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A Quantitative Study on The Magnitude of Business Involvement after Completing an Entrepreneurship Education Program.

Master's thesis in International Business and Marketing

Supervisor: Øivind Strand and Kjersti Kjos Longva

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Abstract

Many researchers have been concerned about the impact of entrepreneurship education programs on the involvement in business activities. Entrepreneurship education creates an impact to become an entrepreneur and gives the foundation of the required skill, knowledge, and ability. In our paper, we tried to determine the impact of entrepreneurship graduate students through their company's involvement. The paper analyzes the data of the former students who passed the bachelor's course. Then we collected the registered data of those students divided into two groups treatment and control. After analyzing the data, we did not find a significant difference between the two groups to reach a definitive conclusion. However, if the numbers are considered, there is a significant difference between the two groups. Overall, we can say that the treatment group had more involvement than the control group in a business as an entrepreneur, as a management position, or as board participation.

Table of Contents

CHAPTER 1: Introduction	6
1.1 Background of the study	6
1.2 Statement of The Problem.....	7
1.3 Purpose of The Study	8
1.4 Research question.....	9
1.5 Research Hypothesis	9
1.6 Significance of The Study	9
1.7 Thesis Structure.....	10
CHAPTER 2: Literature Review	11
2.1. History of Entrepreneurship and Its Evolution	11
2.2 Theoretical Construct of Entrepreneurship	13
2.2.1 Concept of Entrepreneurship	13
2.2.2 Ownership	16
2.3 Entrepreneurship Education	17
2.4 Norwegian Strategy on Entrepreneurship Education	21
2.5 Entrepreneurship Education impacts on entrepreneurship graduates	23
2.6 Board Structures	25
2.7 Entrepreneurship Impact on The Economic Development	27
2.7.1 Downward Trend of Business Ownership	27
2.7.2 Rise of The Business Ownership	28
2.8 Economic Development of Norway Through Entrepreneurship.....	31
2.9 Current World Situation of Entrepreneurship	33
2.9.1 Entrepreneurship education and graduates during covid-19	35
2.10 Empirical Evidence of Entrepreneurship Education Fostering Entrepreneurship	37

CHAPTER 3: RESEARCH METHODOLOGY	48
3.1 Descriptive Statistics	48
3.2 T-Test	50
3.3 Data Collection and sampling Process	51
CHAPTER 4: Data Analysis	53
4.1 T-Test Analysis	63
Chapter 5: Result and Discussion.....	67
5.1 A comparison of all the T-tests	67
5.2 A comparison between the treatment group and control (data)	68
5.3 Discussion	71
Chapter 6: Conclusion.....	72
References:.....	74
Attachment 1	87
Attachment 2	93

List of Figure:

Figure 1: Availability of Funding for Startups (monthly) (J.F. Gauthier, 2020).	33
Figure 2: Employee cut-offs since the start of the COVID-19 crisis (J.F. Gauthier, 2020). ...	34
Figure 3: Theoretical Distribution for treatment and control group (Trochim, 5 Aug 2020) ..	49
Figure 4: overall data of the treatment group.....	53
Figure 5: overall data of the control group	54
Figure 6: Percentage of entrepreneurs holding a position in a business.	56
Figure 7: percentage of board participation holding a position in a business.....	57
Figure 8: Percentage of Managerial Position holding a position in a business.	59
Figure 9: Percentage of entrepreneurs holding a position in a business	60
Figure 10: Percentage of board participation holding a position in a business	61
Figure 11: Percentage of managerial position holding a position in a business	62

Figure 12: Welch two-sample t-test of the overall treatment and the control group	63
Figure 13: Welch two-sample t-test of both the treatment and control group in term of the entrepreneur	64
Figure 14: Welch two-sample t-test of both the treatment and control groups in terms of board participation	65
Figure 15: Welch two-sample t-test of both the treatment and control group in terms of managerial position.....	66
Figure 16: Comparision of all t-tests data.....	67
Figure 17: comparison between treatment group and control group in term of entrepreneur .	68
Figure 18: comparison between treatment group and control group in term of board participation	69
Figure 19: comparison between treatment group and control group in terms of a managerial position.....	70

List of Table:

Table 1: Numbers of Entrepreneur holding a position in a business	56
Table 2: number of board participation holding a position in a business.	58
Table 3: Number of Managerial Position holding a position in a business.	59
Table 4: Number of entrepreneurs holding a position in a business.....	60
Table 5: Number of board participation holding a position in a business	61
Table 6: Number managerial position holding a position in a business	62
Table 7: data comparison of all t-tests	67

CHAPTER 1: Introduction

1.1 Background of the study

Entrepreneurship education has become the primary instrument for equipping graduates in their post-college lives with survivalist and creative new venture formation skills (Ndofirepi & Rambe, 2018). It is challenging for a government to depend on the economy based on natural resources and simultaneously create more job opportunities for unemployed people. Norway is not different in these issues. In 2016, 36,000 jobs disappeared related to the oil industry, and this number is not a small number for a population of 5.1 million (Mitzner, 2016). The country is looking for an option that can build several growth sectors that can contribute to a more sustainable and diversified national economy. Norway has also started to look forward to the diversified industry by giving fresh graduates and young entrepreneurs the opportunity through startup companies. Every University and the school also provides courses related to entrepreneurship education. In 2015, Innovation Norway distributed 6.1 billion NOK (\$729.5 million) to Norwegian businesses, of which 30 percent were startups (Mitzner, 2016). We will try to find out from this study that the student had greater business involvement after completing their graduation.

1.2 Statement of The Problem

Entrepreneurship creates a significant contribution to the success of a country's economy. Through different businesses, jobs are created in the market; they innovate, spot, and exploit new opportunities. Though small companies have a drawback, many companies do not have any growth aspirations, and some companies stopped their trade soon after they started. However, it has a benefit, and that is, running one's own business provides an opportunity to learn new skills that are valuable to the potential employer (Cowling & Bygrave, 2002). If an employee can create an opportunity in the existing organization that can create a job opening for other people, it is also called entrepreneurship (Schmädeke, 2011). After completing education, many students might not get the job they preferred; one reason is that it is difficult for the government to create more jobs for unemployed people in their country. It is imperative to develop an option for unemployed people to earn money, create employment for other people, and bring more innovative ideas into society. Entrepreneurship can be one of the choices that can minimize unemployment and other unemployment-related problems. Through entrepreneurship, one person can create an opportunity for many people. However, the modern world is evolving every time with new technology and ideas. Through education, which is linked to entrepreneurship, people can learn about business. An essential element that can help entrepreneurs run their company smoothly is to understand entrepreneurship by teaching or learning. This thesis will determine the impact of entrepreneurship education on the graduated student regarding future business involvement. We examined the previous student data of bachelor students of NTNU Ålesund; to determine whether students are involved in their own business or are parts of someone's business, such as being (board members, director, contact person, and many more positions. After graduation, this analysis allows us to assess that the study program for entrepreneurship education impacts students by participating in business in terms of entrepreneurs, executive roles, and board involvement.

1.3 Purpose of The Study

This segment will follow the statement of the problem and attempt to solve the problem mentioned in the previous part. In short, we can say that how we will solve this issue will be discussed in this section. The effect of entrepreneurship education is essential to find out, and for that, we collected data of the former bachelor students at NTNU in Ålesund. After that, we divide them into two groups: a control group (Students who did not have entrepreneurship education) and a treatment group (Students who received entrepreneurship education). The perspective of doing these studies is to find the outcome of entrepreneurship education. To do so, we collected the students' current information from purehelp.no and proff.no, where their current companies and their positions were mentioned. After that, we analyzed the data and determined how many students become company owners and how many become part of the board and managerial positions. Then we compared both the treatment and control group data, where we found the students' ownership status and other positions. It was clear that the treatment group result was higher than the control group.

1.4 Research question

For our paper we undertook the below stated research question:

“Does participation in an entrepreneurship education study program have an impact on business involvement after graduation in terms of entrepreneurs, managerial positions, and board participation?”

1.5 Research Hypothesis

Based on the aforementioned research question, we formulate the hypothesis as follows:

Alternative Hypothesis: “The student with entrepreneurship education has higher business involvement than those who did not attend an entrepreneurship education program.”

1.6 Significance of The Study

Entrepreneurship is not just doing business but also adding innovative skills and ideas to the business world. There are also various empirical studies that resulted in myriad of conclusion regarding the impact of an entrepreneurship education program on the development of interpersonal and economic skills for an individual (Karimi, Biemans, Lans, Mulder, & Chizari, 2012b). For this reason, several institutes offers an entrepreneurship education course in their syllabus. The course allows and equips the participant with the intrinsic and practical knowledge regarding the past and current business scenarios and financial tools that are essential for conducting a business. Researchers studying the impact of entrepreneurship education programs typically assigns and assumes some construct variables such as: perceived behavioral control, attitudes toward entrepreneurship, achievement power, social orientation, etc (Karimi et al., 2012b; Oosterbeek, van Praag, & Ijsselstein, 2008) . However, in our paper, we analyzed empirical and tabular data regarding the student's business involvement after completing the entrepreneurship education program. However, as per our hypothesis through our research, we worked with the actual data and variables and tried to determine students who

graduated with entrepreneurship courses and those who did not. We perceive that those who studied entrepreneurship education have more skills and ideas about handling a business, and they have more involvement than those who do not have studied. Our thesis is significant in that the educational institute can use this paper as a reference to show that entrepreneurship education has a vast impact on the student, and they become more successful through their business involvement. Furthermore, our research will bridge the gap that has been persistent among entrepreneurship study researcher which is analyzing the practical data to assess the business involvement in a organization.

1.7 Thesis Structure

This paragraph is a glimpse of the overall process of this thesis. We began with the literature review, where we described the history of entrepreneurship and how it developed over the period. Later part of the literature review, we defined entrepreneurship, entrepreneurship education, and its impact. The next part of the literature review stated the effect of entrepreneurship on business growth and Norwegian economic development and the current world situation on entrepreneurship, and the graduates' current condition due to covid-19. We ended our literature review by showing the empirical evidence; entrepreneurship education encourages entrepreneurship. Then we moved to the research methodology part, where we described our quantitative approach and our data collecting process and sampling. We presented our data analysis part along with the graph. The thesis ended with the result and conclusion part.

CHAPTER 2: Literature Review

This section has addressed the central concept of entrepreneurship, entrepreneurship education, and its impact and board structures. However, before that, we started a literature review with entrepreneurship history and its evaluation.

2.1. History of Entrepreneurship and Its Evolution

The history of entrepreneurs is nearly 20,000 years old (Hur, 2018). We can say that an entrepreneur is as old as the barter system. However, initially, people were not ready for the entrepreneur as an essential part of the market economy. People started the kind of entrepreneurship through the Barter system. Around 17,000 BCE in New Guinea, locals would exchange obsidian (a volcanic glass prized for its use in hunting tools) for other needed goods like tools, skins, and food (Hur, 2018). The settlements or the barter system increased in size, and it helped make new social institutions like religious centers, courts, and marketplaces developed. If we talk about the process of urbanization, development, and entrepreneurship, then these things work together like a horse and carriage. Every economy in the world is developed with urbanization; if we look into a country's demographic situation, most of the population is urban. If we define the entrepreneurs as self-employed and most of the entrepreneurs are found in the big cities. The foundation of civilization starts at the middle east's fertile crescent in between the Tigris and the Euphrates, and it also has a perfect combination of animals and plants (Allis, 2018; Hur, 2018).

“Entrepreneur” term was first used in the French language around the 12th century when the landlord was given their land to the tenants, and in exchange, they received their loyalty and service (Carlsson et al., 2013). This political and social system was called the feudal system, which hindered entrepreneurship development in Europe. Though the feudal system was present in society, entrepreneurship was developed rapidly among the merchant people in Italy, France, and southern Germany (Carlsson et al., 2013). As people understood that the feudal system is a bump in the road to economic success, so around the eighteenth century, this system was abolished from society. A new economic system was introduced to strengthen the

economy; for example, the banking system and joint-stock company change (Wennekers & Thurik, 1999, 2001).

The first concept of entrepreneurship economic value and role in economic development came from the Irish-born banker Richard Cantillon (circa 1680–1734), through his *Essai Sur la Nature du Commerce en Ge'ne'ral* (Cantillon, 1755), (Cornelius, Landström, & Persson, 2006). It explains the inequality between the supply and demand and the entrepreneur's role as a purchasing agent. Entrepreneurs as purchasing agents purchase a particular product with a specific price, but their selling policy will make the market steady. This concept helps economics to create equilibrium models that will encourage economic apprehension and uncertainty (Murphy, Liao, & Welsch, 2006).

Only a few economists mention the entrepreneurial function concept around the seventh century because the classical economic theory was not focusing on the economy's entrepreneurial function. However, this was not a problem because entrepreneurship was moving around very fast as industrial power emerged during the nineteenth century. Joseph A. Schumpeter (1885–1950) was the first economist who focuses on entrepreneurship's role in economic development. The author mentions that an entrepreneur is the change agent who breaks the old practice and brings innovation to the market. However, due to the rapid growth of industrial innovation, the view of entrepreneurship was changed by him. The author also mentions that if an individual can change the existing organizations, that is also called entrepreneurship (Schmädeke, 2011).

2.2 Theoretical Construct of Entrepreneurship

2.2.1 Concept of Entrepreneurship

An entrepreneur makes essential decisions, including capital and uncertainty, about many aspects of a market, such as determining its risk factors. She/He may also recognize strong possibilities that contribute to his overall performance (Casson, 1982). Entrepreneurship leads to economic efficiency, promotes creativity, and raises job levels. (Karimi et al., 2012b). In companies, a good entrepreneurship venture often creates disruption that often changes the industry's existing conditions. The socioeconomic climate affects business enterprises, and economic development and human health are influenced by the result (Carlsson et al., 2013). Entrepreneurship can be considered as the heart of market economics. In the growth of the market economy and to bring change in the market, entrepreneurs work as an agent. They also act to expedite the generation and apply innovative ideas in the market. They ensure the efficient use of resources and expand economic activities; entrepreneurs are often willing to recognize potentially profitable economic options and are prepared to take risks. Not all entrepreneurs can see the face of success by doing so, but the country has varied and improved goods and services with many entrepreneurial activities (OECD, 1998a).

Schumpeter and his classwork, "The theory of economic development," are an essential starting point for today's understanding of entrepreneurship, where he mentioned his theory of economic development. (Landstrom, 2005; J. Schumpeter & Backhaus, 1934/96; O. R. Spilling & Johansen, 2006a). The contractor is the central change agent in this theory, and entrepreneurship is the central mechanism for growth.

Norway supports the embarkation of new businesses that introduce innovations in the economy. Schumpeter's theory's central concept is new combinations, also known as production resources, are combined in new ways and give rise to new products and processes. It adds up the basis for the development of new business activities. Entrepreneurship is considered the central element for economic growth, and the entrepreneur's role is to introduce

changes in the economy by creating new business ventures. In the analysis of Schumpeter's change mainly from within, as implemented by actors in the system, author regarded the capitalist social network as a change system. The beginning of new changes helps to disrupt the existing system, and every change makes a foundation for the latest changes through that economy grow continuously. Because of that constant change, the economy is never in a stable situation. A key element in this understanding of economic development is linked to the concept of 'creative destruction (J. A. Schumpeter, 1944/96; O. Spilling, 2006b). The theory suggests that when a new company is formed in competition with existing companies, any unique units that are disrupted or damaged will lead to existing companies which means that they need to reorganize the business, likely even to lay down the business. When a resource is used to produce an existing product, it is being released and can be used in many areas, and these are processes that happen continuously (O. Spilling, 2006c). We can understand that entrepreneurship is related to starting new businesses and adding something new in the business world and the economy - innovations. Economic innovations usually mean developing and using the latest technology, new business concepts, and implementing new organizational forms. The important thing here is that when something new is introduced, it happens in one sense or another at the expense of something existing, such as adapting to the original. It can be about knowledge having to be renewed and further developed, current products and processes becoming obsolete, traditional ways of doing things being competed out of new methods. Of course, it varies considerably in terms of how big an effect innovation has. It is mostly about incremental, that is, gradual changes, such as in a short time, do not significantly affect. However, the fact that new changes are still coming and that the pace is generally high means that most companies are under pressure to develop to hold and strengthen their competitive positions (O. Spilling, 2006c).

Schumpeter's original theory focused attention on changes triggered by the start of a new business, which is the basis for the classic understanding of the entrepreneurship cabinet. Later, author developed a broader perspective on this and that innovations can happen through changes in existing businesses and start new businesses. It provides the basis to perceive entrepreneurship as a much broader driving force associated with change processes more generally and understand the contractor as a change agent (O. Spilling, 2006b). Later, the field

has developed into a broad and interdisciplinary research area (Z. Acs & Audretsch, 2005; Landstrom, 2005). The above mentioned research is reflected in the fact that we can understand entrepreneurship in different ways and that there are many other aspects of entrepreneurship and entrepreneurial processes, such as study. There is reason to emphasize that entrepreneurship as a phenomenon is linked to economic development, and various aspects of this are put in focus. In part, it's about seeing and utilizing opportunities, including existing resources, as they are immediately available and can create new opportunities by combining existing resources in new ways. It is about organizing recent activities and building new organizations or enterprises, and it is about introducing new goods and services in the market. Most definitions also imply, at least implicitly, that it is a matter of a proactive and dynamic activity.

Entrepreneurship is also used in a broader sense related to change and development processes in society. The social entrepreneur that Johannisson described in the late 1980s century (Johannisson & Nilsson, 1989), the entrepreneur's role was to mobilize local resources and contribute to the local community's development. In the 2000s, we also got the concept of social entrepreneurship, which involves the implementation of projects that are often based on business principles, but where the main goal is to contribute to solving problems related to social and societal conditions, and where financial profit is not the primary goal (Steyaert & Hjorth, 2006).

2.2.2 Ownership

Ownership was considered a list of rights and obligations for a particular asset during the Roman period; such rights can be described as follows (Whinston & Segal, 2010):

User Rights: Right of use of an asset.

Benefit Rights: If you own a piece of property, you own the fruits of that land as well.

Disposal rights: Including rights to sell the asset or even destroy it physically.

Control Rights: The right to choose who can use the land.

In comparison to that, some liability comes with ownership. It is someone's duty, for instance, to ensure that if they own a short gun, others do not find out about it. Owners do not have the right to use corporate assets in a traditional limited liability joint-stock business. They can dissolve the corporation if they wish, but they can not just snatch company assets for their private use. However, they have a right to profit, a right to rule (vote), and a right to sell their shares (M. Conyon & Thomsen, 2012). In a limited liability corporation, the shareholders are typically exempt from the company's responsibilities. They are not committed to the debt that the managers incur above their invested share capital, which implies that they do not often need to keep track of what happens in the organization.

Nevertheless, Conyon and Thomsen (M. Conyon & Thomsen, 2012) all businesses share their features with publicly regulated businesses. For example, companies can issue different types of shares: some with and some without voting rights. Non-voting shareholders will have no voting rights in this case, but they will enjoy equal rights as other shareholders to purchase and sell shares and receive dividends (M. Conyon & Thomsen, 2012). They also mentioned two essential elements in publicly traded companies: the arrangement of ownership: ownership concentration, and ownership recognition. It tests shareholders' ability to control managers through ownership concentration; the owners' identity has consequences for their priorities and how they exercise their power (M. Conyon & Thomsen, 2012).

2.3 Entrepreneurship Education

Entrepreneurship is an economic and cultural phenomenon, an object of study, an academic and educational subject, more and more (Fayolle & Lassas-Clerc, 2006). It becomes especially evident when one looks at the rapidly rising number of organizations that deliver entrepreneurship programs and courses worldwide (Katz, 2003) (Kuratko, 2005). The entrepreneurship curriculum has come a long way since Myles Mace introduced the first-ever entrepreneurship course at Harvard University (Katz, 2003). Previous studies show that the field is well developed, but there is nothing further from the fact, and there remain various epistemological, conceptual, theological, and operational challenges (Fayolle & Lassas-Clerc, 2006). The idea of educating entrepreneurship should be conditional on the philosophy of entrepreneurship, the core object (Fayolle & Lassas-Clerc, 2006). In the variety of points of view, this is not always the case, since some relate their meanings to social or financial goals (Fayolle & Lassas-Clerc, 2006).

Entrepreneurship education aims to educate people who have the skills, talents, and behaviors required to accomplish the aspirations as enterprising individuals. They set for themselves to live a fulfilling life to be successful (Gibcus, De Kok, Snijders, Smit, & Van der Linden, 2012). The entrepreneurship curriculum also emphasizes students' knowledge, expertise, and behaviors, making up entrepreneurship's core skills. The entrepreneurship curriculum is not generally explicitly based on the development of new companies. However, one of several possible results is graduate startups, knowledge of entrepreneurship in modern economies and cultures, particularly the role played by entrepreneurs and entrepreneurship. Skills are central to the need to learn how to become a businessman. It requires the ability to translate ideas into reality, whereby a differentiation between soft entrepreneurial skills and hard entrepreneurial skills is necessary. In order to become entrepreneurial, attitudes relate to the need to read. It discusses the need for people to cultivate such habits to help them take action, including taking responsibility for their schooling, jobs, and lives (Gibcus et al., 2012). Education for entrepreneurship should not be confused with general business and economic studies, as it aims to foster imagination, invention, and self-employment. Entrepreneurial programs provide

learners with the tools to think critically, solve challenges efficiently, connect networks, and lead (Gibcus et al., 2012).

According to a study, traditional education is marked only as a transfer in knowledge and skills. In contrast, entrepreneurial education, on the other hand, is seen as a blueprint for transforming perceptions and motives (Hansemark, 1998). In addition to apparent benefits, such as encouraging industry startups, entrepreneurship, and entrepreneurship education often have a broader market potential (Holmgren et al., 2004). Two of the most critical performance prerequisites in the willingness or ability to do so is to launch a new company; not only are entrepreneurial attitudes needed in the course of a classic entrepreneurial career, but they are obviously at a high level as well (M. Raposo & Do Paço, 2011). Entrepreneurship preparation aims to inspire individuals; in particular, young people should be responsible and entrepreneurial. Immigrants or entrepreneurial thinkers contribute to global growth and environmental development collectivities (M. Raposo & Do Paço, 2011). Request autonomous partnerships in jobs comparative analysis in the field of entrepreneurship education is challenged by the variations in goals and definitions correlated with the terms used to characterize training programs and projects, beyond the low generalizability of study results (Alberti, Sciascia, & Poli, 2004). There is often a misunderstanding in both literature and experience between the words 'entrepreneurship', 'business,' and 'small business' (Alberti, 1999). The words 'entrepreneurship education' or 'entrepreneurship training' are frequently used phrases for education and training, often meant to take on a standardized sense (Curran & Stanworth, 1989). Durham University Business School's study showed that the word 'entrepreneurship education' was and is widely used in Canada and the United States. However, it is seldom used in the United Kingdom and sometimes in Europe (Alberti et al., 2004). There was much uncertainty between the terms 'entrepreneurship education' and 'small business education' until the 1980s, mostly due to an ambiguity between the two respective study areas (Watson, 2001). Although it is possible to draw a big difference between 'entrepreneurship' and 'small business,' small companies can range significantly from basic modes of self-employment to the management of a high-tech enterprise on a scale that is small compared to those in a particular field (Garavan & Barra, 1994).

Entrepreneurship includes the capacity of a person to convert concepts into conduct. Creativity and risk-taking are included and organized, and executed to attain the task goal, which benefits both at home and daily. Employees of culture are more mindful of their work context and more capable of seizing resources and offering a base for entrepreneurs who set up social or economic activities (M. Raposo & Do Paço, 2011). Researchers explained that preparation for entrepreneurship is not just about educating others to operate a business. It is also about fostering innovative thinking and encouraging a good sense of self-worth and empowerment. Students learn how to build business through entrepreneurship education, but they learn a lot more (Eickhoff, 2008). In addition to business experience and skills, entrepreneurship education is mostly about the growth of those values and behaviors. Intending to get students to take care of entrepreneurship is an appealing and legitimate alternative to paying jobs (Holmgren et al., 2004). Entrepreneurial training provides learners with the resources to think critically, solve challenges efficiently, connect, network, and lead. Entrepreneurship is not necessarily a subject - it is also a new form of educating and inspiring young people to grow their ability to the full (Gibcus et al., 2012).

Several scholars, however, propose that this educational method start sooner. For instance, according to the researcher's state - children being seen as entrepreneurial by birth. Education for entrepreneurship should also commence at the youngest possible age (M. L. B. Raposo, Ferreira, do Paço, & Rodrigues, 2008). With further knowledge and inspiration, young people should be capable of fulfilling their dreams for entrepreneurship. While not all young people will become entrepreneurs, all students will become entrepreneurs. They have a solid education and community profits that provide them with entrepreneurship experience and knowledge to use over their Lifespan (M. Raposo & Do Paço, 2011). Occupation or unemployment, an immense increase in the past 20 years, has been observed in the number of courses in small company management and entrepreneurship at various educational institutions (Alberti et al., 2004). A vast number of services that are commonly referred to as business or entrepreneurship learning have been carried out globally in colleges and higher education institutions (Alberti et al., 2004). Previous works showed that three primary sources had been demanded for entrepreneurship education so far, those are - governments, students, and the business world (Jack & Anderson, 2007).

Via college, Via learning process, and education for entrepreneurship, governments tend to establish a job invention entrepreneurship culture: researchers have figured out that most of the available employments come from small entrepreneurial businesses rather than large enterprises (Alberti et al., 2004). The second source is students; Young (Young & Sexton, 1997) explains that there are significant types of explanations why students should be able to learn entrepreneurship: first, they may want to create their own company; second, they may want to gain expertise that would be valuable in broader companies in their professions. The third source, the business world itself, both big and small businesses, on the one hand, in small and medium-sized businesses, appears to be a general lack of management skills (Jack & Anderson, 2007).

On the other hand, there is a need for administrators within big firms aimed at creating innovative market initiatives in order to ensure constant renewal (A. A. Gibb, 1996). So, education for entrepreneurship is expected to meet these sources (Alberti et al., 2004). Many educational institutions in the United States and other countries today offer entrepreneurship courses. In some instances, they lead to majors or degrees in entrepreneurship, both at the undergraduate and graduate level (Alberti et al., 2004). Europe and Asia tend to be characterized by the same growth rate (Dana, 2001). However, the concept is mostly untracked, and the overall number of colleges offering entrepreneurship courses appears to exceed more than 1600 globally (Katz, 2003).

2.4 Norwegian Strategy on Entrepreneurship Education

A wide variety of initiatives to encourage entrepreneurship have been developed by government leaders, including the demand for the education sector to participate through sufficient training services, i.e., entrepreneurship education (Vegard Johansen, Schanke, & Clausen, 2012). A collection of authoritative studies by and from the European Commission (2005) claim that education in entrepreneurship must be at the center of every country's education policy (Vegard Johansen et al., 2012). Entrepreneurship education is now one of the most emerging industries of higher education (Finkle, 2010). Moreover, there seems to be a perception that entrepreneurial activity plays a significant role in a country's economic growth (A. A. Gibb, 1996).

JA-YE Europe is a non-profit organization that educates young people about the entrepreneurial world (Vegard Johansen et al., 2012). In Norway, through 'learning practically' programs given by JA-YE in 2010, more than 100,000 children learned about entrepreneurship (V Johansen, 2011). The Ministries of Education and Science, Industry Norway are financially assisted by JA-YE Norway City government and industrial growth and manufacturing (Vegard Johansen et al., 2012). Company Program is recognized as the leading program of all entrepreneurship education services provided in Norway and the most widespread program by far (Vegard Johansen et al., 2012). Research showed that around 15% of all students are enrolled in the program during their upper secondary school (Vegard Johansen et al., 2012). The curriculum delivers real business experience, and by the conclusion of the academic year, mini-companies are active in national and European industries (Vegard Johansen et al., 2012). Another Norwegian research reports that students spend an average of 200 hours on the company; half of this time is in school, and half is after school events (V Johansen, 2011). Also, the regulation on Entrepreneurship education is integrated into the Primary and Secondary Education and Preparation National Program for Awareness Promotion (Vegard Johansen et al., 2012). That is Norwegian schools' official curriculum, and it emphasizes entrepreneurship education as a way of growing motivation, improvement of graduation rates of pupils and as necessary in the future for active working life (Education & Training, 2011). The proportion of schools interested in entrepreneurship education in Norway is reasonably

high (Vegard Johansen et al., 2012). A survey from previous research revealed that about 90% of Norwegian lower secondary and upper secondary schools offer some sort of entrepreneurship education (V Johansen, 2011).

The Pupil Enterprise Program (PEP), supported by the non-profit organization Junior Achievement-Young Enterprise, is the most comprehensive entrepreneurship initiative in Norwegian high school (O. R. Spilling, Hagen, Johansen, & Støren, 2013). The course is delivered in European countries, which follows the EU and national governments' target criteria for entrepreneurship education (Somby & Johansen, 2017). Here, students are placed in charge of a company that, within a short amount of time, set up, run, and shut down, their teacher directs and follows them, and they consult for local businesses and the public sector (Somby & Johansen, 2017). In this way, collaborating for the corporation is a cooperative operation, and in Norway, in heterogeneous classes, the tasks involve all students with and without special needs (Somby & Johansen, 2017). More than 16,000 students in Norway participated in PEP (Pupil Enterprise program); more than 20 percent of all Norwegian students took part in this initiative in 2013 during lower secondary school (Vegard Johansen & Somby, 2016). The Strategic Plan and the Government Action Plan for Entrepreneurship Education in Norway have stressed that pupil enterprises are a practical working method that, in line with the policy documents of the European Commission, will improve the learning outcomes for pupils and their willingness and motivation to learn (Somby & Johansen, 2017).

2.5 Entrepreneurship Education impacts on entrepreneurship graduates

Research shows, past ten years, entrepreneurship education has been one of the demandable study areas on the European agenda (Støren, 2014). Several countries in Europe have taken actions to promote this education among young generations, to bring out innovation & entrepreneurial skills, and encourage them to build up their businesses (Støren, 2014). There has been a remarkable growth in entrepreneurship education in higher education; this is illustrated by (Kuratko, 2005), "In the past two decades, entrepreneurship has emerged as perhaps the most dominant economic force the world has ever encountered." (Kuratko, 2005). Likewise, another researcher argues that the utilization of innovations and creative skills are essential for any nations' economic growth since they play a vital role in it (Kuratko, 2005).

The entrepreneurship importance for economic development is also emphasized in Europe, and there are political support and engagement in encouraging entrepreneurial education in several European countries. In particular, the priority was put on education in entrepreneurship as a follow-up to the Lisbon Declaration of 2000 (Commission, 2006a). However, in Europe, entrepreneurship training is less prioritized than in the United States and Canada (Pöyry, 2008). According to Dickson, based on other research, there is a need for more focus, research and give more importance to this subject outside the US (Solomon, Dickson, Solomon, & Weaver, 2008). Research shows that entrepreneurship education has helped university students cultivate a positive attitude towards entrepreneurship and increase their positive view of market viability (Bae, Qian, Miao, & Fiet, 2014). The effective use of talents and capabilities, the vision of future progress, the positive attitude towards trying new things and putting imagination into action, the fear of unemployment, personal morality, the search for autonomy, economic independence, and self-actualization, as well as the ideal of fulfilling a more significant impact, are further individual reasons. Those lead university students to choose their career path in entrepreneurship (Barba-Sánchez & Atienza-Sahuquillo, 2012). Some findings from research lead college students to pursue the entrepreneurial career path suggest a series of personal and contextual variables that hypothetically imply the entrepreneurial career preference of college students in general; nothing is known about the variations in the effect of among experienced entrepreneurial students of such variables (Barba-Sánchez & Atienza-Sahuquillo, 2012).

Furthermore, the present research goes more in-depth. It fills a theoretical difference in the perception of the weight of little-explored specific variables (planning and risk management) in university students' entrepreneurial activities. Those students are already entrepreneurs or express their aim to become entrepreneurs (Salusse & Andreassi, 2016). In the pragmatic sense, the research provides the generation of guidance for better legislation and processes aimed at improving the professional capacity of higher education institutions in order to better train potential practitioners, especially those who take on some degree of entrepreneurial activity, including public policies (Ferreira, Loiola, & Gondim, 2017).

The factors for establishing a company have been attributed to economic circumstances. The inability or dissatisfaction with job prospects and the need for self-actualization to search for sustainable market possibilities. (McClelland, 1965). However, having only motivation is not a stable process, as during life, the stimuli that drive people to adjust. For instance, due to acquired functional experience and adverse conditions, what motivates the organization's development may undergo alterations (Ferreira et al., 2017). Financial management typically occurs by strategic, operational proposals, such as the business plan, a collection of written papers that form an enterprise's future (Carvalho, 2009). Having proper financial management in an entrepreneurship career plan helps beginners maintain consistency and determine the initiatives required to achieve the goal (Frese, 2000).

2.6 Board Structures

The board of directors is a bond between its investors and its top management team. The board of directors is elected by shareholders and is the sole arbiter of all its major decisions. The board has a decision-making power, which has been given to it on a limited basis by its shareholders, over the company's properties (M. Conyon & Thomsen, 2012). That includes reviewing the company's success, hiring and firing the company's CEO and top managers, maintaining an ideal management strategy, and deciding on other issues. Managers have a strong interest, such as auditing, salaries, or new board members (M. Conyon & Thomsen, 2012).

The board of directors, a committee of people made up of a select number of members, remains unchanged. Ten members for a medium to a large business would be considered average, although this can easily vary. In some instances, the board may be as large as 30 to 40 members, but this is rare (Adams, Hermalin, & Weisbach, 2010; M. J. Conyon & Peck, 1998; De Andres, Azofra, & Lopez, 2005). On the other hand, corporate law generally requires a minimum number of directors for a company (two or three). Compared to organizations with large boards, there will be a distinct group environment for firms that have smaller boards. This means that the psychology of small groups and boards' dynamics is essential to boards' study. While it is not necessary, many but not all businesses have boards (Bennedsen, 2002). The Board of Directors is made up of inside and outside directors. The inside directors are also called executive directors, and the outside directors are called non-executive directors. Many outside board members are also part-time, non-executive directors who do not work for the corporation except for board meetings and special occasions, such as the annual shareholder meeting (Adams et al., 2010). Another noteworthy characteristic of a board of directors is the CEO-Chair duality. In the United States, the chairman of the board is the CEO as well. The CEO is also the chairman of the board in many other nations, such as France. However, the CEO is seldom the board chairman in other countries, such as the United Kingdom (M. Conyon & Thomsen, 2012).

Another critical question is if the outside directors are neutral. Theoretically, it is discussed because the insiders function to check on any potential self-interested activity from outside directors. Their effectiveness would be blunted if the outsiders were not autonomous. The board (directors) are said to be independent if they have no links to the company and thus no special interests other than their responsibility as board members. So we can presume that the board of directors makes the most important decisions about the company's strategy, related acquisitions, disposals, and many others in the company (M. Conyon & Thomsen, 2012).

On the other hand, the company owners do not directly run the firm but appoint a CEO and a top management team. The CEO is responsible for initiation and execution, while managers develop decision-making ideas (new strategies) and boards ratify or reject these proposals. After that, management carries out the decision, and the board monitors whether it is appropriate (M. Conyon & Thomsen, 2012).

2.7 Entrepreneurship Impact on The Economic Development

Ambiguity has shrouded the relationship between unemployment and entrepreneurship (Carree & Thurik, 2010). On the one hand, there was found that unemployment promotes entrepreneurial development, called a "refugee effect" (Carree & Thurik, 2010). On the other hand, a very different perspective in the literature has established that unemployment or what has been called a "Schumpeter effect" is minimized by higher levels of entrepreneurship (Carree & Thurik, 2010). These two relationships generate essential questions about the relationship between unemployment and entrepreneurship (Audretsch, Carree, & Thurik, 2001). The next two sections will address the pre-1970s era of declining business ownership rates and the period during which rates in most Western economies have risen (Carree & Thurik, 2010).

2.7.1 Downward Trend of Business Ownership

It is possible to characterize the first three-quarters of the 20th century as a growth time (Carree & Thurik, 2010). The high corporate share in most industries and the economy has grown from the Second Industrial Revolution until the 1970s. It was the "scale and scope" era (Chandler, 1990). It was the age of a hierarchical industrial organization that steadily expanded by leveraging economies of scale and reach in fields such as manufacturing, distribution, marketing, and R&D. The corporate merger boom of the late 1960s seemed to have set the case. European governments' policies have also contributed to this downturn, with a declining small business presence in most sectors and encouraging large corporations. In most Western countries, the self-employed labor force's proportion declined until the mid-1970s (Carree & Thurik, 2010). A negative relationship between economic growth and the rate of business ownership (self-employment) has been documented by several writers (Blau, 1987; Kuznets, 1971; Schultz, 1990; Yamada, 1996). This decline has ended and even reversed in many Western countries and industries. Many old and large businesses have been losing ground to their small, modern, and more entrepreneurial peers (Carree & Thurik, 2010).

2.7.2 Rise of The Business Ownership

Since the mid-1970s, the rate of self-employment in most modern economies has begun to grow again (Carree & Thurik, 2010). Blau states that, while for most of this century, the proportion of self-employed in the nonagricultural US labor force decreased, this decline bottomed out in the early 1970s and began to increase at least in 1982 (Blau, 1987). More recently, company ownership in many other countries has also increased. As Audretsch and Evans reported that during the 1970s and 1980s, 15 out of 23 OECD countries witnessed a rise in the rate of self-employment (Z. J. Acs, Audretsch, & Evans, 1994). They show that the weighted average self-employment rate in OECD countries grew marginally from 8.4 percent in 1978 to 8.9 percent in 1987. This growth accelerated in the 1990s, as shown by Audretsch and Thurik (2001) (Audretsch & Thurik, 2001). There are many well-documented explanations for small businesses' resurgence and self-employment (Carree & Thurik, 2010).

It is possible to see the last 25 years of the 20th century as a time of creative destruction (Carree & Thurik, 2010). The word "Industrial Divide" is used by (Piore & Sabel, 1984), the term "Third Industrial Revolution" is favoured by (Jensen, 1993), and the transition from the fourth to the fifth wave of Kondratiev is interpreted by (Freeman & Perez, 1988). The rise of new industries, such as the software and biotechnology industries, is the most evident evidence. In these emerging sectors, small companies play an essential role (Carree & Thurik, 2010). In such highly creative sectors, (Z. J. Acs & Audretsch, 1987) provide empirical evidence that small businesses have a relative innovative advantage over their larger counterparts. (Prusa & Schmitz Jr, 1991; Rothwell, 1983, 1984) also provide proof of small businesses' comparative advantage in inventing radically new products.

The value of economies of scale in many industries has been diminished by new technologies (Carree & Thurik, 2010). Small technology-based businesses have begun to challenge large companies who still trust mass manufacturing methods in any way (Carlsson, 1989; Meredith, 1987). "It is far less valuable for individuals to work together effectively in the same geographical location, and this encourages smaller, more efficient, entrepreneurial organizing units that cooperate through technology," Jensen argues (Jensen, 1993). " In contrast to internal

coordination, recent advancements in information technology have made market-based coordination cheaper and have partly triggered the recent decrease in business size and diversification," Jovanovic argues (Jovanovic & Gilbert, 1993).

The globe has been swept by globalization and privatization drives. A strong trend has occurred in many Western countries to deregulate and privatize (OECD, 1995). (Phillips, 1985) notes that in the early 1980s, small businesses were instrumental in the development of new businesses and new employment in deregulated economic sectors in the US. Furthermore, governments recognize and support small (startup) firms' role in generating economic growth and development. Governments also acknowledge and support small startup companies' role in generating economic growth and development (OECD, 1998b).

Large corporations were reluctant to concentrate on their "core competencies" (Carlsson, 1989). (Jovanovic & Gilbert, 1993) states that corporate switch and liquidations were characterized as a result of the 1980s. (Aiginger & Tichy, 1991) blame the opportunistic conglomerate acquisition boom of the late 1960s for most of the "back-to-basics" and downsizing (or rightsizing) trends.

The sales and income have contributed to a rise in demand for variety (Jackson, 1984). Cross-cultural influences have also enhanced the demand for diversity. The most apparent suppliers of innovative and advanced goods are mostly small companies. As noted by (Jovanovic & Gilbert, 1993), the decline in diversification indicates that large companies have not penetrated certain niches on the market.

As a career option, self-employment is regarded more highly than ever (Carree & Thurik, 2010). According to (Schiller & Crewson, 1997), about one out of four young US employees seek self-employment. (Kirchhoff, 1996) argues that self-employment is no longer defined as underemployment or mom-and-pop institutions but as a means of achieving a set of personal priorities.

In order to raise per capita income, the job share of the service sector has been well recorded (Inman, 1985). This provides additional business ownership opportunities, considering the relatively small total company size of most services (excluding airlines, shipping, and some business and financial services) (Carree & Thurik, 2010).

Clearly, some of these variables can only have a temporary effect. It is not unlikely, for example, that the outsourcing and deregulation waves will dry up. Moreover, many startups in the newly established industries do not thrive (such as Internet-based startups from the late 1990s). On the other hand, there are more lasting impacts, such as the effects of emerging technology (Carree & Thurik, 2010).

Moreover, implementing these new technologies is also positively linked to economic growth since, without the requisite skills and other investments, they cannot be made successful. The growing variety of demand for specialized goods and services, and the enhanced value of self-realization, both based on the degree of prosperity, increase economic development's systemic impact (Carree & Thurik, 2010).

2.8 Economic Development of Norway Through Entrepreneurship

Norway's population was 880,000 during the eighteenth-century, and 80% of the inhabitants were engaged in agriculture (Dalgaard & Supphellen, 2011). However, within the period, Norway's population increased, but it did not make any visible structural change in the economy as the community was raised. Nevertheless, after the nineteenth century, the country was doing well. Many farmers are pursuing other professions such as export industries - mining, shipping, fishing, forestry. Norway was not a developing country, but over a while, a large population relied on an unstable economic base, and because of that, their well-being was not secured. Ola Grytten, a professor of economic history, shared his 2004 paper for the Norge Bank, Norwegian GDP was (in 2000 kroner) at just under 10,000/person during the mid-nineteenth century (Grytten, 2004). Through this, we can say that Norway's GDP was marginally higher than that of Sweden, although still significantly lower than Denmark's.

In Norway's coastal town, merchants enjoyed being rich and reflecting on the development in rural areas. In rural areas, freeholders make up most peasants, but their agricultural work significantly increased and productivity (Shaw, 1979). In the early 1800s in Norway, there is a rise of cottagers, a subordinate class of peasants, and, more importantly, tenant farmers. Danish - Norwegian union was 400 years old, and this union came to an end in 1800, and in 1784 there was a change of government in Copenhagen (Dalgaard & Supphellen, 2011).

In this situation, Hans Nilsen Hauge came into the picture who lived from 1771 to 1824 (Dalgaard & Supphellen, 2011). The author saw some dramatic changes during his period and some of which he chased. However, Hauge is mostly remembered as a religious leader because he inspired countless Norwegians to join in Christianity once again. Meditation on the Folly of the World was Hauge's first book published in 1796 as many of his books were on religious tract and included the harsh criticism of the Norwegian clergy (Dalgaard & Supphellen, 2011).

Norway was at a different economic and political stage of growth at the end of the eighteenth century. The stratification of society and accentuated by religious hierarchies were creating

disagreement in both countries. In Norway, in 1786-7 and 1849-55, two-movements happened by Loftus and Thrane that made similar socioeconomic concerns but very different forms of protest than the Hauge movement (Furseth, 2002). Those two movements were called social reform (Loftus) and labor reform (Thrane) movements. However, both the directions did not have a long-lasting impact on the Hauge Movement. The reason behind this was Hauge's activities regarding entrepreneurship set the motion for ongoing business activities. Most of Hauge's enterprises lasted for decades, and many continued in a modified form until the present day. This success is that the Hauge movement helped the people change their perception about their lives and how they can improve their lives. The idea behind this was empowerment through the economic initiative, and Hauge also features his various business models that help to create a long-lasting impact (Dalgaard & Supphellen, 2011).

There are many similarities found in the economic and political contexts between the British and Norway. Among those, the activities of the British nonconformists and the Norwegian Haugians are similar. What came out from these individuals and movements is that they developed the idea of business development, and today it is called entrepreneurial activity (Dalgaard & Supphellen, 2011).

2.9 Current World Situation of Entrepreneurship

As the whole world is going through a critical situation, many entrepreneurs got affected by this pandemic situation. During the COVID-19 pandemic, more than 70% of startups have had to cut off their full-time employees' contracts (De Cuyper, Kucukkeles, & Reuben, 2020). Many entrepreneurial businesses depended on meeting new needs for goods or services from the crisis. By the pandemic, the way entrepreneurial business models and approaches are affected. It will affect how entrepreneurship is recognized as a job choice in the future.

The spread of COVID-19 has left few people unaffected. Around the world, governments have been repeatedly tested and stretched by setting up new rules and regulations to try to re-establish the confidence of the entrepreneurs and give economies a chance of survival during this situation.

As a source, more than 40% of new enterprises will fall into the so-called "Red Zone" as they have only enough cash for three months or less of their everyday operations.

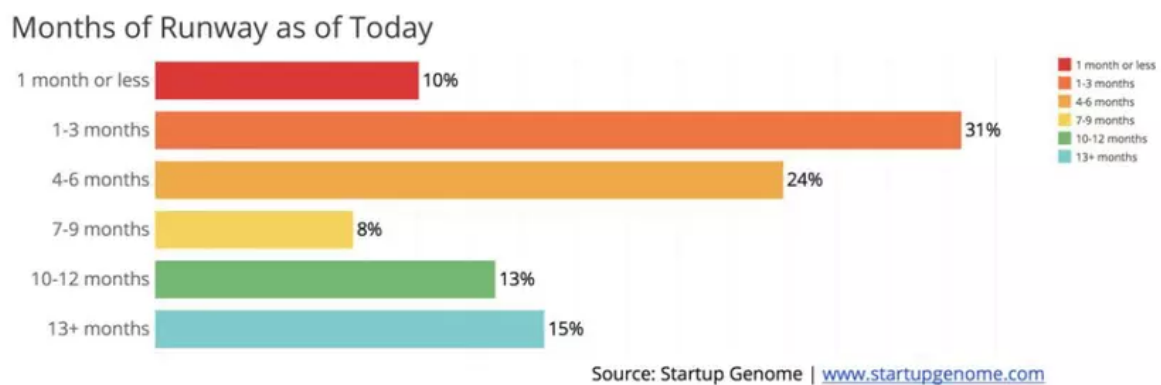


Figure 1: Availability of Funding for Startups (monthly) (J.F. Gauthier, 2020).

As at the beginning of this crisis, more than 70% of startups have had to cut off their full-time employees' contracts (De Cuyper et al., 2020).

Termination of Full-Time Employees

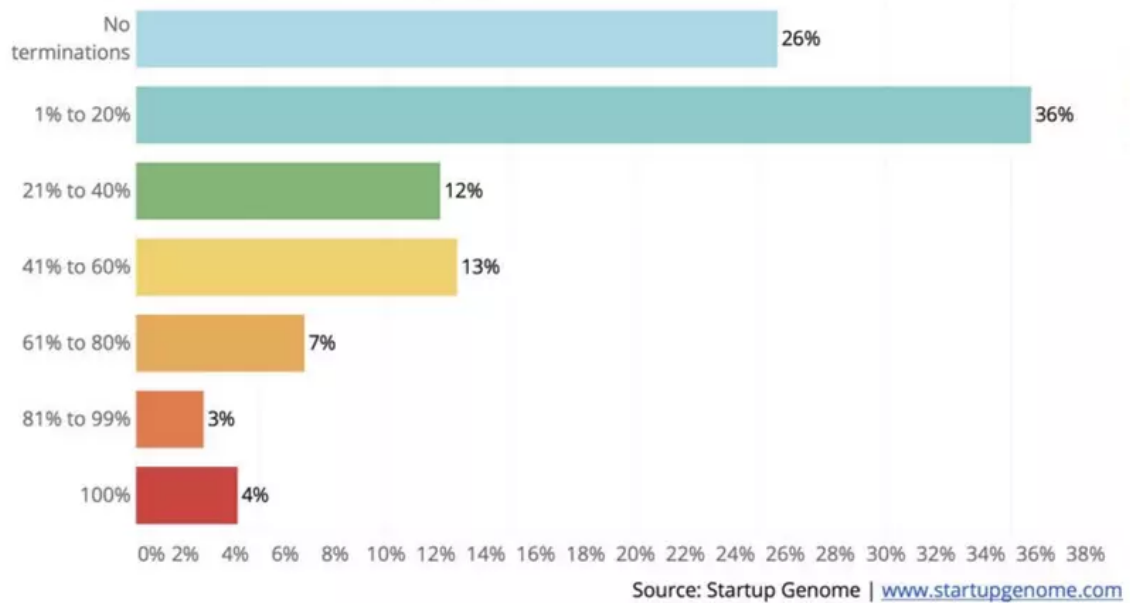


Figure 2: Employee cut-offs since the start of the COVID-19 crisis (J.F. Gauthier, 2020).

During the pandemic, many startups have suffered; thus, it has also increased entrepreneurial activities. Companies and individuals across the world came together to respond and, where possible, make determined efforts to deal with the crisis.

Government support has always been essential for the industry, and during times of crisis, it is needed. Former president of the USA, Franklin D Roosevelt's response during such a crisis, took them out of the great depression and made them get America back on its feet. The modern examples in the UK of furlough schemes are implementing a basic income scheme in the US. As innovative startups are essential without any doubt for innovation, supporting them is critical during the current COVID-19 crisis. However, also showing the importance of small businesses with more advanced approaches to design, we must explore other entrepreneurial activity types to understand how the entrepreneurial landscape is changing entirely (De Cuyper et al., 2020).

2.9.1 Entrepreneurship education and graduates during covid-19

2020 has become a memorable year for the COVID-19 pandemic. The rapid spread of the virus towards the whole world has had terrible consequences in every industrial area and overshadows any other events. It is extending day by day to more countries, including developed, developing, and emerging ones. Moreover, it affects badly in economic areas for businesses. Because of this pandemic, entrepreneurship and startup activities have also fallen into threats. However, the present situation can give more learning about pre-covid-19 status and post covid-19 status for entrepreneurial activities and develop this area.

Because of adverse effects on the economic situation, entrepreneurs have experienced failure in their new projects due to decreased market demand. It has become more challenging to get proper access to resources, such as sponsorships (Liñán & Jaén, 2020). Research shows that potential and new graduate entrepreneurs could be easily scared and feel less confident, which has become a significant barrier to trying out an entrepreneurial career (Morgan & Sisak, 2016). Recent research has shown that facing challenges in the embryonic stage leads to the triggering of fear of failure, making the founder more likely to exit the (Liñán & Jaén, 2020). This result affected the educational areas for entrepreneurs as well.

Because of COVID-19, students faced a significant challenge, especially for the projects that need practical experiments besides studying at home (Ratten & Jones, 2020). Limitations on massive crowds and social distancing requirements have limited practical teaching, resulting in a quick shift to online learning (Ratten, 2020). As a result, students got education taught through digital communication methods (Ratten & Jones, 2020).

International student mobility and business operations have been further restricted by border closures and international transport cuts (Donthu & Gustafsson, 2020). There has been a fast adoption of remote and interactive learning methods for entrepreneurship education to adapt to these developments. (Bacq, Geoghegan, Josefy, Stevenson, & Williams, 2020). Education for entrepreneurship is seen as an essential way to affect every nation or sector's productivity because it offers chances to advance to a more sustainable educational climate in the COVID-19 pandemic (Liguori & Winkler, 2020). Although there are many controversies on whether

entrepreneurship should be taught, the consensus is that every type of education can have beneficial effects, regardless of an individual's personality (Petridou & Glaveli, 2008). That means that an entrepreneurship course's design and structure can be molded to suit an individual's learning preference (Ratten & Jones, 2020).

2.10 Empirical Evidence of Entrepreneurship Education Fostering Entrepreneurship

For the economy and social development, entrepreneurship is given great importance. Entrepreneurship can be reflected through entrepreneurship education. The EU recommends that entrepreneurship be provided in all parts of and at all education systems levels (Commission, 2006, 2010). A document analysis shows that all European countries follow this recommendation (Commission, 2012). Entrepreneurship is about organizing teaching offers that, in various ways, provide knowledge about and qualifications related to starting and developing new business activities. Moreover, such education's central element has been training in preparing a business plan focusing on business ideas, market opportunities, and an organization's development. Thus it is about developing knowledge about what it means to establish a company, what phases they go through, the key issues they have to deal with, and giving the students some tools and developing their skills to master such processes (O. R. Spilling, Johansen, & Støren, 2015).

Although to develop a new business, many issues can be raised about what the educational entrepreneurship process entails, how entrepreneurs learn, and how it can be facilitated for such learning appropriately (A. Gibb, 2002, 2007a, 2007b; Johannisson, 2005). Given that entrepreneurship is about broader processes than the purely business ones, it is also essential to provide a more general framework for entrepreneurship education. (Fayolle & Klandt, 2006) point out that entrepreneurship applies to the development of culture and behavior and the fact that it relates to more specific business-related situations, which must have consequences for how the teaching is organized what framework it is offered. Since the field of entrepreneurship represents such great diversity, this will naturally be reflected in the fact that one can approach entrepreneurship in different educational ways. A similar distinction between teaching about and for entrepreneurship has been made by (Blenker, Dreisler, & Kjeldsen, 2006).

In a research project, the threefold division was proposed by (Scott, Klandt, & Rosa, 2018); those are the following:

Education about entrepreneurship (theoretical) - involves learning about entrepreneurship as a societal phenomenon, i.e., what role and significance entrepreneurship has for society's development. That will be related to economics and business development, emphasizing entrepreneurship's importance for business development processes and new business development. Moreover, within such a framework, there will often be much focus on who becomes entrepreneurs, the motives for entrepreneurship, how entrepreneurship processes occur, and various factors that affect these processes. This approach's basis is that entrepreneurship is established as a separate subject area, rather interdisciplinary. The different methods vary greatly depending on which subject traditions are closest. For example, there will be large differences in the approaches if one analyzes entrepreneurship from a business economic, socioeconomic, psychological, or sociological perspective.

Education for entrepreneurship (business planning) - concerns education and training- develop knowledge and skills to start and run a company. A key element in such activity is to provide a business plan, i.e., to concretize the business idea, set up a budget, and create an organizational strategy marketing strategy. An essential aspect of entrepreneurship education is that those involved should clarify their motives for entrepreneurship, how they want to go into such a role, and how this fits into their career plans. The professional basis for such offers will be knowledgeable in business development and is mainly related to business economics. Moreover, it is not only relevant for those who are going to start a business themselves. Such knowledge is also essential for people who want to join consulting companies or policy instruments and work with contractors' guidance.

Education through entrepreneurship (learning through doing) - involves using entrepreneurial processes to achieve specific learning goals. It means that pupils and students, through participation in processes related to the start and development of new activities, must acquire detailed knowledge and experiences. Including being stimulated to develop attitudes and qualities that can be associated with an "entrepreneurial mindset." It is thus participation in

an (entrepreneurial) process that is the point of this approach. The most comprehensive is to characterize the system as a pedagogical method. This approach is about giving pupils and students experiences by participating in entrepreneurship-related processes. These can be more or less "real" processes, from participation in specific entrepreneurship processes where the goal is to develop viable companies to participate in more superficial and less binding situations such as work with cases. From the end of the 20th century, a widely used basic education approach has been to work with student and youth companies. Students follow a targeted process from idea to finished product or practical solution. After the millennium turn, work has also been put in place with student companies in universities and colleges. These schemes involve students working in groups with realistic cases related to the production and sale of a product or service. Companies plan on a tiny scale according to actual companies' trends and the operation after the school year.

In addition to this, a tradition called pedagogical entrepreneurship has been established in the Nordic countries, which is mainly linked to primary education (I. Ødegård, 2014; I. K. R. Ødegård, 2000; Skogen & Sjøvoll, 2009). In this tradition, it is pointed out that knowledge development through entrepreneurship training should take place based on practical approaches and activities. The learning processes are based on movement, collaboration, interdisciplinary work, experience, co-determination, and demands for results that have action relevance to life outside school. In pedagogical entrepreneurship, reference is made to "entrepreneurial working methods/methods." Entrepreneurial work forms include student and youth companies and other interdisciplinary projects and are based on collaboration between school and working life and, more generally, practice-oriented approaches that cannot necessarily be explicitly linked to entrepreneurship.

In the last decades, entrepreneurship has become a significant economic and social topic, and at the same time, it is a popular research topic in the universe (Fayolle, Gailly, & Lassas-Clerc, 2007). Entrepreneurship has different ways to help the country develop; for example, it creates innovation in the market, creates new jobs, and increases employment levels (Shane & Venkataraman, 2000). Several studies happen in entrepreneurship education. Its empirical evidence suggests that entrepreneurship education can foster entrepreneurship and through that,

the number is raised in the college and universities who are offering entrepreneurship program (Falkäng & Alberti, 2000; Gatewood, Shaver, Powers, & Gartner, 2002; Henry, Hill, & Leitch, 2005; Kirby, 2002; Kuratko, 2005; Matlay, 2005; Mitra & Matlay, 2004; Nabi, Holden, Harris, & Gibson, 2008). As the number of entrepreneurship courses has increased simultaneously, the number of graduate students is also raised (Finkle & Deeds, 2001). The researcher and educators accept that entrepreneurship education is an integral part of education, but one thing that is not yet explored is the impact of entrepreneurship education (Sánchez, 2011).

In the past, it is showing a very significant encouragement regarding entrepreneurship education as well as policymaking in the middle east countries. It is also noticed that a high number of graduates are unemployed and inspire the public and private universities to offer entrepreneurship education. Unfortunately, the inadequacy of policy framework and current entrepreneurship education created an impediment to entrepreneurship success (Karimi, Chizari, Biemans, & Mulder, 2010).

As it is discussed earlier that entrepreneurship education can create a significant impact on the graduate of an entrepreneurship course. Assessment of entrepreneurship education is necessary to identify the impact of the program. A relatively simple way to assess the entrepreneurship education program's impact is to estimate the number of individuals' intention to inaugurate a new business venture. According to a study by Bird and Krueger (Bird, 1988), the intention is a crucial element of entrepreneurship. Their study reveals that Entrepreneurial Intention (EI) is a statistically significant predictor variable of an individual's entrepreneurial behavior. However, the Entrepreneurship Education Program (EEPs) impact on EI to set up a business is yet to be statistically verified (Athayde, 2009; Krueger Jr & Brazeal, 1994; Peterman & Kennedy, 2003; Souitaris, Zerbinati, & Al-Laham, 2007; Von Graevenitz, Harhoff, & Weber, 2010).

Another way of identifying the empirical impact of EEPs on EI is through the Theory of Planned Behavior (TPB). It has been used by several researchers (Fayolle, Gailly, & Lassas-Clerc, 2006; Souitaris et al., 2007). The framework of TPB analyzes EEPs' influence on students regarding their EI. Furthermore, opportunity identification is a crucial element of the

entrepreneurship process that enhances an individual's competency (Kourilsky, 1995; Liñán, Rodríguez-Cohard, & Rueda-Cantuche, 2011). However, few empirical studies regarding education's effects on this competency (Gry A Alsos & Kaikkonen, 2004; Nixdorff & Solomon, 2007). It was said by Social Psychology literature, intentions are a robust predictor of planned behavior, especially when it is difficult to scrutinize or involve time lags (Krueger Jr, Reilly, & Carsrud, 2000). Entrepreneurship can be attributed to such behavior (Bird, 1988; Krueger Jr & Brazeal, 1994).

An increasing amount of literature argues that intentions portray a significant role in starting a new organization (Liñán & Chen, 2009). In the last few years, models regarding employment status choice focusing on EI have gained considerable interest among entrepreneurship researchers (Kolvereid, 1996; N. Krueger, 1993). Attitudes determine intentions in turn, and attitudes are encouraged by 'exogenous influences' for example, education, situational variables, and demographics (Icek Ajzen, 1991; Kolvereid, 1996; N. F. Krueger, 2003; Segal, Borgia, & Schoenfeld, 2005; Souitaris et al., 2007). One of the most widely researched intention models is the Theory of Planned Behavior (TPB) (I Ajzen, 1988; Icek Ajzen, 1991). TPB's efficacy and ability to predict entrepreneurial intentions have been proven by several entrepreneurship studies (Autio, H. Keeley, Klofsten, GC Parker, & Hay, 2001; Engle et al., 2010; Karimi et al., 2013; Kolvereid, 1996).

Following the study of (Fayolle & Klandt, 2006), assessment of the effect of EEPs can be incorporated by analyzing its influence on TPB. This study also develops and extends the TPB model by incorporating the perception of opportunity identification as a proximal cause of entrepreneurial intention. The study examines the liaison between TPB and EI, along with other external variables. The model emphasizes three independent antecedents that predict intention: attitude towards the behavior that an individual perceives about being an entrepreneur (Autio et al., 2001; Kolvereid, 1996), norms primarily subjective from family or significant others towards starting a new business (Icek Ajzen, 1991), and lastly, behavioral control. The more significant the impact of favorable attitude and norms concerning the behavior, combined with a substantial perceived behavioral control, the greater the intention to perform the particular behavior. The above study and model have been applied to various scenarios, including EI

studies (N. Krueger, 1993) applied the model in the context of EEP and found that an education program can impact the antecedents identified by TPB. EI also has a substantial and quantifiable effect on a student's EI (Fayolle et al., 2006). The effect is positive but not very statistically significant on the perceived behavior.

Applying the TPB to science and engineering students, (Souitaris et al., 2007) found that EEPs (statistically) significantly escalate a student's EI and subjective norms; however, there was no significant correlation between EEP and attitudes and perceived behavior. On the other hand, (Athayde, 2009; Peterman & Kennedy, 2003) identified a positive relation of EEPs on EI and perceived behavior. Another study conducted by (Dohse & Walter, 2010) concluded that EEPs positively correlate with attitude and insignificant relationship with norms and perceived behavior.

To summarize, (Karimi, Biemans, Lans, Mulder, & Chizari, 2012a) found that the results about EEP are mostly inconclusive, and a more detailed approach is required to understand the liaison between EEP and attitudes and EI Entrepreneurship litterateurs have advised that identifying opportunities should be a subject matter of an EEP (Saks & Gaglio, 2002). Furthermore, an entrepreneurship classroom is an excellent place to foster the skills needed to enhance opportunity identification competencies. Several studies have found out that opportunity identification is crucial for an EEP (Muñoz C, Mosey, & Binks, 2011). Some literature has shown that EEPs increase students' entrepreneurial knowledge and identify a positive relationship between entrepreneurial knowledge (Shepherd & DeTienne, 2005). However, to become an entrepreneur in a country, students who become entrepreneurs should know their policy. Policymakers believe that more entrepreneurship is required to reach higher economic growth levels and innovation in Europe and the United States.

A different stream of literature spotted the liaison between entrepreneurial activity and economic activities such as growth and modernization (Van Praag & Versloot, 2007). An entrepreneur has a profit-seeking behavior, and this kind of behavior leads to the introduction of new and innovative infrastructure (Van Praag, 1999). These kinds of innovative structures and profit-seeking behaviors have an endogenous effect on the economic system. These

innovations and behaviors also alter the old economic equilibrium and foster a new equilibrium (Aghion & Howitt, 1998). Policymakers (Oosterbeek, Van Praag, & Ijsselstein, 2010) also emphasize that an increase in entrepreneurship levels can be achieved through EEP or other education programs. Several of these kinds of education program has been implemented in various schools curricula in many European countries (Oosterbeek et al., 2010) and the US (Kuratko, 2005). The fundamental assumption of these kinds of education programs is that entrepreneurship skillset can be learned and developed. It is also identified that the effect of education (measured in years of schooling) on an entrepreneur's performance is positive (Justin Van Der Sluis & Van Praag, 2007; J Van der Sluis, Van Praag, & Van Witteloostuijn, 2006).

An example of an EEP among the U.S. and Europe is the Junior Achievement Young Enterprise student mini-company (SMC) program that has been effective in more than forty countries in Europe. The program's fundamental objective is to prepare students to put theory into practice and understanding entrepreneurship. Students are expected to achieve self-confidence and motivation and become a team player (Oosterbeek et al., 2008). Even though many schools use the program, little is known about its impact on students' entrepreneurial competencies and intentions. Until now, the program's success has only been assessed through the appreciation of the parties involved. No reliable impact evaluation study has been conducted so far (Oosterbeek et al., 2010).

In Norway, Ungt Entreprenørskap is a non-profit nationwide organization. On October 21, 1997, they were established. They work closely with sister organizations in 38 countries in Europe through the European organization JA Europe. Ungt Entreprenørskap is a JA Worldwide member. Together with the education system, the business community, and other actors, they work to develop children and young people's creativity, creative joy, and belief in themselves. They have 20,000 supervisors and mentors to guide students and pupils. From 1500 schools and colleges all over Norway, till now, 150,000 students and pupils participated. From those students and pupils, 30,000 started their startups (Entreprenørskap, 2020)

Two mappings were carried out by Nordisk Institutt for studier av Innovasjon, Forskning og utdanning (NIFU), which is a study of the availability of entrepreneurship education at

Norwegian higher education institutions. The surveys provide detailed overviews of how entrepreneurship is offered, whether in individual subjects, continuing education, or year courses or given in the form of bachelor's or master's programs. The survey is also handed over at which educational institutions and within which subject areas the offers are given. A survey was also included of how many students participate in entrepreneurship education as part of higher education in a questionnaire survey conducted in autumn 2011 / winter 2012 (Candidate survey 2011) (Støren, 2014).

According to the survey (Støren, 2014) published a result from it, which are the following:

The mapping studies found that all public higher education institutions and several private colleges offer various entrepreneurship education. In total, they registered 193 such offers in 2013 and 135 in 2010. There was thus an increase in offers during the action plan period. However, the increase primarily concerned offers of individual subjects in entrepreneurship. They also saw that many educational institutions collaborate with external actors through student-company, Gründerskolen, "Take-off," and others. The candidate survey results indicate that most people who participate in tenders under the auspices of external actors also experience entrepreneurship education through ordinary teaching. Entrepreneurship courses exist at all levels, and it is individual subjects that dominate. Studies in individual courses have a short duration, usually 7.5 - 10 credits, often only five credits. That is reflected in the candidate survey results, where most had participated in courses of short duration. Despite great diversity, it is predominantly in the financial-administrative field that they find many entrepreneurship courses. Next comes the field of science and technology. These two disciplines also have the broadest approach in that they offer services that combine different approaches through entrepreneurship. The candidate survey shows that among the masters, it is most common to participate in education about entrepreneurship. Among bachelor's in economic-administrative subjects and engineering subjects, it is most common to participate in entrepreneurship education, closely followed by entrepreneurship. At both levels, it is rarer to participate in education through entrepreneurship.

About half of the bachelors in economics-administrative subjects and engineering subjects who participated in the Candidate survey 2011 had experience with entrepreneurship education during their studies—as for the masters - who came from all disciplines - had approx. One in five had an entrepreneurship education during their studies, which means the proportion among the masters may indicate that at a given time, approx. Two percent of the student was in entrepreneurship education. This is in line with estimates made based on the study's survey offers of the masters. The proportion of entrepreneurship education participants was highest among candidates in economic-administrative subjects, 51%, and lowest among masters in pedagogy/teacher education, 11%. Among masters in science and technical subjects, the proportion was about the same as the average 20%. An estimate based on the surveys of study offers indicates that the majority 60–65% of the entrepreneurship offers are within the disciplines of economic-administrative subjects and natural sciences and technical subjects. Fewer women than men have participated in entrepreneurship education, but the gender difference was small. Such knowledge was most widespread among engineers (three-year bachelor education) and a bachelor's and masters in economic-administrative subjects.

(Støren, 2014) found the latest survey where it was mentioned out that it is thought-provoking that most entrepreneurship courses are given as individual subjects with few credits. Studies indicate that experience with entrepreneurship education seems to have effects primarily if it offers a specific duration. They also pointed out that it is thought-provoking that there are few courses in teacher education. It also gives reason for reflection that courses within economic-administrative subjects and natural sciences and technical subjects still dominate so much. The action plan's goal of integrating such courses within all disciplines seems to be a long way off. There seems to be room for developing the entrepreneurship course within several departments.

In our literature review, we have discussed the impact of entrepreneurship through the education process as well as the curriculum of education that can map an impact on student minds about entrepreneurship. Along with that, several methods are also applied to cultivate the required skill from the beginning of school life. At the same time, we put the empirical evidence from literature where it shows that entrepreneurship education fosters entrepreneurship. However, all the researchers and educators suggest that entrepreneurship education is vital in becoming an entrepreneur. However, we did not find any literature suggesting that students become entrepreneurs after completing entrepreneurship education. We will do the research where we will find out the students who graduated from the entrepreneurship course and who did not, where we collected the registered data and then compared the data with the two groups.

Our literature review discussed entrepreneurship's impact through the education process and the education curriculum that can impact student minds about entrepreneurship. Along with that, several methods are also applied to cultivate the required skill from the beginning of school life. Simultaneously, we gathered empirical evidence from literature where it shows that entrepreneurship education is fostering entrepreneurship. Our research is about finding if the graduated students with entrepreneurship education had greater involvement in terms of entrepreneurs, managerial positions, and board participation than those who did not have entrepreneurship education. We also found that many authors have mentioned what can be done and how it can be done to increase the amount of interest among young students to become entrepreneurs. Some said that pedagogical entrepreneurship was established in the Nordic countries, which links to primary education (I. Ødegård, 2014; I. K. R. Ødegård, 2000; Skogen & Sjøvoll, 2009). Some authors said that entrepreneurship education could significantly impact the graduate of an entrepreneurship course (Fayolle & Lassas-Clerc, 2006). However, all the researchers and educators suggest that entrepreneurship education is vital in becoming an entrepreneur. We did not find any literature where it is mentioned or provided evidence that the student becomes entrepreneurs or got themselves involved in a business by management position or board participation after graduation. To find this answer, we researched the data of the students who graduated from the entrepreneurship course and who did not. We did that by

collecting the registered data, and then we compared the data by making the two groups, which is further discussed in the methodology and data analysis chapter.

CHAPTER 3: RESEARCH METHODOLOGY

A quantitative approach has been adopted for our research paper as a primary research technique. We deployed descriptive statistics and students' t-test to identify the means among the control and treatment groups. In this section, we review the theoretical constructs for our statistical analysis. Furthermore, we discuss the criteria for participant selection and briefly discuss the data at our hands.

3.1 Descriptive Statistics

Descriptive statistics can be defined as the process of describing, viewing, or summarizing data in a meaningful way. Descriptive statistics is a critical part of the data analysis process. However, we can not derive a definite conclusion based on just the descriptive statistics of a data analysis process. Generally, two types of statistic are used to characterize the:

1. Measures of central tendency: to describe the central position of a frequency distribution for a group of data, central tendency measures are being used. We can measure the central tendency by analyzing mode, mean, and median.

a. Mean: Mean or average is the most popular measure of central tendency used by discrete and continuous data. Mean defines the sum of all the values in a data set divided by the data frame's total number of values. The mean is essentially a model of our dataset. It is the most common value; however, the mean is not often one of the actual values that we observed in our data set.

b. Median: The median is the middle score arranged in order of magnitude for a set of data and is less affected by outliers and skewed data.

c. Mode: The most frequent score in a dataset can be defined as the mode. A mode is used for categorical data, where we wish to know the most common category. For example, in our data analysis, we found out that the most frequent management position after completing an EEP is the Chief Executive Officer.

2. Measures of spread: to summarize a group of data by describing how they spread out, spread measures were used. Standard Deviation, Variance, Range, and other methods are usually used to measure a dataset's spread.

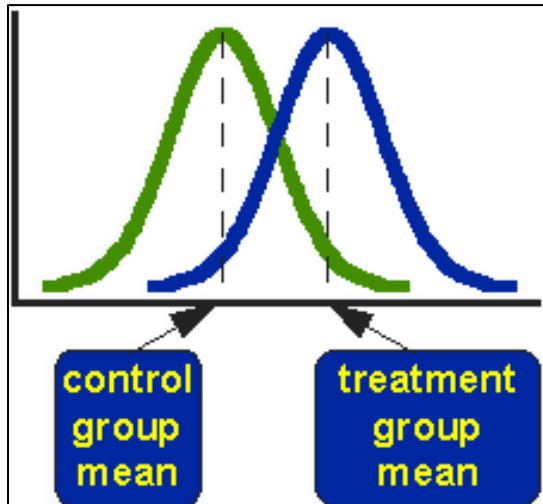


Figure 3: Theoretical Distribution for treatment and control group (Trochim, 5 Aug 2020)

Above figure depicts the theoretical (or ideal) distributions for the treatment and control groups in a study. The figure represents the distribution of control, and the treatment group means are located. T-test describes the question of whether the means are statistically different from each other.

The t-test equation is a ratio. The numerator of the ratio is the difference between the two means or averages. The denominator is a measure of the dispersion of the scores. The formula is stated below:

$$t = \frac{m - \mu}{s/\sqrt{n}}$$

Where,

m = mean of our dataset

μ = theoretical mean of the dataset

s = standard deviation of the dataset

n = total number of samples

3.2 T-Test

A two-sample t-test assesses whether the average/means of two individual groups are statistically different from each other. For a positive t-statistic, our first group's mean should be larger than the second group, and for a negative t-statistic, the mean of the first group should be smaller than the second group. Once we compute the t-value, we will find the table of significance to test that the ratio large enough to say that the difference between the groups is not likely to have been a chance to find. To examine the significance, we set a risk level (alpha level) to 0.95, which is the most common significance level in social science research. An alpha level of 0.95 usually means five times out of a hundred. We would find a statistically compelling difference between the means. We also determine the degrees of freedom (df) for the test, which is the sum of the persons in both groups minus 2.

3.3 Data Collection and sampling Process

The data sampling process is one of the essential processes among many processes. It is an essential part of the research. So, the first process we started with the selection process of the data by selecting the participant. That sample will be the subject to communicate or participate in the research directly or indirectly to contribute to the result. Our focused research topic is to determine an impact on business involvement after graduation from NTNU in terms of the entrepreneur, managerial positions, and board participation. We received the previous bachelor student data of NTNU from the Student Adviser. We worked on three department's student data: Innovation Management and Entrepreneurship, Marketing Management (Innovation), and Export Marketing. However, before we could work on the data, we had to apply to Norsk Senter for Forskningsdata (NSD) for approval for using student data. NSD is a national center and archive for research data. They work to ensure data about people and society are handled appropriately for research.

Moreover, they advise on data management and data protection in research. Also, they publish statistics on higher education and research. Mainly, their mission is to ensure open and easy access to research data and improve the conditions for empirical research through a wide range of data and support services. NSD's advisers have expertise in the various stages of the research process and work together with the developers to offer solutions that lower the threshold for archiving, sharing, and reusing data. Our faculty member asked on behalf of us for permission to use the previous student's data. Initially, it took a longer time than expected due to GDPR, where all the student's approval will collect through signatures, but NSD gave us the approval to use the data (see attachment 1). However, first, we had to send out the information letter through email to the students to collect their consent (attachment 2). We removed them from this research who do not want to participate. Among all the students, only two wanted to opt-out; the rest of the students did not reply at all. As we know that they have been informed and have the opportunity to de-register by choice, we have done our job according to the NSD application.

Our data was divided into two parts one is the treatment group and the control group.

The treatment group is the data where students studied entrepreneurship, and the control group is the students who did not study entrepreneurship. As per the NSD rule, we sent the information letter to the students to collect their consent, and we received two students who did not want to participate in the research process. We removed their name from the data list and started to collect the rest of the students' data. We used the purehelp.no and proff.no to collect the registered data to find out information about the graduated students' current board position in a company, by the information given from the three departments' from NTNU: Marketing Management (Innovation), Export Marketing, and Innovation management and entrepreneurship. We divided three departments into two groups Control Group and Treatment Groups, where Innovation Management and Entrepreneurship and Marketing management is the treatment group in total are 139 students. We selected the same portion of the sample from the export marketing student data. For export marketing, we used the pseudo-random sampling process to get 139 students out of 205 students. We provided some input into R and ask it to pick some numbers randomly, R samples the data pseudo-randomly from its algorithm.

CHAPTER 4: Data Analysis

Treatment Group

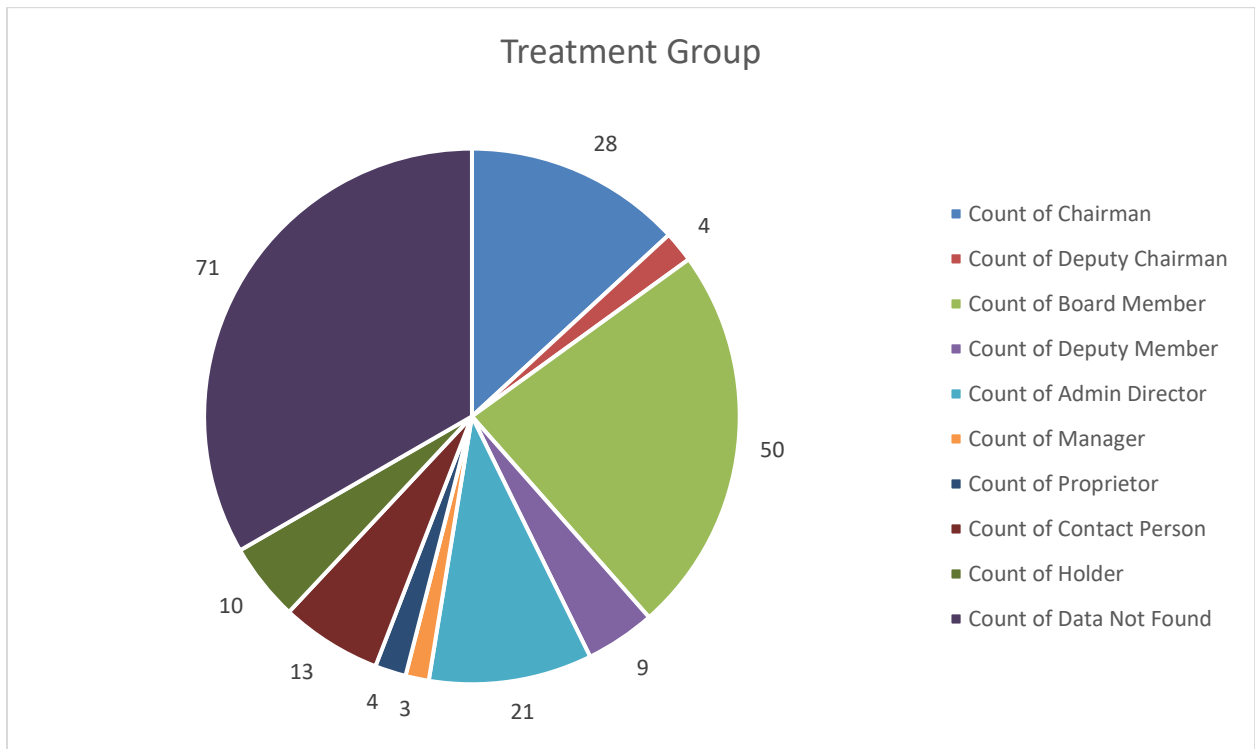


Figure 4: overall data of the treatment group

Our first observation group is the treatment group (Students who studied the entrepreneurship course). Our total sample size was 139, but due to the duplicate value (many students hold different positions in different companies, we have added them as per the number of positions). The total number shows more than that. As per our registered data, we have found nine positions the treatment group students hold, and the count of data not found portion shows where we did not find any data about the student. In the treatment group, we found our mode is = 4, which means the Deputy member position is the most frequent number in the data. The mean or the average of the treatment group is = 21.3. So, we can see from above (figure 4) that in the treatment group; the chairman, deputy chairman, board member, deputy member, admin director, manager, proprietor, contact person, and holder number are respectively: 28,

4, 50, 9, 21, 3, 4, 13 and 10. Among the 139 students, we did not find 71 students' data on registered websites.

Control Group

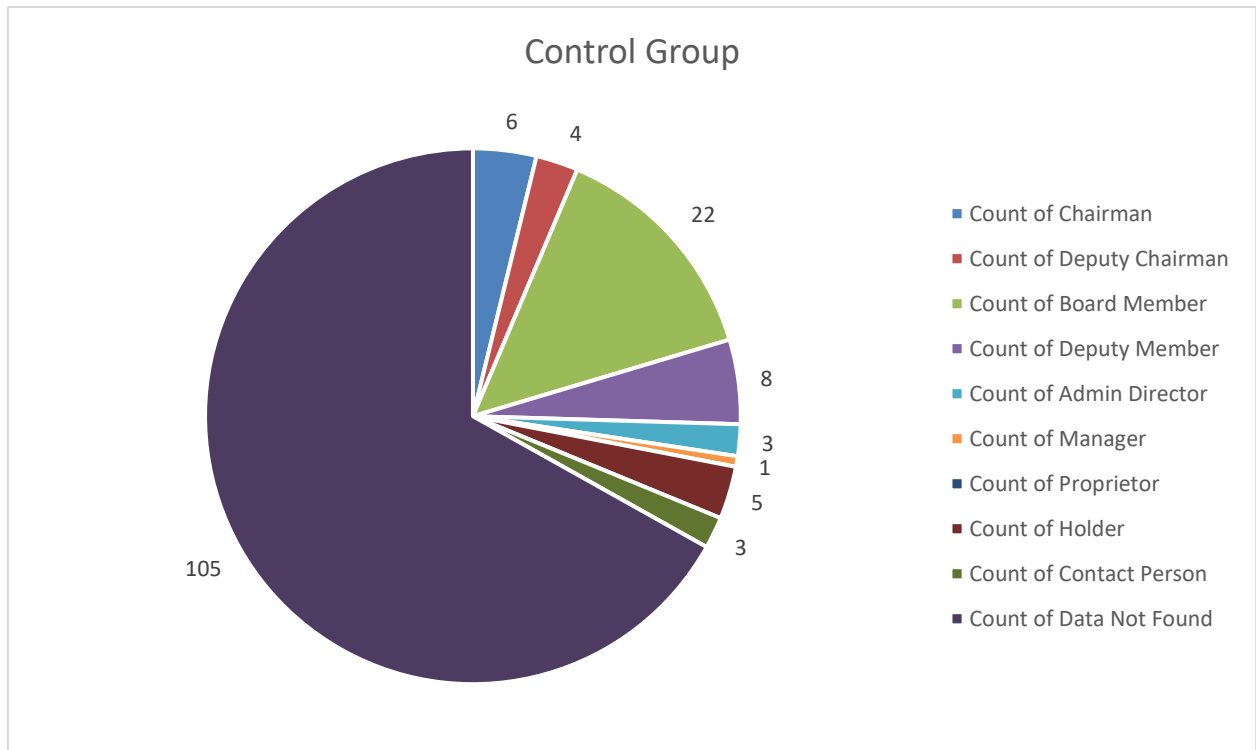


Figure 5: overall data of the control group

The second observation group is the control group, where students did not study the entrepreneurship course. In this group, we took the same portion of the sample as the treatment group. Due to the duplicate value (so many students hold different positions in different companies, we have added them as per the number of positions they are holding). The total number shows more than that. So among the nine positions, our mode for the control group is 3, and the most frequent number is a board member. The mean of the control group is 15.7.

So, we can see from above (figure 5) that in the control group; the chairman, deputy chairman, board member, deputy member, admin director, manager, proprietor, holder, and contact person number are 6, 4, 22, 8, 3,1, 5 and 3. We did not find 105 students' on the registered website.

As we mentioned earlier, we split three departments into two categories: the Control Group and Treatment Group, where the treatment group is Innovation Management and Entrepreneurship, and Marketing Management. On the other hand, the control group is Export Marketing students. As in the treatment group, there was a total of 139 student's data provided to us. From 205 students in export marketing, we selected 139 students by using the pseudo-random sampling technique. In total, we analyzed 278 students (139 control group and 139 treatment group) for our data analysis.

TREATMENT GROUP:

We divided the 139 students' data into three parts to better understand: Entrepreneur, Managerial Position, and Board Participant of the treatment group.

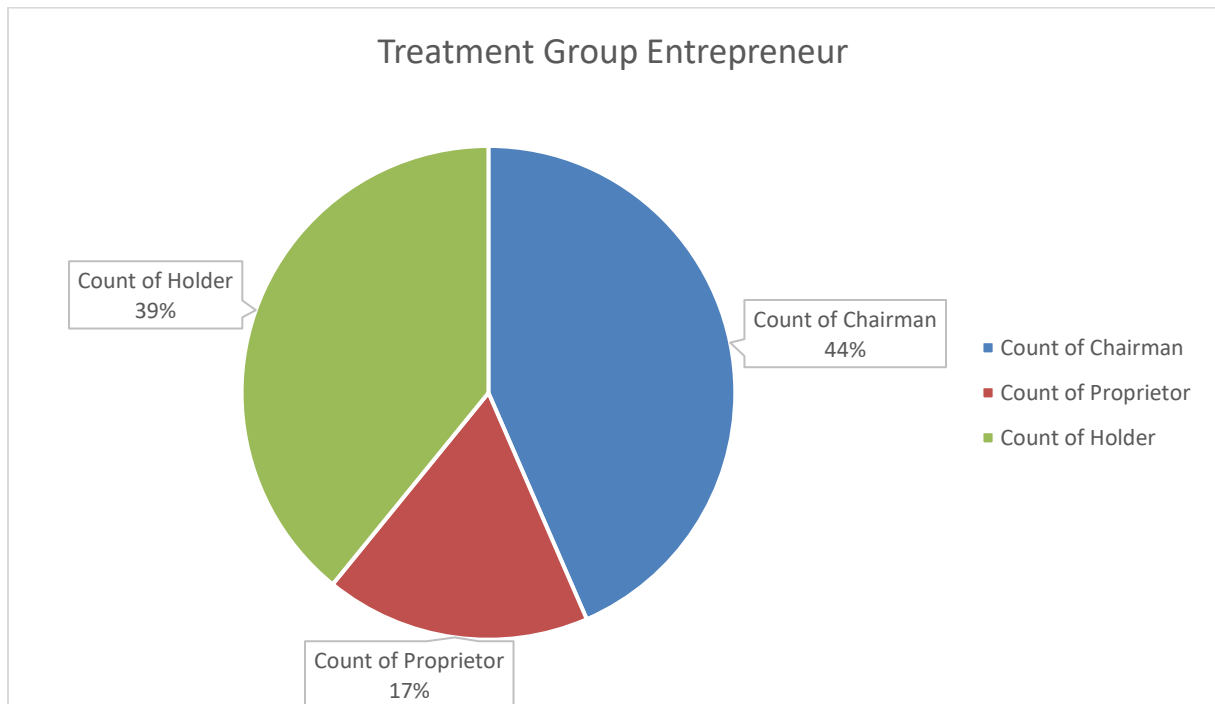


Figure 6: Percentage of entrepreneurs holding a position in a business.

Table 1: Numbers of Entrepreneur holding a position in a business

Count of Chairman	Count of Proprietor	Count of Holder
10	4	9

In Table 1 and figure 6: we can see that from 139 students, 10 (44%) students are chairman, 4 (17%) students are the proprietor, and 9 (39%) students are the holder. All these 23 students are entrepreneurs, where that chairman is 100% shareholder.

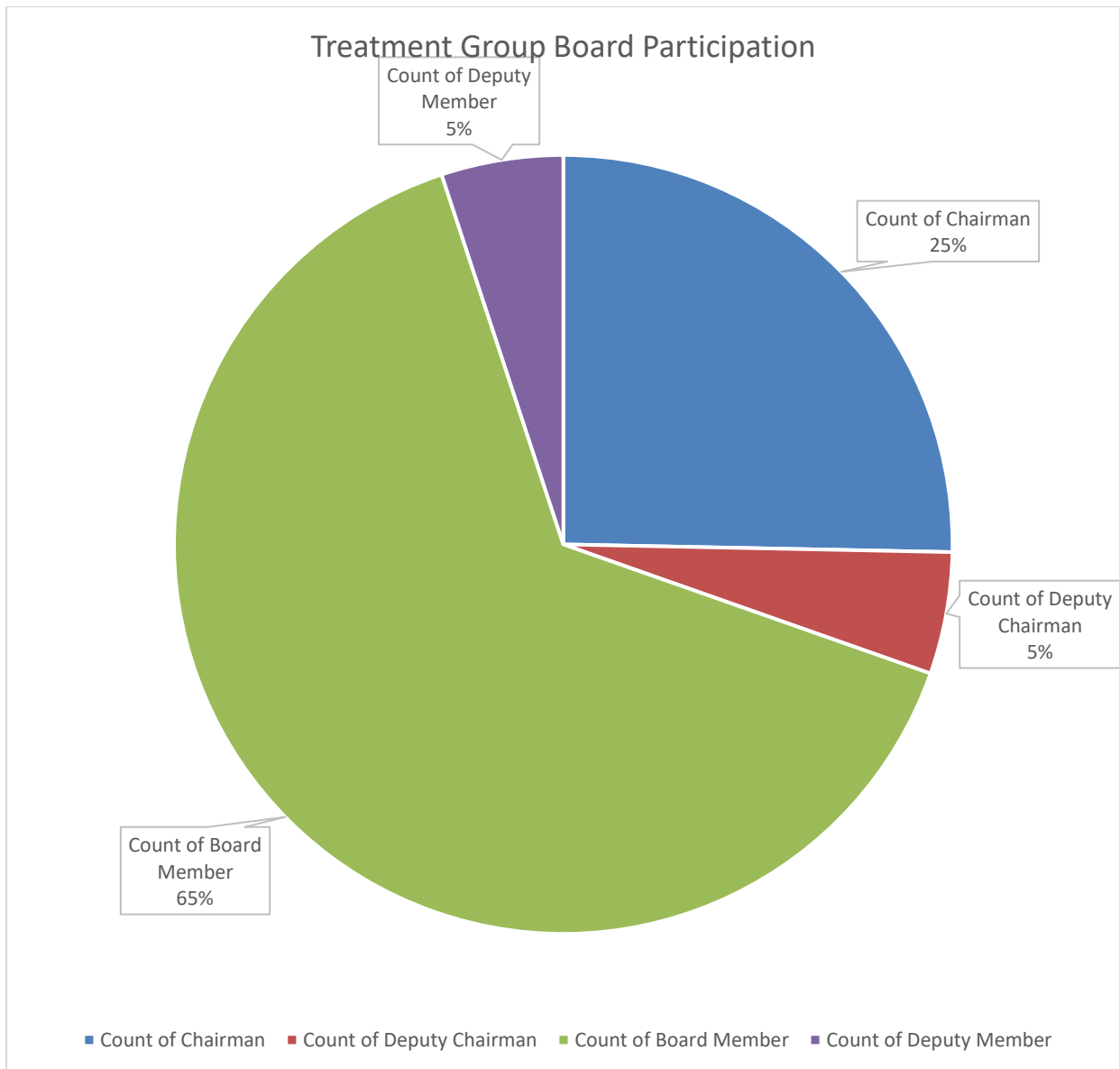


Figure 7: percentage of board participation holding a position in a business.

Table 2: number of board participation holding a position in a business.

Count of Chairman	Count of Deputy Chairman	Count of Board Member	Count of Deputy Member
20	4	51	4

In table 2 and figure 7: we can see that from 139 students, 20 (25%) students are chairman, 4 (5%) students are the deputy chairman, 51 (65%) students are the board members, and 4 (5%) students are deputy members. All these 79 students are board participation.

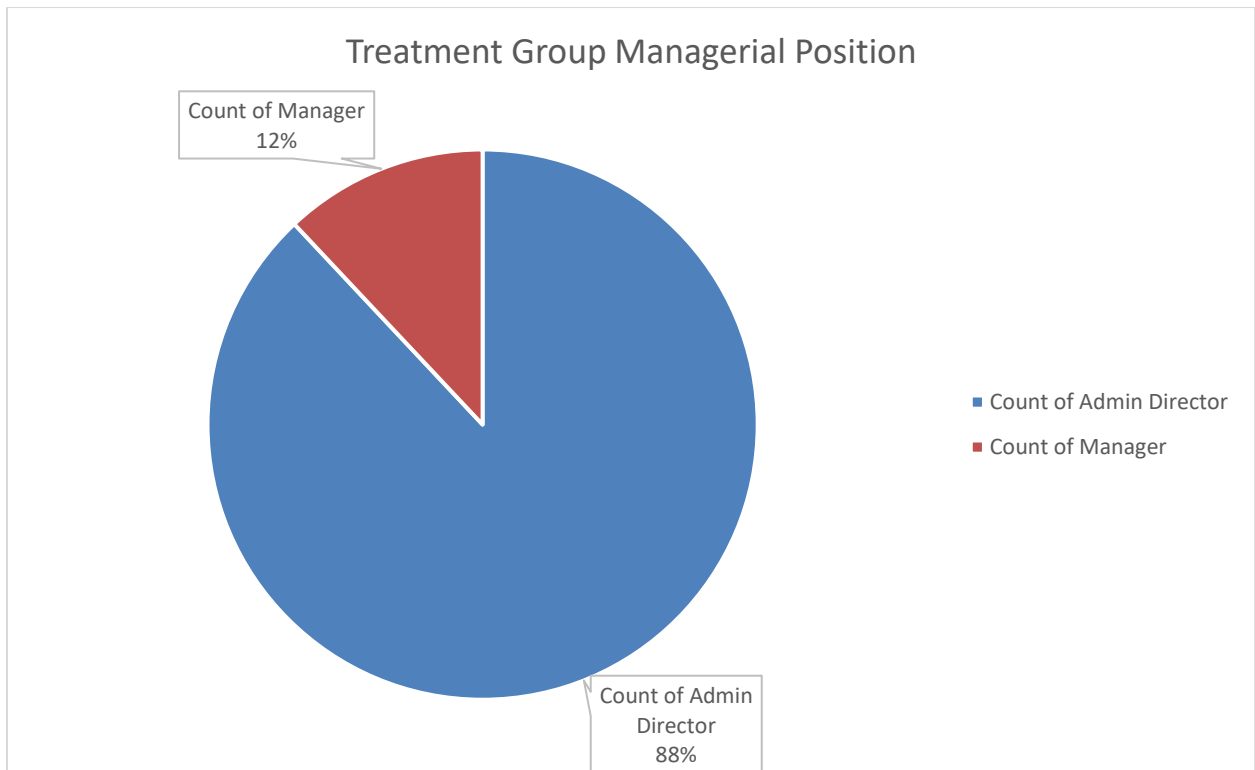


Figure 8: Percentage of Managerial Position holding a position in a business.

Table 3: Number of Managerial Position holding a position in a business.

Count of Admin Director	Count of Manager
22	3

In table 3 and figure 8: we can see that from 139 students, 22 (88%) students are admin directors, 3 (12%) students are the managers. All these 25 students are in managerial positions.

CONTROL GROUP:

We also divided the control group into three parts for better understanding: Entrepreneur, Managerial Position, and Board Participant.

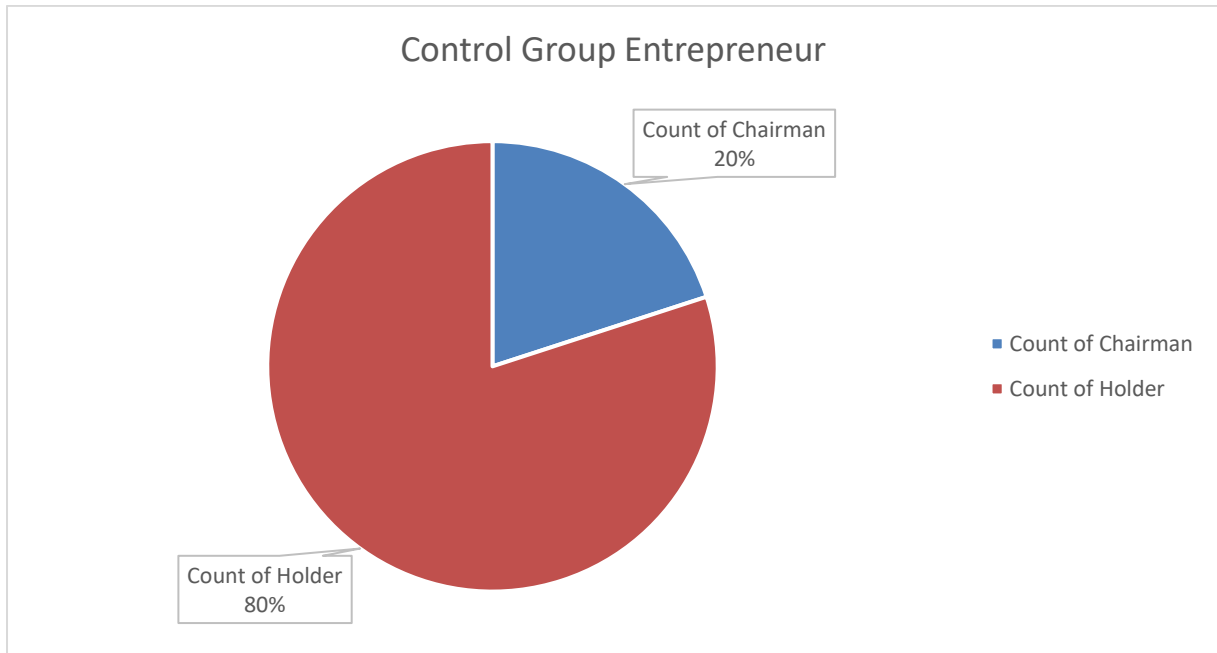


Figure 9: Percentage of entrepreneurs holding a position in a business

Table 4: Number of entrepreneurs holding a position in a business

Count of Chairman	Count of Holder
1	4

In table 4 and figure 9: we can see that from 139 students, 1 (20%) students are chairman, 4 (80%) students are the holders. All these five students are entrepreneurs, and the chairman is 100% shareholder.

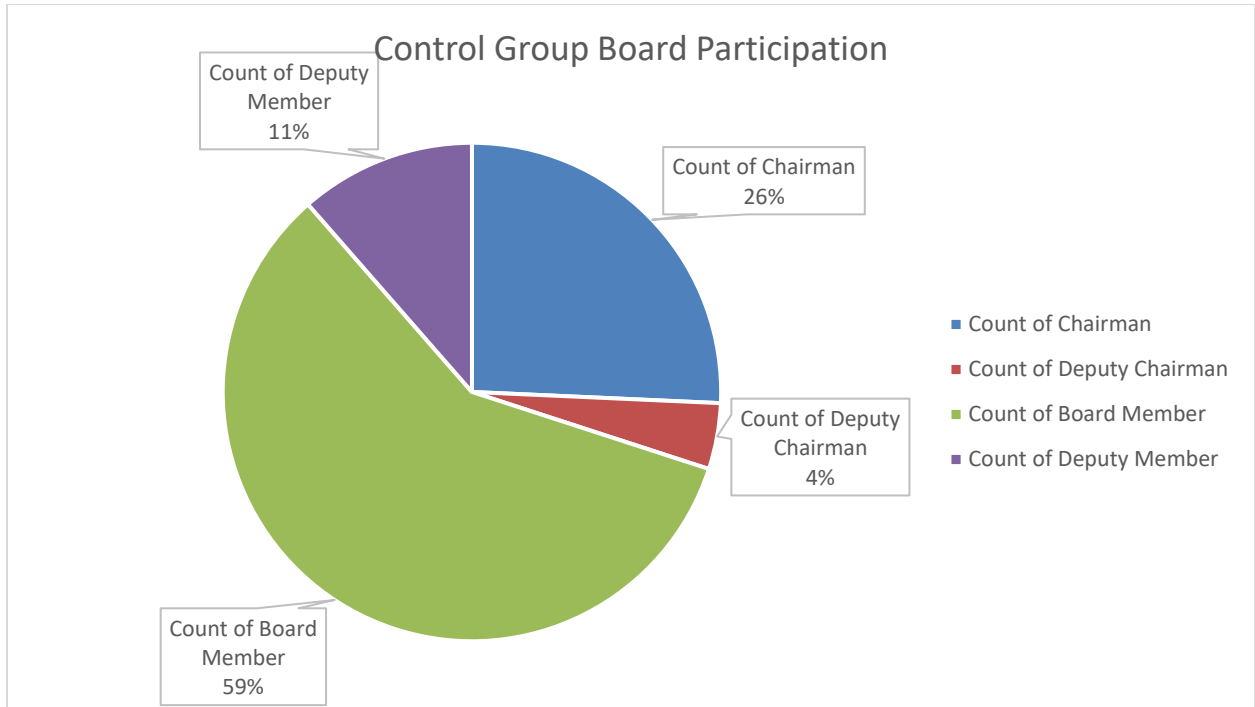


Figure 10: Percentage of board participation holding a position in a business

Table 5: Number of board participation holding a position in a business

Count of Chairman	Count of Deputy Chairman	Count of Board Member	Count of Deputy Member
18	3	41	8

In table 5 and figure 10: we can see that from 139 students, 18 (26%) students are chairman, 3 (4%) students are the deputy chairman, 41 (59%) students are the board members, and 8 (11%) students are deputy members. All these 70 students are board participation.

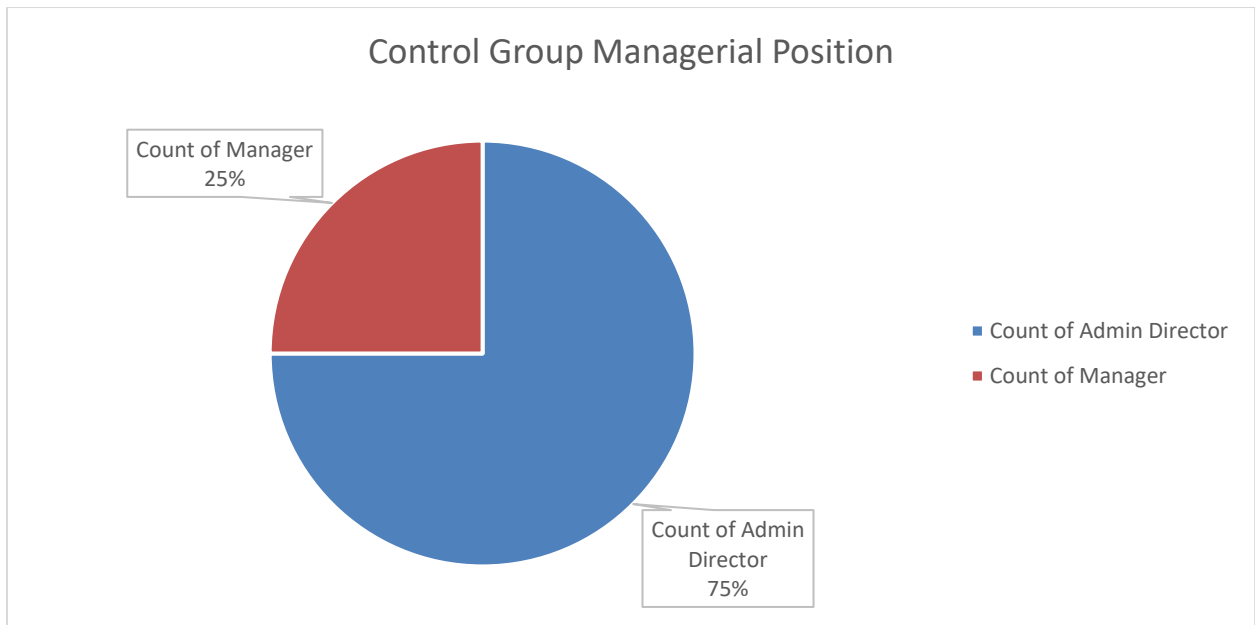


Figure 11: Percentage of managerial position holding a position in a business

Table 6: Number managerial position holding a position in a business

Count of Admin Director	Count of Manager
3	1

In table 6 and figure 11: we can see that from 139 students, 3 (75%) students are admin directors, and 1 (25%) students are the managers. All these four students are in managerial positions.

4.1 T-Test Analysis

After conducting the t-test, we got an at-statistic of 0.45184. The corresponding p-value associated with the test statistic is 0.6574, which is greater than the Social Science Research Standard, i.e., 0.05. The result tells us that the two groups' means are not that different enough to conclude a definitive answer. Our result's primary reason can be attributed to several facts—some of our sample participants opted-out at the last moment of our project due to privacy-related issues. Nevertheless, we have conducted our research complying with the GDPR standard.

```
Welch Two Sample t-test

data:  df$treatment_group and df$control_group_modified
t = 0.45184, df = 16.217, p-value = 0.6574
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -20.64481  31.84481
sample estimates:
mean of x mean of y
   21.3    15.7
```

Figure 12: Welch two-sample t-test of the overall treatment and the control group

(where X is the treatment group and Y is the control group)

We have conducted three t-tests on our dataset amongst and amongst them, one of the t-tests is significant at the 10% significance level (0.1). The other two t-tests are not significant, even at the 10% significance level (0.1).

For the first t-test, we considered the entrepreneur's data (chairman, proprietor, and holder) in both the treatment and control groups. The t-statistic for the test was 2.7136 with 3 degrees of freedom with a p-value of 0.06, significant at the 10% significance level.

```
Welch Two Sample t-test

data:  df$trt_ent and df$con_ent
t = 2.7136, df = 3.4265, p-value = 0.06308
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.5661555 12.5661555
sample estimates:
mean of x mean of y
 7.666667  1.666667
```

Figure 13: Welch two-sample t-test of both the treatment and control group in term of the entrepreneur

(where X is the treatment group and Y is the control group)

For the second t-test, we considered the data for board participation of our participants after completing the EEP, where the designation of the board members includes chairman, deputy chairman, board member, and deputy member. The t-statistic for the t-test is 0.16162, and the degrees of freedom is 5.6022 with a p-value of 0.8773, which is not significant at the 10% level.

```
Welch Two Sample t-test

data: df2$trt_board_participation and df2$con_board_participation
t = 0.16162, df = 5.6022, p-value = 0.8773
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -32.41009  36.91009
sample estimates:
mean of x mean of y
   19.75    17.50
```

Figure 14: Welch two-sample t-test of both the treatment and control groups in terms of board participation

(where X is the treatment group, and Y is the control group).

For the third and final t-test, we considered our participants' involvement in managerial positions after the EEP, where the designation includes admin director and manager. The t-value is 1.0992 with a degree of freedom of 1.022 with a p-value of 0.4668 with a confidence interval of -104.8314 and 125.8314.

Welch Two Sample t-test

```
data: df3$trt_managerialPosition and df3$con_managerialPosition
t = 1.0992, df = 1.0222, p-value = 0.4668
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -104.8314  125.8314
sample estimates:
mean of x mean of y
   12.5     2.0
```

Figure 15: Welch two-sample t-test of both the treatment and control group in terms of managerial position

(where X is the treatment group, and Y is the control group).

Chapter 5: Result and Discussion

5.1 A comparison of all the T-tests:

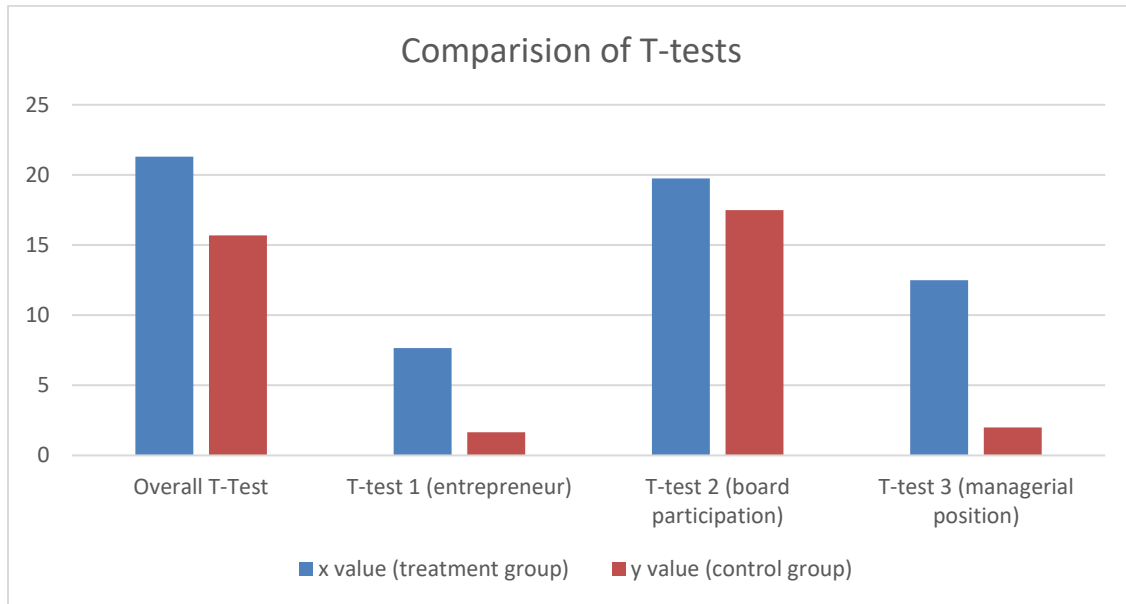


Figure 16: Comparison of all t-tests data

	x value (treatment group)	y value (control group)
Overall T-Test	21.3	15.7
T-test 1 (entrepreneur)	7.66	1.66
T-test 2 (board participation)	19.75	17.5
T-test 3 (managerial position)	12.5	2

Table 7: data comparison of all t-tests

As we know, in the T-test, the mean X value is the treatment group, and the mean Y value is the control group. So, from the above comparison : (figure 16) and (table 7), we can see that the treatment group's t-test value is comparatively higher than the control group's value. That means the treatment group's involvement is more than the control group in a business in terms of an entrepreneur, board participation, or managerial position.

5.2 A comparison between the treatment group and control (data):

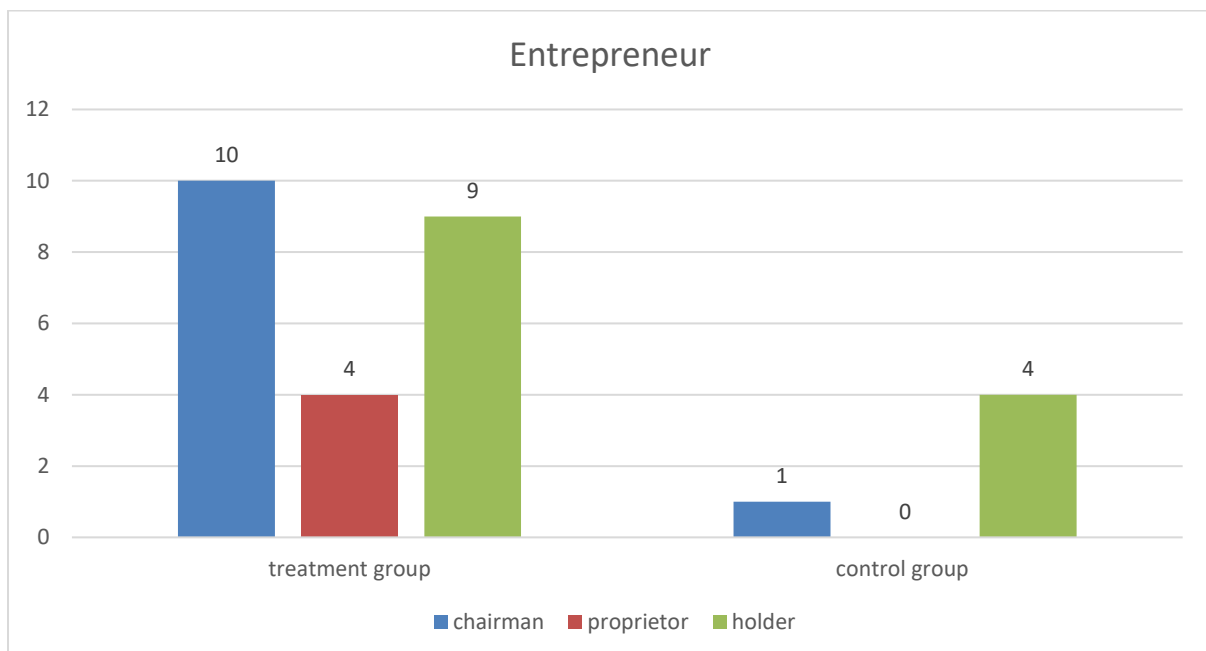


Figure 17: comparison between treatment group and control group in term of entrepreneur

From the above figure, we can see that the chairman, proprietor, and holder numbers of the treatment group are more than the number of the control group.

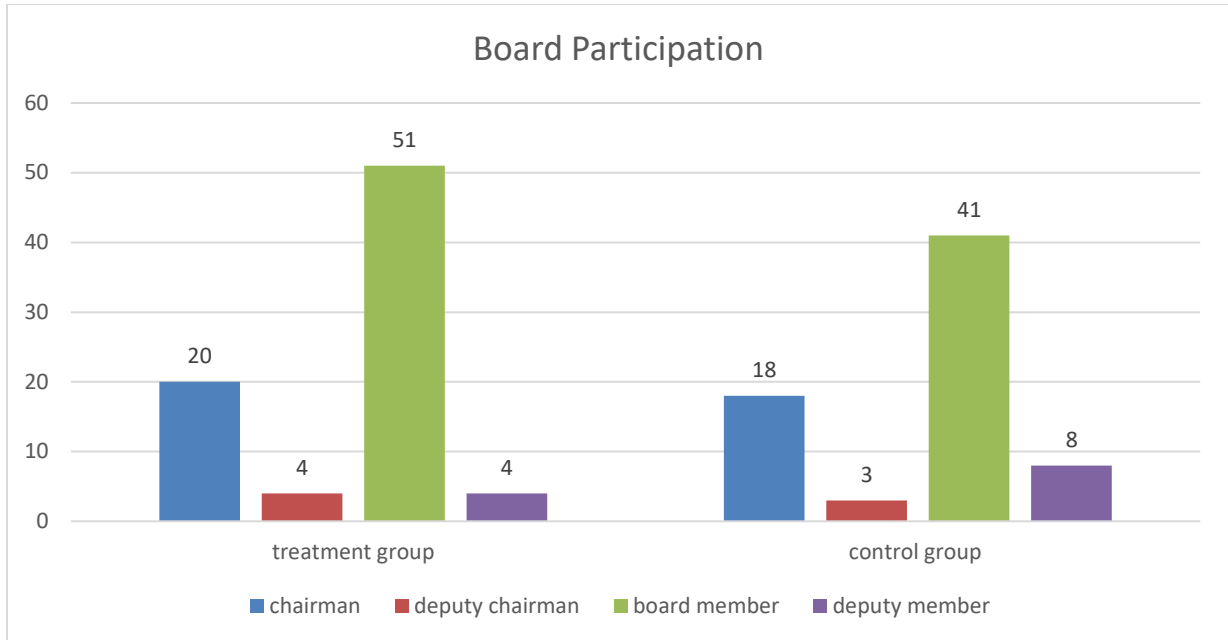


Figure 18: comparison between treatment group and control group in term of board participation

From the above figure, we can see that the numbers of the treatment group's chairman, deputy chairman, and board member are more than the control group's number. Alternatively, in the control group, we can see a higher deputy member role than the treatment group. However, in the treatment group, the remaining places had a higher score.

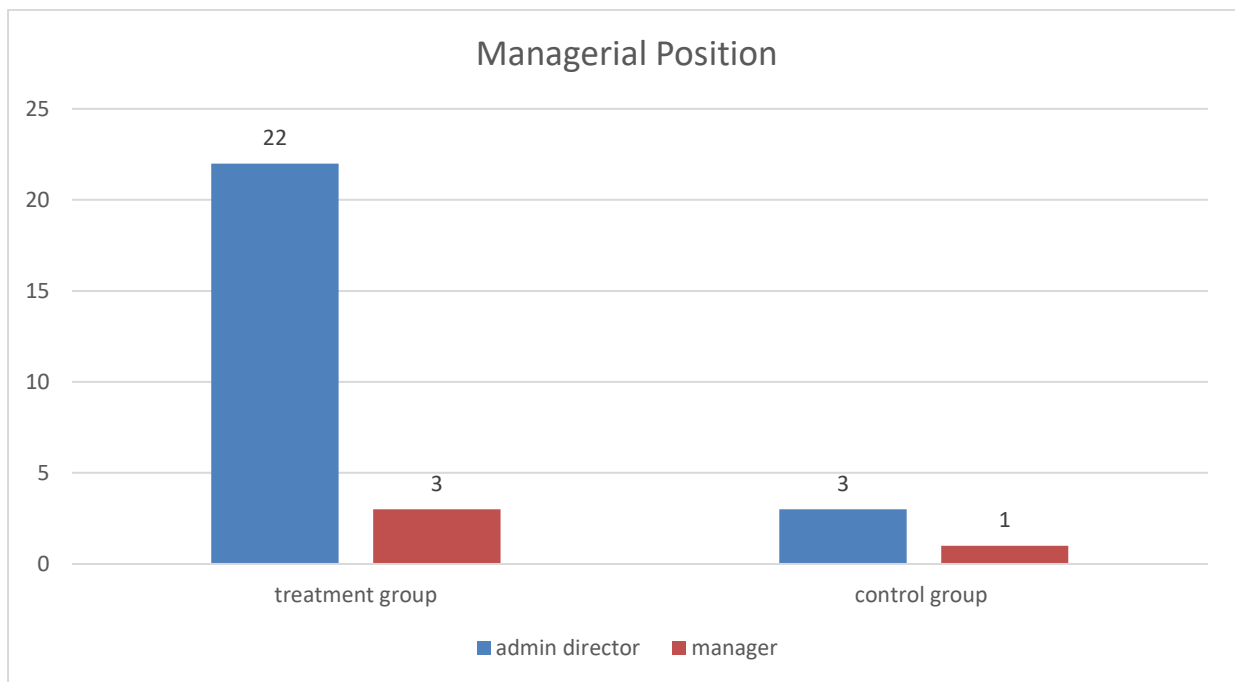


Figure 19: comparison between treatment group and control group in terms of a managerial position.

From the above figure, we can see that the treatment group's admin director and manager numbers are more than the control group's number.

From the above-mentioned comparison, we can see in T-tests and other findings that those who are knowledgeable in theoretical and practical entrepreneurship education from graduation have more involvement as entrepreneurs, board members, and a management position in a company than those who have not received entrepreneurship education.

5.3 Discussion

This thesis is showing us the result of the impact of entrepreneurship education. According to our findings, we have two groups where one group is the treatment group, and the other group is the control group. In the data set, it provides a significant insight into the two groups. It shows that the group who are studying entrepreneurship education programs is more focused on entrepreneurship activity, and the numbers are conclusive than the control group. This finding proves that our hypothesis is justified by finding that students studying entrepreneurship courses are becoming more oriented towards entrepreneurship. The success of entrepreneurship education is also compelling. At the beginning of the research, we have set our goal that we will try to find out that the entrepreneurship course is working for the students or not. According to our study, we have attempted to determine the difference between the two groups' treatment and control group. We have concluded that there is a difference between the two groups. Students who have an entrepreneurship course have a role as entrepreneurs or board members or management roles in their respective companies. This information is beneficial for the NTNU, especially as an educational institute, because that explains that the students' education for entrepreneurship is working for them.

Chapter 6: Conclusion

Our thesis paper aims to determine the result of entrepreneurship education's impact on business involvement after graduation in terms of entrepreneurs, management positions, and board participation. So, we focused on both the treatment group (who studied entrepreneurship education) and the control group (who did not study entrepreneurship education) to analyze the data to determine the number of participants in different business involvement as entrepreneurs, management, and board members. We found that the treatment group's business involvement was comparatively more as they studied entrepreneurship education. On the other hand, the control group's involvement was less as they did not take entrepreneurship education.

We faced limitations during our findings, as we had only a set of data from three departments of NTNU, Ålesund. So, we had to focus on a limited number of students. If we had comprehensive data from overall Norway, then the finding and quantitative analysis would be much better. Moreover, besides quantitative analysis, we could know the students' in-depth situation if we could do qualitative analysis. We could find who became successful after studying entrepreneurship education and, if they failed, what was the reason behind it. Moreover, we could find about those who did not take entrepreneurship education, how did they still manage to become a successful entrepreneur. In qualitative analysis, more information would come out about what improvement is needed in entrepreneurship education. The result obtained by our analysis is only limited to Ålesund and cannot be further generalized to other entrepreneurs in other regions, for instance, Trondheim.

We can give further research suggestions, as we heard from our fellow Norwegian Classmates that entrepreneurial activity in Norway is declining. Moreover, it was stated by (Gry Agnete Alsos, Clausen, Isaksen, Åmo, & Bullvåg, 2013) that entrepreneurial activity declined in 2014. It may also be necessary to research the potential success factors among entrepreneurs, explore the reasons behind the decline in entrepreneurial activity, and identify measures for improvement to encourage and foster Norway's entrepreneurial behavior. Moreover, when the graduates went out in real life, did they succeed? Did the education add value to their career?

If they failed, which part was missing from their study? So, to know in-depth, both quantitative and qualitative, is the need for this topic, and a team should work together for it, not only one person. This thesis paper would have been much better if the quantitative and qualitative analyses were done.

Besides all the limitations, we hope that these findings will encourage more studies on entrepreneurship education, which is essential to understand better the entrepreneur's mentality and what is essential to this form of the education program's learning goals. Nobody has previously studied the outcome of entrepreneurship education in terms of business involvement, so we hope our contribution adds value to the research. Nevertheless, it is up to the readers to determine if the results can be used in other ways and the significant results for their purposes.

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Attachment 1

NSD approval (vurdering)

6/29/2020

Meldeskjema for behandling av personopplysninger



NSD sin vurdering

Prosjekttittel

Entreprenørskapsutdanning - 10 år etter

Referansenummer

932284

Registrert

27.05.2020 av Kjersti Kjos Longva - kjersti.kjos.longva@ntnu.no

Behandlingsansvarlig institusjon

Norges teknisk-naturvitenskapelige universitet / Fakultet for økonomi (ØK) / Institutt for internasjonal forretningsdrift

Prosjektansvarlig (vitenskapelig ansatt/veileder eller stipendiat)

Kjersti Kjos Longva, kjersti.kjos.longva@ntnu.no, tlf: 91170442

Type prosjekt

Studentprosjekt, masterstudium

Kontaktinformasjon, student

Md. Saifur Rahman, mdsr@stud.ntnu.no, tlf: 46369801

Prosjektperiode

01.08.2020 - 31.12.2020

Status

10.06.2020 - Vurdert

Du må vente på svar fra NSD før endringen gjennomføres.

TYPE OPPLYSNINGER OG VARIGHET

Prosjektet vil behandle alminnelige kategorier av personopplysninger frem til 31.12.2020.

LOVLIG GRUNNLAG

Prosjektet vil behandle personopplysninger med grunnlag i en oppgave av allmenn interesse.

Vår vurdering er at behandlingen oppfyller vilkåret om vitenskapelig forskning, jf. personopplysningsloven § 8, og dermed utfører en oppgave i allmennhetens interesse.

Lovlig grunnlag for behandlingen vil dermed være utførelse av en oppgave i allmennhetens interesse, jf. personvernforordningen art. 6 nr. 1 bokstav e), jf. art. 6 nr. 3 bokstav b), jf. personopplysningsloven § 8.

PERSONVERNPRINSIPPER

NSD vurderer at den planlagte behandlingen av personopplysninger vil følge prinsippene i personvernforordningen:

- om lovlighet, rettferdighet og åpenhet (art. 5.1 a)
- formålsbegrensning (art. 5.1 b), ved at personopplysninger samles inn for spesifikke, uttrykkelig angitte og berettigede formål, og ikke viderebehandles til nye uforenlige formål
- dataminimering (art. 5.1 c), ved at det kun behandles opplysninger som er adekvate, relevante og nødvendige for formålet med prosjektet
- lagringsbegrensning (art. 5.1 e), ved at personopplysningene ikke lagres lengre enn nødvendig for å oppfylle formålet

DE REGISTRERTES RETTIGHETER

Så lenge de registrerte kan identifiseres i datamaterialet vil de ha følgende rettigheter: åpenhet (art. 12), informasjon (art. 13/14), innsyn (art. 15), retting (art. 16), sletting (art. 17), begrensning (art. 18), underretning (art. 19) og protest (art. 21).

NSD vurderer at informasjonen om behandlingen som de registrerte vil motta oppfyller lovens krav til form og innhold, jf. art. 12.1 og art. 14.

Vi minner om at hvis en registrert tar kontakt om sine rettigheter, har behandlingsansvarlig institusjon plikt til å svare innen en måned.

FØLG DIN INSTITUSJONS RETNINGSLINJER

NSD legger til grunn at behandlingen oppfyller kravene i personvernforordningen om riktighet (art. 5.1 d), integritet og konfidensialitet (art. 5.1. f) og sikkerhet (art. 32)

Nettskjema (avmelding) skal benyttes som databehandler i prosjektet. NSD legger til grunn at behandlingen oppfyller kravene til bruk av databehandler, jf. art 28 og 29.

For å forsikre dere om at kravene oppfylles, må dere følge interne retningslinjer og eventuelt rådføre dere med behandlingsansvarlig institusjon.

OPPFØLGING AV PROSJEKTET

NSD vil følge opp ved planlagt avslutning for å avklare om behandlingen av personopplysningene er avsluttet.

Lykke til med prosjektet!

Kontaktperson hos NSD: Lene Chr. M. Brandt
Tlf. Personverntjenester: 55 58 21 17 (tast 1)

NSD reporting form (meldeskjema):

6/29/2020

Meldeskjema for behandling av personopplysninger



Meldeskjema 932284

Sist oppdatert

10.06.2020

Hvilke personopplysninger skal du behandle?

- Navn (også ved signatur/samtykke)

Type opplysninger

Skal du behandle særlige kategorier personopplysninger eller personopplysninger om straffedommer eller lovovertrедelser?

Nei

Prosjektinformasjon

Prosjekttittel

Entreprenørskapsutdanning - 10 år etter

Begrunn behovet for å behandle personopplysningene

Personopplysningene som vil bli behandlet i dette prosjektet er navn på tidligere studenter ved et studieprogram for entreprenørskapsutdanning ved NTNU i Ålesund. Vi vil benytte lister med navn på tidligere studenter til å gjøre søk i Bronnoysundregisteret for å undersøke involvering i bedriftsetablering. Det vil ikke være mulig å identifisere de tidligere studentene i den publiserte masteroppgaven. Der vil data bli presentert på overordnet nivå med informasjon om antall studenter involvert i bedriftsetablering og antall bedrifter etablert uten at personnavn, bedriftsnavn eller sted spesifiseres.

Ekstern finansiering

Type prosjekt

Studentprosjekt, masterstudium

Kontaktinformasjon, student

Md. Saifur Rahman, mdsr@stud.ntnu.no, tlf: 46369801

Behandlingsansvar

Behandlingsansvarlig institusjon

Norges teknisk-naturvitenskapelige universitet / Fakultet for økonomi (OK) / Institutt for internasjonal forretningsdrift

Prosjektansvarlig (vitenskapelig ansatt/veileder eller stipendiat)

Kjersti Kjos Longva, kjersti.kjos.longva@ntnu.no, tlf: 91170442

Skal behandlingsansvaret deles med andre institusjoner (felles behandlingsansvarlige)?

Nei

Utvalg 1**Beskriv utvalget**

Studenter som er uteksaminert fra Bachelor i innovasjon og entreprenørskap ved NTNU i Ålesund.

Rekruttering eller trekking av utvalget

Vi vil benytte lister som vi har tilgjengelig i vårt system over tidligere uteksaminerte studenter.

Alder

22 - 50

Inngår det voksne (18 år +) i utvalget som ikke kan samtykke selv?

Nei

Personopplysninger for utvalg 1

- Navn (også ved signatur/samtykke)

Hvordan samler du inn data fra utvalg 1?**Annet****Beskriv**

Studentlister fra NTNU brukes til å søke opp navn i Brønnøysundregisteret for å kartlegge bedriftsetablering blant tidligere studenter.

Grunnlag for å behandle alminnelige kategorier av personopplysninger

Allmenn interesse eller offentlig myndighet (art. 6 nr. 1 bokstav e)

Redegjør for valget av behandlingsgrunnlag

Behandlingen av opplysningene er nødvendig for å oppnå prosjektets formål som er å undersøke bedriftsetablering blant tidligere studenter. Dette er et tema som det eksisterer lite kunnskap om, men som det er viktig å vite mer om med tanke på de finansielle ressursene som blir investert i denne type utdanning. Siden dette gjelder nesten 200 tidligere studenter, vil det bli svært utfordrende praktisk å innhente samtykke fra alle. Vi ønsker derfor å sende ut et informasjonsskriv som beskriver prosjektet til de som står på denne listen, der vi beskriver prosjektet, behandlingen av personopplysninger og hvordan de kan be om at vi ikke

benytter deres navn. De tidligere studentene i utvalget kan dermed be om å utelastes fra prosjektet ved å krysse av på Nettskjema-avmelding som følger med som link i e-post med informasjonsskriv eller gjennom å sende en e-post, sms, brev eller gjennom personlig oppmøte til en av deltakerene i prosjektet.

Informasjon for utvalg 1

Informerer du utvalget om behandlingen av opplysningene?

Ja

Hvordan?

Skriftlig informasjon (papir eller elektronisk)

Tredjepersoner

Skal du behandle personopplysninger om tredjepersoner?

Nei

Dokumentasjon

Hvordan kan de registrerte få innsyn, rettet eller slettet opplysninger om seg selv?

Gjennom avmelding på Nettskjema-avmelding (UiO-løsning) som følger mail med informasjonsskriv eller gjennom å ta kontakt med en av de tre ansvarlige for prosjektet på e-post, på telefon, gjennom brev eller gjennom personlig oppmøte.

Totalt antall registrerte i prosjektet

100-999

Tillatelser

Skal du innhente følgende godkjenninger eller tillatelser for prosjektet?

Behandling

Hvor behandles opplysningene?

- Maskinvare tilhørende behandlingsansvarlig institusjon
- Ekstern tjeneste eller nettverk (databehandler)

Hvem behandler/har tilgang til opplysningene?

- Prosjektansvarlig

- Student (studentprosjekt)
- Databehandler

Hvilken databehandler har tilgang til opplysningene?

Avmelding via Nettskjema (UiO), som dermed vil ha tilgang til navn som eventuelt melder seg av prosjektet.

Tilgjengeliggjøres opplysningene utenfor EU/EØS til en tredjestat eller internasjonal organisasjon?

Nei

Sikkerhet

Oppbevares personopplysningene atskilt fra øvrige data (kodenøkkel)?

Ja

Hvilke tekniske og fysiske tiltak sikrer personopplysningene?

- Opplysningene anonymiseres
- Adgangsbegrensning
- Andre sikkerhetstiltak

Hvilke

Passordsikret lagringsområde på NTNU sin server og automatisk tastelås på datamaskin etter 2 minutter.

Varighet

Prosjektperiode

01.08.2020 - 31.12.2020

Skal data med personopplysninger oppbevares utover prosjektperioden?

Nei, alle data slettes innen prosjektstutt

Vil de registrerte kunne identifiseres (direkte eller indirekte) i oppgave/avhandling/øvrige publikasjoner fra prosjektet?

Nei

Tilleggsopplysninger

Attachment 2

Request for Participant in the research project



Informasjon om forskningsprosjekt

Entreprenørskapsutdanning – 10 år etter

Bakgrunn og formål

Vi ønsker med dette å informere om et pågående forskningsprosjekt ved NTNU i Ålesund. Du kontaktes fordi du tidligere har studert innovasjon og entreprenørskap ved NTNU i Ålesund. I forbindelse med en masteroppgave ønsker vi å kartlegge tidligere studenters involvering i bedriftsetablering. Det vil bli gjort gjennom å bruke klasselister til søk i åpne register i Brønnøysundregisteret.

Vi sender ut informasjon om prosjektet for at du skal ha mulighet til å be om å bli utelatt fra forskningsprosjektet. Vi vil da stryke ditt navn fra listen av tidligere studenter og det vil ikke bli foretatt søk i Brønnøysundregisteret. Du kan be om at vi stryker ditt navn fra listen gjennom å krysse av for dette i Nettskjema-linken som følger med i e-post med informasjonsskriv eller gjennom å kontakte en av de tre prosjektansvarlige på e-post, telefon, brev eller gjennom personlig oppmøte.

Forskningsprosjektet utføres av masterstudent Md. Saifur Rahman. Øivind Strand er hovedveileder og Kjersti Kjos Longva er biveileder. Formålet med studien er å få bedre innsikt i sammenhengen mellom deltakelse i entreprenørskapsutdanning og bedriftsetablering.

Personopplysningene som vil bli behandlet i dette prosjektet er navnet ditt som tidligere student ved et studieprogram for entreprenørskapsutdanning ved NTNU i Ålesund. Etter søket vil navnet ditt bli erstattet med en kode og alle data om eventuelle tilknytninger til firma i Brønnøysundregisteret vil bli anonymisert. Det vil ikke være mulig å identifisere deg eller din tilknytning til bedrifter i den publiserte masteroppgaven. Der vil data bli presentert på overordnet nivå med informasjon om antall studenter involvert i bedriftsetablering og antall bedrifter etablert uten at personnavn, bedriftsnavn eller sted spesifiseres.

Hvem er ansvarlig for forskningsprosjektet?

Norges teknisk-naturvitenskaplige universitet (NTNU) ansvarlig for prosjektet.

Hvorfor får du informasjon om prosjektet?

Du får informasjon om prosjektet fordi vi ønsker å gi deg anledning til å reservere deg fra å stå på klasselistene som vil brukt til søk på åpne data i Brønnøysundregisteret.

Hva innebærer prosjektet for deg?

I prosjektet vil det bli brukt klasselister fra studieprogram i innovasjon og entreprenørskap. Disse vil bli brukt til å gjøre søk i åpne register i Brønnøysundregisteret. Ditt navn vil bli erstattet med en kode så snart søket er gjennomført og alle tilknytninger til bedrifter vil bli anonymisert. Det vil kun være masterstudent og de to veilederne som har tilgang til klasselister og data fra søk i Brønnøysundregisteret før dette anonymiseres.

Det er frivillig å være med i forskningsprosjektet

Det er frivillig å være med i forskningsprosjektet. Du kan før oppstart reservere deg mot at ditt navn blir brukt til søk i Brønnøysundregisteret. Om du ikke reserverer deg før oppstart av prosjektet, kan du likevel gjøre dette når som helst etter prosjektoppstart. Alle opplysninger om deg vil da slettet. Det vil ikke ha noen negative konsekvenser for deg hvis du ikke vil delta eller senere velger å trekke deg.

Ditt personvern – hvordan vi oppbevarer og bruker dine opplysninger

Vi vil bare bruke opplysningene om deg til formålene vi har beskrevet i dette skrevet. Vi behandler opplysningene konfidensielt og i samsvar med personvernregelverket.

- Det er kun prosjektgruppen som vil ha tilgang til data i prosjektet. Prosjektgruppen består av masterstudent Saifur Rahman, hovedveileder Øivind Strand (professor ved NTNU) og biveileder Kjersti Kjos Longva (postdoktor ved NTNU).
- Alle navn og bedriftsopplysninger vil bli anonymisert.
- Data innsamlet gjennom prosjektet vil bli lagret på passordsikret server ved NTNU.

Ditt navn vil ikke bli oppgitt spesifikt og du vil ikke kunne gjenkjennes i publikasjoner i prosjektet.

Hva skjer med opplysningene dine når vi avslutter forskningsprosjektet?

Prosjektet skal etter planen avsluttes 31.12.2020.

Alle data vil da bli slettet. Når studien er avsluttet vil resultatene bli publisert i en masteroppgave. Det vil ikke være mulig å identifisere deg og dine svar i resultatene av studien.

Dine rettigheter

Så lenge du kan identifiseres i datamaterialet, har du rett til:

- innsyn i hvilke personopplysninger som er registrert om deg, og å få utlevert en kopi av opplysningene,
- å få rettet personopplysninger om deg,
- å få slettet personopplysninger om deg, og
- å sende klage til Datatilsynet om behandlingen av dine personopplysninger.

Behandling av personopplysninger

Lovlig grunnlag for behandling av opplysninger om deg er utførelse av en oppgave i allmennhetens interesse.

På oppdrag fra NTNU har NSD – Norsk senter for forskningsdata AS vurdert at behandlingen av personopplysninger i dette prosjektet er i samsvar med personvernregelverket.

Hvor kan jeg finne ut mer?

Hvis du har spørsmål til prosjektet, eller ønsker å benytte deg av dine rettigheter, ta kontakt med

NTNU ved hovedveileder

[Øivind Strand](#)

☎ 977 43 998

✉ oivind.strand@ntnu.no

NTNU ved biveileder

[Kjersti Kjos Longva](#)

☎ 911 70 442

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NTNU ved masterstudent

[Saifur Rahman](#)

☎ 46 36 98 01

✉ mdsr@stud.ntnu.no

NTNUs personvernombud

[Thomas Helgesen](#)

☎ 930 79 038

✉ thomas.helgesen@ntnu.no

NSD – [Norsk senter for forskningsdata AS](#)

☎ 55 58 21 17

✉ personvernombudet@nsd.no

