The Making of an Entrepreneur:

A Comparison Study in Entrepreneurial University Context

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Abstract

This study explores the teaching and learnings at an Entrepreneurial University, by comparing them to the experiences of Entrepreneurs. In the infrastructure of Entrepreneurial University, Entrepreneurship Education and Student Entrepreneurship Support Programs are involved. Students who are pursuing Entrepreneurship Education, and Mentors who are working at the Student Entrepreneurship Support Program, are representing the learnings and teachings at this university. The Entrepreneurs are representing entrepreneurship practice outside of the university. This comparison is carried out by setting up an empirical study, that conducts qualitative analysis of the results. Interviews are conducted with 12 people, composed of 5 Students, 3 Mentors and 4 Entrepreneurs. The interviews are conducted based on the differentiation of Effectuation and Causation, as Entrepreneurship Approaches. The Approaches are compared from five different aspects of Entrepreneurship, and this comparison is used as the basis for the interviews which are defined as [1] Resource Arrangement, [2] View on Risk, [3] Attitude Towards Competition, [4] Unexpected Events, [5] Control Over the Future. The results revealed that there was no significant difference between the planned approach of Entrepreneurship Students, Mentors and Entrepreneurs. Therefore the research question is answered as the learnings and teachings of Entrepreneurial University can be seen in the practice of Entrepreneurs.

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1. Introduction

The saying 'practice makes perfect' is often heard. This indicates, that only knowing how something works does not necessarily mean that the person will achieve doing the action in an adequate way. For instance, when someone only learned driving based on theory but has never driven a car, could that person guess every situation that might happen on the way when they are driving? So, Entrepreneurship Students who have limited experience, or no previous experience in Entrepreneurship, and their knowledge mainly comes from theoretical foundations. Would they know the situations, and how to approach these situations outside of their theoretical-based knowledge?

Sarasvathy (2001a) has triggered this curiosity with their strong and continuous argument regarding teachings and real-life examples of Entrepreneurship Approaches not matching (Sarasvathy, 2001a; Sarasvathy, 2001b; Sarasvathy et al, 2001; Dew et al, 2009). Sarasvathy (2001a) introduced the theory of Effectuation and Causation which is defined as two different approaches to Entrepreneurship. Sarasvathy (2001a) claimed that MBA programs are teaching Causation while Expert Entrepreneurs are following Effectuation. However, only 3 years ago, Ruiz–Jimenez et al (2021) found out that the claim of Sarasvathy regarding Expert Entrepreneurs following Effectuation is wrong. As study of Ruiz – Jimenez et al (2021) showed Expert Entrepreneurs who follow the Causation Approach, experience high performance in their ventures. Therefore, the claims regarding what approach Entrepreneurs follow showed contrasting arguments.

Besides the argument with the approach that Expert Entrepreneurs follow, there is another big argument related to teaching Entrepreneurship. Regarding, should Effectuation or Causation be taught? Sarasvathy (2001a) made the argument that teaching Causation does not align with the approach of Entrepreneurs, over 20 years ago, and the context was MBA programs. However, since then Entrepreneurship Education has been growing and gaining more popularity. Honig (2004) claimed that teaching approaches aligning with Causation is more preferred by Entrepreneurship Education, as they are more structured. On the other hand, Gunzel-Jensen and Robinson (2017) argued that teaching Effectuation is not challenging, because the principles are structured. However, they added that it should be considered while teaching that Effectuation is defined based on Expert Entrepreneurs so maybe students cannot learn (Gunzel–Jensen and Robinson, 2017). Furthermore, there have been studies showing that different approaches are possible to teach (Yamakawa et al, 2016; Thein et al, 2023). Yamakawa et al (2016) have presented in their study that with a combination of practical and theoretical in the Entrepreneurship Education curriculum, students learn Entrepreneurship Approaches.

However, Entrepreneurship Education is evolving, and new phenomena like Entrepreneurial Universities are arising, which can be seen as a combination of practice and theory in a bigger context.

Therefore, entrepreneurship teaching is not only limited to one or two programs of Universities. In addition, Student Entrepreneurs are supported by these incentives. Taking a few steps back from the discussion in literature which provides contrasting viewpoints. The teachings and learnings at an Entrepreneurial University, and how these are observed in the real-life examples as practices of Entrepreneurs is a point of curiosity and Entrepreneurial University is not well covered in the discussions of approaches learned and practised, from previous studies. Consequently, this study asks the question, '*Can Entrepreneurial Universities teach students to approach Entrepreneurship to start a business like Entrepreneurs?*'

To begin with, the terms used in the research question are defined. Firstly, the concept of an Entrepreneurial University is wide. It is defined from different perspectives. This study only considers one corner of this concept, and it is defined as an infrastructure that includes Entrepreneurship Education and Student Entrepreneurship Support provision, as part of the other University activities (Guerrero and Urbano, 2012). Second, students are studying Entrepreneurship as part of this Entrepreneurial University, have no or limited experience with Entrepreneurship, and they dream of becoming entrepreneurs one day. Third, the Entrepreneurship Approach refers to the method used by Entrepreneurs in a highly uncertain environment to start a business. Last, who are these entrepreneurs? The question is answered in this study as people who founded a business in the last 5 years and are full-time working in this venture to make it the future's Google or Blockbuster.

All these can be found in the context of Aalborg University (AAU) in Denmark, which can be defined as an Entrepreneurial University. Under the roof of AAU, the Student Entrepreneurship Support Program and Entrepreneurship Education are provided. Therefore, the different claims from the literature, which have developed a curiosity regarding theory and practice match, can be explored by utilising this Entrepreneurial University context. This research has the potential to add various values to the topic of Entrepreneurship Education, Entrepreneurial University and Entrepreneurship in general, some of these values, are presented in the section below.

1.1 Value that the Study Adds

The value of exploring answers to the research question can be evaluated from different aspects. The research in the context of Entrepreneurial University, adds an observation which can be used for further research, as well as the development of programs as part of Entrepreneurial University in different settings. Furthermore, the development, and refinement of Entrepreneurship Support at the country level can benefit from this research which may add value to assessing the outcome of Entrepreneurship Education from the perspective of students. The researchers on Entrepreneurship, and specifically Entrepreneurship Education can benefit from the results which may pave the way to further research areas regarding the topic which taps into real-life problems. Lastly, Entrepreneurship Students, as well

as prospective students of Entrepreneurship may benefit from this research as they would be able to observe the outcome of Entrepreneurship Education, and the comparison with the Entrepreneurs and the Student Entrepreneurship Support Program teachings.

1.2 Research Design Introduction

The preliminary introduction of the research design is presented in this section and, further details of the Research Design are provided in Chapter 4: Methodology of the paper. The study is empirical, the research method is interviews. The participants of the interviews are all part of Aalborg University. To compare their perspectives on Entrepreneurship Approaches, interviews are conducted with Entrepreneurship Students, Student Entrepreneurship Program Mentors, and Entrepreneurs. The research is developed on qualitative analysis, in total 12 people are interviewed: 5 Students, 3 Mentors and 4 Entrepreneurs. The interviews are designed based on five themes which are identified based on the theory of Effectuation and Causation (Sarasvathy, 2001a). These themes are [1] Resource Arrangement, [2] View on Risk, [3] Attitude Towards Competition, [4] Unexpected Events, [5] Control Over the Future. From the theory, these themes are used to present the distinction between Effectuation and Causation. The following Chapter presents the Theoretical Background which includes the comparison of Effectuation and Causation based on the five themes.

1.3 Structure of the Paper

The paper is composed of 5 main Chapters which are structured as [1] Theoretical Background: defining the keywords of this study which are Entrepreneurship and Entrepreneurship Approach, as well as defining the different forms of Entrepreneurship Approaches and, the introduction of Effectuation and Causation as a comparison as the basis for the interviews. [2] Literature Review: empirical studies regarding Entrepreneurship Approach teachings of Entrepreneurship Education. [3] Methodology: the research design, and the methods utilised in the study. [4] Findings: Interview responses based on the themes of research. [5] Discussion: comparison of the responses based on the groups and themes. Every Chapter contains several Sections which delve deeply into the relevant topics, and some Sections are divided into subsections when deeper information is needed. The conclusion is presented separately from the discussion, which presents the conclusion drawn from the study as a whole, study limitations and recommendations for future research.

2. Theoretical Background

This section presents the relevant concepts of the research. Firstly, as it is the main topic of the study, Entrepreneurship is defined to clarify the point of view by considering the definitions provided by earlier researchers. Different perspectives argue different ways of defining who would be called an Entrepreneur, and what values, actions, and characteristics would make a person an entrepreneur. For a very long time, this literature has been saturated by different arguments. From the wide literature on Entrepreneurship, the definitions associated with the present study are extracted.

Secondly, the present study focuses on the Entrepreneurship Approach, which is not a well-defined term. Therefore, in this section, the term is also attempted to be defined and the different forms of the Entrepreneurship Approach are discussed. The Effectuation and Causation Approaches are elaborated further compared to the other conceptualised approaches as the theory is utilised as an outline for the interviews, which is explained more in Chapter 4: Methodology.

2.1 Entrepreneurship

One of the most challenging tasks of researching Entrepreneurship has been finding a valid definition. For a very long time, researchers have been experiencing this struggle (Gartner, 1988; Brändstätter, 1997; Venkataraman, 1997; Shane & Venkataraman, 2000; Kobia and Sikalieh, 2010; Gedeon, 2010). The differences between the definitions of Entrepreneurship are surprising, but this also indicates the opportunities created by the entrepreneurship activity which is causing the discussion of answering simple questions like '*What is Entrepreneurship? Who is an Entrepreneur*?'.

To start with, Gartner (1988) argued that it is wrong to ask, 'Who is an Entrepreneur?' because it assumes that there are some characteristics that make someone an 'Entrepreneur', therefore it limits the understanding of the phenomenon of Entrepreneurship and defining the term Entrepreneur. In their research, Kobia and Sikalieh (2010) examined the three different attempts that are used by researchers to define entrepreneurship which are trait, behavioural and opportunity identification. Considering this differentiation, it can be observed that the argument by Gartner (1988) claims, 'Who is an Entrepreneur?' only discusses the trait domain. For Gartner (1988), Entrepreneurship is defined as the "Creation of Organizations" (p.57), which indicates a behavioural approach to defining the term. Gartner (1988) suggested that entrepreneurs create the organization, and the characteristics of the entrepreneurs only support the behaviours.

It can be argued that if the person did not have those characteristics, would they still be an Entrepreneur if they created an organization? The definition by Metallo et al (2021) may answer this question which states that "an Entrepreneur is an innovative and creative person who explores the environment for new opportunities and takes advantage of them after proper evaluation" (p. 35). This is one of the most

inclusive definitions, pointing out that some characteristics of a person combined with their action of starting a business with their value of opportunity identification, make them Entrepreneurs. Therefore, the creation of an organisation would not happen without certain characteristics, and a person with those characteristics would not be called an entrepreneur if they do not create an organisation.

Furthermore, Brändstätter (1997) argued that there are two types of Entrepreneurs. One is the 'Independent Entrepreneurs' who are the founders of the business and are part of the Top Management, and the other is 'Dependent Entrepreneurs' who are employed as part of the Top Management and show entrepreneurial behaviours such as leading innovation by taking initiatives and managing the environment with their ideas and goals (Brändstätter, 1997). However, Gartner et al (2010) argue against this, and they claim that 'entrepreneurial behaviours' are only defined by the activities that cause the creation of new organizations rather than the activities which are done in an established organization.

The present study focuses on the approaches followed by Entrepreneurs in the early stages. Therefore, in light of the discussions above, also reflecting the argument of Gartner (1988), the present study accepts that people become Entrepreneurs because of the activities they do, specifically starting a business. The study scope does not include the reasons why entrepreneurs take certain actions, and what drives them to start a business, which are discussed previously. The only focus related to entrepreneurial activity is the approach followed by an entrepreneur to start their business. This entrepreneur must be a person with an idea to develop into a business and take the initiative to do so.

However, another division of Entrepreneurship occurred related to the goal of the activity. Gedeon (2010) observed that researchers have developed sub-domains with different meanings of Entrepreneurship such as 'Social Entrepreneurship' and 'Corporate Entrepreneurship', to simplify the process of defining Entrepreneurship. Regarding this distinction, the Entrepreneurship activity discussed in this study exclusively focuses on Entrepreneurial Activities to create a for-profit business, and the Entrepreneurs are the founders of these businesses. As mentioned by Gartner et al (2010) organizations such as social businesses, non–profit organizations, and public organizations may have different processes of development, therefore it is also important to point out that the scope of this study is limited to for-profit company entrepreneurship. To clarify the perspective of the present study, in terms of the definition of Entrepreneurship and Entrepreneur, based on the discussions provided above, this study defined Entrepreneurship as an activity to develop a for-profit business. The person who takes the initiative to do this is called the Entrepreneur.

The discussion regarding whether that person stays an Entrepreneur after the establishment of the business is not well defined in the literature on Entrepreneurship. However, there are points made regarding when a business can be seen as newly established which gives a hint to that is the time the person establishing the company fits to be an Entrepreneur, as defined by the present study. In their study, McDougall et al (1992) accepted 8 years to be the average age of a venture, in their study to

analyse the New Venture Strategy. More recently, based on this acceptance by McDougall et al (1992), Larrañeta et al (2012) studied a venture 8 years old in their study for the research on strategies of new ventures. Furthermore, Morris et al (2018) defined a new venture to be 2 to 5 years old. In their analysis, Henry et al (2020) defined a new venture as an organisation until 4 to 6 years of operation. EU Startup Monitor (2018) included startups up to 10 years old and for some sectors 5 years in the study. More recently, the Global Entrepreneurship Monitor (2024), defined a new venture as up to 3.5 years old. The difference between the years provided for each study is wide, ranging from 3.5 years to 10 years old. In this range, the present study focused on 5-year-old companies as 'newly established'. As it might be challenging for entrepreneurs to remember a long time ago, therefore a figure in the middle of the range provided by earlier studies. To sum up, in the very wide literature of Entrepreneurship and the definition of Entrepreneurs this section attempted to clarify the questions regarding the present research on how these terms are accepted to be defined. Accordingly, Entrepreneurship is defined as '*Entrepreneurship is founding a for-profit business, and working in this business for 5 years or less by an individual, who called be an Entrepreneur*'.

2.2 Entrepreneurship Approaches

Entrepreneurship Approach is not a well-defined term, yet. This section attempts to define the Entrepreneurship Approach, considering the earlier use of terminology. Researchers used different terms, which meant the approach of an Entrepreneur. For instance, Brown (2008), Ries (2011), and Sarasvathy & Venkataraman (2011) called these approaches as 'Methods' of Entrepreneurs. Furthermore, Blank and Dorf (2012) called 'Framework', Sull (2004) called the 'Guidelines', then McGarth and MacMillian (1995), Xu and Koivumäki (2019) and Zhu et al (2021) mentioned 'Approach'. Based on these early descriptions, to define this aspect of Entrepreneurship as mentioned by Xu and Koivumäki (2019) "Business Creation Approaches" (p.307), the approaches followed by an Entrepreneur to start a business is the definition of *Entrepreneurship Approaches*. Xu and Koivumäki (2019) used this term to describe Approaches such as Effectuation, Causation and Lean Startup, which are the Entrepreneurship Approaches considered in the present study. In addition, Zhu et al (2021), described Effectuation as an Approach to Entrepreneurship. As a result of the relevance of their description and current study, this term is utilized and the description of different types of Entrepreneurship Approaches is elaborated later in this chapter.

The Entrepreneurship Approach can also be described as, a structured guidance to entrepreneurial actions, which is mentioned by Mansoori and Lackéus (2020), as a need for this kind of structure was raised by students and entrepreneurs. Hence scholars, as well as practitioners, responded to this request by conceptualizing a variety of Entrepreneurship Approaches (Mansoori and Lackéus, 2020). It is recognized that entrepreneurship involves acting at the point when the entrepreneur identifies an

opportunity that is worth chasing (McMullen and Shepherd, 2006). Forbes (2024) defined some initial steps of starting a business such as researching competitors and the market, writing a business plan, developing a business model, and making financial plans. However, for an entrepreneur, this list is not as straightforward, as a step-by-step process to follow and start a business. In the early stages of the business, uncertainty is very high. As defined by Ries (2011), a startup is "a human institution designed to create new products and services under conditions of extreme uncertainty" (p.8). Under these conditions, these approaches can be seen as a guideline and in the development of these concepts, uncertainty consideration played an important role. The researchers observed that the entrepreneurs themselves looked for ways to survive in this 'extreme uncertainty'. Therefore, the Entrepreneurship Approach that is the focus of this study is defined as *the method that Entrepreneurs follow to complete Entrepreneurial Activities, under conditions of uncertainty and create their ventures*. Different Entrepreneurship Approaches are observed and conceptualised over time. In the section below these Approaches are presented.

2.3 Forms of Entrepreneurship Approaches

The present study is carried out based on the theory by Sarasvathy (2001a) which defined the Effectuation and Causation as two opposite Entrepreneurship Approaches. Besides the theory of Sarasvathy (2001a), several Entrepreneurship approaches are conceptualized such as Business Planning, Discovery–Driven Planning, and Lean Startup. In this section, initially, these different forms of Entrepreneurship Approaches are described based on the literature on the method differentiation of Entrepreneurs. Later, the similarities and differences between the approaches are discussed. The present study benefited from the structural nature of Effectuation and Causation Approaches as differentiated by Sarasvathy (2001a), and out of the Entrepreneurship Approaches discussed in this section the theory of Sarasvathy (2001a) is used for analysing the interview results. It is considered that the answers to interview questions might not align perfectly with the definition of Sarasvathy (2001a) and, with this consideration, the similarities and differences between the Approaches are observed which can used for further elaboration of results discussion. In this section, the Entrepreneurship Approaches are presented in chronological order based on the time that the approach mentioned in the literature. In the last Subsection of this Section, the comparison of approaches is presented.

2.3.1 Business Planning

It is argued that the Business Planning approach to creating a new venture has been utilized since the 1960s – 70s. During this period, it was used as a structural approach to manage the operations of firms as well as guidance for decision-making processes (Mansoori and Lackéus, 2020). Business Plans are seen as important documentation to be provided for funding from different sorts of investors (Karlsson & Honig, 2009). In the Guide by Forbes (2024) to write a business plan, a structural guideline is given

which includes components such as a table of contents, executive summary, description of products or services, financial plans etc.

2.3.2 Discovery – Driven Planning

Based on the Business Planning Approach, which was used widely, McGrath and MacMillan (1995) observed the struggle of companies in uncertain situations. By adopting the business planning approach, they developed the Discovery–Driven Planning. This approach acknowledges that established firms can make decisions based on their experience, whereas for new ventures, sufficient information is not available, and they rely on high assumptions (McGrath and MacMillan, 1995). It is defined as a practical tool, which supports uncovering the underlying assumptions at the start of a business (McGrath and MacMillan, 1995). The process of discovery-driven planning is supported by four documents that serve as modelling basic business economics, listing required operations, following the assumptions as a checklist, and testing the assumptions at milestones (McGrath and MacMillan, 1995).

2.3.3 Effectuation and Causation Approaches

Effectuation and Causation Approaches are defined by Sarasvathy (2001b), based on their differences. Therefore, this section defined the two approaches together. However, later in this section where approaches are discussed based on the differences and similarities, Effectuation and Causation are separated. The fundamental concept of the Effectuation process focuses on answering the three questions (1) who I am (2) what I know (3) whom I know, to evaluate the available resources and take action as an entrepreneur (Sarasvathy, 2008). The approach of Effectuation focuses on utilising existing resources and creating a venture rather than focusing on predicting, as it recognizes the uncertainty in Entrepreneurship (Effectuation.org, n.d.). Sarasvathy (2001a), defined the principles of this approach as; [1] Affordable loss; [2] Strategic Alliances; [3] Exploitation of Contingencies; and [4] Controlling the Unpredictable. In addition to these principles, one more is added in later studies, which is defined as a [5] Bird-in-hand principle (Sarasvathy, 2008). Causation is defined by Sarasvathy (2001a) as the inverse of the Effectuation Approach. The Causation Approach indicates the focus of the Entrepreneur towards the desired goal, which requires specific resources to be planned and organized (Read et al, 2011). The Causation approach includes various strategies to manage the development of a venture (Read et al, 2011). Overall, as it is the inverse of Effectuation, this approach focuses on predictions, and planning that arranges the definite resource to achieve the desired goal.

2.3.4 Lean Startup

The Lean Startup Approach recognizes the high assumptions by startups in the early stages regarding the problem understanding that they are targeting. This principle indicates identifying and prioritizing the riskiest assumptions and working on validating them primarily, which will avoid any potential effort and time waste (Gutbrod and Münch, 2018). From their own experience, Eric Ries came up with the Lean Startup Approach in 2011 (Ries, 2011). In the Entrepreneurship context, this approach is seen as the first successful attempt by a practitioner to develop an Entrepreneurship Approach (Mansoori and Lackéus, 2020). The approach of a Lean Startup focuses on developing a Minimum Viable Product (MVP) and validating the business model by testing with potential customers (Bortolini et al, 2018). One of the important instruments is the Lean Canvas which helps to take the first steps of the venture by focusing on the minimum of a business model (Bortolini et al, 2018). The approach is an experiment based on validating or invalidating the hypothesis (Ries, 2011).

2.3.5 Comparison of Entrepreneurship Approaches

The subsections above demonstrated different Entrepreneurship Approaches from theory, that are followed by entrepreneurs, from the definitions overlapping values are observed. Therefore, this section presents a discussion of the similarities and differences between the Entrepreneurship Approaches. This analysis contributes to the research by clarifying the main aspects of Entrepreneurship Approaches that can be identified from interview results.

To start with, in light of the argument by Sarooghi et al (2019) a similarity between Effectuation and the Lean Startup Approach is observed. It is mentioned that the principles of Design Thinking can be heavily observed in the principles of Effectuation, which is a method of project management that includes an iterative process (Sarooghi et al, 2019; Rauth, 2015). The process of Design Thinking includes observing and establishing empathy with the target group, having an iterative approach to develop the product, service, and processes as well as challenging big assumptions to validate the ideas (Dam & Siang, 2024). Similarly, Discovery–Driven Planning and Lean Startup Approach involve the assumption validation. Discovery – Driven Planning is developed as a consideration for uncertainty in Entrepreneurship. As a result of uncertainty consideration, the assumptions made by Entrepreneurs are observed. Furthermore, uncertainty is also recognized in the Effectuation Approach therefore, in the situation where the future does not go as planned, the contingencies are considered (Read et al, 2011). Discovery – Driven Planning, in contrast to Effectuation and Lean Startup Approaches, follows a structured planning process, which is an aspect similar to the Business Planning and Causation Approach. However, the Business Planning and Causation approach involves predictions in contrast to Discovery–Driven Planning, as uncertainty is not considered when these approaches are followed.

To sum up, the main similarities and differences between the five Entrepreneurship Approaches are based on predictions and planning aspects. To present this differentiation within the Entrepreneurship Approaches the figure by Read et al (2011) is utilised.
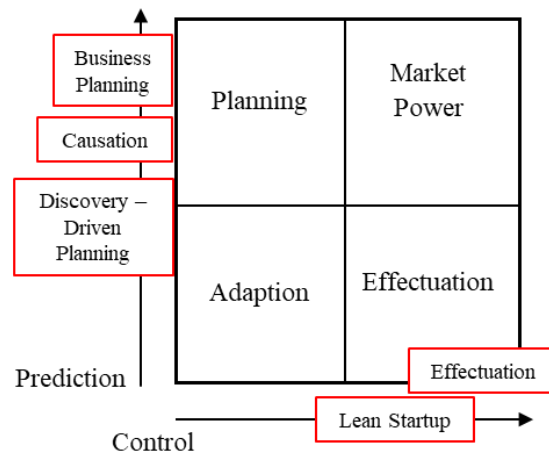
Figure 1 Comparison of Entrepreneurship Approaches. Own illustrations, based on Read et al (2011).

The figure by Read et al (2011), is represented in   Figure 1 as a replica of the original figure. The figure shows the indication of prediction and control involved in the Entrepreneurship Approach. Read et al (2011) defined this figure as a tool for evaluating the strategies of companies. On the four areas of the figure companies can be positioned depending on the combination of prediction and control they follow (Read et al, 2011). In the context of Entrepreneurship Approaches, this figure is utilised to group the approaches based on their prediction and control aspects. The reason behind the comparison is for further discussion of the results from the interviews. Utilising this figure the five Entrepreneurship Approaches can be compared in terms of their aspects regarding predicting and controlling based on the definitions provided above. Accordingly, in the figure it is shown that the high control and low predictions Approach is called Effectuation, therefore the Effectuation Approach is allocated to that part of the figure. Furthermore, as above the similarities of approaches with Effectuation discussed, the Lean Startup Approach also involves low prediction and as it follows an iterative process, adaption is involved in the Approach therefore it is located next to Effectuation, but with lower control. Moreover, Discovery – Planning involves higher planning compared to Effectuation and Lean Startup as it works towards milestones. Furthermore, testing assumptions involve adapting to the process, therefore Discovery – Driven Planning is located between Planning and Adaption, with low control and moderate Prediction. According to the figure provided by Read et al (2011), Causation and Business Planning, as both have high prediction threats and include planning is in the opposite direction of Effectuation.

According to the fundamental definition of the Approaches, different aspects of Entrepreneurship Approaches are compared. Accordingly, Causation and Business Planning, Effectuation and Lean Startup share the most similar aspects. Discovery – Driven Planning fits into both groups depending on the aspect that is considered. Therefore, the results of the study can be analysed based on these similarities by focusing broadly on the Effectuation and Causation Approaches. Therefore, the definitions of Lean Startup, Business Planning and Discovery–Driven Planning can be considered, to determine the closeness of approach followed by participants to Effectuation and Causation. In the following section, the theory is presented in more detail, and the current chapter is concluded with the framework that presents the indicators of Entrepreneurship Approaches which are used for analysing whether the Approach aligns more with Effectuation or Causation.

2.4 Effectuation versus Causation

Referring back to Section 2.2, where the Entrepreneurship Approach is defined. Uncertainty is very high in the early stages and the approach of Effectuation is determined based on the viewpoint. Contingencies cannot be analysed or predicted easily. Still, they can be exploited which is the motto that has driven Sarasvathy to detect the Effectuation approach, as stated: "Human life abounds in contingencies that cannot easily be analysed and predicted but can only be seized and exploited" (Sarasvathy, 2001a, p.250). In light of the work by Simon (1991), who argued that rationality is limited in complex situations, Sarasvathy (2001a) introduced the inverse of rationality as 'Effectuation'.

The root of the Effectuation Theory goes back to 1998. The research by Sarasvathy (1998) focused on defining how an idea is transformed into a firm by an entrepreneur, which is the process called 'pre–firm'. It is suggested that the initial entrepreneurial decisions can be understood by observing the pre–firm process to fill the gap in various research topics (Sarasvathy, 1998). Later, Sarasvathy et al (1998) conducted research comparing entrepreneurs and bankers to observe the differences in the perception and management of risks among these two groups. The research methodology of 'think–aloud protocols' is utilized in the empirical studies under the topic of Effectuation (Sarasvathy et al, 2001; Sarasvathy, 2008; Dew et al, 2009). The study by Sarasvathy et al (1998) concluded that there is a significant difference between the two groups. Entrepreneurs work on controlling the outcomes from the risk situations, at every level of risk: they correlate the problem with their values and feel responsible regarding the situation's outcome. On the other hand, it is observed that bankers set targets for the outcomes of the situation, treat the situation as a structured problem and attempt to avoid situations where personal responsibility is higher (Sarasvathy et al, 1998). The results of differences between the two groups paved the way for further research on risk management and decision-making under uncertain conditions by economic actors, which is focused on by Sarasvathy (2001a).

As mentioned in the abstract of Sarasvathy (2001a), the main difference between the processes is that "Causation rests on a logic of prediction, Effectuation on the logic of control." (Sarasvathy, 2001a, p.243). The process for Entrepreneurs, who are following the Effectuation approach, begins with the available means and works on picking between different effects that can be created by utilising these means (Sarasvathy, 2001a). On the other hand, as the opposite of Effectuation, Sarasvathy (2001a) defined Causation as the approach which focuses on an end goal and selects within means to achieve the aimed effect. Based on Sarasvathy (2001b) the difference between Effectuation and Causation is illustrated in the figure below.
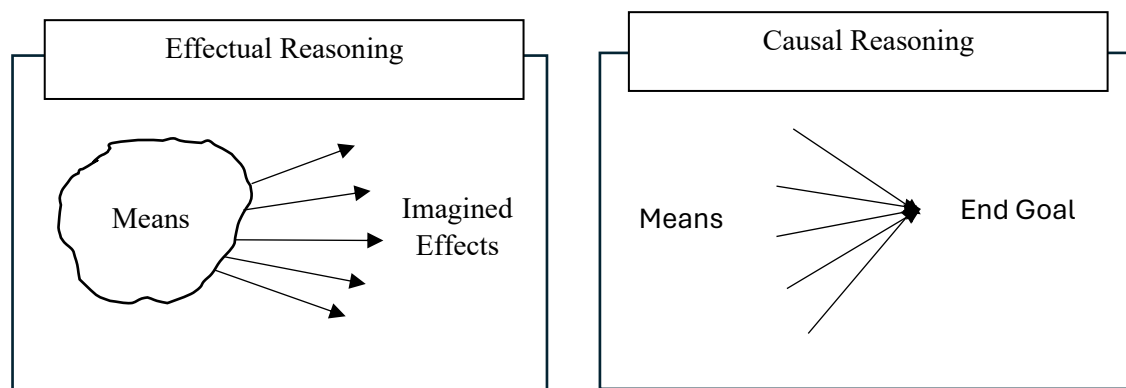
Figure 2 Comparison of Effectuation and Causation. Own Illustration based on Sarasvathy (2001b)

As also illustrated in Figure 2 the two processes have different starting points. Entrepreneurs who follow the Effectuation approach start by observing and evaluating available means. Usually, the means are defined as answers to questions (1) who I am – preferences, qualities, skills; (2) what I know – education, experience, proficiency; (3) whom I know – networks (Sarasvathy, 2001b). From these defined means entrepreneurs take actions such as looking for partnership options, to select from the results they can get from these available means.

On the other hand, Entrepreneurs following the Causation Approach, start with market research, segmentation of the market, selecting a target segment, creating a product that is appealing to the target segment, raising the funds needed, forming a team, and lastly implementing the market strategies and plan for the next steps carefully (Sarasvathy, 2001a). According to Sarasvathy (2001a), with the Causation Approach, entrepreneurs focus on predicting the future. In contrast, the Effectuation Approach focuses on controllable sides of the future and does not predict the future. Moreover, as an outcome of the two approaches, it is mentioned that the Causation Approach would create a business that has a market share in an existing market, by utilizing competitive strategies (Sarasvathy, 2001b).

In contrast, the Effectuation Approach would develop a business in a new market created with alliances and utilizing cooperative strategies (Sarasvathy, 2001b).

Referring to Subsection 2.3.3 the Effectuation Approach is defined by principles which are [1] Affordable Loss; [2] Strategic Alliances; [3] Exploitation of Contingencies, [4] Controlling the Unpredictable and [5] Bird – in – hand (Sarasvathy, 2001b; Sarasvathy, 2008). These principles of Effectuation are defined based on observation of the Entrepreneurship Approach that Entrepreneurs follow according to Sarasvathy (2001b, 2008). Sarasvathy (2001a) defined the Causation approach as the inverse of Effectuation, therefore it is expected that the Causation Approach is defined by the opposite of these principles.

To compare the two approaches, five themes are defined based on the Effectuation Principles, which shows the case of the Causation Approach as an inverse. These themes are also utilized for the development of interview questions for the present study, which will be elaborated on in Chapter 4: Methodology. The themes that indicate two different perspectives on approaches are presented in the table below.

	Effectuation	**Causation**
Resource Arrangement (Read et al, 2011)	Bird–in–Hand	Goal–Driven
View on risk (Sarasvathy, 2001a)	Affordable loss	Gain–oriented
Attitude Towards Competition (Sarasvathy, 2001b)	Strategic alliance	Competition – oriented
Unexpected Events (Read and Sarasvathy, 2005)	Exploiting the Contingencies	Inflexible
Control Over the future (Read and Sarasvathy, 2005)	Controlling Unpredictable	Prediction

Table 1 Comparison of Effectuation and Causation based on themes.

Accordingly, the themes are defined as;

[1] **Resources Arrangement**, which indicates the bird–in–hand principle of Effectuation is observed as Entrepreneurs develop their businesses by assessing the outcome they can get with the utilization of the available resources (Read et al, 2011). On the other hand, Causation is goal-driven therefore they work with predetermined goals where they arrange the resources accordingly (Read et al, 2011).

[2] **View on Risk**, this indicates the Affordable Loss Principle of Effectuation, where the Entrepreneur focuses on risking the minimum of resources (Sarasvathy, 2001b). Whereas an Entrepreneur who follows the Causation approach has a gain–oriented perspective and invests the resources without consideration of risk (Sarasvathy, 2001b).

[3] **Attitude Towards Competition** indicates the Strategic alliance principles, where the Entrepreneur considers partnership options with the competitors and focuses on benefiting from the competitors (Sarasvathy, 2001b). On the other hand, an Entrepreneur following the Causation approach would focus on detailed market research and would work on being better than the competitors (Sarasvathy, 2001b).

[4] **Unexpected Events**, this aspect reflects the Exploiting the Contingencies principle which states that an Entrepreneur has an opportunity to focus and discover the ways to benefit from the situation (Read and Sarasvathy, 2005). However, for Entrepreneurs who are following the Causation Approach, when an unexpected event happens, as there is a high commitment to the specified goal, path selection is limited (Read and Sarasvathy, 2005).

[5] **Control Over the Future** reflects the Controlling Unpredictable principle that is combined with the previous principle of unexpected events, the focus is to find opportunities and work with the aspects that they can control (Read and Sarasvathy, 2005). Whereas the Causation approach has a prediction focus, therefore the Entrepreneur has the viewpoint that based on past events future can be predicted and planned (Read and Sarasvathy, 2005).

Although, Sarasvathy (2001a) has introduced Causation as the opposite of Effectuation, and in the comparison above it has been observed that the two approaches have different perspectives on Entrepreneurship. However, in an Entrepreneurial setting utilising one approach is not exclusive, which means a combination of Effectuation and Causation is possible. Sarasvathy (2001a) mentioned: "Both causation and effectuation are integral parts of human reasoning that can occur simultaneously, overlapping and intertwining over different contexts of decisions and actions" (Sarasvathy, 2001a, p. 245). Therefore, the present study does not argue that one of the approaches is better to use, and clear-cut results for each group are not expected. Rather, as Effectuation and Causation are defined in the structure, the theory is utilised as a framework to analyse the results of the interviews. That will create distinctive results of interviews from different aspects which makes it clearer to compare different perspectives.

2.5 Conclusion of the Chapter

To conclude, this section has contributed to the study by presenting the theoretical background regarding the research. First, Entrepreneurship discussions from the literature are presented and the present study defines an Entrepreneur as the founder of a for-profit business, who has been working in the venture for 5 years or less. Furthermore, as the focus of the present study Entrepreneurship Approach is also discussed based on Entrepreneurship Literature and it is defined as the method that the Entrepreneur uses to complete the Entrepreneurship Activities. Different forms of Entrepreneurship Approaches are discussed, which are Business Planning, Discovery – Driven Planning, Effectuation, Causation and Lean Startup. The differences and similarities between the Approaches are discussed and as a result, it is observed that Effectuation and Causation have common points with other approaches, while they are opposite to each other. Effectuation and Causation are presented in detail, and a comparison between the two approaches is presented which is the base for the interview designs and result analysis. This section mainly focused on the background theory from the Entrepreneurship literature, a literature review regarding empirical studies which focus on the Entrepreneurship Approach, and Entrepreneurship Education is carried out, that is presented in the following section.

3. Literature Review

This Chapter presents the literature review results which focused on the studies that discuss the student learnings from education in terms of Effectuation and Causation. In the present study, the Effectuation and Causation Theory is utilised as a framework to study the learnings of students. The previous studies on the learnings of students based on Effectuation and Causation are observed to develop a discussion which will pathway to exploring differences and similarities between the Entrepreneurship Approach of learnings of students and teachings of Student Entrepreneurship Support, compared to the practices of Entrepreneurs. The literature review is formed of two sections. First, Early papers regarding the Effectuation and Causation learnings of MBA students, as argued by Sarasvathy (2001b), and further studies related to this argument are observed. However, the studies presented in the first section focus on MBA students, as well as these studies are from over 15 years. Therefore, a second literature review is conducted on studies which focus on the learnings of Entrepreneurship Students, and studies that are 10 or fewer years old.

3.1 Early Studies on Entrepreneurship Approach Learning

The argument by Sarasvathy (2001b) regarding MBA classes are teaching causation, sparked the present study. In several studies, a similar argument is observed, and these studies are summarised in Table *2* Early Arguments Regarding Entrepreneurship Approach Teachings. Sarasvathy (2001a) claimed that the popular textbooks among MBA programs are teaching the Causation Approach to starting a business. For instance, it is argued that in MBA classes pricing approaches are taught as setting marginal

revenue to marginal cost, which is argued that this method aligns with the Causation Approach (Sarasvathy, 2001a). Furthermore, Sarasvathy (2001a) mentioned that MBA classes teach a predictive approach to entrepreneurship, which is defined as the Causation Approach.

Authors	Type	Related Quotes / Findings
Sarasvathy (2001a)	Theoretical	MBA teach a predictive approach to decision-making processes in business.
Sarasvathy (2001b)	Theoretical	Globally MBA programs teach causal or predictive reasoning.
Sarasvathy et al (2001)	Empirical	Entrepreneurs followed Effectuation more than Causation. MBA students followed Causation more than Effectuation.
Dew et al (2009)	Empirical	Most MBA students mainly followed Causation, Expert entrepreneurs mainly followed Effectuation.

Table 2 Early Arguments Regarding Entrepreneurship Approach Teachings

Sarasvathy et al (2001), conducted an empirical study which has shown that the early claims regarding Causation taught at MBA programs are supported. In the study, Entrepreneurs and MBA students are compared in terms of Effectuation and Causation Approaches, as part of the research 27 Entrepreneurs and 37 students are observed using the Think-aloud protocols method (Sarasvathy et al, 2001). The research monitored participants, as they identified market fit for a new product (Sarasvathy et al, 2001). The research has concluded that in the protocols 89% of the entrepreneurs followed the Effectuation Approach more frequently compared to the Causation Approach. On the other hand, 81% of the students followed the Causation Approach more than the Effectuation Approach.

Similar to the study by Sarasvathy et al (2001), the study by Dew et al (2009) included participants of 27 Entrepreneurs and 37 MBA Students. In the study by Dew et al (2009) as the research method, think-aloud protocol analysis is also utilised. In the research, the participants are required to solve a typical decision–making problem while developing a new venture (Dew et al, 2009). The study results have revealed significant differences between the framing of problems by Entrepreneurs and MBA students (Dew et al, 2009). The results show that entrepreneurs are tempted to use a more effective approach compared to MBA students, by focusing on the controllable from the means available to work on unpredictable ends (Dew et al, 2009). On the other hand, students focused on a goal-based process which is defined as the Causation Approach (Dew et al, 2009).

To sum up, the initial review of the literature regarding the Entrepreneurship Approach learnings of students, and the studies which focus on MBA Programs are analysed. These studies presented that the Causation Approach is learned by the students, and this is mentioned as an issue in these studies. The reason behind this argument is that the Effectuation Approach is defined as the approach that expert entrepreneurs follow (Sarasvathy, 2001a). However, more recent studies have shown the opposite. In contrast to the findings of Sarasvathy et al (2001) and Dew et al (2009) on Novice and Expert Entrepreneurs, Ruiz–Jimenez et al (2021) had different results. The study by Ruiz–Jimenez et al (2021) focused on the correlation between the decision-making approach and new venture performance. In the survey results, entrepreneurs with different expertise levels were included, therefore the conclusion of the study was drawn towards novice and expert entrepreneur analysis (Ruiz–Jimenez et al, 2021). The results of the study showed that there is a positive correlation between Expert Entrepreneurs following Causation and the performance of the company, however, this is not confirmed for Novice Entrepreneurs. Therefore, the literature has shown different cases, and the point of view that education should only teach effectuation because experts are following that is not a supported argument in the present study.

Furthermore, another argument is raised by Gunzel–Jensen and Robinson (2017) which points out the concern about to what extent Effectuation can be taught. Gunzel–Jensen and Robinson (2017) mentioned that Sarasvathy (2001a) distinguished the Effectuation and Causation Approach based on a study that focused on expert entrepreneurs however, students are novices in the context of entrepreneurship, and this should be under consideration while teaching Effectuation in the class. Gunzel–Jensen and Robinson (2017) argued that, in terms of Entrepreneurship Education, the principles of Effectuation can be taught in class. On the other hand, Causation Approaches are argued to be more structured to be taught in the class for instance Honig (2004) mentioned that a Business Plan is preferred by educators of Entrepreneurship as it is a project-oriented approach that supports student evaluations and provides a structure to the course. The arguments regarding Effectuation and Causation Approach in Entrepreneurship Education have evolved around, which one should be taught. The studies mentioned above can be summarised as both Effectuation and Causation are found to be used by Expert Entrepreneurs, therefore the argument regarding Entrepreneurship Education goes beyond the discussion of what is taught, towards '*What are the student learning?*'. A further literature review is carried out to explore the learning of the students, in the following section.

3.2 Entrepreneurship Education and Entrepreneurship Approach Learnings

To keep an updated information flow in this section, with present and relevant discussion, the studies are selected as a maximum of 10 years old. To find studies which explored Entrepreneurship Education and the Learnings of students, the snowball technique is utilised. Initially on Google Scholar terms such

as 'Entrepreneurship, Effectuation, Causation, Entrepreneurship Approach, Student Learning etc' are searched with different combinations and the papers are analysed from the results. The most relevant studies to the present study are presented to support the arguments.

Yamakawa et al (2016) argued that Entrepreneurship Education aims to teach the theory, which includes abstract concepts, and skills of Entrepreneurship. However, the definition of a successful entrepreneur engages a cognitive approach, which is referred to as the Entrepreneurship Approach (Yamakawa et al, 2016). Therefore, they explore whether it is possible to develop a pedagogy to teach this approach to the students. Yamakawa et al (2016) have distinguished two types of pedagogical approaches to Entrepreneurship Education, which are theory–based and practice–based learning. Their study explores whether a bridge can be built between these two to teach the Entrepreneurship Approach (Yamakawa et al, 2016). Furthermore, the hypothesis of their study reflected the objective of pedagogy is to teach students both Effectuation and Causation as an Entrepreneurship Approach (Yamakawa et al, 2016; Sarasvathy, 2001a).

To conduct the study, they developed the curriculum and carried out tests before and after courses provided to undergraduate business students (Yamakawa et al, 2016). The curriculum had the objectives of integrating experience in the entrepreneurial setting, practising the entrepreneurship approach, identifying the opportunities of entrepreneurship, analysing the opportunities, and exploring self, and team formation as part of Entrepreneurial leadership (Yamakawa, et al, 2016). Two surveys were conducted related to the studies of the students, the first survey was before the course started and the second survey was after the course was completed (Yamakawa et al, 2016). In total 267 participants were included in the study and after various eliminations, finally 255 of the responses were included in the result analysis of the study (Yamakawa et al, 2016). The findings of the study have shown a positive change in the responses of the students, and five hypotheses of the study were supported (Yamakawa et al, 2016). First, students engaged in prediction more, which was an expected result of the course in relation to the Causation approach. Second, in relation to the Effectuation Approach, comfort with experimentation, engaging affordable loss, flexibility and pre-commitment have shown positive change, supporting all five hypotheses (Yamakawa et al, 2016). Therefore, the study by Yamakawa et al (2016) has presented the effect of Entrepreneurship Education on the Entrepreneurship Approach, which indicates that the Entrepreneurship Approach could be taught through the development of a curriculum covering both practical and theoretical aspects.

Similar to Yamakawa et al (2016), the study by Thein et al (2023) argued that Entrepreneurship Education is not only responsible for teaching knowledge and skills about Entrepreneurship. Therefore, Thein et al (2023), focus on Entrepreneurial Behaviour as learning of the students, in addition to the knowledge and skills. They have conducted the study and analysed the results with a perspective of Social Cognitive Theory. As proposed by Bayron (2013) to apply in the curriculum of Entrepreneurship

Education to enhance the cognitive features of students, and consequently Entrepreneurial Behaviour (Thein et al, 2023).

The study focused on the Entrepreneurship Education Program that supports students to become Entrepreneurs (Thein et al, 2023). The objective of the study is to test how Action Planning in Entrepreneurship changes the behaviour of students (Thein et al, 2023), which is argued that it supports students to learn Entrepreneurial Behaviour. The research design included the development of an online entrepreneurship boot camp for university students, and the participants were divided into two groups 47 of which received the intended program aligned with Action Planning Intervention, and the others as the control group which did not learn Action Planning. As the main part of Entrepreneurship Education, causation and effectuation approaches are taught to the students (Thein et al, 2023). In terms of Causation: Systematic Market Analysis, Strategy Development and Preparation of Business Plan are taught, and for Effectuation it was requested that students develop business opportunities utilising the principles of Effectuation and using their available means (Thein et al, 2023). They were required to establish affordable losses, explore partnerships with stakeholders, act on contingencies, and take control over resources and actions, to the extent possible (Thein et al, 2023). Thein et al (2023) mentioned that teaching the two approaches integrated to the students expected them to learn the knowledge and skills that will support thinking and acting like an entrepreneur. The integrated approach was taught to all students and only the action plan lessons were divided into two groups (Thein et al, 2023). The study had 6 Hypotheses, and 3 out of 6 Hypotheses were supported by the study carried out (Thein et al, 2023). Accordingly, the qualitative analysis confirmed that action planning included Entrepreneurship Education, focused on integrated Effectuation and Causation had a positive effect on Entrepreneurial self–efficacy and Opportunity recognition (Thein et al, 2023).

The effect of Self–efficacy on Novice Entrepreneurs is observed in the study by Engel et al (2014). The study focused on 93 Business Students, without any entrepreneurship experience (Engel et al, 2014). The method of research is designed to measure the perception of students in an uncertain situation, as a mix of questionnaires, feedback sessions and scenario questions (Engel et al, 2014). The students are divided into two groups. In the process, one group of students received feedback regarding their entrepreneurial ability, which they provided in the answers to the questionnaire conducted initially (Engel et al, 2014). The other group did not receive feedback regarding this and was part of the research as the control group (Engel et al, 2014). The findings of the study are analyzed with consideration of the approach that students follow in highly uncertain situations (Engel et al, 2014). As a result of the study, it was found that students who received feedback were more likely to follow Effectuation in their scenario questions, compared to control group participants in uncertain situations (Engel et al, 2014).

3.3 Conclusion: Literature Review

This Chapter focused on exploring the empirical studies from literature based on the Entrepreneurship Approach learnings of Entrepreneurship Students. Initial studies regarding the Entrepreneurship Approach teachings as Causation, which are discussed by early studies presented and it is found that they share a similar point of view that Causation should not be taught because Expert Entrepreneurs follow Effectuation (Sarasvathy, 2001a; Sarasvathy, 2001b; Sarasvathy et al, 2001; Dew et al, 2009). However, later studies proved that there are cases where expert entrepreneurs follow Effectuation Approach, (Ruiz–Jimenez et al, 2021). Furthermore, it is argued that as Effectuation theory is developed based on expert entrepreneurs, it is challenging to teach in the class and it is preferred to teach topics such as Business Plan, as it is more structured, which aligns with the Causation Approach referring back to Chapter 2: Theoretical Background (Gunzel–Jensen and Robinson, 2017; Honig, 2004). As a result, of the initial literature review, the conclusion is drawn as the focus of research should be directed to the learnings of the students and the support of Entrepreneurial University, rather than having a perspective only on what should be taught solely by Entrepreneurship Education. Therefore, further literature review is conducted based on different scenarios of teachings and focusing on conclusions of what students learnt. The studies by Yamakawa et al (2016), (Thein et al, 2023) and Engel et al (2014) showed that with Entrepreneurship Education it is possible to teach the student Entrepreneurship Approach. Therefore, expecting an alignment between the Entrepreneurship Approach followed by students and the entrepreneurs could be supported by these studies, and the alignment can be addressed by teaching changes, if only they are pointed out, which is the objective of the present study.

4. Methodology

This Chapter focuses on presenting the research design of the study. The study is designed as empirical, and qualitative and research method interviews are used. This Chapter presents the details of the study. It is composed of 8 Sections which are [1] Context of the study: presents Aalborg University as an Entrepreneurial University setting example, which is the University that all the participants are part of. [2] Method of Data Collection: presents the considerations of selecting interviews as a data collection method. [3] Research Participant: presents the selection criteria for participants, and introduces the participants of interviews. [4] Design of interviews: the interviews are organized into five themes, and this section presents how the interviews are designed with this consideration. [5] Themes of the Interviews: the questions which are created based on the themes are presented in this section. [6] Method of Result Analysis, [7] Ethical Considerations: as the study is based on interviews, this section presents how the ethical considerations are taken into account before, during and after the interviews. [8] Acknowledging the Biases: the biases which are acknowledged, and accordingly how the research is designed by these considerations are presented.

4.1 Context of the Empirical Study

Integrating Entrepreneurship in University activities has gained attention over the years, and policymakers have supported this activity to make Entrepreneurship a third pillar of universities in addition to research and teaching activities (Kuckertz, 2021). Universities are seen as a part of the Entrepreneurial Ecosystem at the country level, Isenberg (2014) has defined the 'Entrepreneurial Ecosystem' as an economic development strategy through encouraging entrepreneurship in countries. Policymakers believe that entrepreneurship rates can be increased by education (European Commission, 2006). However, it is argued that the quantity of startups in a country does not necessarily mean that the country should expect economic development (Isenberg, 2014), it is more about the quality of the enterprises. As mentioned by Lee and Eesley (2020), Entrepreneurship education helps students realise their entrepreneurial potential and improve the performance of enterprises in terms of survival and revenue.

More and more Universities are offering study programs that cover 'Entrepreneurship'. Since the early 2000s, universities have been offering Entrepreneurship, which was first formed as elective courses and, more recently full master programs have been developed (Fayolle and Klandt 2006; Kuratko, 2005). Across the globe, universities are dramatically increasing offerings of both faculty-based education and side programs of Entrepreneurship to their students (Morris et al, 2017). These include master's Programs at Business Schools and Student Entrepreneurship Support centres as a part of University Activities. Referring to the main objective of the present study, Entrepreneurship Education improved the quality of Entrepreneurship Activities is a supported discussion. Therefore, the consideration of the outcome of Entrepreneurship Education, and in general the Entrepreneurial University has gained importance, which is the topic that the present study serves. The definition of an Entrepreneurial University suggests the provision of structure for Entrepreneurship Education and support for Entrepreneurship which is observed at Aalborg University (AAU), Denmark. Therefore, AAU is only utilized as an example of an Entrepreneurial University case in this study, because of three reasons.

First, AAU fits well into the case of Entrepreneurial University. Based on the definition of Guerrero, Urbano and Gajon (2020), the Entrepreneurial University provides entrepreneurial education programs, infrastructure such as incubators and close relations with external stakeholders of the external entrepreneurial ecosystem such as investors, industry, and government. As mentioned on the official webpage of AAU "Our units help ensure an entrepreneurial environment and ecosystem at Aalborg University that supports ambitious entrepreneurs" (AAU Innovation, 2024) which is a vision that aligns with the description of Entrepreneurial University. Second, as the thesis was completed as part of this university's Entrepreneurship program, the accessibility to the participants was high. Third, when focused on one university context, the consistency of results can be established. As the students received similar education, for instance, Problem–Based Learning (PBL) method of teaching entrepreneurship.

The mentors are working with similar cases of student entrepreneurs, and the entrepreneurs have completed their degrees at AAU, and they have been part of the student entrepreneurship program of AAU during their studies. For these reasons, AAU is a representative example of an entrepreneurial university infrastructure, and the aim is to support further research areas related to Entrepreneurship.

4.2 Data Collection

Initially, interviews are considered an appropriate data collection method, because they help collect a wide range of information regarding the topic that will support findings of differences and similarities between perspectives of people. An alternative to the interview method in the form of surveys was also considered, as it would help reach a wider range of participants in a shorter time, and quantitative analysis could be developed with the results of surveys. The plan with surveys was rating-based. For instance, to analyse the tendency towards different Entrepreneurship Approaches the participants would choose the agreement level for corresponding scenarios, and the results would show which Entrepreneurship Approach they would follow more often. However, the research method was developed around interviews and the survey option was omitted due to several reasons.

To start with, interviews provide thicker data compared to surveys. Furthermore, the answers for each interview can be analyzed using qualitative techniques therefore the perspective of each participant can be linked to the theories and explored in terms of Entrepreneurship Approaches. Yet, compared to surveys, for both the researcher and interviewee it takes more time to conduct and analyse the interviews. However, if the time duration is provided to the interviewees prior and they volunteer to participate, this is a sign of their intention with the answers as they considered investing a certain time in this research. Therefore, the main reason for analysing the results is based on theory, which is also used for designing the interviews. This supports the comparison of different perspectives to answer the research question of the research, interviews are utilized as the data collection method of the study. However, the preparation for interviews is crucial to prevent any potential disconnection between the participants and the researcher. Therefore, before the themes of the interviews are developed the questions are created based on these themes. The design of the interviews is presented in the following section.

4.3 Research Participants

In this section, the participants of interviews for the three groups are presented. In total 12 people participated in the study; 5 of these are Entrepreneurship Students, 3 Mentors and 4 Entrepreneurs. All the information presented in this section regarding the participants is provided with their consent. The information that is not granted consent, with the form is not relevant to the study, therefore they are not included in the description of the participants. For instance, to avoid revealing their identities instead

of their names, labels are provided for each participant. The labels are formed by combining the initials of their participant group and the order in which they have been interviewed. Therefore, Students are labelled as S1, S2, S3, S4 and S5. The mentors are labelled as M1, M2 and M3. Finally, the Entrepreneurs are labelled as E1, E2, E3 and E4.

4.3.1 Entrepreneurship Students

The table below introduces the student participants of the interviews. The information provided in Table 3 is collected during the interviews. The semester number is provided based on the master's level as that is one of the criteria for the participants. The reason behind this criterion is that at the master's level, the studies are focused on more specialized areas, furthermore, higher accessibility also played a big role in this selection. All students have or had their Entrepreneurship Education at AAU, which provides Entrepreneurship Education at the master's level. Therefore, this criterion is selected to create consistency within the participant group.

4 of the Students are currently in their 4th Semester of master's studies, and at least 1 semester they have studied Entrepreneurship in their previous semesters. The third column of the table provided information regarding the previous Entrepreneurship experiences of the students. Prior experience in Entrepreneurship potentially affects the answers regarding the Entrepreneurship Approach. However, exploring the direct effect of prior entrepreneurship experiences on the Entrepreneurship Approach required larger samples. As indicated in the table the level of Prior Experience of the 3 Students is defined as 'Limited Experience', and this indicates that they have been involved in developing a venture, however currently they are not founders of any registered company in Denmark, which separates them from the Entrepreneurs.

Initially, a self–selection process was carried out for the participants of student participants, therefore, a message to the class was sent online regarding the research. Four students replied to this message. Out of these students, three of them participated (S1, S2, S3) in the interviews, and one of them opted out due to challenges with time arrangements.

To achieve the target number of participants, three more people are contacted who are not part of the 'online group chat' for the class, therefore these participants are not part of the self-selection process. These students are selected due to their interest in starting a business which was known before the interviews. All three students volunteered to participate, however, one of these students is not studying at AAU therefore their interview responses are not included in the research.

Therefore, five students are defined as S1, S2, S3, S4 and S5. Four of these students are in the final semester of their Master's Degree, while one of them is in the second semester of their Master's degree. S1, S2, and S3 completed the first year of their master's degree at a different University, and they are studying Innovation Management and Entrepreneurship. S4 is studying Master's Program focusing on Entrepreneurship, and S5 is studying International Business. S2, S4 and S5 have limited experience in

entrepreneurship while others do not have any prior entrepreneurship experience. Lastly, all the student participants are planning to become entrepreneurs, as they have stated in the interviews.

Interview	Semester	Prior Entrepreneurship Experience	Plan to start a business	Education
S1	4	No	Yes	Innovation Management & Entrepreneurship
S2	4	Limited Experience	Yes	Innovation Management & Entrepreneurship
S3	4	No	Yes	Innovation Management & Entrepreneurship
S4	2	Limited Experience	Yes	Entrepreneurship
S5	4	Limited Experience	yes	International Business

Table 3 Description of Entrepreneurship Students

4.3.2 Student Entrepreneurship Support Mentors

For the mentors, no selection process is carried out as all the mentors who are currently working at this position in the same place are interviewed. The number of mentors who are both working in this job/role and who are accessible is limited. Therefore, three mentors who are working full time at the incubators Center of the University are interviewed. Compared to the other groups, the educational background of these groups is not presented due to the low number of participants and limited number of mentors at the university, to avoid revealing their identity. However, in terms of research, the relevant information regarding their educational background is that in their Bachelor's and Master's studies, they did not complete entrepreneurship-related studies. All the mentors who participated in the study have prior entrepreneurial experience, which supports the assumption that mentors will add a practical viewpoint to the results of the study. M1 and M2 have 7 years of experience in this role and M2 has 6.5 years of experience.

4.3.3 Entrepreneurs

The table below introduces the Entrepreneurs who have participated in the study. Accordingly, the year of experience in Entrepreneurship ranges from 1-5. All the Entrepreneurs have different educational backgrounds, and none of them has completed Entrepreneurship at the university level of education. Only E1 has started their journey of entrepreneurship as a solo founder, however recently they partnered

with a co-founder. The Entrepreneurs are selected for the study individually, and they are from the network within the Student Entrepreneurship Support Program. Firstly, they have all graduated from Aalborg University, and they have participated in the Student Entrepreneurship Support Program.

Interview	Experience	Education Background	Co-founder	Selection Criteria
E1	1	Bachelors: Software Engineering	Solo (recently partnered with a co-founder)	Grants they received
E2	5	Bachelors: Electronics and IT Engineering Masters: Acoustics and Audio Technology	Yes	Challenges they faced
E3	2	Bachelors & Masters: Robotics	Yes	Grants they received
E4	1	Bachelors: Architecture and Design (ongoing studies)	Yes	Good networking

Table 4 Description of Entrepreneurs

Secondly, these entrepreneurs are recognised for several achievements within the network, and this has been utilised as selection criteria for the entrepreneurs to request their participation in the research. E1 and E3 are recognised for their achievements by receiving grants for their startups. This indicates an extent of success for them. E2 has recently participated in an event for networking where they have shared their experiences with some challenges they have overcome as an entrepreneur. Lastly, E4 has also participated in a networking event where they shared their advice for growing their network as an entrepreneur. These recognitions of entrepreneurs within the network, and their inspiring journey with starting businesses, have put them under the spotlight to request participation in the present study, and they all have volunteered to share their experiences.

4.4 Design of Interviews

In the initial steps of the study, three types of interviews are considered to design the interviews. These types are structured, semi-structured and unstructured. Structured interviews suggest the sessions follow a well – defined Question and Answer (Q&A) order, semi-structured indicate the interviews follow a guideline instead of a well-defined Q&A, and lastly, unstructured interviews do not follow an order and it is a free-flow conversation between the researcher and the participant. The first consideration that drove the choice of interview structure was to create a less time-consuming session, and second, give the interviewees freedom to add their opinions and experiences without major limitations. Therefore, to carry out efficient and low-time-consuming interviews to collect information, a semi-structured

interview design is followed. The average duration of interviews is recorded as 30 minutes. In total 12 interviews are conducted, and 7 of these interviews are conducted face to face. The other 5 interviews are conducted online using the Zoom application. To record the face-to-face interviews a voice recorder of the laptop is used, and the online interviews are recorded by the application.

The semi-structured interviews are designed based on the Effectuation and Causation Comparison as provided in Chapter 2: Theoretical Background. Initially, themes are developed based on this comparison and interview guidelines are created, including some drafts of what questions will be asked in the interviews. The study consists of three different interview groups which are Entrepreneurship Students, Student Entrepreneur Support Mentors, and Entrepreneur. For each of these groups, three different guidelines are developed, and these guidelines are followed in every interview session. Depending on the flow of the conversation, questions are asked in different orders. The themes of the interviews are defined as Resource Arrangement, View on Risk, Attitude Towards Competition, Unexpected Events and Control over the Future. These themes represent the different aspects of Entrepreneurship, which indicates whether the person describes an Effectuation or Causation Approach in that situation.

The guidelines start with more general questions which do not have a direct effect on the research aim but warm up the conservation. Furthermore, information regarding the description of the participant is collected in the first stages of the interview.

In Appendix 1, the interview guidelines are presented, which are prepared before the interviews in the form of notes. For the interviews of all three groups, it is divided into two stages. Before the questions, the interviews are introduced to the participants, such as the aim of the study and the structure of the interview. In addition to these, to the students 'please answer the questions considering your studies, and thinking of yourself as an Entrepreneur' is noted.

In the first stage of interviews, some warm-up questions are asked. These questions aim to start the conversation as well as acquire additional information regarding the participants. For instance, the question of 'How do you define an Entrepreneur?' is asked to all three groups. This question aims to understand the point of view of the participant, regarding the definition of Entrepreneurship. This question was not included in the discussion as it is outside of the scope, but it was used as a conversation starter.

Furthermore, to the students and the mentors, 'Do you have any prior Entrepreneurship Experience?' is asked. This question aims to understand whether having prior experience would be a potential reason if they give different answers in their interview groups. Especially for the student, to clarify if they are answering the questions purely from their studies or their experience affects their answers. Furthermore, the students are asked whether they would like to start a business in the future, and this question is asked to target the assumption of the research that students join Entrepreneurship Studies, by aiming they

want to become entrepreneurs. This question aims to test whether the assumptions are held for the student participants of the present study. Lastly, as a warm-up question to the students, it is asked if they had a chance of contacting Entrepreneurs during their studies. This question explores the potential missing link between the studies and real-life experiences. Similarly, the mentors are asked whether they have any in–lecture experience, meaning any involvement in faculty-based activities. This question towards the mentors also questions the potential gap between the studies of Entrepreneurship and more real-life experiences focus activity of the University that is the incubator centre. Another question to the mentor and to the entrepreneurs is asked regarding their years of experience, in order to understand their level of expertise in their roles. Lastly, the Entrepreneur whether their company is officially registered in Denmark is asked, to make sure about their fit to this research as it is one of the criteria for the entrepreneurs in the present study. The first stage of interview questions consists of warm-up questions, and the second stage consists of questions related to the theory, defined as the themes and question related to these themes are presented in the section below.

4.5 Themes of Interviews

The themes of the interviews are defined based on the theoretical comparison of Effectuation and Causation as presented in Chapter 2: Theoretical Background. This section presents the questions asked in terms of these themes which are [1] Resource Arrangement, [2] View on Risk, [3] Attitude Towards Competition, [4] Unexpected Events, [5] Control Over the Future. This section is organized in the order of these themes.

4.5.1 Resource Arrangements

To the students, it is asked which resources they would arrange initially. Further questions regarding how they would carry out idea development are asked. This question aimed to understand if they would consider the resources, they have available to develop the idea, or if they would be idea-oriented and arrange the resources accordingly. In the interviews with mentors, two questions are asked relating to resource arrangement. The first is related to idea development, and this aimed to understand whether they would support the student entrepreneurs to follow the effectuation approach where they examine their available resources and develop the idea based on them. Or if they would guide more towards causation, and having an end to arrange the resources accordingly. Lastly, to the Entrepreneurs, the question is asked as to how they carried out the idea development in their experiences. This question aimed to understand whether they utilized their available means in the beginning, or they had the business idea and attempted to arrange the resources and acquire the missing resources to achieve the initial plan.

4.5.2 View on Risk

Related to this theme, the students are asked whether they would spend all their time or if they would invest money in the early stages of development. Furthermore, to the students and the entrepreneurs, the risk question is asked as to whether they focus on gain or loss. This question aims to analyse whether they have affordable loss consideration. For the students it is asked in the early stages would the revenue or cost consideration would be more important. To the Entrepreneurs from their experience, if they considered the gain or loss more when they were in the development stage of their ventures. Furthermore, how much of their resources they have invested in the early stages. The question regarding this theme is asked as, whether they encourage the Student Entrepreneurs to consider the resources they are investing in the company in the early stages. Furthermore, it is asked if they encourage them to calculate the expected revenues and if so, how detailed.

4.5.3 Attitude Towards Competition

In the questions related to the competitors, to the students instead of the word 'competitors' they are stated as 'the companies which are selling a similar product', or similar. The reason behind this is to observe their competition orientation. The students were asked how would define these companies, and the answers related to how they would see these companies and if they were defined as competitors would they see them as companies which they need to focus on being better in the market. To the mentors it is how they encourage the student entrepreneurs to carry out market research, aiming to get answers regarding how detailed market research is expected from the student entrepreneurs. Furthermore, their guidance towards the student entrepreneurs to see their competitors is asked of the mentors. Lastly, to the entrepreneur their process of market research is asked, as well as another question is dedicated to asking if they have considered any partnership in the early stages of their business.

4.5.4 Unexpected Events

Questions regarding this aimed to explore how they would approach business development if they experienced a highly uncertain situation which has happened unexpectedly. As an example, the COVID–19 Pandemic is used. The reason behind mentioning examples is to make it easier for the participants to relate to an unexpected situation that has significant effects. To the student, it is asked if this happened in the early stages how would they define this situation. To the mentors, their guidance to the student entrepreneur in terms of how to approach the situation is asked. Lastly, the entrepreneurs, first if they have experienced the COVID–19 Pandemic situation with their venture development is asked. If yes, it is asked how they have approached the situation is asked. If not, how they would approach is asked.

4.5.5 Control Over the Future

In terms of control over the future, whether the participants are more tempted towards predictions and planning-oriented or whether they focus on the controllable aspects of entrepreneurship is examined. For all three groups, a Business Plan question is included, aiming to analyse the purpose of planning for them. To the student, if they would write a business plan is asked, and additionally as given in the guidance if they would be planning based on the predictions is asked. Furthermore, to mentors, if they provide guidance and expect the student entrepreneurs to write business plans, are asked. Lastly, to the Entrepreneurs, if they have written a business plan is asked. Additionally, the importance of predictions and planning is asked of entrepreneurs. The reason behind focusing on business plan questions is to analyse to what extent the interview groups follow the business planning approach, and their purpose in writing the business plan. The conditions of writing a business plan, for instance, are to have a clear-cut plan or to evaluate their resources to improve their decision-making processes.

In addition to the themes given above, follow-up questions were asked based on their answers to let them elaborate on the answers. The guidelines are used as a basis for the interviews, but the questions are rephrased while asked during the interviews. Depending on the flow of the conversation, timing, and the expertise level of the participant

4.6 Method of Result Analysis

This section presents the process of result analysis for the research. The participants provided their consent regarding the recording of the interviews. These recordings are only saved on one laptop and stored internally, to keep the data secure. For each of the interviews, transcripts are developed using Microsoft Word, following the transcript generation the interviews are listened to do corrections with writing. The transcripts and audio recordings of interviews are analyzed several times, to validate the findings for each of the analyses.

The interview questions are developed based on themes as presented in the section above, and drafts for questions to be asked in the interviews are determined before the interviews. However, because of the semi-structural nature of the interviews, the order of themes and questions were not asked in a specific order. Therefore, as a first step after the interviews were completed a Microsoft Excel file was created with three different tables containing each of the research groups the students, mentors, and the entrepreneur. The tables organized the answers from interviews under the themes of the interview as predetermined. This step is carried out a short time after the interviews are completed. This has supported the analysis of the information based on themes initially and getting an overview of the results.

A second result analysis is carried out, a month after the first result analysis. In the month in between theory is researched further, to analyse the answers another time, The further research supported a

second-time extraction of information from the transcripts, this time another technique is used. The second result analysis is carried out using the method of colour coding for each of the themes. Each interview is listened to, and the transcripts are read simultaneously.

The information mentioned in the interview that matches with the themes of the interviews is written as different coloured notes. To carry out this process Miro Board, which is an online platform as a workspace, is utilized to separate the answers into themes by using different coloured notes. The reason behind this is that corresponding information is observed for different themes from the answers. To elaborate on these in the discussion of results, this analysis of results is carried out a second time. Furthermore, the result analysis is carried out in different periods. Aiming that the results which are overlooked in the first analyses can be realized. Checking the result extraction from the interviews with a co-author would not be possible to apply intercoder reliability, therefore interviews are analyzed twice to carry out a similar process.

After the information is extracted from interviews, the results are interpreted based on the theory. The table is provided as the results of the interviewees to be defined as Effectuation or Causation Approach, based on the predetermined definition of these Approaches. Firstly, the results from the interviews are listed without any interpretation. Secondly, from the information regarding the approach they would follow, for each of the five themes, the answers are analyzed based on the definitions of the Approaches. Mainly the process, and the order of steps that the participants explain, whether it aligns with Effectuation or Causation is determined. The final discussion is developed from these results, and the corresponding information for each of the themes is also included in the discussion of the results.

4.7 Ethical Considerations

Before the interviews, consent forms are sent to the interviewees. The template of the consent form is given in Appendix 2. Regarding the ethical issues, all the recordings are stored locally on the laptop without having any third-party application involved. Furthermore, in the consent form in the information that will be included in the research this kind of personal information is not specified to prevent any potential ethical concern, 'they' is used but every interview is conducted with only one person. Personal information such as age, gender, and nationality are excluded from the questions as they are not relevant to the present study. In the section below the participants of the study are introduced and further discussion regarding the personal information is given. The first reason behind this is this information is not relevant to the research question. Second, like the name concern, this information might keep the identity of the participants from being recognized without their consent, which would cause an important ethical concern.

From the quotations, some parts of the sentences are excluded and there are two reasons behind that. First, the information provided at the beginning or end of the sentence has the potential to reveal the

participant as the information provided is sensitive. Second, the information they provided is not relevant to the study. Therefore, certain parts of the speeches from the participants regarding the themes of interviews are not included in the quotations, and the either beginning or endings of the quotations are indicated with the sign '[…]'.

4.8 Acknowledging Biases

Biases in research are inevitable, however, acknowledging these biases and designing the research with this acknowledgement is important for improving the reliability of the study. These are biases to be aware of when reading. Firstly, as the research is based on personal experience, the expected outcome exists. This bias is addressed by developing semi-structured interviews based on theory, so the freedom of asking questions outside of the theory is limited. The reason behind this is that, when the interview results were analyzed, the opinion did not play a role in extracting findings from the interviews, this has been done based on the themes, and the predetermined definitions are used for interpreting. The findings are extracted based on theory, and predetermined themes of the interviews. Secondly, the expected outcomes are mentioned as assumptions of the study which supported the development of a preunderstanding of the problem, and these are mentioned to be tested because of the study. Lastly, The biases of the current study include that Effectuation is a personally preferred approach. By acknowledging this, Effectuation and Causation are researched from different perspectives from the literature. During the interviews, the questions are asked with a neural language to prevent affecting the response of the participants. There are also biases from the participant's side, which are considered as potential effects on the results, and these are presented in Chapter 7: Conclusion, as limitations of the study.

5. Findings

This chapter presents the results derived from the interview responses of the participants. As presented in the previous chapter, the interviews are designed based on five themes. The results for each of these themes are presented in dedicated sections, which are divided into subsections based on the Students, Mentors and Entrepreneurs division of participants. The initial interpretation of results is conducted in this Chapter, and the responses of the participants are analysed to determine the alignment with the Effectuation or Causation approaches. Definition and the comparison between these approaches are defined based on Read et al, 2001; Sarasvathy, 2001a; Sarasvathy, 2001b; Read and Sarasvathy, 2005). For each of the themes, these definitions are provided as a table presentation. This chapter lays the groundwork for answering the research question with the analysis and organisation of interview responses. Chapter 6: Discussion provides a detailed discussion of the results and main answer to the research question.

5.1 Resource Arrangements

This section presents the results of the questions in the interviews regarding Resource Arrangement in the initial stages of entrepreneurship. The Resource Arrangement aspect of entrepreneurship describes the process of resource utilization by an entrepreneur. Accordingly, the resource arrangement approach of entrepreneurs can be identified by analysing whether they have developed the idea for their business by considering their available resources, or whether they have worked towards a predetermined goal, and arranged the resources that will complement the desired outcome. This description is extracted from definitions of Read et al (2011), and from the interview responses the distinction presented in the table is used to determine the approach that participants described.

	Effectuation	**Causation**
(Read et al, 2011)	**Bird–in–hand:** exploring potential outcomes based on the available resources.	**Goal–Driven:** arranging the required resources based on a predetermined goal

Table 5 Description of Resource Arrangement

5.1.1 Students

This section presents the results from interviews with students, under the topic of resource arrangement. In the interviews with the students, they were asked about the process that they would follow to develop a business idea and their consideration of arranging the resources. The comparison of the two approaches and descriptions are referenced from Read et al (2011).

In terms of resource consideration for developing a business idea, S1 stated *"I would actually see the resources I have based on that do the ideation"*. Furthermore, S1 mentioned, *"Someone that I studied with or that I'm working with, someone that could be compatible with what I have in mind and then further start to keep developing the idea until we have something tangible."*. The approach that S1 described in terms of assessing the available resources and developing the idea based on them, shows that they tend to follow Effectuation based on the description in theory.

S2 mentioned, *"So the first I would look for is a mentor of that industry because […], it is easier to have some guidance […]"*. Furthermore, S2 stated, *"If there are more people and there are more perspectives, it is easier to grow the business faster and of course to divide the workload and […] get success a bit faster as compared to that, so the first resource I would look for is people […] on the team."*. The answers of S2 indicated that they would look for people to work with based on certain

skills required to develop a specific product, which indicates that the approach that S2 described is goal-oriented which is a threat aligning with the Causation Approach.

S3 mentioned, "*I keep thinking if it is a business idea, is there a business plan around it? What is the market size? These are the first things that start coming to my mind*". Furthermore, S3 added, "*I can just easily connect to people, use the already existing resources [...]*". The approach of resource arrangement as described by S3 aligns with Causation, as their process is defined as being goal-oriented, and they mentioned arranging the resources based on the predetermined idea they have.

The response of S4 stated as the initial steps of their business they would consider, "*Do I have time for this, or do I have the experience to run this? If I don't have [...] then I need to find someone with that experience to run the project and make it possible. But to hire someone I need more resources. [...] So, if I put in order time, knowledge, and money.*". The approach that S4 would follow indicates that they would work with the Causation approach as the process they described indicated they would work towards an initially set goal.

 S5 stated, "*Based on the availability of the current resources because we can't wait for the resources to accumulate everything and start with [...]*". The approach as described by S5 indicates that they would follow Effectuation as they will be developing the business idea based on available resources, therefore S5 would select from possible outcomes that their means can provide.

5.1.2 Mentors

This part presents the main findings from the interviews with mentors regarding resource arrangement guidelines they provide to student entrepreneurs. To the mentors, which approach they guide the student entrepreneurs to follow is asked.

M1 mentioned resource arrangement that "*[...] it starts with an idea. it's not polished, it's not ready and in a lot of cases, it goes in both directions.*", furthermore, they added, "*Of course, starts with building with whatever they have, so do they know some part of it [...] work smarter, not harder [...] also develop a team and integrate people from outside with key knowledge in other direction*". The approach that M1 described as their guidance to the student entrepreneurs aligns with Effectuation, as they mentioned working with the resources to find which direction the business will go rather than focusing on one end goal.

M2 mentioned, "*[...] if you want to do a software-based startup, getting a co-founder who knows software is a must [...]*". Furthermore, M2 stated that when student entrepreneurs lack resources it is only a one-time use "*work around it*". M2 did not specify how they guide the student entrepreneurs to approach developing business ideas. However, the answers of M2 indicated that they would expect

them to have a goal-oriented approach, and acquire specific resources, which aligns with the definition of Causation.

M3 stated, "*I always try to help them set the right team because they know that they can't go far alone*". Furthermore, M3 mentioned missing specific skills to develop "*find some courses so they can learn themselves and also by time saying that you need to find somebody to do that for you because you can't.*" The guidance of M3 aligns with the Causation Approach, as they expect the student entrepreneurs to have an end goal planned and acquire resources accordingly to develop the product.

5.1.3 Entrepreneurs

In this section, the resource arrangement aspects of entrepreneurship as described by entrepreneurs from their experiences are presented. In the interviews with the entrepreneurs, their experiences with how they considered their resources, and their idea development processes are asked.

E1 mentioned, "*I started just instead of thinking of how I can get the resource, I just started making some […] because I wanted to validate not if there was a market, but I wanted to validate if the product was possible, […] I started developing some small prototypes, but none of them I used today*". Therefore, E1 developed their business idea based on their skills, as they found a solution to the problem that they were facing. This approach of E1 aligns with the definition of the Effectuation approach.

E2 stated "*[…] we wanted to help […] make it easy […]*". Furthermore, E2 mentioned that "*We had a very broad idea and then it narrowed down to the wrong thing, and then we pivoted from that, and we went to something else. But still with the same goal of helping.*". According to the description of E2, they developed the business idea based on their skills with the technology and they validated the idea by working with people in the industry This approach of E2 aligns with Effectuation as they have focused on their available resources, which is their skills in this case, initially to develop the business idea.

E3 mentioned, "*We are very good at [...] the question we asked was what industry right now is under digital transformation*". Furthermore, E3 added "*So we started talking to […] about what the challenges are and what the how their space is evolving and how maybe […] could fit into that.*". The approach that E3 described as they developed the business idea based on their skills, aligns with the description of Effectuation.

E4 stated, "*It is really hard work to open all these […]. So that is why we came up with this idea.*". Furthermore, E4 added that "*First […] iterating about this and […] then we find out. […] maybe we could just do […]*". The experience of E4 indicated that since the beginning they worked with a team which is formed of different skills that complement each other to work on the development of the

business idea and explored the options that could solve the identified problem with their available skills, which aligns with the Effectuation Approach.

5.1.4 Main Results: Resource Arrangement

The table below presents the main results from the Resource Arrangement theme of the interviews.

Group	Resource Arrangement
Students	Idea development based on available resources (S1, S5), Resource Arrangement based on predetermined goal (S2, S3, S4)
Mentors	Start with a broad idea and depending on resources find a direction (M1), Use strategies to acquire needed resources (M2, M3)
Entrepreneurs	Developed the business idea based on the available resources (E1, E2, E3, E4)

Table 6 Main Results: Resource Arrangement

The table above summarises the main findings regarding the resource arrangements aspect. Accordingly, the majority of students indicated that they would work towards a predetermined goal, by arranging the specific resources. This approach as described by students aligns with the approach guided by two of the mentors as they mentioned they would guide the student entrepreneurs to use strategies and arrange specific resources, therefore three students from the interviews and two mentors have described an approach that aligns with Causation.

While other two students mentioned that they would develop the idea for their business based on their available means. One mentor indicated their guidance towards, starting with a broad idea and finding the direction for the business based on the availability of resources. All of the entrepreneurs who are interviewed also mentioned a similar approach, that aligns with Effectuation.

5.2 View on the Risk

This section presents the interview results regarding the View on the Risk aspect of Entrepreneurship. The View on Risk aspects refers to the gain and loss considerations of the entrepreneurs in the initial stages of business. This aspect is related to how the entrepreneur considers the investment of the resources, and how much of the resources they are willing to risk. The interview answers are considered

in terms of whether they consider risking the minimum of these resources, or if they would have an expected return focus and invest a significant amount of the resources. The definition of Sarasvathy (2001) is accepted for the View on Risk aspect of entrepreneurship as a comparison of two approaches, and based on this definition the answers of participants are analysed. The table below provides a description of the aspect based on the definition by Sarasvathy (2001a).

	Effectuation	**Causation**
View on risk (Sarasvathy, 2001a)	**Affordable loss:** focusing on risking a minimal number of resources such as time, effort, and money	**Gain–oriented:** expected return by investing a significant number of resources

Table 7 Description of View on Risk

5.2.1 Students

From the perspective of students, they were asked how they would approach this aspect if they were to start a business.

S1 mentioned, "*[…] the first thing would be drafting the idea and the concept. I would not put all my money into it. I would try to work in collaboration with a hub to help me develop […]*". This approach of S1 indicated that they are cautious about their time use before further development of their product they are considering validation of the product. This description of S1 aligns with the Affordable Loss principle, therefore it suggests that S1 would follow Effectuation based on their answers.

S2 indicated "*I think initially we should not focus on revenue*". Furthermore, S2 added, "*First, I would try to validate it*". The answers of S2 implied that they would not have a gain focus in the initial stages, and they mentioned validation of their idea before further development. The approach that S2 has described aligns with Effectuation, as the focus is on considering the risk of losing.

S3 mentioned, "*The present scenario of burning a lot of money does not make sense to me*". Furthermore, S3 stated, "*[…] outside of money to validate […] potential thing that's when you start putting in some money. Try to do it on your own bootstrapped, at least initially, […]*". The description of S3 aligns with the Affordable Loss principle of Effectuation as they would not invest significantly, and mentioned validating ideas before further investment.

S4 mentioned, "*Somebody needs it. [...] It's something that you can sell. You can make money out of it. Can you scale it?*". The View on Risk aspect of S4 indicates that they would have a high return orientation. This approach description aligns with the gain–orientation Causation Approach.

S5 mentioned, "*So that's the reason I think most successful entrepreneurs, all drop out from their universities. Bill Gates all like [...] dropped out because they wanted to focus more on their business*". The approach that S5 described as they would follow suggests that their consideration of losses is low, and they would decide to leave studies which would create a significant downside. The approach that is described by S5 aligns with the description of Causation in terms of the View on Risk aspect of entrepreneurship.

5.2.2 Mentors

The mentors were asked how they guide and expect from the student entrepreneurs.

M1 stated, "*Investment of time needs to be aligned with other obligations in your studies*". The guidance of M1 as described in the interview suggests that they encourage the students to follow the Effectuation approach, as they guide them to sacrifice minimum in the early stages.

M2 mentioned, "*How can we validate [...] just parts of our solution without spending much [...]?*". Furthermore, M2 stated, "*Bootstrapping is super useful.*". This description of M2 indicates that their guidance to student entrepreneurs is following the Effectuation Approach in terms of risk as they mentioned they encourage a focus on investing the minimum which will be sufficient to validate the idea.

M3 mentioned, "*[...] you need to put in all the time you have without overloading yourself*". Furthermore, M3 stated, "*Depending on the business model, a startup must have financial sustainability*". M3 shared insights regarding future considerations when investing time to develop the business, as the resources invested initially should support the financial sustainability of the business. The answers of M3 showed a tendency towards their guidance aligning with the Causation Approach, as they indicated they would expect student entrepreneurs to invest significant time and have future considerations while investing resources.

5.2.3 Entrepreneurs

The experience of entrepreneurs is observed during the interviews in terms of how much of their resources they have invested.

E1 mentioned "*I'm a part of the target group, [...] if I can make something that works for myself and that I would accept as a great product, then I want to work more with it [...] then I started validating*

the idea with other people". Furthermore, E1 stated that "*So that's why we are limited to [..]. But we don't want to make something that is specifically for [...], because that would just be too much work*". The approach as described by E1 suggests that they have high consideration of loss as they validated their idea before investing significant resources. Furthermore, E1 mentioned they focus on the satisfactory condition of their product and do not attempt to invest further, which will not bring significant value back which aligns with the Effectuation Approach.

E2 stated, "*iterated the product and the idea before developing too much with the interview*". The validation of the product prior to the further development of product indicates that based on the definition this approach aligns with Effectuation.

E3 mentioned, "Explored the challenges of […] before developing the idea". The consideration of E3 regarding resource investment, when they define the customer needs, indicates that they followed the Effectuation approach. The validation of the product before further development of the product indicates that based on the definition this approach aligns with Effectuation.

E4 mentioned, "*Money is not a motivation for me*". In terms of time investment. E4 mentioned they carry out entrepreneurship on the side of studies, therefore they balance the time invested in their business with the studies. However, E4 pointed out that they do not have a gain focus, which suggests that their approach tends to Effectuation.

5.2.4 Main Results: View on Risk

Group	View on Risk
Students	Initial Validation of the product (S1, S2, S3) Focus on the gains (S4 and S5)
Mentors	Minimum investment of resources (M1 and M2), Future finances consideration (M3)
Entrepreneurs	Consideration of effort invested (E1) Validation before resource investment (E2 and E3), considerate time investment (E4)

Table 8 Main Results: View on Risk

The table above presents the main findings regarding the View on Risk theme. Accordingly, the majority of students stated that they would initially attempt to validate the idea before considering further

investments in resources. The consideration of minimum resource investment aligns with the approach guided by two of the mentors, and the findings revealed that the experiences of all Entrepreneurs with risk consideration align with Effectuation as well as three students and two of the mentors. On the other hand, two students indicated that they would have gained focus, aligning with one of the mentors who mentioned that they would guide the students to consider future finances while they are investing the resources initially. This approach description aligns with the Causation Approach.

5.3 Attitude Towards Competition

This section focuses on presenting the interview results regarding the theme of Attitude Towards Competition. This aspect of entrepreneurship stands for how the entrepreneur sees the competitors in the market. The approach of entrepreneurs towards competition can be identified by how they see their relations with other companies in the same industry and the market research activities that carry out. From the answers to the interview questions, the extent of market research, their orientation regarding being better than the competitors and the consideration of partnership options with competitors are analysed from the process they described. The table below presents the description of theme from the Effectuation and Causation perspective, based on the definition by Sarasvathy (2001a).

	Effectuation	**Causation**
Attitude Towards Competition (Sarasvathy, 2001a)	Strategic alliance: entrepreneurs look for partnership options within the industry	Competition–oriented: researching the competitors, differentiating and being better than the competitors

Table 9 Description of Attitude Towards Competition

5.3.1 Students

In the interview, the students were asked how they would see the companies in the same industry, as well as the extensiveness of the market research that they would conduct.

S1 stated "*[…] I think it's all about differentiation and not only about the product but also about the service. […] make your product better or more attainable or more compelling […] beyond like what's at more added value*". The answers of S1 indicated their orientation towards competition, as they are better than the competitors which is an approach that aligns with Causation.

S2 mentioned "*And of course, it is quite important to have healthy competition because it keeps you motivated to continuously innovate. [...]*". Furthermore, S2 stated, "*So, we could learn how they are marketing and what changes we could do to our product to make it better*". Detailed market research

and the consideration of being better than the competitors are signs that S2 would follow the Causation Approach according to their interview answers, and alignment with the definition of Causation.

S3 mentioned "Your competitors are a good source of information as well", Furthermore, S3 stated, "[...] it's really good of [...] a very strong competition because you constantly keep innovating.". S3 mainly pointed out how would see competition which indicates that towards the competitors they would follow the Causation Approach, as they consider to be innovative that indicates companies compete to be better than each other and they foster their innovation activities.

S4 mentioned, "So, to me, it's always looking at who's the best doing this copy their strategies, do what they're doing and try to [...] be at the same level as them and then beat them". This approach that S4 described as they would follow towards competitors, aligns with the Causation Approach. As they indicated learning and implementing the strategies of competitors and reaching the same point, to become better than the competitors.

Lastly, S5 mentioned "Innovate the business model part only that is completely different. Not all the components of fulfilled by the other competitors". The approach that S5 has described indicates that they would focus on differentiation from the competitors as they would focus on development accordingly to the competitors, therefore this aligns with the definition of the Causation Approach. The approach that is described by S5 is discussed further in the Discussion Chapter.

5.3.2 Mentors

In this part, the main results from mentor interviews are presented under the aspect of attitude towards competitors' aspect of entrepreneurship. The mentors guide the student entrepreneurs to see the competitors and their guidance for initial market research is asked.

M1 mentioned, "There's often others on the market already [...] reaching out to people [...] or reaching out to experts that knows the industry, they can make desk research findings". The approach that M1 described as they would guide the student entrepreneurs aligns with the Causation Approach, as they stated they would guide the student entrepreneurs to carry out intensive market research.

M2, "Even competitors can be potential partners". The guidance described by M2 aligns with the Strategic Alliance principle of the Effectuation Approach, as M2 encourages student entrepreneurs to consider partnership options with competitors.

M3 mentioned "[...] their competitors, they could be partners as well". M3 mentioned further, "So going to, for instance, a fair, you can also do it on the computer online talking to some customers saying what kind of solutions are you using today". The approach guidance of M3 indicates that as they would encourage the student entrepreneurs to see the competitors as potential partners, they guide them to have the strategic partnership principle of the Effectuation Approach.

5.3.3 Entrepreneurs

During the interviews, entrepreneurs were asked how they carried out the market research and whether they considered any partnership options.

E1 mentioned "*[…] there was a gap in the market right now*" as they mentioned that they did not conduct detailed market research on competitors. Furthermore, regarding partnerships E1 stated "*I didn't consider that because I think that if I were to do it that way, I would not have the freedom that I needed to build something that works*". However, E1 mentioned that they are using certain services that are provided by an established company in the same industry. Therefore, their approach aligns with Effectuation, as they do not have a competitive focus and instead of developing everything from scratch, they are partnering with a company that is a competitor.

E2 mentioned "*We […] can solve the issue in a lot of different ways and some of our competitors are you know consultancy firms that do the same and while we […]*". As they described they looked at the competitors to define the market they were entering. This aimed to find a niche that their competitors are not covering and find a part of the market that competitors are not covering well. Regarding partnerships, E2 stated, "*And at least right now we have the approach that we want to, you know be very close with our customers*". According to the definition of the Causation Approach, the process described by E2 aligns with the Causation approach. However, further discussion regarding the approach of E2 followed is included in the Discussion Chapter.

E3 mentioned, "*So I think partnerships is something you can work on the sideline, but you should always have a standalone version or something that you can quickly push […] at the market.*". E3 explained that they have been developing their business without signing a big partnership, and after they have negotiated with an established company in the industry, they are signing a partnership agreement for one operation of their product. The approach that E3 follows aligns with the Strategic Partnership, as defined under the Effectuation Approach.

E4 mentioned, "*Right now there is a race to be the first one to have the most […]*". The strategies that E4 follow, and as they are closely following the competitors to make sure that they are following up with the advanced, indicate that E4 has been following the Causation Approach towards the competitors.

5.3.4 Main Results: Attitude Towards Competition

The table below presents the main results from the Attitude Towards Competition theme.

Group	Attitude Towards Competition
Students	Work on becoming better than the Entrepreneurs (S1, S2, S3, S4, S5)
Mentors	comprehensive market research (M1) Competitors are potential partners (M2, M3)
Entrepreneurs	Partnerships (E1, E3) Closely following the entrepreneurs (E2, E4)

Table 10 Main Results: Attitude Towards Competition

The table above summarises the main results regarding Attitude Towards Competition. The results revealed that all the students indicated that they would work on being better than the competitors, which aligns with the description of the Causation approach. One of the mentors also indicated the same, as they mentioned they would guide towards comprehensive market research. Two of the entrepreneurs also mentioned they are closely following the competitors and they are making decisions based on their competitors. While two mentors indicated that they guide the student entrepreneurs to look for partnership options with the competitors, which aligns with the Strategic Alliance principle of Effectuation. The other two entrepreneurs indicated that they have been working towards partnerships.

5.4 Unexpected Events

This section presents the results of interviews regarding Unexpected Events in entrepreneurship. The aspect focuses on how the entrepreneur sees the uncertainty in entrepreneurship, and how they approach their business activities during an event that happened unexpectedly that created high uncertainty. The approaches for this aspect can be identified by observing how this situation is defined by the entrepreneur, and to what extent they carry out the entrepreneurship activities during this period. The interview questions focused on the example of the COVID–19 pandemic as it affected businesses, and it is a recent event which the participants can relate to. From the interview answers, how the participants would define a situation and if they would see opportunities created or if they describe the situation as their plans would stop working is analysed. The analysis is interpreted regarding alignment with the Effectuation or Causation approach based on the definition of Read and Sarasvathy (2005), and they are described in the table below.

	Effectuation	Causation
Unexpected Events (Read and Sarasvathy, 2005)	**Exploiting the Contingencies**: look for opportunities in an unexpected situation, and explore the benefits of the situation	**Inflexible**: focus on rigid planning which limits their path selection in an uncertain situation

Table 11 Description of Unexpected Events

5.4.1 Students

Students were asked how they would define this situation if they were in the early stages of their ventures, and which steps they would take.

Regarding COVID–19 Pandemic happening again, S1 mentioned *"[…] it could kill the business. It's something that could be a disaster. Very negative effect to the company"*. Furthermore, S1 added, *"But then also it could be an opportunity"*. Furthermore, S1 stated, *"[…] way to success to just adapt constantly and come up with something that fits you have in store at the moment"*. The consideration of S1, that an unexpected situation could bring opportunity aligns with the description of Effectuation.

S2 mentioned, *"So I would try to benefit from that situation"*. The approach that S2 stated aligns with Effectuation, as they would look for how the exploit the contingency which is defined as a principle of the Effectuation Approach in theory.

 S3 stated, *"It depends on the business that you're in […]"*. S3 mentioned that the hotels benefited as quarantine centres during the COVID-19 pandemic. As tourism received a significant impact, the hotels changed to quarantine centres, and they were not closed. The perspective that S3 mentioned indicated that they see as an opportunity might also arise from an unexpected situation, therefore their description of the approach that they would follow aligns with the Effectuation Approach.

S4 pointed out *"We have to now try to adapt. […] very much like in nature, if you don't adapt to your environment, you die"*. S4 mentioned, *"if something like this is happening and How can I benefit from this situation with my current project?"* The approach that S4 described aligns with the Effectuation approach, as they mentioned opportunities might appear from an unexpected event.

S5 mentioned examples of how some companies adapted to the situation during COVID – 19 Pandemic. However, as the approach that S5 would follow, they stated *"[…] then once you just wait, calm down.*

Then you again come to the market". This approach of S5 indicates that they would follow the Causation Approach, as they would approach the situation as their plans are not working so now, they need to wait.

5.4.2 Mentors

To the mentors, how they have guided during this period and if it happens again how would they guide is asked.

M1 talked about their experience during the COVID–19 period and M1 mentioned "*[...] we needed to motivate them to stay tuned*". The answers of M1 indicated that the student entrepreneurs would have limited options in this period. The guidance of M1 indicated that they encouraged the students to follow the Causation Approach, as they did not mention any opportunities that would arise from the situation.

M2 stated, "It's probably more about looking at it as an opportunity or a free space breathing room to fix errors.". Furthermore, M2 mentioned, "*[...] some opportunities and challenges arise [...] but nothing lasts forever*". The description of M2 indicated that they would encourage the student entrepreneurs to follow the Effectuation approach in an uncertain event.

M3 mentioned that in an unexpected event in the future, they would encourage to "[…] spot some opportunities". Finding opportunities in an uncertain situation aligns with exploiting the contingencies principle of Effectuation.

5.4.3 Entrepreneurs

Lastly, to the entrepreneurs whether they experienced the pandemic period, and how their experience was asked. If they did not experience it, then how would they define the situation, if they can see any opportunity possibility and what would they do is asked.

E1 mentioned that they did not experience the COVID period with their company, however, they mentioned that they do not see any potential impact on the business if there's a highly uncertain situation. Furthermore, E1 stated, "*I don't see any opportunities right now*". Therefore, the answers of E1 indicate that they tend towards the Causation approach as they did not mention considering any arising opportunities.

E2 mentioned they have experienced COVID-19 during the early stages of their business, and they shared their experience as "*[...] we could focus more on development*". E2 shared their experience as they had more time for development, which was an opportunity for them to boost the development while the industry slowed down. This approach of E2 indicated that they followed the Effectuation Approach by finding an opportunity in the situation.

E3 mentioned they did not experience the COVID-19 Pandemic with their company; however, they experienced other unexpected events in their experience with the company. E3 stated, "*If you're an entrepreneur and sit back and say it's the rest of the world's fault that you're not succeeding. Then it's because you're not agile enough, in my opinion*". E3 indicated their experience as by being agile they found new opportunities. The identification of opportunities by E3 aligns with the Effectuation Approach.

E4 mentioned that in an unexpected situation, they would look for ways to adapt the business. The answers of E4 indicated that they would be agile in the situation as they mentioned: *"[...] so we find like a plan C or something*". The approach as described by E4 aligns with the Effectuation Approach, as they would shift their strategies in the situation.

5.4.4 Main Results: Unexpected Events

The table below summarizes the answers collected from the interviews.

Groups	Approach towards Unexpected Events
Students	Adaptability is important (S1) Opportunity might appear (S2, S3, S4) Slow down and wait until it pasts (S5)
Mentors	Keep the initial plan (M1) Spot the opportunities (M2, M3)
Entrepreneurs	No opportunities (E1), Detect opportunities (E2, E3), Be agile (E3, E4)

Table 12 Main Results: Unexpected Events

The table above presents the main findings regarding the Unexpected Event theme. Accordingly, four students indicated that they would follow the Effectuation approach as they mentioned the possibility of opportunities arising, as well as the importance of adaptability. Two of the mentors also mentioned that they guide through spotting opportunities. Most entrepreneurs indicated their experience aligned with the Effectuation approach. One of the students mentioned that in an unexpected situation, they would wait until the situation ends and then their plans would work. This approach aligns with the Causation approach, and one of the mentors also indicated their guidance aligned with this student. Lastly, one of the entrepreneurs did not mention any opportunities.

5.5 Control over the Future

This section presents the results from the interviews related to the control over future aspects of entrepreneurship. The control over the future aspect focuses on the tendency of entrepreneurs towards predicting or controlling the future. This aspect of entrepreneurship can be indicated by observing the degree of planning that the entrepreneur carries out. In the interviews, questions related to writing a business plan are asked to observe the intention of a business plan as described by participants. This theme is observed based on the definition by Read and Sarasvathy (2005) and the description of Effectuation and Causation in this theme is provided in the table below based on the definitions.

	Effectuation	**Causation**
Control Over the Future (Read and Sarasvathy, 2005)	**Controlling Unpredictable**: focuses on the aspects that can be controlled rather than predicting, and planning the future	**Prediction**: views the future as a continuation of the past and tends to predict and plan based on these predictions

Table 13 Description of Control Over the Future

5.5.1 Students

In the interviews with students, they were asked if they would write a business plan, and what would be the aim of the business plan for them. Furthermore, they were asked if they would work with predictions.

S1 mentioned, "*[...] a business plan that it's something that we are very much encouraged to do is a guideline that works to a certain degree because it changes so much*". S1 also mentioned, "*And having an entrepreneurial mindset is about dealing with these challenges [...] nothing is fixed and being able to be certain in the ocean of uncertainty*". The approach regarding control over the future, as described by S1 aligns with the Effectuation approach as they described as they would focus on the controllable sides of the business.

S2 mentioned that in the early stages, they would not focus on predictions and rigid planning, rather they would focus on the aspects that they can work in the current situation. Furthermore, in terms of business plan writing they mentioned: "*[...], it's very important because it establishes a foundation of the vision, and it also keeps all the founders intact of how the business should go forward [...]*".

Therefore, the approach description of S2 aligns with the Effectuation Approach as they mentioned the controllable aspects as their focus.

S3 mentioned that planning is important for setting targets for research. Furthermore, S3 mentioned that the predictions over the future valuation of the company are important. This perspective of S3 aligns with the Causation Approach, as it is prediction a prediction-based approach that S3 explained they would follow.

S4 mentioned "*You always need to know where you want to go. Otherwise, you can end up anywhere.*" S4 described their approach as aligning with the Causation Approach, as their process is highly prediction focused.

S5 mentioned that in their business they would focus on adaptability rather than creating strict plans for the company. In terms of predictions, S5 mentioned "*Now everyone is talking about AI like so many jobs may be replaced. So how this might affect in my business if that comes so you think like that is the entrepreneur's mindset […]*". This approach as described by S5 indicates that they would focus on the aspects that they can follow by improving on adaptability, which is an approach that aligns with the Effectuation approach, as they mentioned they would not focus on exact plans.

5.5.2 Mentors

To the mentors, if they guide for writing business plans, their expectations over predictions such as financial projections are asked.

M1 mentioned, "*[…] we don't start talking with them with key numbers or budgets or scale up parts we start with problem solution match the value proposition because that's the essential part.*". Furthermore, M1 mentioned, "*Later stages of the startups, more detailed market insights are expected.*". Therefore, the approach that M1 described aligns with the Effectuation Approach.

M2 stated "*We continuously work with roadmaps, and I think they are a key resource to making sure that we are always critical about our time. […]*" Furthermore, they pointed out the importance of the adaptability of startups that the Student Entrepreneurs are encouraged to work on. The answers of M2 regarding predictions and planning indicate that their guidance to the student entrepreneur consists of values that align with the Effectuation Approach, as they focus on the controllable aspects.

M3 stated that "*we do not work with business plan*". Furthermore, they added, "*[…] you need to develop both the business and the product and service alongside. So, you can't just focus on only the product you need also to be aware of the business as well*". M3 pointed out that the plans of entrepreneurs are constantly changing therefore their guidance description aligns with Effectuation as they mentioned controlling the business aspects that can be controlled rather than planned and predicted.

5.5.3 Entrepreneurs

The entrepreneurs were asked if they have written a Business Plan, and if they work with predictions. E1 mentioned, "*I honestly don't think that much about the future. I think mostly just of how I can play my cards right now that's most beneficial.*". E1 responded to the question regarding the business plan as they have not worked to write one however, they are planning to work on it in the future. The answers of E1 align with the Effectuation Approach, as they mentioned that they focus on taking the right step rather than working on predicting the future.

E2 mentioned "*[…] but I would think that for bigger companies' business plans become more important. […] longer time to change course […] But then the start starting when you start in a company and become an entrepreneur, everything moves so fast.*". E2 pointed out that, they see the Business Plans as more relevant for bigger companies as their operations would be more settled and when the company is in the early stages the operations are changing fast. The E2 indicated that they focus on the business aspects that they are working on currently, they do not focus on prediction which aligns with the Effectuation Approach.

E3 mentioned "*[…] how much revenue we're going to make because of course it's and you know with the that we can put in 50% of […] in all of the worlds. So that's like billions and billions. So of course it's always a little bit of a weird metric. The potential market size because that means that if things don't go as well as you plan, what can you expect*". Furthermore, E3 stated, "*If you sit in the garage or the basement or wherever you're making the product all by yourself then I think you need to have a very clear-cut plan from the beginning […] Being agile all the time has been one of our main focuses, we always try to navigate the all the stakeholders and whenever we made a big change, a big pivot, we always included those.*". E3 mentioned that being in dialogue with the stakeholders is important for them, therefore they do not need a clear plan and they can pivot based on the discussions. The planning approach of E3 aligns with Effectuation.

E4 mentioned, "*We have a plan for how to reach the customer [...]*". Furthermore, E4 stated, "*I like to [...] stick to the plan, but it's not locked [...]*". E4 indicated that they are following the Effectuation Approach, as they mentioned the only plan they have is for marketing and they make short-term plans and do not only focus on these plans.

5.5.4 Main Results: Control Over the Future

The table below summarises the main results regarding control over the future theme of the interviews.

Group	Control Over the Future
Students	Focus on controllable (S1, S2, S5) Planning is important (S3, S4)
Mentors	Focus on development initially (M1, M2, M3)
Entrepreneurs	Did not write a business plan (E1, E2, E3, E4) Being agile (E3, E4)

Table 14 Main Results: Control Over the Future

The results suggest that most participants described an approach that aligns with Effectuation. Three students indicated that they would focus on the controllable aspects rather than rigid planning and predictions. All the mentors indicated that they do not expect the student entrepreneurs to conduct detailed planning and predictions. All the Entrepreneurs indicated that they did not write a business plan. Furthermore, two of them pointed out the importance of being agile. On the other hand, the responses of two students aligned with the Causation Approach as they indicated the importance of planning.

6. Discussion

Referring to where the research started, the results demonstrated by the interview answers of the participants aim to answer the question '*Can Entrepreneurial Universities teach students to approach Entrepreneurship to start a business like Entrepreneurs?*'. As a result of interviews with 12 individuals, this question can be answered, which will bring light to exploration. This section is designed to present a discussion regarding the findings of the research. Initially, the overall findings are discussed, and later the sections are presented in the order of themes discussing the findings for each of the themes individually.

6.1 Overall Discussion

The figure below presents the overall findings of the study. On the left, results of Effectuation are presented and on the right Causation results are presented. The circles of both approaches are divided into five representing the five themes of the interviews. Accordingly, RA (Resource Arrangement), VR (View on Risk), ATC (Attitudes Towards Competition), UE (Unexpected Events), COF (Control Over the Future). The coloured points demonstrated inside these divisions represent the participants, and each group is represented by a different colour. Thus, Blue is Students, Green is Mentors and Red is Entrepreneurs. Depending on the results from interviews, the relevant colour for each participant is placed in either the circle of Effectuation or Causation, in the division of the corresponding theme.
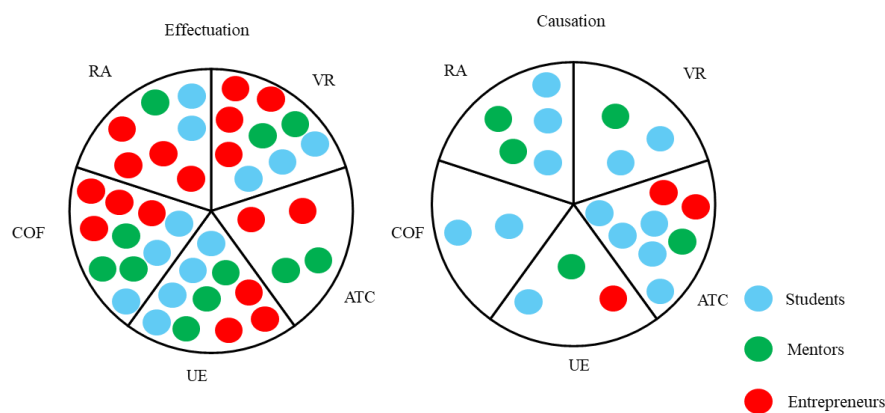

Figure 3 Overall Findings

Accordingly, the overall results present that the participants were tempted to answer their questions aligning with Effectuation when compared with Causation. Furthermore, from all questions, only two Entrepreneurs for Attitude Towards Competition, followed Causation and one for Unexpected Events followed Causation. Furthermore, another interesting observation is in the Control Over the Future theme, where only two students indicated their planned approach as Causation while all the other participants indicated Effectuation.

6.1 Resource Arrangements

In terms of Resource Arrangement, it is observed that most students focused on the Causation Approach as they described a process starting with the development of an idea and arrangement of resources based on the idea they must work on a specific goal. In the process described by Mentors, this is also observed as their expectation from the student entrepreneurs, is to work towards a predetermined goal. However, the interviews with Entrepreneurs revealed that they all started with an identified problem, and they explored how they could solve this by developing an idea based on their skills.

The main resource that mentors and students have mentioned is skills, and the main source of skills as mentioned in the interviews is Team Building. This approach of Mentor and Students aligns with answering the 'whom I know' question as defined under the Effectuation Approach. The question of 'whom I know' is also observed in S3, as they mentioned findings the needed resources from family and friends. One interesting point that is observed from the results is that Mentors mention their guidance to Student Entrepreneurs as, suggesting ways to develop the product by eliminating the need for resources. This point has not been observed in either the answers of the students or the entrepreneurs during the answers.

These discussions revealed that when the approaches are analysed from one specific aspect, such as bird–in–the–hand principle or goal–orientation, it might look like they have described Effectuation or Causation at a glance. However, when the approach is analysed from different aspects, it reveals that the mix of approaches is possible even for one specific aspect of the business.

6.2 View on Risk

In terms of View on Risk majority of participants indicated an approach that aligns with Effectuation. All Entrepreneurs indicated their experiences as they follow a process which is considerate of the loss while investing their resources. Furthermore, from the results, a pattern is observed regarding validation in the process described, as mentioned by both Students and Entrepreneurs. Validation is a principle of the Lean Startup Approach (Ries, 2011). Therefore, this points out a similarity between the approach that students would follow and the approach that entrepreneurs follow. However, the main difference between students and entrepreneurs is that the majority of students had the focus that, in the very early stages they mentioned focus on developing a business idea and developing a goal-driven process that aligns with the Causation Approach to develop the product, based on the definition by Read et al (2011). Previously, in terms of Resource Arrangement, Mentors mentioned an approach to ignore the need for resources, by changing the plan this can be interpreted as an affordable loss consideration, as they indicated less investment of resources by achieving the result without requiring a high intensive investment of resources. Furthermore, S3 and M2 mentioned bootstrapping, under the view on risk considerations. In the work by Schinck and Sarkar (2012), bootstrapping is defined as "involving the use of resources to start and grow venture at the lowest possible or even at no cost" (p.2). This consideration of resource investment perfectly aligns with the affordable loss principle, and it shows an alignment approach between the mentor and students in terms of resource investment initially.

6.3 Attitude Towards Competition

The result of Attitude Towards Competition demonstrated that all students followed the Causation Approach. Their answers focused on how to develop strategies to be better than the competitors. While.

two of the mentors pointed out the importance of partnership consideration with competitors. In addition, entrepreneurs showed mixed results regarding these aspects, two followed causation and others followed effectuation. In the results of Attitude Towards Competition, several common points indicated by Entrepreneurs and Students are pointed out.

Furthermore, another pattern is observed in the answers of students as they all mentioned "learning from the competitors". Shahri (2022) defined this as Strategic Learning in their study. This indicates that entrepreneurial firms acquire knowledge from their competitors, and process this knowledge to recreate their strategies (Shahri, 2022). This is described as strategic decision-making by Shahri (2022), which is also observed in S5 and E2 as mentioned, finding a segment of customers which is described as the Causation approach by Reymen et al (2015) as "carrying out competitor analysis and competitive positioning" (p.363).

In the answers of students, a secondary search over the market is observed. On the other hand, the entrepreneurs pointed out from their experience that, they talked to the people in their process which aligns with the co-creating principle of effectuation which stands for building partnerships within the industry to position the company in the market (Read et al, 2011).

6.4 Unexpected Situation

S5 mentioned that in an unexpected situation, they would slow down their business, and wait until the situation is over. However, for the questions related to control over the future S5 pointed out the importance of adaptability. Therefore, a conflicting answer regarding this is observed as when an unexpected event occurs, they mentioned they indicated their plans would stop working until everything goes back to normal. On the other hand, S5 mentioned the importance of adaptability, when the plan is considered. This can be discussed as the student has the awareness that adaptability for future planning gives advantages, however, the application of this adaptability in a highly uncertain situation is not planned approach by S5.

The results revealed that most participants pointed out that opportunities could arise from an event that happens Unexpectedly. An interesting pattern has been observed in the results as S1, S4, S5 and E3 have pointed out the importance of adaptability in an uncertain situation, in addition, E3 and E4 mentioned being agile in an uncertain situation. Furthermore, M1 mentioned adaptability as well, but they mentioned it related to planning which is the next theme of Unexpected Events. This adaptability is pointed out as following the Effectuation Approach by Chandler et al (2011). It is mentioned that when contingencies happen the entrepreneur is flexible enough to follow Effectuation to take advantage of the surprises (Chandler et al, 2011).

6.5 Control Over the Future

Other than S3 and S4, all the participants described the approach towards future planning, and predictions as Effectuation. In terms of Perspective Business Plans, it is observed that all the Entrepreneurs who participated in this study did not write a Business Plan. The findings show that Entrepreneurs see the Business Plan as something more relevant for the bigger companies as in the early stages the business aspects change in the short term, which was also a point mentioned by one of the students. Furthermore, the Mentors also mentioned in the interviews that Business Plans are more relevant in further stages of the ventures. In the findings, this has been identified as a sign of Effectuation based on the predetermined definitions, as the participants mentioned controlling aspects rather than predicting. However, this can be argued that Business Plans align with Effectuation. Read et al (2009) argued that developing a business plan does not eliminate the Effectuation Approach of the company as it can be pivoted when variables change, and can be utilized as guidance for the venture. This has been pointed out by S1 as they would develop a business plan, to clarify the vision and agreements with cofounders.

6.6 Conclusion of the Chapter

Therefore, the points discussed above suggest that a significant misalignment of approach description by Entrepreneurs and Students has not been observed. However, the research question is not a yes-no question, it is explored in this specific context, and according to the context of empirical study, the teachings and learnings at an entrepreneurial university reflect the practices of entrepreneurs. The study has shown that all the groups have some sort of alignment with each other regarding the Entrepreneurship Approaches described based on the interview answers. The differences that are observed within and across the groups are not significant, however, exploring the outcome of Entrepreneurship Education, and with new initiatives like Entrepreneurial University, is never-ending therefore this can be a starting point for the next research. Consequently, the chapter below finalises the study with a general conclusion, providing limitations of the present study, and recommendations for future studies.

7. Conclusion

The study started with a curiosity, about practice and theory match regarding teachings of Entrepreneurship Education, and the practices of Entrepreneur. The research was developed to explore this curiosity by taking an Entrepreneurial University context as an example of the infrastructure and conducting an empirical study with the groups involved under this roof. The findings presented that theory–and practice, in this specific context, are not far from each other. However, there are limitations to be considered regarding the study. As well as, the future research opportunities arising a as result of this research,

To start with, the number of interviewees was relatively small, and the focus was only one context of the university. The answers given by the participants are possibly to be biased, the researcher is responsible for their own biases, however, to prevent the biases of participants from affecting research the initiatives are limited. Furthermore, the input of Entrepreneurs does not necessarily represent an ideal approach to Entrepreneurship. Some criteria regarding the selection of Entrepreneurs are set to define they represent a recognized group of Entrepreneurs. However, in future research with entrepreneurs who fit to be called 'successful' based on literature can be included so it can be explored if the differences in approaches have an effect on success, and to what extent this can be taught. There are many reasons that a person becomes entrepreneur and the learnings from Entrepreneurship Education are only one niche area.

Interesting results from the study are observed, which is worth taking a step forward with them to explore more regarding the topic. The approaches that Entrepreneurs follow can be seen as the results of the decisions they make, and the result of approaches are the actions. So why a certain decision is made by an Entrepreneur, to let them follow a specific and what results does this bring? More importantly, if there is a correlation, that is worth researching might be a good starting point. There is an ocean of possibilities for how these decisions are made, and why the specific approach is followed. Future research may also take a look at the other reasons that Entrepreneurship Students would be affected other than Entrepreneurship Education. Cultural differences might play a role, and from different countries by observing the success rates, the differences between planned Entrepreneurship Approaches by students can be observed. This might provide a bigger picture, in the direction of development of Entrepreneurial Universities around the world.

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Appendices

Appendix 1: Interview Guidelines

Appendix 1.1: Student Interview Guidelines

Student Interview Guidelines

Focus on General Information of Entrepreneurship, how well were they connected to the incubator centre of the university and if they had any contact with Entrepreneurs as part of their studies.

How do you define an Entrepreneur?

Do you think people are born as Entrepreneurs?

Do you have any prior Entrepreneurship Experience? - If yes, did you get any Entrepreneurship Support from University?

Do you think you will be starting a business in the future?

Did you have chance to exchange knowledge/experience exchange with Entrepreneurs during your studies?

1

2

Point out "If they were to start a business ..." and ask to answer the questions with this consideration & based on studies and prior experience (if have)

What resources would you attempt to arrange to start?

How important is it to work on an idea in the early stages of business?

How would you define other companies in the market who are selling the similar product/service as you?

Would you attempt to plan based on predictions?

Let's say that Pandemic happened again, as an Entrepreneur how would you define this situation?

Which one would be more important in early stages Revenue or Cost considerations?

focus on planning aspects when they talk about

Clarify this while asking!

When tells relevant, add follow up questions to elaborate.

Appendix 1.2: Mentor Interview Guidelines

Appendix 1.3: Entrepreneur Interview Guidelines

Entrepreneur
Interview Guidelines

What is your education background?

Is your company officially registered in Denmark?

Years of Experience of founding your company?

How would your define an Entrepreneur?

1

Education, Experience,
Company Registration,
Entrepreneurship
Definition

2

Predictions,
Planning, Priority
of resources?

How did you carry out Idea Development?

Do you consider the revenue or loss more? (Clarify while talking)

Did you write a Business Plan?

Do you think Predictions and planning are important?

Have you considered any Partnership Options?

Did you wait for the perfect time to start your company?

How did you carry out early Market Research?

Did you experience any crisis? If yes, explain your experience. If no, how would you define a situation like this?

focus on planning
aspects when they
talk about

When tells relevant,
add follow up
questions to
elaborate.

Appendix 2: Consent Form

Consent Form - Master Thesis

This is a request for your consent to gather personal information about you through an interview, and for later processing of this data.

The purpose of the interview is to collect data for my master thesis at Aalborg University (MSc Entrepreneurial Business Engineering).

I am writing my master thesis about comparisons of different entrepreneurial perspectives with regards to starting a business.

You consent the following by signing this form:

- Gathering of information about your entrepreneurial knowledge/experience and decision making approaches.

- Participation in an interview that will be recorded.

No personal/company names will be included in the research paper. I, Yagmur Gunel, am responsible for collecting, processing and securing your data.

Your data will be stored securely. It will solely be used for the purposes listed above, and after the project is submitted (5 June 2024), the data will be deleted. Your participation is greatly appreciated.

You always have the right to change your consent. If you wish to change your consent later on, please contact yagmur.gunel777@gmail.com. Upon your request your data will not be included in the research, however this can't be changed after the project is submitted on 5 June 2024.

The General Data Protection Regulation entitles you to obtain information that you find at General Data Protection Regulation (GDPR) Compliance Guidelines

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I hereby consent to Yagmur Gunel processing my data in accordance with the above purpose *
and information.

☐ Agree

Date *

Day, month, year 🗓

Full Name *

Short-answer text