SCHOOL OF ECONOMICS AND MANAGEMENT

The difference between lower educated entrepreneurs and higher formally educated entrepreneurs in fostering entrepreneurial competencies in Sweden.

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Abstract

Sweden is a highly innovative economy with high levels of entrepreneurial activity. An entrepreneurial mindset is being stimulated heavily by the Swedish government through educational programs. Next to that, the war-on-talent increases the need for looking at more than only educational backgrounds. Currently, here is a lack of research on the differences between educational levels and the link with entrepreneurial competencies possessed by entrepreneurs in Sweden, which are important abilities for entrepreneurs to possess when focussing on new venture creation. Therefore, the aim of this research is to discover if there is a difference between lower educated entrepreneurs and higher formally educated entrepreneurs regarding their possession of entrepreneurial competencies. Lower educated being primary, secondary, post-secondary education, bachelor and higher formal educated entrepreneurs being master or PhD education. This is done by deductive research and a quantitative data collection approach by using a web-based survey. With 156 respondents, whereas 129 responses were valid, no significant difference was found between lower and higher formally educated entrepreneurs concerning their entrepreneurial competencies. Meaning that level of education does not necessarily make an entrepreneur possess a higher level of entrepreneurial competencies. The implication hereof is that the main research question, that expected higher educated entrepreneurs to possess a higher level of skills in terms of entrepreneurial competencies, is not accepted. This research contributes to organizations and entrepreneurs who make hiring decisions as skills can be rather looked at than education level. But also, for an individual intending to create a venture and therefore can prioritise other features than the effort and time spent on gaining the highest degree possible.

Keywords: Entrepreneurial competencies, education, lower education, higher formal education, entrepreneurship, new venture creation.

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List of Abbreviations

Abbreviation	Full form
H0	Hypothesis 0
H1	Hypothesis 1
KMO	Kaiser-Meyer-Olkin
KSA	Knowledge, skills, and abilities
PCA	Principle Component Analysis
PhD	Doctor of Philosophy
SPSS	Statistical Package for the Social Sciences

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1. Introduction

Within the last decade, the number of start-ups has been increasing to boost economic growth (Harari, Sela & Bareket-Bojmel, 2022; Kalogiannidis & Chatzitheodoridis, 2021; Kuratko, 2005). Entrepreneurial individuals are interacting with their environment to discover, evaluate and exploit opportunities, resulting in new venture creation (Shook, Priem & McGee, 2003). Moreover, new venture creation increases job creation, thus indirectly impacting societal wellbeing and economic growth (Balawi & Ayoub, 2022; Schofer, Ramirez & Meyer, 2021; Toma, Grigore & Marinescu, 2014). For this reason, the Swedish government is stimulating entrepreneurial activities (Balawi & Ayoub, 2022; Heyman et al., 2019; Lgr, 2011). It can be said that Sweden has a great foundation for entrepreneurs and their ventures (Balawi & Ayoub, 2022; OCED, 2018). However, Sweden would like to increase the activity as it is impeding within the last years (Heyman et al., 2019). Within these newly created jobs and rising entrepreneurial activity, seen in new venture creation development, is the growth in demand for skills (Felstead, Ashton & Green, 2000; Gallie et al., 1998; Green, Felstead & Gallie, 2003). To gather these necessary skills, many people decide to get a higher education degree (Hargreaves, 1999). An important skill taught in higher education is the increase in an individual's productivity which, again, leads to economic growth (Becker Jr & Lewis, 2012).

Currently, there are some great entrepreneurs out there like Bill Gates, Steve Jobs, Mark Zuckerberg and Larry Ellison who did not obtain a bachelor's degree but are quite successful (Baumol, Schilling & Wolff, 2009; Cotonou, 2022). Whilst according to Baumol, Schilling & Wolff (2009) most inventors of a new business idea acquire a PhD (Doctor of Philosophy), it is likely that invention might be conditional to a "*burden of knowledge*" (Jones, 2009 p. 283-317). Still, individuals with a higher education background tend to establish their own companies more often (Hunady, Orviska & Pisar, 2018). However, this does not necessarily mean they learned all the skills and abilities to create a new venture through higher formal education.

Some researchers have a different perspective on the impact that higher education has and see this more negatively. Higher education can stimulate the burden of knowledge which can be a liability for innovation and decrease entrepreneurial intention (Jones, 2009; Tasnim, Saleh & Zainuddin, 2014).

The time of degree inflation has turned significantly as nowadays the trend is that companies are focusing more on skills rather than asking for the requirement of a college degree (Fuller, Langer & Sigelman, 2022). The shift in hiring technique comes from the current war-on-talent because the demand is higher than the supply in the current labour market (Fuller, Langer & Sigelman, 2022; Michaels, Handfield-Jones & Axelrod, 2001). Since employers are removing the requirement for a college degree from their vacancies, most of them add more soft skills to their list of preferences (Fuller, Langer & Sigelman, 2022). The advantages of turning around the degree inflation are an increase in equity of the labour market and companies will have a greater ability at matching the job with a perfect applicant (Fuller, Langer & Sigelman, 2022).

Seeing this trend of hiring based on skills and competencies instead of educational backgrounds, it has become interesting to look at the educational backgrounds of entrepreneurs and if they have differences in their entrepreneurial competencies. The outcome of the study helps entrepreneurs make hiring decisions. Additionally, as Sweden's entrepreneurial activity is slowing down, the importance of looking into at which level of education, entrepreneurs possess entrepreneurial competencies at the greatest level is significant to discover at which education level, an entrepreneurial mindset should be stimulated in. Not only is this important for the Swedish government to see if they allocate the funding correctly but also for individuals who have the intention to start a business concerning if gaining a higher formal education degree will make it worthwhile their time and efforts.

Whilst there is a significant amount of research on how entrepreneurial education impacts venture creation, research about the difference between general lower education and higher formal education and its influence on new venture creation in Sweden is still lacking (Jardim, Bártolo & Pinho, 2021; Lackéus, 2015; Lorz & Volery, 2011; Moses, 2010; Raposo, 2010; Sánchez, 2013).

The research link between higher formal education and venture creation in the Swedish context that is missing creates a gap in the literature. Moreover, even though much research about the importance of higher formal education exists, there is a lack of research about if there is a difference in entrepreneurial competencies between lower and higher formally educated entrepreneurs. Therefore, this research aims to understand what the difference between lower education and higher formal education is on the entrepreneurial competency

levels of entrepreneurs that are important for partaking in new venture creation. Is it worth it? Or would not participating in higher education reach the same goal of increasing new venture creation to stimulate economic growth? This resulted in the following research question:

What is the difference in entrepreneurial competencies possessed between formal higher educated entrepreneurs compared to lower educated entrepreneurs in Sweden?

This will be answered by conducting quantitative research gathered through a web-based survey where (co-)founders are asked to fill in the questions about their abilities, linking to the entrepreneurial competencies. Thereafter, the sample is divided into lower educated entrepreneurs and higher formally educated entrepreneurs.

Besides the contribution to the Swedish government, this research also adds value in practise to founders to know if they can hire based solely on skills instead of mainly based on educational degrees. With regards to theoretical implications, showing the difference in the possession of entrepreneurial competencies between lower educated entrepreneurs and higher formally educated entrepreneurs, will benefit entrepreneurs because it can be the determinant to pursue higher formal education or not.

The structure of the study is as follows. Firstly, a literature review and theoretical framework are presented where key definitions are defined and related literature is given about the topic. The hypotheses are determined from the literature in this chapter. After, the methodology including the research approach, data collection and sampling is explored. Whereas validity and reliability of the methods, ethical considerations and operational measures are given to create more clarity about limitations and the prevention thereof. After data is collected, this is carefully analysed, and findings are discussed. Hereafter, the implications refer to how this research can be applied practically and theoretically. This is followed by the limitations of this research, future research topics and a conclusion.

2. Literature Review

2.1. New venture creation

2.1.1. Defining entrepreneurs and new venture creation

Entrepreneurship is a growing phenomenon, and an increasing amount of research has been done to gather a deeper understanding of what its definition is about. Entrepreneurship is about researching how people handle entrepreneurial activities within their environment and even more about handling opportunity recognition as this has a positive influence on economic growth (Acs & Szerb, 2019; Honig & Samuelsson, 2012; Shane & Venkataraman, 2000). Part of the entrepreneurship phenomenon is venture creation which is seen in Gartner's entrepreneurship definition; "*entrepreneurship is the creation of new organizations*" (Gartner, 1988, p.62). New venture creation is a result of entrepreneurial individuals pursuing an entrepreneurial activity, this definition focuses on "*entrepreneurial individuals interacting with their environment and their actions in discovering, evaluating and exploiting opportunities*" (Shook, Priem & McGee, 2003, p.379). New venture creation is mostly seen as a process from nothing to new economic activities, it is not just one moment in time or event (Baron & Markman, 2018; Davidsson & Gruenhagen, 2021; McMullen & Dimov, 2013; Shane, 2012; Vogel, 2017).

In this research, the definition of new venture creation by Gartner (1988) is used and is defined as the starting of a new business.

Acs and Szerb (2019) define an entrepreneur as someone with an innovative vision and the ability to bring this idea to the market. They are people who can work with everything, in any market unrelatedly to their education level, knowledge and demographics (Acs & Szerb, 2019). As entrepreneurship has a positive influence on economic growth, it is of high importance that entrepreneurs see and take opportunities to create novel and innovative ideas and persevere until their goal is reached (Acs & Szerb, 2019; Giannetti & Simonov, 2004). Entrepreneurship is a process where "*opportunities to create future goods and services are discovered, evaluated, and exploited*" (Shane & Venkataraman, 2000, p.218). There are many different definitions of what an entrepreneur means due to the many different views on the definition of entrepreneurship (Howorth, Tempest & Coupland, 2005). Some even say that entrepreneurs cannot be usefully defined, thus this should not be strived for (Cole, 1969). One

of the reasons is that entrepreneurial behaviour and thoughts change, thus are not stable (Shane & Venkataraman, 2000). An alternative is to focus on how entrepreneurial individuals approach and handle certain situations, such as opportunity exploitation, to help understand the entrepreneur better (Shane & Venkataraman, 2000; Shook, Priem & McGee, 2003). Something many of this phenomenon researchers do agree upon is the theory that entrepreneurship research should keep developing (Davidsson, Low & Wright, 2001; Gartner, 2001; Shane & Venkataraman, 2000). In this research, the following definition of an entrepreneur is used:

An entrepreneur is someone who has started their own business at any point in time, thus went through the new venture creation process at least once.

The individual decision of partaking in the entrepreneurial process is argued to come from different types of influences (Shane, Locke & Collins, 2003). Much of the existing research focuses on environmental characteristics (Aldrich, 1999), and characteristics of the opportunity (Christenson, 1997). A third possible big influence on the decision to start a new venture is human capital also referred to as motivation to become an entrepreneur and pursue an opportunity (Aldrich & Zimmer, 1986). Some dependents of people deciding to exploit an opportunity are the opportunity cost, financial capital, their network, and work experience (Aldrich & Zimmer, 1986; Amit, Muller & Cockburn, 1995; Carroll & Mosakowski, 1987; Cooper, Woo & Dunkelberg, 1989; Evans & Leighton, 1990; Shane, Locke & Collins, 2003). According to Shane and Venkataraman (2000) how people are affected by risk and their opportunity recognition competencies are largely influencing the decision to become an entrepreneur. This is mainly because there is a lot of uncertainty when self-starting a business and therefore, the people who are motivated and willing to proceed with the entrepreneurial process anyway, often have higher self-efficacy and are more optimistic than people who would not take the risk (Shane & Venkataraman, 2000). Other factors that play a role in impacting someone to pursue an opportunity and partake in the entrepreneurial process are political factors, market forces and available resources (Shane, Locke & Collins, 2003).

2.1.2. Individual entrepreneurial characteristics

Matthews, Jones & Chamberlain (1992) define skills are different from abilities as an "*exercise of skill produces proficiency at tasks, whereas abilities are akin to more general traits*" (Chell, 2013, p.7). Combining them, they are often referred to as competencies, telling what a person can do and achieve (Mischel, 1973). Skills can be trained and developed continuously throughout life (Chell, 2013). Even though an entrepreneur is heterogeneous, making researching 'who is an entrepreneur' difficult (Bruyat & Julien, 2001). Baron (2007) states that entrepreneurs are people who take action and work hard as long as needed until their novel ideas become profitable and their goals are achieved. Additionally, "*entrepreneurship involves human agency. The entrepreneurial process occurs because people act to pursue opportunities*" (Shane, Locke & Collins, 2003, p.259). To decide and pursue these opportunities a person's cognitive behaviour matters, this exists out of knowledge, skills and abilities (KSAs) as all action taken by the person is based on a combination of KSAs and motivation (Locke, 2000). It is necessary to understand why these associated entrepreneurial skills are important for starting a new venture because the better the person-entrepreneurship fit the higher the chances of entrepreneurial success (Kristof, 1996; Van Vianen, 2000). It is stated that "*the closer the match between individuals' attitudes, values, knowledge, skills, abilities, and personality, the better their job satisfaction and performance*" (Markman & Baron, 2003, p.281).

Individual characteristics such as, the need for achievement, creativity, innovativeness, and someone's ability to handle risk, are deemed important for entrepreneurs to possess (Begley and Boyd, 1987; Barkham, 1994; Kotey and Meredith, 1997). Especially during the decision making process of founding a business and continuously working on it to make the business a success, cognitive behaviour and individual characteristics play an important role (Li, 2009a).

2.2. Education

2.2.1. Introduction to the Swedish education system

The education system in Sweden is financed through taxation and therefore no monthly fees are charged until university level (Wikström, 2006). The reason for this is to stimulate the Swedish population to study and to hopefully prevent the unemployment rate to increase (Deen, 2007; Wikström, 2006). The Swedish education system is explained as followed; (1) pre-school, ages 1 to 5, (2) pre-school class, age 6, (3) primary and lower-secondary education, ages 7 to 16 (grundskola), (4) upper-secondary education, ages 16 to 19 (gymnasieskola) (Deen, 2007), (5) post-secondary education (higher vocational education) (Swedish Council for Higher Education, 2023), (6) higher education (Swedish council for Higher Education, 2023).

School is mandatory until primary and lower-secondary education, whilst upper-secondary and other higher education levels after are optional (Wikström, 2006). Nonetheless, 90% of all students in Sweden pursue upper-secondary education (Wikström, 2006).

In this research, education levels are divided into primary, secondary, post-secondary education (high school), bachelor, master, and PhD education in Sweden. The last two are referred to as higher formal education in this dissertation.

Research has shown that general education matters regarding an individual's social life as cognitive ability and the appreciation of social conveniences are greater when someone is educated (Kingston et al., 2003). Besides, there is a significant relationship between economic success, social status and education (Kingston et al., 2003; Raudenbush & Kasim, 1998). Students perceived benefit from education is gaining greater self-esteem, which helps with making better career choices (Côté, 1997), it will help create a wider social network and the ability to tolerate one another (Putnam, 1996).

Sweden being one of the best economies worldwide with a highly innovative business climate helps with a significantly evolved educational system and a good basis for entrepreneurial activity (Balawi & Ayoub, 2022; OCED, 2018). This can be seen in the data that states that 5% of Swedish people have started a business and 6% of the population has invested in another's business which is higher compared to other European countries (Braunerhjelm et

al., 2016). Between 1998 and 2008, barriers to becoming an entrepreneur were lowered by the government to further stimulate entrepreneurial activity (Braunerhjelm et al., 2016; Heyman et al., 2019). In other countries their entrepreneurial activity has been slowing down in the past years, in Sweden, this goes slower which might be a result of technological developments, something Swedes are very eager to improve (Heyman et al., 2019). Sweden's high start-up rates are supported by a stable labour supply and average population age (Balawi & Ayoub, 2022). This is mainly because stability decreases the risk of self-start and helps people to make well thought through decisions, such as founding a company (Bizri et al., 2012).

Additionally, Sweden's educational system has been updated in the 90's to shift more focus to increasing the entrepreneurial level in Sweden, the mindset behind this curriculum change is "*the school should assist children in developing an entrepreneurial mindset*" (Lgr, 2011, p.6). This entrepreneurial mindset can also be used in students' daily lives (Dahlstedt & Fejes, 2019). In 2022, enrolments to Swedish universities have increased by 2% showing that this evolved and the entrepreneurial focused educational system is becoming more successful (Swedish Higher Education Authority, 2023). However, there is no research or success rate about the difference in education level regarding entrepreneurial success in Sweden.

2.2.2. Higher formal education

Higher education is considered to be contributing to the core features of the globalized world (Schofer, Ramirez & Meyer, 2021). According to Schofer, Ramirez and Meyer (2021), higher education stimulates human rights and environmentalism, changing global and national societies. Furthermore, the service sector and the economic area have grown because of higher education (Schofer, Ramirez & Meyer, 2021). Furthermore, because of higher education, societal mobilizations can stark controversy between opposing parties (Schofer, Ramirez & Meyer, 2021). However, in Sweden around one in four individuals of all high-school students, decide to proceed to higher education (Wikström, 2006). Reasons for students to choose higher education include parental influences, a student's interest and the ability to proceed with a course (Proboyo & Soedarsono, 2015). But most importantly, individuals choose higher education because they get a financial return as it can be expected that choosing higher education leads to higher lifetime income (Becker Jr & Lewis, 2012). The societal benefit is that higher education causes greater productivity which leads to

economic benefit (Becker Jr & Lewis, 2012). Furthermore, higher educated are taught to be resilient (Bell, 1973; Bohme & Stehr, 1986) which according to Brewer is defined as "*a dynamic process of positive adaption in the face of adversity or challenge*" (2019, p1114). Resilience is crucial in managing effectively mental, emotional, educational and social challenges (Ahmed & Julius, 2015; Kumar & Singh, 2014).

2.2.3. Individually gained skills from higher education

There has been an increase in demand for skills within the labour market (Felstead, Ashton & Green, 2000; Gallie et al., 1998; Green, Felstead & Gallie, 2003). One popular way to gather new skills is through education (Hargreaves, 1999). Research has shown that the gained skills of a graduate are important to transfer with them to their future job (Brewer et al., 2019; Grant-Smith, Gillett-Swan & Chapman, 2017; Kift, 2015; Postareff et al., 2017). Part of these skills are their learner characteristics, certain personality traits and related work experience (Jackson, 2016; Nafukho et al., 2017). Learner characteristics include motivation to learn, risk taking, cognitive ability and confidence (Burke & Hutchins, 2007). Regarding personality traits, openness, conscientiousness and extraversion were discovered to positively impact the transfer of gained skills (Jackson, 2016). Moreover, "*extraversion refers to high self-esteem, ambition, taking initiative and being sociable, gregarious and active*" (Jackson, 2016, p.217). Lastly, conscientiousness is described as "*being disciplined, persevering, achievement oriented and systematic*" (Jackson, 2016, p.217). This characteristic is considered the most crucial motivation to skill transfer from university to the work floor (Barrick, Mount & Strauss, 1993). Furthermore, workplace characteristics can influence skill transfer positively due to learner perceptions such as considering the crucial aspect of learning and innovation (Chiaburu, Van Dam & Hutchins, 2010). The most impactful characteristics are "*access to role models, followed by performance feedback, goal setting, mentoring, peer collaboration and supervisory support; and working in a climate which supports change and encourages flexibility*" (Jackson, 2016, p.223).

Discipline-specific skills and knowledge were mentioned as more useful than generic skills (Jackson, Fleming & Rowe, 2019). Whereas, students are more confident to transfer skills and knowledge when the education includes practical learning, great integration between work and education, enough industry engagement through for example field trips or guest speakers and group activities (Jackson, Fleming & Rowe, 2019). Further, activities outside of the

university were also considered important such as job and volunteer work (Jackson, Fleming & Rowe, 2019). One of the barriers to transferring knowledge and skills is the lack of support in the workplace, where colleagues already have a certain way of doing something instead of listening to what the new person has to bring to the table (Jackson, Fleming & Rowe, 2019). Another barrier is the complexity of a task as students might be used to guidance which on the work floor might be expected that this individual can do by themselves (Jackson, Fleming & Rowe, 2019; Leberman & McDonald, 2016). The last barrier is the wrong vision that is showcased by university compared with reality (Baldwin, Kevin Ford & Blume, 2017; De Rijdt et al., 2013; Jackson, Fleming & Rowe, 2019). Education can also negatively impact knowledge and skill transfer because the related task that an individual needs to perform at that moment can be constrained by the experience someone has from their education (Bransford, Brown & Cocking, 2001).

Innovators, "*a necessary input to any innovation*" (Jones, 2009, p.283), are at risk of the burden of knowledge which is rising (Jones, 2009). Whilst going through a lengthy educational phase, people are taught about more specific topics which is increasing their team working capabilities (Jones, 2009). However, the downfall of this longer educational experience is the risk of lower innovative capacities. This is not only a negative impact on the individual, but also on companies as less growth can be realized without innovation (Dess & Lumpkin, 2005).

2.2.4. Lower educated

Educators teach what they know, but mostly they do not have experience in the new modern market that is out there (Caplan, 2018). Detachment between this labour market and the curriculum that is taught at university is recognized. Quoted in the book written by Caplan it states that *"the average person shouldn't go to college*" (Caplan, 2018, p.285) because of the ability bias and completion probability (Caplan, 2018). This means that skills are taught through more than just a school diploma and when the level might be too high for someone, the odds are against completing college anyway. Employers hire people based on their expectations of pre-existing ability and former schooling even though these two are not necessarily related (Caplan, 2018). Because of social desirability bias, no one questions the usefulness of education even though it will not provide the human capital that is promised upfront (Caplan, 2018). Dropping out of school or the choice to not proceed to college does

not necessarily mean that they do not have certain talents or a drive, but it shows deviance (Caplan, 2018). Caplan says that if there is career success nobody will be criticizing the education system because education is a great way to get a job. However, it has been argued that it is an insufficient way to learn how to do the job well (Caplan, 2018; Murphy et al., 2010; Obedkova et al., 2020).

3. Theoretical Framework

Entrepreneurial research is popular because entrepreneurship has a direct influence on economic welfare due to the creation of innovation (Harari, Sela & Bareket-Bojmel, 2022; Kalogiannidis & Chatzitheodoridis, 2021; Kuratko, 2005; Li, 2009b). Part of this economic welfare and growth, coming from new venture creation, is its influence on job creation, enhancing tax revenues, a higher number of export and a boost in national productivity (Low & MacMillan, 1988).

The topic of entrepreneurial competencies to measure entrepreneurial characteristics has become more popular (Huck and McEwen, 1991; Chandler and Jansen, 1992; Minet and Morris, 2000; Baum et al., 2001; Man et al., 2002; Sony and Iman, 2005). This is important because entrepreneurial competencies are linked to influence business performance, thus showcasing if certain competencies help entrepreneurs to become successful (Li, 2009a; Sakib & Khanam, 2020a).

Competencies refer to "*individual characteristics such as the knowledge, skills, and/or abilities required to perform a specific job*" (Baum, Locke & Smith, 2001, p.293). Entrepreneurial competencies can be seen as the "*underlying characteristics such as generic and specific knowledge, motives, traits, self-images, social roles, and skills which result in venture birth, survival, and/or growth*" (Bird, 2019, p.115).

The entrepreneurial competencies are defined as higher level characteristics including personality traits, skills and knowledge (Man, Lau & Chan, 2002). Together this can be seen as "*the total ability of the entrepreneur to perform a job successfully*" (Li, 2009a, p.8). Man, Lau & Chan (2002), created six main entrepreneurial competencies areas that are important for entrepreneurs to possess. Due to the extensiveness and clear categorization, these are chosen to utilize in this research, see table 1.

Competency Domain	Behaviors of Entrepreneurs	Sources of Literature
01. Strategic competency	The ability of entrepreneurs to formulate, evaluate, and implement the strategies of the firm.	(Bartlett & Ghosall, 1993); (Durkan et al., 1993); (Hunt, 1998); (Gasse, 1997); (Adam & Chell, 1993)
02. Conceptual competency	The competency related to entrepreneurs' conceptual abilities is reflected in decision-making, innovativeness, understanding complex situations, and entrepreneurs' risk-taking behaviors.	(Baum, 1994); (Bartlett & Ghosall, 1997); (Bird, 1995); (Durkan et al., 1993); (Hunt, 1998); (Chandler & Jansen, 1992)
03. Organizing and leading competency	The competency is related to the organization of numerous firm's resources, e.g., human, financial, physical, and technological resources, like team-forming, leading employees, controlling, and training.	(Gasse, 1997), (Chandler & Jansen, 1992), (Bartlet & Ghosall, 1997); (Durkan et al., 1993), and (Baum, 1994).
04. Opportunity competency	The ability of entrepreneurs to identify, seek, and grasp business opportunities.	(Baum, 1994); (Gasse, 1997), (Chandler & Jansen, 1992)
05. Commitment competency	Competencies that drive entrepreneurs to go ahead with business and energize to restart after failure.	(Durkan et al., 1993); (Bartlett & Ghosall, 1997); (Chandler & Jansen, 1992)
06. Relationship competency	Ability to develop a network and build a relationship, communicate, negotiate, and manage conflict effectively.	(Bartlett & Ghosall, 1997); (Durkan et al., 1993); (Chandler & Jansen, 1992); (Bird, 1995), and (Gasse, 1997)

Table 1 (Sakib & Khanam, 2020a)

Hypothesis 1 is based on the gap of the research and the research aim, being to find out if there is a difference between lower educated entrepreneurs and higher formally educated entrepreneurs regarding the entrepreneurial competencies. This is supported by the secondary research and sub-hypotheses underneath.

Hypothesis 1: Higher formally educated entrepreneurs possess a higher entrepreneurial competency level than lower educated entrepreneurs.

3.1. Strategic competencies

"*Strategic competency refers to the skills which are related to the setting, evaluating, and finally implementing strategies for the organization*" (Sakib & Khanam, 2020, p.78). To be able to start a venture, it is necessary to determine objectives and a vision for the company (Li, 2009a). The advantage of possessing strategic competencies is that there is a positive impact on venture performance (Man, Lau & Chan, 2002; Sakib & Khanam, 2020a; Subagyo et al., 2020). Strategic competency is measured by the following behaviours: *"(1) gauge long range opportunities, issues, and problems (2) aware of the anticipated directions of the*

industry and how changes might impact the firm (3) prioritise works according to business goals (4) restructure the department and/or organization to better link with the long-range issues, opportunities and problems (5) link up ongoing activities with strategic goals of the organization (6) integrate short term and day to day activities with strategic goals of the organization (7) track performance towards strategic goals (8) evaluate outcomes against strategic goals (9) consider strategic actions evaluating appreciate cost and benefit analyse"(Sakib & Khanam, 2020, p.83).

According to Allen, Ramaekers and van der Velden (2005), nine features are necessary for the work floor and which most of the higher educated students have obtained. These features are *"directing productive tasks, directing the work of others, planning, coordination, control, innovation, information management, maintaining relations with personnel, and maintaining relations with clients"* (Allen, Ramaekers & van der Velden, 2005, p.53). As these features complement the strategic behaviours, the following hypothesis was formulated:

Hypothesis 1a: Higher formal educated entrepreneurs possess a higher level of strategic competencies than lower educated entrepreneurs.

3.2. Conceptual competencies

Conceptual competencies indicate cognitive skills that create the ability for an individual to incorporate all tasks and activities in an organization (Chandler & Jansen, 1992; Li, 2009a; Sakib & Khanam, 2020a). These competencies are essential for entrepreneurial success as it includes many abilities one needs to acquire to run a business by making certain decisions and solving organizational problems (Li, 2009a; Man, Lau & Chan, 2002; Sakib & Khanam, 2020a). Once again, there is a great relationship between the venture's performances and conceptual competencies (Ahmad, 2007; Man, 2001a; Sakib & Khanam, 2020a). Additionally, conceptual competencies are short-term related which means that instant thinking and resolving is crucial (Li, 2009a; Man, Lau & Chan, 2002). Furthermore, conceptual thinking is measured by the following behaviours: *"(1) looking at old problems in a new way, (2) consider obvious problems as opportunities, (3) explore new ideas, (4) take reasonable job-related risks"* (Sakib & Khanam, 2020, p.83).

These behaviours all concern problem solving which according to Garcia-Esteban and Jahnke (2020) is one of the most essential skills European higher educated students acquire. Problem solving techniques are being stimulated in higher education as it is crucial for students to apply later on in their professional work-related environment (Miranda et al., 2021). Because according to literature there is a relationship between the skill taught in higher formal education, which is problem solving, and conceptual competencies, therefore, the following hypothesis was formulated:

Hypothesis 1b: Higher formal educated entrepreneurs possess a higher level of conceptual competencies than lower educated entrepreneurs.

3.3. Organising and leading competencies

It is essential for entrepreneurs to possess organising and leading competencies because of the importance to understand and organise a company's environment both internally and externally (Sakib & Khanam, 2020a). Generally, organisational competencies are comparable to managerial competencies and will be used in human competence (Boyatzis, 1982; Li, 2009a; Sakib & Khanam, 2020a). Moreover, organisational competencies have a positive influence on the performance of ventures (Man, 2001a; Sakib & Khanam, 2020a). Organising and leading competencies will be measured by the following behaviours: "(*1) develop plans for the business activities, (2) manage the resources of organizations, (3) keep the organization function properly, (4) organizing resources, (5) coordinate tasks, (6) supervise subordinates, (7) lead subordinates, (8) organizing people, (9) motivate people, (10) delegate the tasks significantly"* (Sakib & Khanam, 2020, p.83).

The ability to successfully achieve these beforementioned behaviours in the right way, some transversal competencies are necessary such as critical thinking, communication, creativity and innovation (Miranda et al., 2021). These are competencies that are being taught in higher education and significantly being promoted there as well (Miranda et al., 2021). Firstly, critical thinking is taught by using different problem-solving techniques and prepares students for the real-life problems they need to encounter later on (Miranda et al., 2021). Secondly, communication is educated by offering the students multiple occasions of vocal expression which will ensure the students to adequately show their ideas in different manners and where

they can use these skills later on in discussion and meetings (Miranda et al., 2021). Lastly, creativity and innovation are being accomplished by providing the students with activities where the main focus is to boost students regarding developing, researching and designing to eventually gain the ability to problem-solving (Miranda et al., 2021). As critical thinking, communication, creativity and innovation are important behaviours that are taught in higher formal education the following hypothesis was created:

Hypothesis 1c: Higher formal educated entrepreneurs possess a higher level of organizing and leading competencies than lower educated entrepreneurs.

3.4. Opportunity competencies

Opportunity competencies are defined by the entrepreneur's ability to "*recognize and seize market opportunities through numerous means*" (Man, Lau & Chan, 2002, p.132). The opportunity competencies of an entrepreneur might be one of the most important to possess as without these competencies, it is difficult to start a new and innovative venture. Chandler and Jansen (1992), agree with this by them stating that opportunity recognition is at the core of entrepreneurship and that having a high ability to recognise and take advantage of opportunities will positively influence venture performance (Hofer & Sandberg, 1987; Macmillan, Siegel & Narasimha, 1985; Timmons et al., 1987). Generally, opportunity competencies are measured through the entrepreneur's ability to spot, actively seek, develop, assess and take advantage of those opportunities (Ahmad, 2007; Baum, 1994; Chandler & Jansen, 1992; de Koning, 2003; Gasse et al., 1997; Man, Lau & Chan, 2002).

According to Cohen and Levinthal (2019), higher-educated individuals possess more knowledge, which is a necessary resource to relate to potential business opportunities. Due to this higher likelihood to recognize opportunities, higher educated individuals are perceived to get more opportunities for new venture creation (Arenius & Clercq, 2005). A broad knowledge base strongly contributes to an individual's ability to recognize and pursue opportunities because this taught knowledge base helps to process and recognise new information (Shane & Venkataraman, 2000). Higher educated individuals can be said to possess more knowledge, and more skills in translating this knowledge but they also have a

perceived higher confidence level to come up with successful ideas for new venture creation (Bandura, 1978).

Even though, when being higher educated, more options to find employment are available, which might be decreasing the individual's entrepreneurial motivation (Bates, 1995; Bates & Servon, 2000), Arenius and de Clercq (2005) found that there is a positive effect between the higher formal educational level and a person's perceived opportunities in the market compared to lower educated people. Therefore, the following hypothesis arose:

Hypothesis 1d: Higher formal educated individuals possess a higher level of opportunity competencies than lower educated entrepreneurs.

3.5. Commitment competencies

Generally, entrepreneurs are fully committing themselves to their venture and can be described as determined, dedicated and proactive (Li, 2009a). This proactiveness is seen back in entrepreneurs taking action before they are forced to do so (McClelland, 1973). Chandler and Jansen (1992), state that having this drive to see the firm through, whatever is happening, is corresponding to the role of an entrepreneur. Commitment competencies are summarized as "*competencies that drive entrepreneurs to go ahead with business and energize to restart after failure*" (Man, Lau & Chan, 2002, p.132). Four behaviours, previously created by Man, Lau & Chan (2002), have been used to measure commitment competencies, these four are: *"(1) ability to possess a strong internal drive to be a success, (2) refuse to let the business fail, (3) having powerful dedication to make the business smooth and work, (4) have long-term business goals"* (Sakib & Khanam, 2020a, p.79,80).

The personal knowledge about how to run a business is an important factor of entrepreneurial success and is particularly but not necessarily developed through higher education (Tasnim, Saleh & Zainuddin, 2014). Educated people might be scared to fully commit to entrepreneurship due to the business sector being seen as the least attractive field for a life-long career (Burrows & Curran, 1989). The lower social status and fewer privileges it offers specifically for higher educated people do not seem worth the effort for everyone (Kupferberg, 1998). However, being educated is often related to a stable source of income and savings, to start the entrepreneurial journey. Therefore, the fair of failure is generally

lower in this group where strong entrepreneurial intention levels are seen (Tasnim, Saleh & Zainuddin, 2014).

Getting a higher formal education degree not only teaches knowledge in reasoning, but also teaches individuals attitudes and aspirations (Heggen & Terum, 2013). Generally, higher formal education programs are increasing students' motivation toward future work. By working by bringing theory into practice and integrating different elements into education, students become familiar with coherence, which is directly linked to commitment (Heggen & Terum, 2013). Three other components of commitment are passion, values and personality, which drive entrepreneurial performance (Tasnim, Saleh & Zainuddin, 2014). These three components have a direct influence on an entrepreneur's internal drive to be successful but are not all taught through education (Arora & Adhikari, 2015). In higher formal education, individuals are taught to be flexible and resilient, which is helpful to not give up and make sure the business does not fail (Bell, 1973; Bohme & Stehr, 1986).

Possessing enough skills to fully commit to the entrepreneurship journey is very important (Man, Lau & Chan, 2002). However, these skills might not always be seen most in higher formally educated individuals as committing to entrepreneurship is not always the most popular choice by these individuals. This might cause more lower educated people to become entrepreneurs and seize these opportunities. Outweighing this information from both lower and higher formal education research, the following hypothesis was created:

Hypothesis 1e: *Higher formal educated entrepreneurs possess the same level of commitment competencies than lower educated entrepreneurs.*

3.6. Relationship competencies

The ability to establish relationships with both individuals as stakeholders is important for the success of a venture, especially at the beginning of smaller ventures (Ramsden & Bennett, 2005). At the start of the entrepreneurial journey many decisions need to be made about future plans and resources to support their business, often from external stakeholders (Hansen, 2001). Relationship building, communication and the ability to persuade others are competencies that entrepreneurs need to succeed in establishing trustworthy relationships with these stakeholders (Lau, Chan & Man, 2012; Man, Lau & Chan, 2002; McClelland, 1973). To

be able to create long-term trusting relationships with suppliers, customers, employees and other stakeholders, entrepreneurs need to communicate effectively and maintain good networking relations (Jenssen & Greve, 2002; Man, 2001b). The relationship competencies of entrepreneurs are measured through their ability to: "(*1) develop long term trusting relationship with others, (2) negotiate with others, (3) interact with others, (4) maintain a personal network of work contacts, (5) understand what others mean by their words and actions, (6) communicate with others effectively."*(Sakib & Khanam, 2020a, p.83).

Higher formal education is not only assumed to positively influence knowledge as a resource but also the connection to other knowledgeable individuals such as industry experts and an alumni network (Burt, 1995; Cohen & Levinthal, 1990). According to Allen, Ramaekers & van der Velden (2005), higher education graduates can make their meaning clear to others and empathize with others. Their social skills, including openness which refers to being open to a new experience, reflect people being "*imaginative, cultured, curious, original, broad-minded, intelligent and artistically sensitive"* (Barrick & Mount, 1991). However, the ability to form social interpersonal relationships "*largely depends on the physical, mental, intellectual and volitional characteristics of a person*" (Obedkova et al., 2020, p.218). Therefore, it does not always necessarily improve after having participated in a higher education program.

Interpersonal relationships are highly dependent on individual characteristics and do not necessarily improve after university studies (Obedkova et al., 2020). There are many ways to learn relationship skills outside of a higher formal education program. For example, in elementary school social communication and interpersonal relationships are taught through exercises and role-plays (Johnson & Johnson, 1990). Additionally, people who use self-help books to improve relationship skills are said to be able to learn a lot about themselves and improve communication skills (Halford, Sanders & Behrens, 2001). Moreover, identifying with role models is crucial for personal growth and development (Gibson, 2004). In particular, parents' communication styles directly influence children's social and communication skills (Jiao, 2020). When parents have healthy relationships and communication styles with each other, children use them to build and maintain their interpersonal relationships (Neitola, 2018).

Literature about relationship competencies gives multiple ways to learn and improve an individual's relationship competencies. However, it does not state which ones are most influencing or most used. Therefore, the researchers do not expect that lower or higher

formally educated entrepreneurs possess this competency better than others. Concluding in the following hypothesis:

Hypothesis 1f: Higher formal educated entrepreneurs possess the same level of relationship competencies as lower educated entrepreneurs.

3.7. Overview of hypotheses

3.7.1. Research question:

What is the difference in entrepreneurial competencies fostered by higher formally educated entrepreneurs compared to lower educated entrepreneurs in Sweden?

3.7.2. Hypotheses:

Hypothesis 1: Higher formal educated entrepreneurs possess a higher entrepreneurial competency level than lower educated entrepreneurs.

Hypothesis 1a: Higher formal educated entrepreneurs possess a higher level of strategic competencies than lower educated entrepreneurs.

Hypothesis 1b: Higher formal educated entrepreneurs possess a higher level of conceptual competencies than lower educated entrepreneurs.

Hypothesis 1c: Higher formal educated entrepreneurs possess a higher level of organizing and leading competencies than lower educated entrepreneurs.

Hypothesis 1d: Higher formal educated individuals possess a higher level of opportunity competencies than lower educated entrepreneurs.

Hypothesis 1e: *Higher formal educated entrepreneurs possess the same level of commitment competencies than lower educated entrepreneurs.*

Hypothesis 1f: Higher formal educated entrepreneurs possess the same level of relationship competencies as lower educated entrepreneurs.

4. Methodology

This chapter focuses on which research design is used and how it is executed leading to answering the main research question and hypotheses. An outline is given of various aspects of the research approach, including the data collection method and the sampling process. Furthermore, the validity and reliability of the methods are for precautionary reasons researched in depth and are considered before going into the analysis phase. Ethical considerations are taken into account as it becomes more important legally but also in a manner of respect (Hasan et al., 2021; Ketefian, 2015). Lastly, operational measures are explained for the terms used and shown how the terms are measured.

4.1. Research Approach and Design

This research focuses on analysing the difference between entrepreneurial competencies possessed by higher formal educated entrepreneurs compared to lower educated entrepreneurs. Because of this comparison between these two contrasting cases, a comparative research design was used throughout the research (Bell, Bryman & Harley, 2022). This design can use existing designs to help create a base for the comparison between the two cases (Brewer & Kuhn, 2010). With a comparative design, data is mostly collected within a cross-sectional set-up (Bell, Bryman & Harley, 2022).

A cross-sectional design features the focus on variation, which highlights that more than one case will be utilized (Bell, Bryman & Harley, 2022). In this research, the two cases used were data from lower and higher formal educated entrepreneurs. Further, this design includes data collection at more or less the same time, which can be an advantage, especially when considered to be in a specific time frame (Bell, Bryman & Harley, 2022). This set-up occurs mostly in quantitative research because it will provide results in a consistent matter which is important when analysing a difference between variables. Besides, with this method, multiple associations between variables can be found, which is valuable (Bell, Bryman & Harley, 2022). These criteria fit well with the purpose and the objective of the research therefore a cross-sectional set-up was used to collect data.

4.2. Data Collection Method

This research is based on structured, quantitative research, attempting to measure different phenomena. A web-based survey data collection method was necessary to collect data that answer the specific research question created (Bell, Bryman & Harley, 2022). This survey type was chosen because it has a higher ability to appear to the chosen target segment easily.

A deductive approach, which is suitable to a survey design strategy, has been used, meaning that from the literature review, multiple hypotheses were created to be "*subjected to empirical scrutiny*" (Bell, Bryman & Harley, 2022), also called a positivist approach. Deductive research helps to establish the effects of variables and can often produce unexpected findings (Bell, Bryman & Harley, 2022). Moreover, this method helps with finding relationships between theory and research by testing through different methods (Bell, Bryman & Harley, 2022).

4.3. Data collection and sampling process

Convenience sampling combined with snowballing sampling is used in this research because the researchers could use their network and accessibility to gather respondents in an easy way (Bell, Bryman & Harley, 2022). Besides, this research is conducted in a limited time frame which makes this non-probability sampling method suitable (Bell, Bryman & Harley, 2022). The only criteria the researchers set for the participants to fill in the survey was that they were either a co-founder or founders of a company. Further, the researchers asked the participants to forward the survey to their network. Taking these precautions to avoid the impossibility to generalize the findings (Bell, Bryman & Harley, 2022). The main concern for the researchers is to uncover if the entrepreneurial competencies segregate between higher formally educated entrepreneurs and lower educated entrepreneurs. Therefore, it is plausible to use convenience sampling. The snowballing sampling method is used to reach a wider network (Bell, Bryman & Harley, 2022).

Additionally, a total of 1012 email addresses were found through LinkedIn searches on job title criteria and were reached out to through e-mail. Further, the researchers used their network and distributed the survey also to their mentor network (83 entrepreneurs), acquaintances and contacted start-up incubators in Sweden such as Connect Sverige, Ideon Innovation and SmiLe Incubator. The aim was to assemble around 150 entrepreneurs who

have (co-)founded a company in Sweden. In total, 156 people filled in the questionnaire. Whereof five people responded that they did not ever start a business, thus they have been taken out of the sample as this research is connected to the entrepreneurial competencies of people involved in new venture creation. There were no missing values in the survey due to not being able to hand in the results without filling in all fields. Out of the 151 remaining data sets, 22 respondents have started their own business, however not in Sweden. As this research focuses on the Swedish context, these 22 responses were also taken out of the sample, resulting in a data set of 129 valid responses.

4.4. Validity and reliably of the methods

In quantitative studies, reliability is especially important to take into consideration as it considers the matter of the consistency of measures (Bell, Bryman & Harley, 2022). Further, the results that were analysed from the survey using Statistical Package for the Social Sciences (SPSS), the internal reliability was taken into account by using Cronbach's alpha where a reliability coefficient of 0.7 or higher is considered acceptable but 0.8 or 0.9 is the best (Bell, Bryman & Harley, 2022).

Measurement validity is considered throughout the research as with quantitative research it is important to see whether the measurement captures what really needs to be measured (Bell, Bryman & Harley, 2022). To increase the internal validity of the data gathered, an existing survey has been taken to measure the hypotheses created (Li, 2009a). The survey of Li existed of 62 items, whereof some were similar and repetitive. Therefore, Li's survey items were combined into a final 29 items divided over the 6 sub-constructs, decreasing the length of the survey aiming to gain the same information. Shortening the survey could lead to a limitation, however, respondents are more likely to respond to and complete short questionnaires, therefore it needed to take them a maximum of 5 minutes to participate (Liu & Wronski, 2018; Trouteaud, 2004). Next to this, questions to gain deeper a understanding of the educational background of the participants and their information were requested by using samples of entrepreneurial education research focusing on entrepreneurial competencies (Alsos et al., 2023). This type of validity is relevant when researching something subjective like possessing the different entrepreneurial competencies (Kaplan, Bush & Berry, 1976).

The main focus is not to generalise the study however to reinforce external validity slightly, the researchers tried to gather a sample that is as representative as possible (Bell, Bryman &

Harley, 2022). As both researchers' networks mainly exist of higher formal educated entrepreneurs, the focus was put on finding more additional respondents outside of this network. Taking this into consideration, the researchers have asked the participants to distribute the survey further within their networks using the snowballing sampling method. After collecting the sample, the size of the education levels of the sample was almost split in the middle, therefore being equal. Even though this can be a representative sample, because convenience sampling is used there is no possibility of knowing if the findings of the tests can be generalized beyond this peculiar research (Bell, Bryman & Harley, 2022). Meaning that the risk of the sample not being entirely representable is a limitation. Yet the researchers have tried to reinforce the external validity by using the snowballing sampling technique.

Another limitation regarding the validity is the ecological validity. Because this quantitative research is based on the collection of data via a web-based survey, it is not data that is obtained in a natural environment. Therefore, data can be misinterpreted as it is not observed in an everyday setting (Bell, Bryman & Harley, 2022).

4.5. Ethical considerations

During the entire research, it is crucial to recognize and pay attention to ethical considerations (Bell, Bryman & Harley, 2022). Most importantly, these ethical considerations should be sustained throughout the research and needed to be re-evaluated every step of this process (Bell, Bryman & Harley, 2022). Diener and Grandall (1978) have divided the ethical considerations into four main components, being "*whether there is harm to participants; whether there is a lack of informed consent; whether there is an invasion of privacy; whether deception is involved*" (Bell, Bryman & Harley, 2022, p.114).

Within this research the data was collected through a web-based survey, a quantitative data collection method, which made it easier to anonymise the results in a way that the respondents were not able to be identified (Bell, Bryman & Harley, 2022). According to the Academy of Management Code of Ethics, it is important to reduce any potential for harm by the researcher as possible (Bell, Bryman & Harley, 2022; ISA, 2023).

To prevent any lack of informed consent the researchers gave as much information as possible in the introduction description of the survey that has been distributed, to ensure that

participants could make a well-informed decision about whether they wanted to participate in the research or not, see appendix 1 (Bell, Bryman & Harley, 2022).

Furthermore, the invasion of privacy was impeded by the researchers by formulating the questions in a way that minimalize the possibility to disrespect or offend anyone (Bell, Bryman & Harley, 2022). For example, question 9 in the survey is: '*What is your gender?*', with answering options: '*female, male and diverse*' as it is important to select neutral categories (Fink, 2003).

4.6. Operational Measures

4.6.1. Entrepreneurship – Control Variable

To start the survey and to gather reliable data, two questions to gather a representative sample for this research were most important. Depending on if people have ever started a business alone or together with someone, was the first question of the survey. Should the answer to the question '*Have you ever started your own business?'* be '*no*', the data could not be used. As discussed in the theoretical framework, see chapter 3, entrepreneurs are defined as individuals that have gone through the steps of the entrepreneurial process at least once which is interlinked with new venture creation.

4.6.2. Swedish context – Control Variable

At the end of the survey obtained the second most important question to create a representative sample '*In what country did you start your business?*', respondents had the option '*Sweden*' and '*Other…*'. To make sure all data is suitable to the Swedish context, all responses of entrepreneurs who started their businesses outside of Sweden were taken out of the sample.

4.6.3. Educational level – Independent Variable

The educational level of participants was determined by gathering data on the respondent's highest educational degree obtained. This makes sure that dropouts were not part of this sample, and the questions specify the obtainment of someone's highest degree. Respondents had 7 options, being: '*Primary, Secondary, Post-secondary or Diploma, Bachelor, Master, PhD and other…'.* Thereafter, the researchers decided to split those into lower education and higher formal education, as can be seen in the literature review, see chapter 2.2.1.

4.6.4. Entrepreneurial competencies – Dependent Variable

Literature focuses on the six most important possessed competencies of entrepreneurs has been used to determine the focus of entrepreneurial skills (Ahmad, 2007; Man, Lau & Chan, 2002; Sakib & Khanam, 2020b). These entrepreneurial competencies are divided into six categories: opportunity, relationship, conceptual, leading, strategic and commitment competencies. The official survey created by Li (2009a), exists out of 62 survey items for 8 different entrepreneurial categories. To shorten this into a more consistent questionnaire, focusing on the main 6 competencies, this is combined into 29 items. See appendix 2, for all final items and their connected categories. These 29 items were measured by using a 6-point-Likert scale, to avoid people using a midpoint as a dumping ground, optioning from '*Strongly disagree*' to '*Strongly agree*' (Chyung et al., 2017).

4.7. Data analysis

The data collection was gathered using thesistoolspro.com, which is a software tool to build web-based questionnaires. After collecting 156 responses, all responses were exported into an Excel file where all data was controlled, there were no incomplete responses as the survey could not be completed without filling in all fields. When analysing the data, some people never founded a venture and it showed not all companies were started in Sweden, to maintain within the Swedish scope of this research, these responses were taken out of the sample. This concluded with a data sample of 129 respondents which is deemed a reliable data set (Israel, 1992). The collected survey data was analysed using SPSS to identify patterns, trends, and relationships in the data.

Using descriptive statistics, all data was summarized to gather more insight into the demographic information of the participants. Their age, gender, education level and location of their businesses were part of this. The majority of participants had started their own business in Sweden, therefore based on this criterion, 134 out of 156 responses were useable. The average age of the respondents was 42 and a small majority is higher educated, thus obtained a master's degree or a PhD.

The aim of this study has been to see what kind of, if any, difference there might be between educational levels of entrepreneurs and their perceived entrepreneurial competencies. To analyse the difference between higher educated entrepreneurs and lower educated

entrepreneurs regarding competency level, a difference needed to be tested. Further, the distribution of lower and higher formally educated entrepreneurs was analysed regarding the competencies. This was done in SPSS by splitting the survey data file, to compare the competencies groups. This data was used to create a frequency table including the skewness option. As can be seen in table 2, the skewness of both higher education and lower education is negative which means that the mean value is less than the median (Martins, 1965). All competencies regarding lower education are significantly skewed as they are lower than -1 (Gawali, 2021). Furthermore, the competencies regarding higher formal education are slightly until significantly skewed because they are lower than -0.5 (Gawali, 2021). This indicates as seen in table 2 that the distribution is skewed (Gawali, 2021).

Together with the result from the Kolmogorov-Smirnov Normality Test results, see chapter 4.2.3, it can be indicated that the data is not normally distributed. Therefore, the Mann Whitney U Test is used, to see if there is a difference between lower and higher formal educated entrepreneurs and the different competencies (Laerd, 2023a).

Highest education level			Opportunity+ Conceptual	Strategic	Leading	Relationship	Commitment
Lower education	N	Valid	58	58	58	58	58
		Missing	0	0	0	0	0
	Mean		5.1108	4.9069	4.7207	5.3750	4.9138
	Median		5.2857	5.0000	5.0000	5.7500	5.0000
	Std. Deviation		.86960	.89538	1.10307	.91677	1.00170
	Skewness		-2.135	-1.857	-1.253	-2.516	-1.427
	Std. Error of Skewness		.314	.314	.314	.314	.314
	Minimum		1.00	1.00	1.00	1.00	1.00
	Maximum		6.00	6.00	6.00	6.00	6.00
Higher education	N	Valid	71	71	71	71	71
		Missing	0	0	0	0	0
	Mean		5.0644	4.6986	4.7521	5.1901	4.9648
	Median		5.0000	4.8000	4.8000	5.2500	5.0000
	Std. Deviation		.68800	.91206	.93287	.67277	.88771
	Skewness		-.800	-.544	-.985	-.661	-1.642
	Std. Error of Skewness		.285	.285	.285	.285	.285
	Minimum		2.57	2.20	1.40	3.00	1.75
	Maximum		6.00	6.00	6.00	6.00	6.00

Table 2

5. Analysis & Findings

5.1. Introduction

This part examines the analysis of the data gathered by tests, used to determine the results and findings for the hypotheses. First, the validity, reliability and sample distribution were tested for all competencies and therefore all hypotheses. A justification is given about how valid and reliable the data is and if something had to be removed to increase the overall trustworthiness of the results. Furthermore, all hypotheses were tested and analysed by the Mann Whitney U Test to establish if the hypotheses are accepted or declined.

5.2. Before testing

Before testing the hypotheses and gathering the findings, six competency sub-constructs were identified in the literature which is seen in table 1. Different questions were used to assess every competency sub-construct, which items belong to which competency sub-construct is seen in table 3. The level of entrepreneurial competencies possessed was tested through 29 items in total.

Survey Item	Competency Sub-Construct
Item 1-4	Opportunity
Item 5-10	Relationship
Item 11-14	Conceptual
Item 15-20	Leading
Item 21-25	Strategic
Item 26-29	Commitment

Table 3

Exploratory factor analysis helps figure out how many underlying factors or components there are in each sub-category (Tavakol & Wetzel, 2020). This can be detected in the loading patterns of the survey items which is done by analysing how different survey questions are related to each other, using a method called principal component analysis (PCA) and a rotation analysis called varimax (Tavakol & Wetzel, 2020; Wood, Tataryn & Gorsuch, 1996).

These underlying factors are most of the time variables that are difficult to quantify, in this case, the possessing of a founder's entrepreneurial competencies (Joliffe & Morgan, 1992). Three to five questions were asked per sub-construct to identify if founders possess these entrepreneurial competencies. To see if the questions asked per entrepreneurial competency correlate, the exploratory factor analysis was executed. Some questions that were captured from the existing survey of Li (2009) were removed or combined to generate more willingness for participation by creating a shorter survey (Rummel, 1988). Even though, the competency sub-constructs were already determined through literature, an exploratory factor analysis was used to explore if the survey items still belong in the determined sub-constructs. Additionally, it was used to see if all 29 items are valid and if any item needs to be removed or combined to help increase the validity (Tavakol & Wetzel, 2020; Wood, Tataryn & Gorsuch, 1996).

Moreover, a reliability test, Cronbach's Alpha, was performed to measure internal consistency between the items (Connelly, 2011). This test is used to discover whether the different questions per entrepreneurial competency are measured consistently, therefore showing that what is measured is significantly related to the measurement of possessing the entrepreneurial competencies (Bland & Altman, 1997). Even though the basis of an existing research survey is used, new competency sub-constructs existed after the exploratory factor analysis. Therefore, it is important to see if these new (sub-)constructs are consistent and reliable (Bland & Altman, 1997; Connelly, 2011). Lastly, to test normality, the Kolmogorov-Smirnov Test & Shapiro-Wilk Test was executed to evaluate if the data from the sample has been chosen from a normally distributed data set or not (Hanusz & Tarasińska, 2015). This is essential to know because if the distribution is skewed, a nonparametric test like the Mann Whitney U test needs to be performed instead of a parametric test like the individual sample t-test (Mishra et al., 2019).

5.2.1. Factor analysis (validity)

5.2.1.1. Kaiser-Meyer-Olkin & Bartlett

First, the Kaiser-Meyer-Olkin (KMO) and Bartlett tests were performed to consider if the equivalence in the data is strong enough to carry out the PCA, which indicates if it is useful to execute the factor analysis altogether (Li, Huang & Feng, 2020). The KMO and Barlett test measures the adequacy of the sample (Kim & W.Mueller, 1978; Li, Huang & Feng, 2020).

From the following table 4, can be seen that the KMO sample sufficiency index is 89.7%. This is well over 70%, so reliability is deemed to be high and it can be said that the sample is adequate (Anastasiadou, 2011). Moreover, the Bartlett's sphericity test shows that the statistical significance is $p<0.0005$ which is below 5%, meaning that there is a correlation between most items in each sub-construct (Li, Huang & Feng, 2020). Therefore, both tests are approved because the variables correlate significantly together which means that a factor analysis can be performed (Anastasiadou, 2011; Kim & W.Mueller, 1978; Li, Huang & Feng, 2020).

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.894
Bartlett's Test of Sphericity	Approx. Chi-Square	2850.902
	df	406
	Sig.	**<.001**

Table 4

5.2.1.2. Principle Component Analysis

As the factor analysis could be performed, first the PCA test was analysed. This test was chosen because this method searches for uncorrelated data and generates new components or factors which maximizes variance by saving as much variability as possible (Jolliffe & Cadima, 2016). As the data needs to be interpretable, this technique reduces the dimensionality of the data (Jolliffe & Cadima, 2016). Meaning reducing the number of features in the data sample set present (Dash, Liu & Yao, 1997). The PCA is based on the correlation matrix because it measures both the direction and the strength of the relationship between the different items (Jolliffe & Cadima, 2016).

Originally the PCA found 29 components, also called factors which can be seen in table 5. However, in total five components have an Eigenvalue >1, and combined are responsible for 71% of the total variance, meaning that they are satisfactory solutions (Li, 2009a). The other 24 components are too weak to depict a real trait underlying all 29 components, as can be seen in table 6 where the weak components are called scree (Jolliffe & Cadima, 2016). Therefore, these five components make up for all 29 components and the initial thought of six components needs to be adjusted.

Total Variance Matrix

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Factor	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	**13.095**	45.155	45.155	13.095	45.155	45.155	4.959	17.099	17.099
2	**2.077**	7.163	52.318	2.077	7.163	52.318	4.652	16.042	33.141
3	**1.778**	6.132	58.449	1.778	6.132	58.449	3.928	13.545	46.686
4	**1.594**	5.496	63.945	1.594	5.496	63.945	3.429	11.824	58.510
5	**1.353**	4.665	68.610	1.353	4.665	68.610	2.929	10.100	68.610
6	.984	3.393	72.004						
7	.925	3.189	75.193						
8	.789	2.721	77.914						
9	.652	2.248	80.162						
10	.618	2.131	82.292						
11	.541	1.866	84.158						
12	.488	1.682	85.840						
13	.447	1.542	87.382						
14	.399	1.378	88.760						
15	.386	1.332	90.092						
16	.356	1.227	91.319						
17	.335	1.156	92.475						
18	.298	1.027	93.502						
19	.272	.937	94.439						
20	.254	.875	95.314						
21	.221	.764	96.078						
22	.216	.746	96.824						
23	.192	.662	97.486						
24	.172	.594	98.079						
25	.158	.544	98.623						
26	.127	.440	99.063						
27	.117	.403	99.466						
28	.092	.316	99.782						
29	.063	.218	100.000						

Table 5

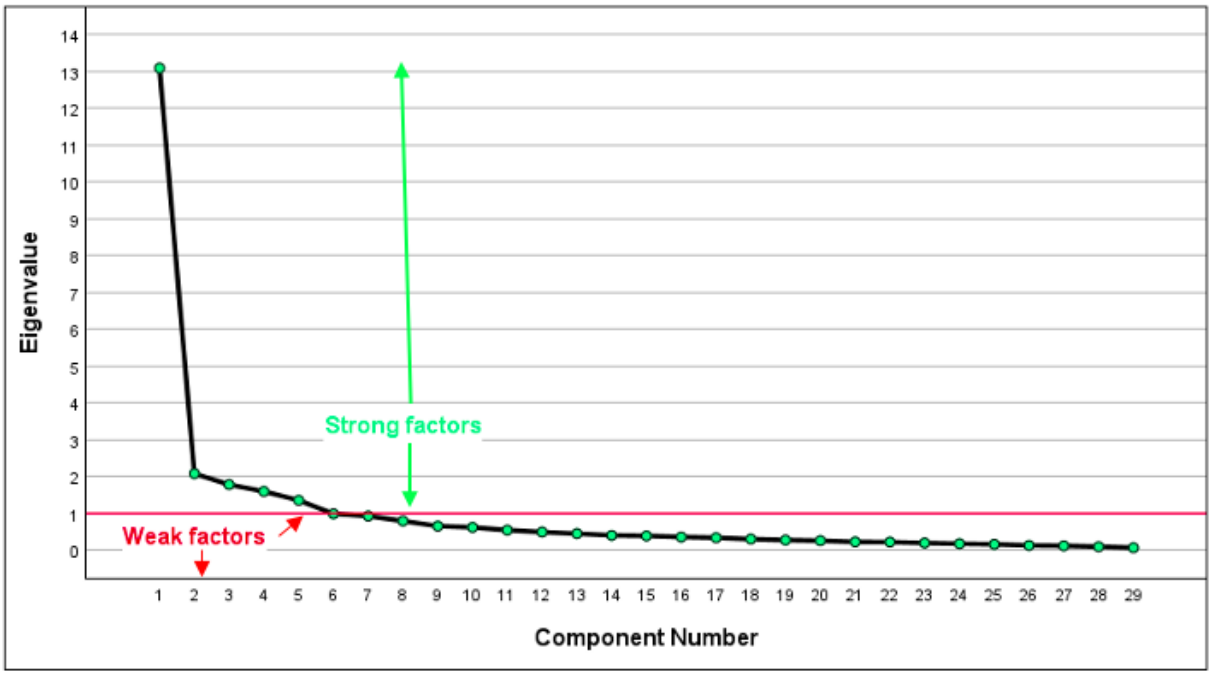
Eigenvalue
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
Strong factors
Weak factors
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29
Component Number

Table 6

5.2.1.3. Rotated component matrix

The multiple regression showed no low communalities, which is considered $r^2<0.40$. All communalities were higher than 0.40 which means that no item needed to be removed yet (Yong & Pearce, 2013), see appendix 3. However, to see if any items still need to be removed to make the data more reliable and to see which items belong in which sub-construct, the varimax rotation is used (Yong & Pearce, 2013). In the rotated matrix, all 29 survey items are included. All items are grouped per factor, which is subsequent to the five (new) sub-constructs, see table 10. Firstly, within the rotated component matrix, listwise cases were excluded to only look at which items pair together and it was sorted by size, which resulted in that one item, conceptual competency 4, was below 0.5 and was removed (*see appendix 4*). After that item was eliminated, the sorted by size option was removed to discover which items belong in which component and if some items overlap that were belonging initially to another sub-construct. As showed in table 7, one leading competency item, competency 1, has the lowest overall factor loading, below 0.5, thus needs to be removed. Moreover, it shows that opportunity competency items together with conceptual items are under the same sub-construct. Accordingly, these two competencies were combined into sub-construct number 1.

	Component / Factor				
	1	2	3	4	5
Opportunity competency_3	**.767**	.192	.076	.248	.144
Opportunity competency_2	**.790**	.271	.086	.103	.092
Opportunity competency_1	**.791**	.204	.085	.149	.101
Opportunity competency_4	**.498**	.427	-.027	.324	.031
Relationship competency_1	.227	.276	.110	**.734**	.264
Relationship competency_2	.168	.328	.026	**.643**	.252
Relationship competency_4	.299	.224	.184	**.748**	.053
Relationship competency_3	.212	.131	.232	**.798**	-.066
Relationship competency_6	**.618**	.154	.295	.249	-.041
Relationship competency_5	**.481**	.173	.397	.454	.138
Conceptual competency_2	**.577**	.173	.284	.066	.352
Conceptual competency_3	**.519**	.366	.125	.302	.304
Conceptual competency_1	**.679**	.171	.192	.203	.337

Leading competency_1	.314	.620	**.403**	.222	.184
Leading competency_6	.283	.443	**.589**	.096	.306
Leading competency_3	.180	.149	**.826**	.064	.132
Leading competency_2	.185	.155	**.861**	.148	.141
Leading competency_5	.243	.158	**.607**	.415	.258
Leading competency_4	-.001	.227	**.734**	.104	.063
Strategic competency_5	.156	**.676**	.122	.284	.232
Strategic competency_2	.275	**.792**	.208	.175	.142
Strategic competency_4	.230	**.677**	.365	.280	.151
Strategic competency_3	.157	**.776**	.308	.258	.032
Strategic competency_1	.284	**.813**	.076	.056	.118
Commitment competency_2	.112	.236	.069	.162	**.815**
Commitment competency_3	.147	.085	.180	-.014	**.758**
Commitment competency_4	.459	.037	.349	.222	**.560**
Commitment competency_1	.195	.463	.242	.301	**.554**

Table 7

After the leading item 1 was removed, opportunity item 4 was significant enough to keep. However, relationship competency 5 was still below 0.5, as seen in table 8, and therefore this item was terminated as well.

	Component / Factor				
	1	2	3	4	5
Opportunity competency_3	**.769**	.180	.077	.250	.146
Opportunity competency_2	**.793**	.252	.085	.109	.097
Opportunity competency_1	**.792**	.198	.088	.150	.103
Opportunity competency_4	**.501**	.421	-.022	.326	.034
Relationship competency_1	.229	.265	.112	**.738**	.265
Relationship competency_2	.171	.307	.025	**.652**	.257
Relationship competency_4	.300	.219	.188	**.747**	.052
Relationship competency_3	.213	.118	.232	**.800**	-.065
Relationship competency_6	**.619**	.152	.299	.246	-.043
Relationship competency_5	**.483**	.158	.398	.455	.139
Conceptual competency_2	**.579**	.162	.285	.068	.354
Conceptual competency_3	**.522**	.361	.131	.302	.305
Conceptual competency_1	**.681**	.156	.192	.206	.338

Leading competency_6	.291	.401	**.585**	.112	.319
Leading competency_3	.182	.135	**.829**	.066	.136
Leading competency_2	.188	.128	**.859**	.154	.147
Leading competency_5	.244	.153	**.612**	.412	.256
Leading competency_4	.001	.233	**.744**	.098	.061
Strategic competency_5	.162	**.677**	.134	.286	.236
Strategic competency_2	.283	**.777**	.217	.183	.153
Strategic competency_4	.236	**.673**	.377	.283	.156
Strategic competency_3	.165	**.777**	.322	.259	.037
Strategic competency_1	.292	**.818**	.091	.056	.123
Commitment competency_2	.114	.222	.070	.167	**.818**
Commitment competency_3	.147	.084	.183	-.017	**.755**
Commitment competency_4	.459	.021	.347	.224	**.560**
Commitment competency_1	.199	.449	.247	.305	**.558**

Table 8

Eventually, all items are reliable enough as every variable is higher than 0.5 seen in table 9. However, relationship competency item 1, does not belong in the relationship sub-construct 6 but in the opportunity and conceptual sub-construct 1, therefore the researchers decided to remove this item.

	Component / Factor				
	1	2	3	4	5
Opportunity competency_3	**.778**	.160	.088	.262	.137
Opportunity competency_2	**.804**	.229	.096	.126	.087
Opportunity competency_1	**.802**	.176	.098	.164	.093
Opportunity competency_4	**.516**	.394	-.009	.349	.021
Relationship competency_1	.237	.251	.123	**.745**	.257
Relationship competency_2	.178	.295	.033	**.659**	.251
Relationship competency_4	.303	.217	.193	**.740**	.049
Relationship competency_3	.217	.114	.243	**.794**	-.071
Relationship competency_6	**.591**	.206	.264	.183	-.011
Conceptual competency_2	**.577**	.171	.278	.055	.361
Conceptual competency_3	**.531**	.345	.137	.314	.299
Conceptual competency_1	**.681**	.156	.191	.199	.341

Leading competency_6	.292	.409	**.579**	.105	.324
Leading competency_3	.191	.130	**.838**	.072	.127
Leading competency_2	.194	.128	**.866**	.153	.141
Leading competency_5	.249	.150	**.619**	.410	.251
Leading competency_4	.007	.234	**.748**	.099	.057
Strategic competency_5	.173	**.660**	.136	.305	.231
Strategic competency_2	.287	**.778**	.206	.186	.158
Strategic competency_4	.236	**.682**	.365	.276	.164
Strategic competency_3	.169	**.782**	.312	.259	.043
Strategic competency_1	.292	**.826**	.073	.054	.135
Commitment competency_2	.119	.209	.072	.182	**.815**
Commitment competency_3	.135	.102	.166	-.034	**.769**
Commitment competency_4	.466	.006	.357	.233	**.551**
Commitment competency_1	.202	.445	.243	.310	**.559**

Table 9

The final competency sub-construct table is shown in table 10.

Item	Competency Sub-Construct
Item 1-4, 12-14	Opportunity + Conceptual
Item 5-8	Relationship
Item 16-20	Leading
Item 21-25	Strategic
Item 26-29	Commitment

Table 10

5.2.2. Cronbach's Alpha (reliability)

A reliability coefficient of 0.7 or higher is considered acceptable according to Bell, Bryman & Harley (2022). In table 11, it can be seen that Cronbach's alpha, which is 0.858, indicates a high level of internal consistency and shows that the competency measures are internally reliable (Bell, Bryman & Harley, 2022; Moran, 2018).

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.858	.862	5

Table 11

After the explorative factor analysis, no further items should be deleted as this would result in a lower Cronbach's Alpha (<0.858), see table 12. It can be concluded that the measurement scales are internally reliable.

Sub-constructs	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Opportunity + Conceptual	19.7453	8.696	.721	.541	**.820**
Strategic	20.0384	8.044	.721	.531	**.816**
Leading	20.0926	7.863	.653	.436	**.837**
Relationship	19.5574	8.889	.646	.450	**.836**
Commitment	19.8888	8.185	.655	.448	**.834**

Table 12

5.2.3. Kolmogorov-Smirnov Test & Shapiro-Wilk Test (normality)

A normality test was executed on the competency variables. The significance level of both the Kolmogorov-Smirnov and the Shapro-Wilk tests are all <0.05 because they all have a p-value of smaller than 0.1%, see table 13. Meaning that the assumption of having a normal distribution is rejected and therefore it can be stated that the data deviates from a normal distribution (Laerd, 2023b).

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Opportunity + Conceptual	.118	129	**<.001**	.882	129	**<.001**
Strategic	.141	129	**<.001**	.925	129	**<.001**
Leading	.106	129	**.001**	.913	129	**<.001**
Relationship	.180	129	**<.001**	.824	129	**<.001**
commitment	.171	129	**<.001**	.867	129	**<.001**

a. Lilliefors Significance Correction

Table 13

5.3. Descriptive Statistics

5.3.1. Age

As seen in table 15, the age group including the most respondents are the people who are born between 1971 and 1980 (29.5%), meaning they currently are between the ages of 43 and 52. Another big part of the sample, almost half are the people born between 1981 and 2000 (48%). Currently, these people are between 23 and 42. As seen in table 14, both the mean and median birth year is 1980, meaning the mean/median age is 42 years old.

N	Valid	129
	Missing	0
Mean		1980.29
Median		1980.00
Std. Deviation		12.466
Minimum		1953
Maximum		2002

Table 14

Age	Respondents	Percentage
1953-1960	11	8.5%
1961-1970	17	13.2%
1971-1980	38	29.5%
1981-1990	31	24%
1991-2000	31	24%
2000+	1	0.8%
Total	129	100%

Table 15

5.3.2. Gender

Seen in table 16 and 17 is that out of the complete sample of 129 respondents, there is a high difference between the percentage of male (72.9%) and female (27.1%) respondents.

N	Valid	129
	Missing	0
Mean		1.73
Median		2.00
Std. Deviation		.446
Minimum		1
Maximum		2

Table 16

Gender	Respondents	Percentage
Female	35	27.1%
Male	94	72.9%
Total	129	100%

Table 17

5.3.3. Occupation

All respondents part of the research sample, have at a certain moment in their life, started their own business, therefore all participants are considered to be entrepreneurs with entrepreneurial skills. Table 19 showcases that most respondents are currently self-employed entrepreneurs (58.1%), which is consistent with the data collection method as people who ever started a business were requested to participate in the research. Connected to self-employment are hybrid entrepreneurs (14%), as they are both self-employed and employed by another business.

N	Valid	129
	Missing	0
Mean		2.16
Median		2.00
Std. Deviation		1.059
Minimum		1
Maximum		7

Table 18

Occupation	Respondents	Percentage
Employed	26	20.2%
Self-employed	75	58.1%
Hybrid Entrepreneur	18	14%
Studying	7	5.4%
Retired	3	2.3%
Total	129	100%

Table 19

5.3.4. Education level

All participants were requested to give their highest educational qualification. Answers were then grouped into lower (primary, secondary, post-secondary or diploma and bachelor's degree) and higher formal education (master's degree and PhD). The results show a slightly higher percentage of higher educated entrepreneurs (55%) than lower educated entrepreneurs (45%), see table 21.

N	Valid	129
	Missing	0
Mean		1.55
Median		2.00
Std. Deviation		.499
Minimum		1
Maximum		2

Table 20

Education level	Respondents	Percentage
Lower education	58	45%
Higher education	71	55%
Total	129	100%

Table 21

5.3.5. Country where you are from

All respondents had to fill in which country they were born because even though they are operating in Sweden, this does not mean that they are born in Sweden. Majority of the people were born in Sweden (72.9%), while after that most people are from the Netherlands (7.8%), which is not abnormal as partly the survey is distributed via convenience sampling and the researchers are Dutch, see table 23.

N	Valid	129
	Missing	0

Table 22

Origin country	Respondents	Percentage
Albania	1	.8%
Belgium	1	.8%
Brazil	1	.8%
Colombia	2	1.6%
Finland	1	.8%
Germany	5	3.9%
Iceland	1	.8%
Iran	2	1.6%
Pakistan	1	.8%
Romania	1	.8%
Sweden	94	72.9%
The Netherlands	10	7.8%
United Kingdom	6	4.7%
United States of America	3	2.3%
Total	129	100%

Table 23

5.3.6. Age when you decided to become an entrepreneur

As can be seen in table 25, most entrepreneurs decided to become an entrepreneur when they were between 12 and 29 years old.

N	Valid	129
	Missing	0

Table 24

Age	Respondents	Percentage
<11	7	5.4%
12-20	38	29.5%
21-29	40	31%
30-38	28	21.7%
39-47	12	9.3%
48-56	3	2.3%
57-61	1	0.8%
Total	129	100%

Table 25

5.4. Testing the hypothesis

To answer the research question, hypothesis 1 needs to be accepted or rejected, this is based on the acceptance or rejection of the sub-hypotheses. After the validity and reliability tests, it can be said that the data is significant to use for difference testing. The normality test seen in table 12, together with the skewness frequency table, see table 2, showcase that there is a skewed distribution compared to the means, which is determined as an abnormal distribution, this is one of the reasons a Mann Whitney U test is used (Laerd, 2023a). Another reason is that the variables of the 6-point Likert scale used in the survey, are continuous which is necessary when a Mann Whitney U test is performed (Sundjaja, Shrestha & Krishan, 2020). Moreover, the variable groups of lower and higher formal education are independent categorical groups, another criterion of the Mann Whitney U test (Stephanie, 2021). The last criterion is that both lower and higher formal education do not have a relationship with each other (Stephanie, 2021). Because all data fits with the criteria, the Mann Whitney U test is performed for each entrepreneurial competency thus, to answer each sub-hypothesis.
Hypothesis 1: Higher formal educated entrepreneurs possess a higher entrepreneurial competency level than lower educated entrepreneurs.

5.4.1. Hypothesis 1a: *Higher formal educated entrepreneurs possess a higher level of strategic competencies than lower educated entrepreneurs.*

	Highest education level	N	Mean Rank	Sum of Ranks
Strategic	Lower education	58	70.77	4104.50
	Higher education	71	60.29	4280.50
	Total	129		

Table 26

	Strategic
Mann-Whitney U	1724.500
Wilcoxon W	4280.500
Z	-1.590
Asymp. Sig. (2-tailed)	**.112**

Table 27

As shown in the theoretical framework, see chapter 3.1., the hypothesis is made with the expectation that higher formal educated entrepreneurs will possess a higher level of strategic competencies than lower educated entrepreneurs. Moreover, the Mann Whitney U Test is used to see if there is any difference between lower educated entrepreneurs and higher formally educated entrepreneurs and their possessing of strategic competencies. It can be stated that hypothesis 0 (H0) is there is no difference between lower education and higher education regarding strategic competencies. While hypothesis 1 (H1) is there is a difference between lower education and higher education with regards to strategic competencies. As shown in table 27 the p-value is 0.112 which means that this significance level is above 0.05 and considered negative, therefore H0 is accepted. This means that there is no difference between lower educated entrepreneurs and higher formally educated entrepreneurs regarding possessing strategic competencies. This contrast with what initially was expected by the research done in the literature.

5.4.2. *Hypothesis 1b: Higher formal educated entrepreneurs possess a higher level of conceptual competencies than lower educated entrepreneurs.* + *Hypothesis 1d: Higher formal educated individuals possess a higher level of opportunity competencies than lower educated entrepreneurs.*

	Highest education level	N	Mean Rank	Sum of Ranks
Opportunity Conceptual	Lower education	58	68.34	3963.50
	Higher education	71	62.27	4421.50
	Total	129		

Table 28

	Opportunity Conceptual
Mann-Whitney U	1865.500
Wilcoxon W	4421.500
Z	-.920
Asymp. Sig. (2-tailed)	**.358**

Table 29

As shown in the theoretical framework, see chapters 3.2. and 3.4., the hypotheses are made with the expectation that higher formal educated entrepreneurs will possess a higher level of conceptual and opportunity competencies than lower educated entrepreneurs. Moreover, the Mann Whitney U Test is used to see if there is any difference between lower educated entrepreneurs and higher formally educated entrepreneurs and their possessing of conceptual and opportunity competencies. It can be stated that hypothesis 0 (H0) is there is no difference between lower education and higher education with regards to conceptual and opportunity competencies. While hypothesis 1 (H1) is there is a difference between lower education and higher education with regards to conceptual and opportunity competencies. As shown in table 29 the p-value is 0.358 which means that this significance level is above 0.05 and considered negative, therefore H0 is accepted. This means that there is no difference between lower educated entrepreneurs and higher formal educated entrepreneurs regarding possessing conceptual and opportunity competencies. This contrast with what initially was expected by the research done in the literature.

5.4.3. Hypothesis 1c: *Higher formal educated entrepreneurs possess a higher level of organizing and leading competencies than lower educated entrepreneurs*.

	Highest education level	N	Mean Rank	Sum of Ranks
Leading	Lower education	58	65.80	3816.50
	Higher education	71	64.35	4568.50
	Total	129		

Table 30

	Leading
Mann-Whitney U	2012.500
Wilcoxon W	4568.500
Z	-.221
Asymp. Sig. (2-tailed)	**.825**

Table 31

As showed in the theoretical framework, chapter 3.3., the hypothesis is made with the expectation that higher formal educated entrepreneurs will possess a higher level of organizing and leading competencies than lower educated entrepreneurs. Moreover, the Mann Whitney U Test is used to see if there is any difference between lower educated entrepreneurs and higher formally educated entrepreneurs and their possessing of organizing and leading competencies. It can be stated that hypothesis 0 (H0) is: there is no difference between lower education and higher education with regards to organizing and leading competencies. While hypothesis 1 (H1) is: there is a difference between lower education and higher education with regards to organizing and leading competencies. As shown in table 31, the p-value is 0.825 which means that this significance level is above 0.05 and considered negative, therefore H0 is accepted. This means that there is no difference between lower educated entrepreneurs and higher formal educated entrepreneurs regarding possessing organizing and leading competencies. This contrast with what initially was expected by the research done in the literature.

5.4.4. Hypothesis 1e: *Higher formal educated entrepreneurs possess the same level of commitment competencies than lower educated entrepreneurs.*

	Highest education level	N	Mean Rank	Sum of Ranks
Commitment	Lower education	58	64.72	3753.50
	Higher education	71	65.23	4631.50
	Total	129		

Table 32

	Commitment
Mann-Whitney U	2042.500
Wilcoxon W	3753.500
Z	-.079
Asymp. Sig. (2-tailed)	**.937**

Table 33

As showed in the theoretical framework, see chapter 3.5., the hypothesis is made with the expectation that higher formal educated entrepreneurs possess the same level of commitment competencies than lower educated entrepreneurs. Moreover, the Mann Whitney U Test is used to see if there is any difference between lower educated entrepreneurs and higher formally educated entrepreneurs and their possessing of commitment competencies. It can be stated that hypothesis 0 (H0) is there is no difference between lower education and higher education with regards to commitment competencies. While hypothesis 1 (H1) is there is a difference between lower education and higher education with regards to commitment competencies. As shown in table 33, the p-value is 0.937 which means that this significance level is above 0.05 and considered negative, therefore H0 is accepted. This means that there is no difference between lower educated entrepreneurs and higher formal educated entrepreneurs regarding possessing commitment competencies. This corresponds to the set hypothesis created by the literature, that the level of education does not differ in the level of commitment competencies.

5.4.5. Hypothesis 1f: *Higher formal educated entrepreneurs possess the same level of relationship competencies as lower educated entrepreneurs.*

	Highest education level	N	Mean Rank	Sum of Ranks
Relationship	Lower education	58	**73.73**	4276.50
	Higher education	71	**57.87**	4108.50
	Total	129		

Table 34

	Relationship
Mann-Whitney U	1552.500
Wilcoxon W	4108.500
Z	-2.440
Asymp. Sig. (2-tailed)	**.015**

Table 35

As showed in the theoretical framework, see chapter 3.6., the hypothesis is made with the expectation that higher formally educated entrepreneurs possess the same level of relationship competencies as lower educated entrepreneurs. The Mann Whitney U Test is used to see if there is any difference between lower educated entrepreneurs and higher formally educated entrepreneurs and their possessing relationship competencies. It can be stated that hypothesis 0 (H0) is there is no difference between lower education and higher education with regards to relationship competencies. While hypothesis 1 (H1) is there is a difference between lower education and higher education with regards to relationship competencies. The p-value is .015, see table 35, which is below 0.05 which is considered positive, meaning that hypothesis H0 is rejected and H1 is accepted. Stating that there is a difference between lower educational entrepreneurs and higher formal educational entrepreneurs in relationship competencies. Lower educated entrepreneurs score higher on the relationship questions than higher formally educated entrepreneurs looking at the means of both variables. The effect size can be calculated by using the formula r= Z/√N (Datatab, 2023). 2.440/√129= 0.21, which indicates that this is a small effect, meaning there is a small difference (Datatab, 2023). That lower educated entrepreneurs score higher than higher formal educated entrepreneurs contradict hypothesis 1f.

6. Discussion

6.1. Introduction

This research aimed to find potential differences between lower and higher formally educated entrepreneurs and their possessed entrepreneurial competencies. To answer the research question, entrepreneurial competencies are divided into six different sub-constructs, based on the categorization created by Man, Lau & Chan and the exploratory factor analysis. This framework is defined to see personality traits, skills and knowledge of entrepreneurs and to determine their ability to successfully start and run a business (Chandler & Jansen, 1992; Li, 2009b; Man, Lau & Chan, 2002). All constructs have gotten their own sub-hypothesis that helps to gain a deeper understanding of the potential differences between the entrepreneurs.

The Mann Whitney U test was used because the sample data distribution is skewed as the means were compared, the measurement scale is continuous, the variable groups are independent of each other and there is mutual independence between the groups (Laerd, 2023a; Stephanie, 2021; Sundjaja, Shrestha & Krishan, 2020). Therefore, the Mann Whitney U test is the suitable test to perform while the independent sample T test would not have been appropriate because a normal sample distribution is used with this method (Laerd, 2023a; Stephanie, 2021; Sundjaja, Shrestha & Krishan, 2020). However, there is a downside to the Mann Whitney U test which is that this parametric test has less power than a nonparametric test like the independent sample T test (Zimmerman, 1987). This means that parametric tests are less likely to find a difference if there is really a difference between two groups (Zimmerman, 1987).

The discussion chapter focuses on combining the analysis of the empirical data with the literature on each topic to answer the (sub-)hypotheses. The sub-hypothesis will be discussed first whilst the ending of this chapter will answer hypothesis 1:

Higher formal educated entrepreneurs possess a higher entrepreneurial competency level than lower educated entrepreneurs.

Thereafter, implications for this study, limitations and future research possibilities will be further explained.

6.2. Discussion of the results

6.2.1. Hypothesis 1a: *Higher formal educated entrepreneurs possess a higher level of strategic competencies than lower educated entrepreneurs.*

The results of the testing have cleared that there is no significant difference between lower and higher formally educated entrepreneurs in terms of their strategic competency abilities. Strategic competencies mainly focus on the creation, restructuring, integration and evaluation of strategic company goals (Sakib & Khanam, 2020). This is something that according to Allen, Ramaekers and van der Velden (2005) are skills that are being taught to higher education students. Additionally, higher education helps people to be "*disciplined, persevering, achievement oriented and systematic*" (Jackson, 2016, p.217). This behaviour is directly linked to the strategic competencies described thus another reason why the hypothesis was created. The fact that 55% of the participating entrepreneurs are higher formally educated, does not necessarily mean that what they learned helped them do their job well (Caplan, 2018). Especially when focussing on setting and achieving goals this is not only taught in school, as these competencies are interlinked with possessing certain learner characteristics such as perseverance and the discipline to keep going and achieve the best outcome possible (Jackson, 2016; Burke & Hutchins, 2007). In the research done by Baron (2007), it is said that people who take action and work hard will achieve their goals. Hard work is not only taught in higher education and can have many different reasons why certain people possess a higher level of this ability than others. A possible reason why people work hard and take action is based on motivation in combination with a person's KSAs (Locke, 2000).

The Mann Whitney U test does not give an obvious and clear reason why there is no difference between the lower and higher formally educated respondents as the test outcome is not deemed significant enough. However, the p-value (0.112) of the hypothesis about the strategic competencies is the closest to being significant (<0.05) in comparison with the other Mann Withney U test outcomes done for this research. It is likely to be true that there is no difference in strategic competencies between lower and higher formally educated entrepreneurs. Finally, this means that this hypothesis is declined.

6.2.2. Hypothesis 1b: *Higher formally educated entrepreneurs possess a higher level of conceptual competencies than lower educated entrepreneurs* + *Hypothesis 1d: Higher formal educated individuals possess a higher level of opportunity competencies than lower educated entrepreneurs.*

The results of the testing have cleared that there is no significant difference between lower and higher formally educated entrepreneurs in terms of both their conceptual and opportunity competency abilities combined.

Problem solving in organisational situations is the main focus of conceptual competencies of entrepreneurs, which is also the most essential skill that higher education students acquire in Europe (Garcia-Esteban & Jahnke, 2020). This is taught to them because it helps students to make the transition to the work-environment easier and go smoother (Miranda et al., 2021; (Jackson, Fleming & Rowe, 2019). Next to good problem solving skills, risk taking and new idea exploration are main influences on the level of ability in conceptual competencies (Li, 2009a; Man, Lau & Chan, 2002; Sakib & Khanam, 2020a). Learner characteristics, taught through higher formal education, include risk-taking and confidence (Jackson, 2016; Nafukho et al., 2017). Whereas Jones & Dess and Lumpkin (2009; 2005) said that higher education risks entrepreneurs to be less innovative.

All entrepreneurs need to see and take advantage of opportunities to start their venture (Chandler & Jansen, 1992; Hofer & Sandberg, 1987; Macmillan, Siegel & Narasimha, 1985; Man, Lau & Chan, 2002; Timmons et al., 1987). Therefore, opportunity competencies are especially important. It is said that higher educated individuals are perceived to get more opportunities because they are in the right environment and social networks (Arenius & Clercq, 2005). However, also because they have a perceived higher confidence level in being successful with their business ideas (Bandura, 1978).

Therefore, the initial hypotheses were created based on the more convincing literature on higher formal education its positive effects on both the conceptual and opportunity competencies. However, a downside of higher education is that it creates barriers to knowledge and skill transfer from university to the work-floor, such as the task-complexity and lack of guidance, especially in entrepreneurship (Baldwin, Kevin Ford & Blume, 2017; De Rijdt et al., 2013; Jackson, Fleming & Rowe, 2019; Leberman & McDonald, 2016). It might be that higher educated entrepreneurs experience these barriers more than not higher educated entrepreneurs due to a higher expectation towards them. Experiencing this barrier,

therefore can also cause higher educated entrepreneurs to have lower performance success (Bransford, Brown & Cocking, 2001). Furthermore, losing some of their usually high self-esteem which would level out the lower and higher formally educated entrepreneurs more, possibly explaining the reason for seeing no significant difference (p-value 0.358) between the two groups.

The researchers think that due to the items about innovation, opportunity taking and problem-solving skills, these two competencies are correlated, thus grouped into one sub-construct by the exploratory factor analysis. The combination of these hypotheses is another possible reason for this hypothesis to not be answered with confidence, thus a significance. During the factor analysis, it became clear that there was a close correlation between both conceptual and opportunity competencies. Meaning, it is hard to differentiate between the conceptual competencies and the opportunity competencies regarding the significance level, therefore it is hard to state which of the competencies are which strength of the insignificance as they are both combined. Meaning, these hypotheses cannot be answered fairly thus, this new hypothesis is declined.

6.2.3. Hypothesis 1c: *Higher formal educated entrepreneurs possess a higher level of organizing and leading competencies than lower educated entrepreneurs.*

The results of the testing have cleared that there is no significant difference between lower and higher formally educated entrepreneurs in terms of their organising and leading competency abilities. According to Sakib & Khanam (2020), it is relevant to possess organizing and leading competencies as the importance to understanding the internal and external environment of a company. Moreover, these competencies have a positive effect on ventures' performances (Man, 2001a). Transversal behaviours such as communication, critical thinking and creativity and innovation will lead to a good ability to possess these organizing and leading competencies (Miranda et al., 2021). Miranda et al. (2021) state that the transversal behaviors are being taught in higher education and being stimulated there as well. However, the results were not distinguishing between lower educated entrepreneurs and higher formal entrepreneurs concerning organizing and leading competencies.

It is possible that the higher educated entrepreneurs have learned certain transversal behaviours such as those that were mentioned before, however, this does not mean that they know how to use this behaviours in the entrepreneurial activity settings (Jackson, 2016;

Jackson, Fleming & Rowe, 2019). As it is difficult for a higher educated student to use all these competencies without university help (Jackson, Fleming & Rowe, 2019; Leberman & McDonald, 2016). Therefore, when higher educated entrepreneurs had to fill in the survey questions if they had the ability to do certain tasks in the entrepreneurial activity setting, they might have answered similarly to lower educated entrepreneurs. Furthermore, according to Jones (2009), innovators are at risk of the burden of knowledge, which means that when you have greater knowledge, the possibility is there that it is harder to think outside of the box and innovate. This can lead to lower innovative capabilities (Jones, 2009). This could be another reason why there is no difference between lower educated entrepreneurs and higher formal educated entrepreneurs regarding organizing and leading competencies as it might be that on the questions where innovations skills are necessary, they scored lower but on other questions scored higher which balanced the perception for both groups out.

In the analysis chapter, the results of the Mann Whitney U test showed that there is no difference between lower education and higher education with regard to organizing and leading competencies (p-value 0.825). Therefore, this hypothesis is declined.

6.2.4. Hypothesis 1e: *Higher formal educated entrepreneurs possess the same level of commitment competencies than lower educated entrepreneurs.*

The analysis of the data showed that there is no difference between lower education and higher education with regards to commitment competencies. The commitment competency includes being proactive (McClelland, 1973), keeping going (Changler & Jansen, 1992), and restarting after possible failure (Man Lau & Chan). It is all based on the entrepreneur's internal drive for success, which comes from the individual's passion, values and personality (Tasnim, Saleh & Zainuddin, 2014). This is backed up by their research, stating that the knowledge about how to run a business, is not necessarily gathered through higher education (Tasnim, Saleh & Zainuddin, 2014; Caplan, 2018). However, Heggen and Terum (2013) say that higher education programs focus on coherence and motivation, which should increase the student's resilience and flexibility. Both skills are important to handle the challenges that occur during the new venture creation process (Ahmed & Julius, 2015; Kumar & Singh, 2014; Bell, 1973; Bohme & Stehr, 1986).

Commitment competencies are generally not always seen in higher educated individuals because it is not the most popular choice to start a business among them (Man, Lau & Chan,

2002). This is because starting your own business is not always deemed to offer nice privileges and higher social status, especially higher educated people consider this to not be worth all effort and risk belonging to starting a venture (Kupferberg, 1998; Burrows & Curran, 1989). Nevertheless, the risk of not having sufficient resources to start a new venture is usually lower for higher educated people because being highly educated is often related to a stable source of income and savings (Becker Jr & Lewis, 2012). This so called 'safety-net', also reduces the fear of failure, and shows strong entrepreneurial intention levels (Tasnim, Saleh & Zainuddin, 2014).

Comparing the research on this theme, it does not become clear that lower or higher formally educated people have a higher benefit on the commitment competencies in general, therefore the hypothesis created said that the educational level of the entrepreneur does not make a difference for the level of commitment of these entrepreneurs.

The results from the Mann Whitney U test showed that there is indeed no difference between the lower and higher formally educated entrepreneurs in terms of how much commitment competencies they possess. The p-value of 0.937 shows the highest insignificance in comparison to the other competencies except relationship (*see hypothesis 1f underneath*), meaning that it can be said that the result showing that there is no difference has a high certainty. Therefore, hypothesis 1e can be accepted.

6.2.5. Hypothesis 1f: *Higher formal educated entrepreneurs possess the same level of relationship competencies as lower educated entrepreneurs.*

The statistical analysis showed that there is a difference between lower education and higher formal education with regards to relationship competencies. Relationship building (Ramsden & Bennett, 2005), communication (Jenssen & Greve, 2002; Man, 2001b), and the ability to persuade others (Lau, Chan & Man, 2012; Man, Lau & Chan, 2002; McClelland, 1973) are three important skills to possess to succeed as an entrepreneur.

Education generally has a positive influence on the social life and social abilities of entrepreneurs (Kingston et al., 2003). This is possible because students who participate in higher education gain a higher self-esteem that helps with creating a wider social network (Côté, 1997; Putnam, 1996). However, forming interpersonal relationships are depending largely on the characteristics of a person and is therefore not necessarily improving after

higher education programs (Obedkova et al., 2020). There are more ways than through higher education to learn about relationship competencies. For example, in primary schools social intercommunication and interpersonal relationships are being taught through practicing and role playing (Johnson & Johnson, 1990). Additionally, it is said that people who use self-help books to improve their relationship competency, significantly learned about themselves and are able to improve their communication skills (Halford, Sanders & Behrens, 2001). Furthermore, identification with role models is critical for individual growth and development (Gibson, 2004). Especially the communication style parents use has a direct influence on the social and communicative skills of the child (Jiao, 2020). When parents have a healthy relationship and communication style with each other, children will use this to create and maintain their own interpersonal relationships (Neitola, 2018).

The result of the Mann Whitney U test for this sub-hypothesis is that there is a difference between higher formal educated entrepreneurs and lower educated entrepreneurs possessing relationship competencies. According to the calculated effect size, there is only a small difference between higher formally educated entrepreneurs and lower educated entrepreneurs regarding possessing the relationship competency as it has a small effect. However, the difference that is detected, is lower educated entrepreneurs score higher in the ability of possessing relationship competencies than higher formally educated entrepreneurs. This means that the lower educated entrepreneurs perceive they are better at building relationships, communicating and persuading others to establish relationships with stakeholders (Lau, Chan & Man, 2012; Man, Lau & Chan, 2002; McClelland, 1973). even though the hypothesis stated the level would be the same, it indeed might be that the lower educated scored higher as relationship competencies are not necessarily learned in higher education but as a young individual. This hypothesis is declined, due to the very small difference between lower and higher formally educated entrepreneurs.

6.2.6. Hypothesis 1: *Higher formal educated entrepreneurs possess a higher entrepreneurial competency level than lower educated entrepreneurs.*

After careful analysis and discussion of all sub-hypothesis, it can be said that this research did not accept this hypothesis. The outcomes of the sub-hypotheses as seen in table 36, show a summary overview.

Sub-hypothesis competency	Higher formally educated entrepreneurs possess a … level of the competency:	Test outcome	Hypothesis accepted or declined	Z-value
1a: Strategic	Higher	No difference	Declined	0.14
1b + 1d: Conceptual + Opportunity	Higher	No difference	Declined	0.08
1c: Organizing and leading	Higher	No difference	Declined	0.02
1e: Commitment	Same	No difference	Accepted	0.007
1f: Relationship	Same	Small difference	Declined	0.21

Z-Value: <0.3= small effect, 0.3-0.5= medium effect, >0.5= large effect (Datatab, 2023)

Table 36

As seen in the table, the first three hypotheses are declined, also hypothesis 1f was declined even though there was only a slight difference in the competencies between lower and higher formally educated entrepreneurs. Seeing this overview, the overall outcome is that hypothesis 1, is to be declined. This can be due to the different testing limitations but also because it cannot be said that education causes the possession of the entrepreneurial competencies as it can also be caused by different variables. Additionally, the entrepreneurs' perceiving of their abilities might be different in general because of social desirability and entrepreneurs having higher self-esteem. In chapter 6.5., the limitations of the study are further elaborated on.

6.3. Discussing the main research question

The aim of this study is to respond to the goal of this research by answering the main research question:

What is the difference in entrepreneurial competencies fostered by higher formal educated entrepreneurs compared to lower educated entrepreneurs in Sweden?

To answer this research question, one hypothesis and six sub-hypotheses were made and answered. As seen in chapter 6.6., hypothesis 1 is answered with the help of the sub-hypotheses and is declined. Saying that higher formal educated entrepreneurs do not possess higher entrepreneurial competencies. This answer was based on the sub-hypotheses that stated that within 4 out of 5 separate competencies, no difference was found.

Even though, three out of four Swedish citizens decide to participate in higher education (Wikström, 2006), it is to be concluded that this research focussing on the Swedish context, showed that there is no significant difference in entrepreneurial competencies possessed by higher and lower educated entrepreneurs.

Due to a deductive research approach, this is an unexpected research outcome. Therefore, possible reasons therefore are discussed in limitations.

6.4. Implications

6.4.1. Theoretical implications

To boost economic growth, entrepreneurial activities are being stimulated by the Swedish government (Harari, Sela & Bareket-Bojmel, 2022; Kuratko, 2005). Even though Sweden is one of the best economies worldwide including a significant innovative business climate, the entrepreneurial activity is slowing down more than in other countries in the past years (Heyman et al., 2019). Therefore, Sweden is highly concentrated on improving their entrepreneurial business climate (Heyman et al., 2019). Whilst there is a lot of research about entrepreneurial education that it positively influences venture creation in Sweden, the research about the difference in education levels regarding venture creation in Sweden is missing. As the degree inflation time is turning and skills are becoming more important (Fuller, Langer & Sigelman, 2022), this research contributes by showing if there is a difference in educational backgrounds regarding the level of entrepreneurial competencies possessed. This means that this research implies that a higher formal education degree might not be necessary to obtain entrepreneurial competencies needed to start your own venture or to get hired by an entrepreneur.

6.4.2. Practical implications

This research is developed for entrepreneurial founders and entrepreneurs in general. New venture founders can use this research in making hiring decisions as it states that they can focus on entrepreneurial competencies and skills instead of looking at the individual its education level. Additionally, entrepreneurs in general will have the choice of whether they want to obtain a higher formal education degree or start their own venture as this research states that there is no difference between lower and higher formally educated entrepreneurs. Furthermore, this research can be used by the Swedish government, as they do not necessarily need to focus on developing an entrepreneurial mindset in higher formal education but better a focus on primary education that every Swedish citizen participates in (Lgr, 2011). As the entrepreneurial activity is slowing down (Heyman et al., 2019), the government should question whether they are investing in the right education level and if investing in entrepreneurial activity in schools is the way to go. This all can be drawn from the analysis of the hypotheses, which states that overall, there is no difference between lower educated entrepreneurs and higher formally educated entrepreneurs regarding entrepreneurial competencies.

6.5. Limitations

With not all hypotheses a conclusion could have been drawn as not all of them are accepted, which is common with similar studies. Therefore, limitations need to be examined. Next to the validity and reliability limitations stated in the methodology chapter, other limitations are considered.

The main limitation of this research is the fact that the Mann Whitney U test had to be used to test all sub-hypotheses as the sample data distribution is skewed. This test has the disadvantage that it has less power than a nonparametric test (Zimmerman, 1987). Meaning that parametric tests are less likely to find a difference if there is really a difference between two groups (Zimmerman, 1987). This could be a limitation and a reason for why some of the expected hypotheses found no differences whilst according to literature there should have been a difference.

Furthermore, within this research, the aim is to find out if higher formal educated entrepreneurs possess a higher entrepreneurial competency level than lower educated

entrepreneurs. However, it cannot be assumed that the education variables (independent variable) cause the level of entrepreneurial competency (dependent variable) possession. Moreover, there can be other variables such as work experience and genetic personality traits that can influence the entrepreneurial competencies of an individual. Nonetheless, the main research goal was focused on the comparison and not the relationship.

Additionally, the secondary data that has been collected in the theoretical framework about higher education, does not state what their definitions are of higher education. Whilst, throughout this research, higher formal education is defined as a master's degree or a PhD's degree. Therefore, this can be a limitation as the secondary data could have implied that a bachelor's studies are part of higher formal education as well.

Moreover, the data collection method is a web-based survey, which unlocks the possibility for social desirability bias to occur (Grimm, 2010). As people might want to be socially accepted, they fill in higher scores than they perceive themselves to have (Grimm, 2010). Another limitation of social desirability bias is that the researchers themselves could unconsciously think that higher educated entrepreneurs possess a higher level of entrepreneurial competency, possibly having an impact on the hypotheses creation (Grimm, 2010). However, the researchers have enough literature to ensure that the social desirability is limited.

Lastly, every entrepreneur filled in the survey with what they perceive as what their level is concerning their abilities, however as the researchers do not know how successful their business is, there might be a misalignment between the answers given and what their actual ability level is. Again, respondents could have filled in the questions differently on account of social desirability bias (Grimm, 2010). However, this is something that occurs in most quantitative research when focusing on personal abilities and therefore is deemed to be almost unavoidable.

6.6. Further research

Based on the limitations mentioned before and the analysis of the results, future research could be implicated. First, as the convenience sampling method was used, it cannot be said that the results can be generalized beyond this research, meaning that the sample might not be as representative as possible (Bell, Bryman & Harley, 2022). Therefore, further research could use probability sampling instead of non-probability sampling to gather a sample of (co-)founders completely random (Bell, Bryman & Harley, 2022).

As stated in the limitations, it cannot be said that education causes possessing certain entrepreneurial competencies because other variables could also have influenced these competencies. Therefore, it would be interesting to see if and which other variables have an impact on entrepreneurial competencies such as work experience or specific personality traits.

Another limitation implies that the used literature in this research is written by using the terms of lower and higher formal education. However, not all literature used clarified what higher education was defined as, causing a possible difference in understanding the term higher education. In this research, higher formal education existed out of a master's degree and or a PhD. An interesting other approach for this study could be to include a bachelor's degree in the higher education sample to see if the outcomes change.

Moreover, because of a social desirability bias, the entrepreneurs could have filled in the survey questions with a higher rating than how they perceived their own abilities (Grimm, 2010). Entrepreneurs generally have higher self-esteem which could add to the reasoning behind their perceived higher ability levels (Putnam, 1996). This could be intriguing to do further research on to see what and where this high self-esteem comes from as all entrepreneurs perceive their abilities to be similar regarding their educational levels.

Next to the limitations, other reasons for further research were also found. Lower educated entrepreneurs score higher on relationship competencies which was not initially expected. To obtain more understanding of what the reason behind this is, more research into relationship competencies specifically could be performed.

Furthermore, this research is focused on the Swedish context, whilst school is financed through taxation until university level (Wikström, 2006). Moreover, Sweden encourages entrepreneurial activity and has a highly innovative business climate (Balawi & Ayoub, 2022; OCED, 2018; Wikström, 2006). This means that Swedish citizens are getting stimulated to go

to school and therefore the majority of the population in Sweden finishes their high school diploma and many pursue higher formal education programs (Statista, 2021; Wikström, 2006). A comparative study design would be interesting to compare Swedish educational decisions with another European country that might have less entrepreneurial focus backing from the government.

The analysis and discussion showed an unexpected research outcome where not all hypotheses were accepted. Therefore, further research should be done on why this happened. Some of these alternatives and possible reasons are established in the limitations and other future research options. However, specific research focusing on why this outcome in Sweden is different as literature states are needed to understand the Swedish entrepreneurial competency levels and educational system better.

Corresponding to the unexpected outcome of this research, the measuring tool could be further tested as well. The currently used measure is a survey by Li (2009), which has initially been created to test entrepreneurial competency levels and their correlation to business success. Further insights into the measuring tool itself could be done, as in this research the sub-constructs were also different from the sub-constructs Li used.

Lastly, to understand general education and its influence on the creation of new ventures, more research could be done on testing the actual effect and impact that different educational levels have. Instead of seeing the difference between the entrepreneurs and their corresponding educational levels, more knowledge should be gathered on how and why education influences new venture creation.

7. Conclusion

This research aimed to understand how lower educated entrepreneurs differ from higher formally educated entrepreneurs in terms of their entrepreneurial competency levels which are important for taking part in new venture creation. All because an increasing focus on new venture creation will stimulate economic growth in Sweden. Additionally, due to the trend of the war-on-talent entrepreneurial founders can use this research to base hiring decisions on. They can start looking at entrepreneurial competencies and skills instead of only focusing on education levels.

This research did not aim to showcase causal relationships, but it focused on finding potential differences between lower and higher formally educated entrepreneurs. This is seen through quantitative hypotheses testing based on a deductive research method. To establish entrepreneurs' skills, the theoretical framework is used based on six entrepreneurial competencies: opportunity, organising and leading, relationship, commitment, conceptual, and strategy. The education levels are divided into lower (primary, secondary, post-secondary education (high school), bachelor) and higher formal education (master, and PhD). Swedish entrepreneurs, people who have started a business, were asked to participate in this research through a web-based survey, concluding with 129 valid responses.

By doing statistical testing to learn about the difference between lower and higher formally educated entrepreneurs, the research questions could be answered. The differences found between the differently educated entrepreneurs are very slim, basically none. Showcasing that there is no significant difference between those entrepreneurs. Meaning, that the conclusion of this research is that a certain educational level does not necessarily make an entrepreneur possess a higher entrepreneurial competency level.

Therefore, this research is especially useful for entrepreneurs and organisations who make hiring decisions and are looking for entrepreneurs to hire or work together with. In Sweden, it is not necessarily the case that if someone has participated in higher formal education, that they also possess a higher level of entrepreneurial abilities. Additionally, this research conclusion could help lower educated entrepreneurs boost their confidence as they have similar entrepreneurial competencies.

However, the limitations of this research need to be strongly considered, especially the fact that the Mann Whitney U test does not always show the differences thus can cause a slight error, that the survey responses are based on the self-assessment of entrepreneurs, and that no further background, such as work-experience is taken into account.

The researchers imply that further research should be done to extend this research, both the measuring tool and the reason why the hypotheses based on a deductive research design are not accepted are especially interesting to further analyse. Additionally, it would be interesting to test additional influences and resources next to the educational level of entrepreneurs that have a possible effect on entrepreneurial competencies. This helps to only understand its differences but also see how and where the differences arise. This would be positive for education purposes as well as to learn where the focus should be put on most when establishing a learning programme all in focus to positively influence Sweden's business climate by the creation of new ventures in the most effective manner.

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Appendices

1. Appendix 1 – Survey

Dear Sir/Madam,

We are conducting research on the entrepreneurial competencies needed for new venture creation in Sweden and would like to request your assistance.

We kindly ask if you could take a few minutes to complete a questionnaire regarding the activities and decisions you make as a (co-)founder of your company, as well as your personal educational background.

Your participation is voluntary and your responses will be kept confidential, this will only be used for academic research purposes. Your views are highly valuable and will contribute significantly to our study.

It should only take you around 5 minutes to complete the survey. If you have any questions or concerns regarding the research or the survey, please do not hesitate to contact us at evigeelen1803@gmail.com or juliavis@hotmail.com

Thank you for your time and cooperation.
Best regards,

Julia Vis and Evi Geelen
Sten K Johnsen Centre for Entrepreneurship
Lund University School of Economics & Management, Sweden

1. Have you ever (co-)founded a company?

A Yes

B No

2. Please circle one number that indicates your agreement or disagreement with the statement regarding opportunity competencies

Opportunity competencies

	Strongly disagree					Strongly agree
	1	2	3	4	5	6
As the owner of this business, I am able to identify goods or services customers want	○	○	○	○	○	○
As the owner of this business, I am able to perceive unmet consumer needs	○	○	○	○	○	○
As the owner of this business, I am able to actively look for products or services that provide real benefits to customers	○	○	○	○	○	○
As the owner of this business, I am able to seize high-quality business opportunities	○	○	○	○	○	○

3. Please circle one number that indicates your agreement or disagreement with the statement regarding relationship competencies

Relationship competencies

	Strongly disagree					Strongly agree
	1	2	3	4	5	6
As the owner of this business, I am able to develop long-term trusting relationships with others	○	○	○	○	○	○
As the owner of this business, I am able to negotiate with others	○	○	○	○	○	○
As the owner of this business, I am able to interact with others	○	○	○	○	○	○
As the owner of this business, I am able to maintain a personal network of work contacts	○	○	○	○	○	○
As the owner of this business, I am able to understand what others mean by their words and actions	○	○	○	○	○	○
As the owner of this business, I am able to communicate with others effectively	○	○	○	○	○	○

4. Please circle one number that indicates your agreement or disagreement with the statement regarding conceptual competencies

Conceptual competencies

	Strongly disagree					Strongly agree
	1	2	3	4	5	6
As the owner of this business, I am able to take reasonable job-related risks	○	○	○	○	○	○
As the owner of this business, I am able to look at old problems in new ways	○	○	○	○	○	○
As the owner of this business, I am able to explore new ideas	○	○	○	○	○	○
As the owner of this business, I am able to treat new problems as opportunities	○	○	○	○	○	○

5. Please circle one number that indicates your agreement or disagreement with the statement regarding organising and leading competencies

Leading competencies

	Strongly disagree					Strongly agree
	1	2	3	4	5	6
As the owner of this business, I am able to develop operational plans for business activities	○	○	○	○	○	○
As the owner of this business, I am able to manage and organise different resources	○	○	○	○	○	○
As the owner of this business, I am able to lead subordinates	○	○	○	○	○	○
As the owner of this business, I am able to organise people	○	○	○	○	○	○
As the owner of this business, I am able to motivate people	○	○	○	○	○	○
As the owner of this business, I am able to delegate effectively	○	○	○	○	○	○

6. Please circle one number that indicates your agreement or disagreement with the statement regarding strategic competencies

Strategic competencies

	Strongly disagree 1	2	3	4	5	Strongly agree 6
As the owner of this business I am able to be aware of the projected directions of the industry and how changes might impact the firm	○	○	○	○	○	○
As the owner of this business, I am able to prioritise and align actions with strategic business goals	○	○	○	○	○	○
As the owner of this business, I am able to monitor progress toward strategic goals	○	○	○	○	○	○
As the owner of this business, I am able to evaluate results against strategic goals	○	○	○	○	○	○
As the owner of this business, I am able to determine strategic actions by weighing costs and benefits	○	○	○	○	○	○

7. Please circle one number that indicates your agreement or disagreement with the statement regarding commitment competencies

Commitment competencies

	Strongly disagree 1	2	3	4	5	Strongly agree 6
As the owner of this business, I am able to dedicate myself to making the venture work whenever possible	○	○	○	○	○	○
As the owner of this business, I am able to refuse to let the venture fail whenever appropriate	○	○	○	○	○	○
As the owner of this business, I am able to possess an extremely strong internal drive	○	○	○	○	○	○
As the owner of this business, I am able to commit to long-term business goals	○	○	○	○	○	○

8. What is your gender?

- [A] Female
- [B] Male
- [C] Diverse

9. What is your birth year?

---

10. In which country were you born?

---

11. What is your current occupation? (the one you spend the most time on)

- [A] Employed
- [B] Self-employed
- [C] Hybrid entrepreneur (combining employment with self-employment)
- [D] Studying
- [E] Parental leave
- [F] Unemployed
- [G] Other:

12. What is your highest educational qualification?

- [A] Primary
- [B] Secondary
- [C] Post-secondary or Diploma
- [D] Bachelor's degree
- [E] Master's degree
- [F] Ph.D.
- [G] Other:

13. What is the graduation year of your highest degree?

---

14. In what year did you start the company?

---

15. In which country did you set up your company? (Please specify country if other)

- [A] Sweden
- [B] Other:

16. At what age did you decide to become an entrepreneur?

Submit my answers

2. Appendix 2 – Sub-Constructs and Items

Opportunity

Item1	O1	I am able to identify goods or services customers want
Item2	O2	I am able to perceive unmet consumer needs
Item3	O3	I am able to actively look for products or services that provide real benefits to customers
Item4	O4	I am able to seize high-quality business opportunities

Relationship

Item5	R1	I am able to develop long-term trusting relationships with others
Item6	R2	I am able to negotiate with others
Item7	R3	I am able to interact with others
Item8	R4	I am able to maintain a personal network of work contacts
Item9	R5	I am able to understand what others mean by their words and actions
Item10	R6	I am able to communicate with others effectively

Conceptual

Item11	C1	I am able to take reasonable job-related risks
Item12	C2	I am able to look at old problems in new ways
Item13	C3	I am able to explore new ideas
Item14	C4	I am able to treat new problems as opportunities

Leading & Organizing

Item15	L1	I am able to develop operational plans for business activities
Item16	L2	I am able to manage and organise different resources
Item17	L3	I am able to lead subordinates
Item18	L4	I am able to organise people
Item19	L5	I am able to motivate people
Item20	L6	I am able to delegate effectively

Strategic

Item21	S1	I am able to be aware of the projected directions of the industry and how changes might impact the firm
Item22	S2	I am able to prioritise and align actions with strategic business goals
Item23	S3	I am able to monitor progress toward strategic goals
Item24	S4	I am able to evaluate results against strategic goals
Item25	S5	I am able to determine strategic actions by weighing costs and benefits

Commitment

Item26	CT1	I am able to dedicate myself to making the venture work whenever possible
Item27	CT2	I am able to refuse to let the venture fail whenever appropriate
Item28	CT3	I am able to possess an extremely strong internal drive
Item29	CT4	I am able to commit to long-term business goals

Based on: (Ahmad, 2007; Li, 2009b; Man, Lau & Chan, 2002; Sakib & Khanam, 2020a)

3. Appendix 3: Communalities

Communalities initial		Extraction
Opportunity competency_1	1.000	.716
Opportunity competency_2	1.000	.721
Opportunity competency_3	1.000	.704
Opportunity competency_4	1.000	.547
Relationship competency_1	1.000	.748
Relationship competency_2	1.000	.619
Relationship competency_3	1.000	.738
Relationship competency_4	1.000	.761
Relationship competency_5	1.000	.551
Relationship competency_6	1.000	.643
Conceptual competency_1	1.000	.481
Conceptual competency_2	1.000	.562
Conceptual competency_3	1.000	.596
Conceptual competency_4	1.000	.667
Leading competency_1	1.000	.729
Leading competency_2	1.000	.725
Leading competency_3	1.000	.752
Leading competency_4	1.000	.845
Leading competency_5	1.000	.690
Leading competency_6	1.000	.586
Strategic competency_1	1.000	.623
Strategic competency_2	1.000	.789
Strategic competency_3	1.000	.744
Strategic competency_4	1.000	.790
Strategic competency_5	1.000	.774
Commitment competency_1	1.000	.731
Commitment competency_2	1.000	.659
Commitment competency_3	1.000	.692
Commitment competency_4	1.000	.715

4. Appendix 4: Rotated Component Matrix

	Component / Factor				
	1	2	3	4	5
Opportunity competency_1	**.790**	.200	.092	.146	.101
Opportunity competency_2	**.789**	.266	.095	.101	.089
Opportunity competency_3	**.768**	.190	.075	.242	.161
Conceptual competency_1	**.674**	.160	.212	.201	.319
Relationship competency_1	**.621**	.156	.284	.245	-.021
Conceptual competency_2	**.574**	.163	.303	.064	.333
Conceptual competency_3	**.518**	.359	.137	.297	.304
Opportunity competency_4	**.503**	.432	-.046	.313	.079
Relationship competency_2	**.482**	.172	.394	.451	.150
Strategic competency_1	.288	**.813**	.071	.047	.150
Strategic competency_2	.271	**.785**	.228	.175	.129
Strategic competency_3	.161	**.777**	.304	.253	.055
Strategic competency_4	.227	**.670**	.381	.280	.139
Strategic competency_5	.154	**.670**	.137	.281	.229
Leading competency_1	.313	**.614**	.415	.221	.179
Leading competency_2	.182	.148	**.867**	.151	.123
Leading competency_3	.181	.146	**.822**	.064	.133
Leading competency_4	.003	.229	**.719**	.101	.083
Leading competency_5	.242	.153	**.608**	.413	.260
Leading competency_6	.280	.433	**.606**	.095	.288
Relationship competency_3	.213	.132	.233	**.800**	-.065
Relationship competency_4	.298	.222	.190	**.749**	.051
Relationship competency_5	.228	.274	.114	**.730**	.274
Relationship competency_6	.171	.328	.021	**.636**	.279
Commitment competency_1	.105	.220	.096	.154	**.799**
Commitment competency_2	.145	.074	.185	-.027	**.773**
Commitment competency_3	.196	.455	.249	.291	**.568**
Commitment competency_4	.455	.026	.361	.216	**.554**
Conceptual competency_4	.384	.330	.059	.177	.436

a. Rotation converged in 6 iterations