. p. 216).

The advantage for both programs of using an application form as the first step of the selection process is that it is a low cost method (Gatewood et al., 2010. p. 4). Thus it requires less time and effort from the faculty to eliminate some of the candidates. This was not utilized effectively at NSE who let 71% of the candidates who submitted an application through to the interview stage, compared to 34 % at CSE, as seen in Table 3 in the findings chapter. Also, the programs differed in which assessment methods were weighted the highest when making selection decisions. At CSE the applications were weighted the highest. The disadvantage of this choice is that application forms have a lower predictive validity (Gatewood et al., 2010) compared to the structured interview. The advantage with application forms over interviews is that the data is collected mechanically. At NSE the interview was weighted the highest, the advantage being their high predictive validity (Gatewood et al., 2010; Huffcutt et al., 2001; Schmidt & Hunter, 1998). A disadvantage was found to be that candidates were often nervous during the interview as observed by the author and noted by the faculty, which could have a negative effect on how well candidates answer the interview questions.

6. Conclusion and Implications

This chapter will first show how the sub-questions discussed in the previous chapter answer the research question of what characterizes the candidate selection process at venture creation programs. Second, a revised conceptual model for VCP selection will be presented. Third and fourth the theoretical and practical implications of the paper will be presented and finally its limitations and implications for further research will be discussed.

6.1 Conclusion

In this thesis the author set out to investigate the selection process at VCPs to shed a light on the "black box" of how candidates are selected at venture creation programs and answer the research question. First, a literature review was performed to uncover existing theory within the fields of entrepreneurship education and personnel selection that resulted in the development of a conceptual model for explaining VCP selection. This model was mainly influenced by the selection process designed by Gatewood et al. (2010) for selecting candidates for a traditional job and person-entrepreneurship fit (Markman & Baron, 2003), a model that applied person-environment fit from personnel selection in an entrepreneurial context. Next a multiple-case study of two VCPs, Chalmers School of Entrepreneurship and NTNU School of Entrepreneurship, was performed to explore how their selection processes functioned in real-life. This resulted in the following findings that answer the research question of what characterizes the candidate selection process at venture creation programs.

First, the initial model based on existing theory was found to be inadequate for explaining how candidates were selected in reality at the two case VCPs, because it did not take into account how the VCP characteristics influenced the process and the unique challenges faced by VCP selectors. The existing theory on personnel selection is well suited when applied to a traditional hiring process, which involves selecting a candidate with a specific set of KSAOs that fits a job with a specific set of KSAO requirements (P-J fit). However several unique challenges with performing selection in a VCP context were identified that added complexity to the process such as the lack of a specific job or task description. Also, the VCP candidates being students meant that they typically had less experience and that their skillsets were more similar than for traditional job candidates who have been working for multiple years. In addition the VCPs also faced more typical selection challenges such as how to use limited

resources to efficiently select candidates, assessment methods weaknesses and eliminating or reducing interviewers bias.

Second, it became clear that the VCP faculty were trying to assess how well a candidate fit into the program, however this *fit* was not clearly defined. The result being that a person-environment fit was considered to be a better framework for considering the fit rather than a traditional person-job fit in a VCP context. Thus it was necessary to define Person-VCP fit, which applied P-E fit in a VCP context. The VCPs' characteristics were used to define the environment component of the fit. For instance, because the primary objectives of VCPs are too educate rather than accepting the complete entrepreneur, candidates could have too much entrepreneurship experience. However, it was a trade-off, because if they possessed no prior entrepreneurial experience then it became difficult to assess how well they would fit in an entrepreneurial environment.

Third, it was found that the VCP faculty members believed that there was no such thing as an ideal candidate. Rather there were some knowledge, skills, abilities or other characteristics (KSAOs) that the candidates need to possess that are supplementary. In addition, because ventures created by interdisciplinary teams is a key characteristic of VCPs, there are complementary KSAOs that were considered to ensure heterogeneity in the candidate mix. The VCPs used implicit and explicit criteria to evaluate candidates. The criteria were linked to the candidates' supplementary and complementary KSAOs in a conceptual framework, as shown through Table 6 in the discussions chapter.

Fourth, it was discovered that a similarity between the VCPs were that their selection processes consisted of multiple stages, were both used applications forms followed by semi-structured interviews as assessment methods to collect information on the candidates. However it became clear that the VCPs differed notably in how the information collected from the assessment methods was combined and evaluated. CSE followed a mechanical composite, while NSE followed a judgmental composite. According to Gatewood et al. (2010) mechanical collection and combination is the superior method as it has a higher predictive validity for future performance, because it reduces the influence of the assessors personal bias and prejudices on the selection process. Based on the discussion of empirical findings a revised conceptual model for how VCPs performance candidate selection has been developed as seen below in Figure 6.
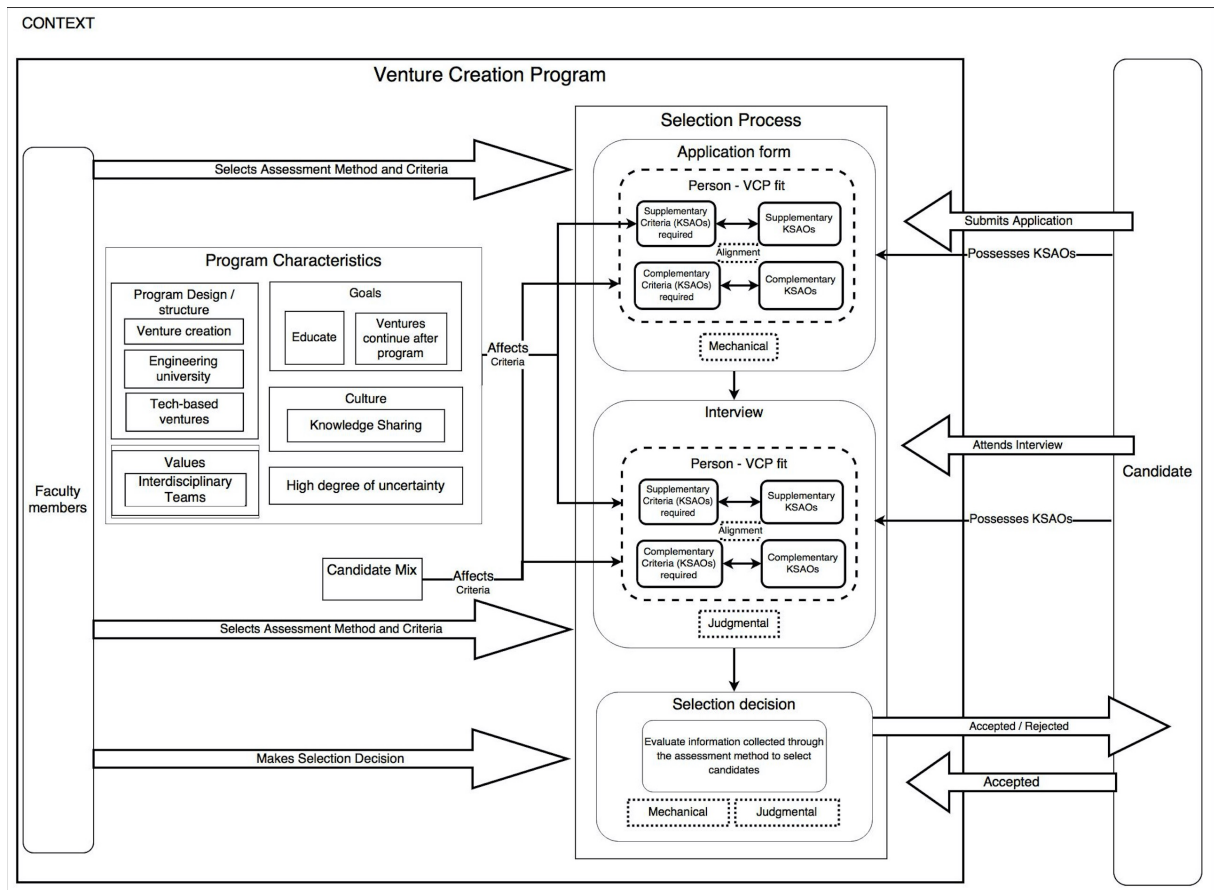
Figure 6: Conceptual Model of Person-VCP Fit

6.2 Theoretical implications

This thesis adds to our understanding of venture creation programs by investigating the characteristics of the selection process at two case study VCPs. It has identified challenges, criteria and assessment methods used by VCPs when selection candidates and explained how they affect the selection process. The thesis has also showed that a person-organization level fit is well suited in a VCP context through the development of the Person-VCP fit concept. Through P-VCP fit it was shown how the VCPs' characteristics affect the environment component of the fit and how the programs' criteria are linked to the KSAOs possessed by its candidates.

6.3 Practical implications

The thesis describes and compares how the selection process is performed at the two case VCPs. Other VCPs can potentially use the revised conceptual model in addition to the best practices identified at CSE and NSE, when designing new or seeking to improve their current

selection process. Also, being aware of the selection issues at the case VCPs can potentially help the assessors to find ways to solve them. By explicitly defining the Person-VCP fit concept and describing its relationship to complementary versus supplementary KSAOs one can potentially increase awareness and make it easier for the faculty to make trade-offs when evaluating candidates. Also having a clear definition can potentially result in better communication when discussing candidates. It was showed how the use of the assessment methods at the case VCPs was related to best practices from personnel and human resource selection. For instance mechanical collection and combination of predictor information is considered to be superior to judgmental combination (Gatewood et al., 2010) and structured interviews have a higher predictive validity than semi-structured interviews (Schmidt & Hunter, 1998). Hopefully this can lead to better selection decisions being made by VCP selectors and the design of more resource efficient selection processes.

6.4. Limitations

CSE and NSE as programs are to a large degree inspired by each other and as a result they have relatively similar program designs and objectives. However several differences were also identified and have been discussed through this thesis. A wider scope could have been used when selecting cases to be included in the study, which would have increased the transferability of the study. However the author is only one person and there is a limit to how much in-depth data it is possible for one researcher to collect and analyse within the limited timeframe of this master's thesis, between April and September, 2016. In addition loosening the criteria would reduce the *literal replication* between the cases, which is important according to Yin (2009). Having two cases increases the overall robustness of the thesis compared to a single case study and makes it possible to compare similarities and contrasts between the programs.

As discussed in this thesis, the two case study programs have both similarities and differences in their program design, which affects the selection process. Therefore all of the results of in this thesis will not be applicable to all venture creation programs. According to (Gioia et al., 2013) it is possible to generalize from a small case study if the concepts and principles are of obvious relevance to others. Thus VCPs who follow a similar selection process as the selected cases can potentially discover best practices from the cases that are transferable to their own program.

Person-organization fits ability to predict job performance has been questioned in the personnel selection literature. In a meta analysis Arthur Jr, Bell, Villado, and Doverspike (2006) found that P-O fit was a weak predictor of job performance. However Ostroff and Xhan (2012) disagreed with the implications of these findings and argued that the analysis was performed at an individual level, meaning that there could still be benefits for the organization of having employees who had a good P-O fit through e.g. better customer service. In addition Ostroff and Xhan (2012) pointed out that it is important to perform a very comprehensive analysis of the P and E elements, as this is likely to have a large impact on the predictive validity of fit. Also, it should be noted that evaluating concepts of fit adds additional complexity to the selection process compared to a traditional selection process where one can assess the match between a person's KSA to a job specification. However it is viewed as necessary due to the unique context of VCP, such as the VCPs being educations and that they therefore are looking to develop entrepreneurs rather than accepting the ready-made package. In addition the students perform a broad range of interdisciplinary activities, which makes it difficult to define specific "job" requirements. The students having limited experience and similar backgrounds further amplify the VCP selection challenges, which makes distinguishing them difficult as noted by the faculty. Thus it is suggested that implementing the concept of Person-VCP can potentially improve selection at venture creation programs.

6.5 Further research

Further research could be performed to test the predictive validity of the Person-VCP fit concept. In addition research should be performed to identify the tasks and activities performed by VCP students to define person-job fit in a VCP context. Research could also be performed to test the predictive validity of the KSAOs that have been identified in this thesis and that are evaluated as criteria by the case VCPs. Brannick et al. (2012) suggests performing a test validation study to test the predictive validity of KSAOs that have been identified through analysis. In a VCP context this could be performed through testing if there is a statistically significant relationship between the individual KSAOs possessed by the candidates at the time of admittance versus those that continue in their ventures after graduation. Future research should investigate VCPs outside of the Nordics that have even larger contrasts than the selected case VCPs to further expand our knowledge of VCP selection.

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Appendix

Appendix 1: Literature recommended by the author's supervisors

Literature recommended by the author's supervisors, Roger Sørheim and Morten Ansteensen. In addition to NSE faculty member Marius Tuft Mathisen.
Bae et al. (2014), Dalland (2012), Eisenhardt (1989), Gioia et al. (2013), (Lackéus, 2013), Lackéus et al. (2011), Marvel (2013), Moberg (2014), Ollila and Williams Middleton (2013)

Appendix 2: Overview of articles found through structural search

Search term	NTNU Oria library search	Google Scholar	Additional search criteria and notes
action-based entrepreneurship* education*	(Rasmussen & Sørheim, 2006)	(Rasmussen & Sørheim, 2006), (Mwasalwiba, 2010),	
Venture* creation* program*	(Lackéus & Williams Middleton, 2011), (Lackéus & Williams Middleton, 2015)	(Shaver & Scott, 1991)	
"entrepreneurial traits"	(Baum & Locke, 2004)	(Baum & Locke, 2004)	
human* resource* selection*		Gatewood et al. (2010)	
personnel* selection* method*		(Schmidt & Hunter, 1998)	
personnel selection methods constructs		(Ryan and Ployhart, 2014)	In order to discover more recent articles, this search was limited to results since 2012
"entrepreneur selection"	(Santos & Caetano, 2014)	(Santos & Caetano, 2014)	
entrepreneurial social	(Lamine et al.,	(Baron and Tang,	

skills	2014)	2008)	
social* skill* entrepreneur*	(Omrane, 2014)	(Baum & Locke, 2004)*	
human capital performance technology venture	(Ganotakis, 2012)	(Unger et al. 2011)	
entrepreneurial success factor	(Makhbul & Hasun, 2010)	(Schmidt and Hunter, 1998)*; Unger et al. 2011)	
person* entrepreneurship* fit	(Markman & Baron, 2003)*; (Dvir et al., 2010)	(Markman & Baron, 2003)*.	
interdisciplinary entrepreneurial team	(Henneke & Lüthje, 2007)	Henneke and Lüthje (2007)	
selection team social skills	(Morgeson et al., 2005)	(Morgeson et al., 2005)	
ability discovery entrepreneurial opportunity	(Corbett, 2007)	(Shane, 2000)*; (Davidsson & Honig, 2003)*;(Corbett, 2007)	
snowball sampling	(Cohen & Arieli, 2011).		
grades job performance		(Roth et al. 1996)	
entrepreneurship personality big five	(Leutner et al., 2014)	(Zhao et al., 2010), (Zhao & Seibert, 2006), (Leutner et al., 2014)	

Appendix 3: Literature discovered through snowball sampling

	Original reference	New reference: Times cited by other references in this thesis.
Reference list	Rasmussen and Sørheim (2006)	Gartner (1988): 9.
	Ryan and Ployhart (2014)	Finch et al. (2009): 2. Klehe et al. (2008): 1. Schmitt (2012): 3. Van Iddekinge and Ployhart (2008): 1. Chapman and Zweig (2005): 1
	Gatewood et al. (2010)	Huffcutt et al. (2001): 3. Lawler (2007): 1. Klehe et al. (2008): 1. Huffcutt et al. (1996): 1. (Tversky & Kahneman, 1973)
	Schmitt (2012)	Ostroff and Xhan (2012): 1. Murphy (2012):1 Brannick et al. (2012): 1.
	Ostroff and Xhan (2012)	Chuang and Sackett (2005): 1. Arthur Jr et al. (2006)
	Lackéus and Williams Middleton (2015)	Kuratko (2005): 7.
	Warhuus and Basaiawmoit (2014)	Krueger et al. (2000): 6. Ollila and Williams Middleton (2011): 1. Duval-Couetil (2013): 1. Karlsson and Moberg (2013). 1
	Markman and Baron (2003)	Bandura (1977): 1. O'Reilly et al. (1991): 3. Kristof (1996): 2. Cable and Judge (1997): 2. Brush and Chaganti (1999): 1. Baron and Markman (2003): 5. Chen et al. (1998). 10
	Moberg (2014)	McGee et al. (2009): 3. Mauer et al. (2009): 1. Fayolle et al. (2006): 2.
	McGee et al. (2009)	Aldrich and Wiedenmayer (1993): 4. De Noble et al. (1999): 2.
	Bae et al. (2014)	Davidsson and Honig (2003): 6.
	Unger et al. (2011)	Becker (2009): 2.
	Lamine et al. (2014)	Gelderen (2012): 1.
	Corbett (2007)	Venkataraman (1997): 9.
	Ganotakis (2012)	Ucbasaran et al. (2008): 2.
	Dvir et al. (2010)	Rauch et al. (2005): 2.
	Marvel (2013)	Fiet (2007): 1. Bosma et al. (2004): 1
	Zhao et al. (2010)	Zhao et al. (2005): 1
	Santos and Caetano (2014)	Baum and Locke (2004): 1

Appendix 4: Interview guide

Questions for program directors and administrators

General questions
- What is the goal of Chalmers?
- Could you describe the current selection process at Chalmers?
- Which people are involved in the various stages of the candidate selection process?
- Could you describe an ideal candidate?
- What criteria are you using to evaluate candidates? Are some of them more important than others?
- What do you take into consideration the overall mix of candidates?
- What do you define as a successful candidate versus an unsuccessful candidate at Chalmers?
- What challenges do you face when evaluating candidates?
- Do you have an interview guide or policy? How strictly do you follow the guide?
- How are the different stages of the selection process weighted?
  o Are there any cut-off points between the different stages of the process?
  o E.g. After the candidate has passed the motivation letter and be called in for an interview, is the letter used in further evaluation?
- How many candidates are accepted into the program each year?
  o How has this changed over time?
- Do you use a rating system for evaluating candidates? Could you explain how this works?
- How would you improve the current selection process?

Criteria
- How do you value technical competence? Should the candidates be able to build their own product?
  o Or is the main focus on commercializing university-based research?
- How do you value previous entrepreneurial experience in the candidates?
  o Do you accept candidates who already have a startup or an idea into the program?
- How do you value a candidate's educational background? Are some lines of study valued more than others?
- How do you evaluate which team role a candidate is suitable for?
- Do you evaluate a candidate's personality and if so, how?
- How much business experience should the candidate possess before attending Chalmers versus after?
- Do you evaluate a candidate's personality and if so, how?
- How do you value the candidate's academic achievements?
  o Are grades used as a criteria for evaluating the candidate?

Questions for people involved in the selection process

General questions
- What is your connection to Chalmers School of Entrepreneurship?
- Could you describe your role in the candidate selection process?
- Have you attended Chalmers School of Entrepreneurship yourself?
- How would you describe the culture of Chalmers and the environment that the candidates have to fit into?
- Could you describe what you consider as an ideal candidate?
- What do you think are the largest challenges with the current selection process?
- What do you define as a successful candidate versus an unsuccessful candidate at Chalmers?
- How do you evaluate candidates?
- What challenges do you face when evaluating candidates?
- What criteria are you using to evaluate candidates? Are some of them more important than others?

Criteria
- How do you value previous entrepreneurial experience in the candidates?
- How do you value a candidate's educational background? Are some lines of study valued more than others?
- How do you evaluate which team role a candidate is suitable for?
- How do you evaluate a candidate's prior teamwork experience
- Do you evaluate a candidate's personality and if so, how?
- How important is motivation?
- How much commercial experience or business knowledge should the candidate have prior to attending Chalmers?
- How do you evaluate a candidate's grades?
- How do you evaluate a candidate's previous entrepreneurial experience?
- How do you evaluate a candidate's social skills and persuasive ability?

Interviews
- Do you take notes during the interview?
- Do you assign a score to each candidate?
  - When is this score assigned, during the interview or after?
- Do you read through the applications or motivation letter of the candidate prior to conducting the interview?
- Do you have an interview guide or policy? How strictly do you follow the guide?
- Do you have training in conducting interviews?
- Do you have prior experience in interviewing?
- How much time do you need with a candidate to determine whether they are a good fit for Chalmers?
- How would you improve the current selection process?