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The Entrepreneurial Mind – Torn between Beliefs, Attitude, Cognition, and Behavior

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To my parents and my sister

Acknowledgements

The entrepreneurial journey is paved with countless decisions. Sometimes entrepreneurs rely on their intuition. Sometimes they rely on analyses and rational thinking. It is most likely a combination of both that leads the way to the road to success.

However, it is not only entrepreneurs that face crucial decisions. Everyday life is connected to moments in which we must decide. Sometimes these decisions appear minor, sometimes eminent. Looking back, writing this dissertation was a fundamental decision for the years that followed. A decision that required time, effort, and work. This dissertation would not have been possible without the people who supported and encouraged me.

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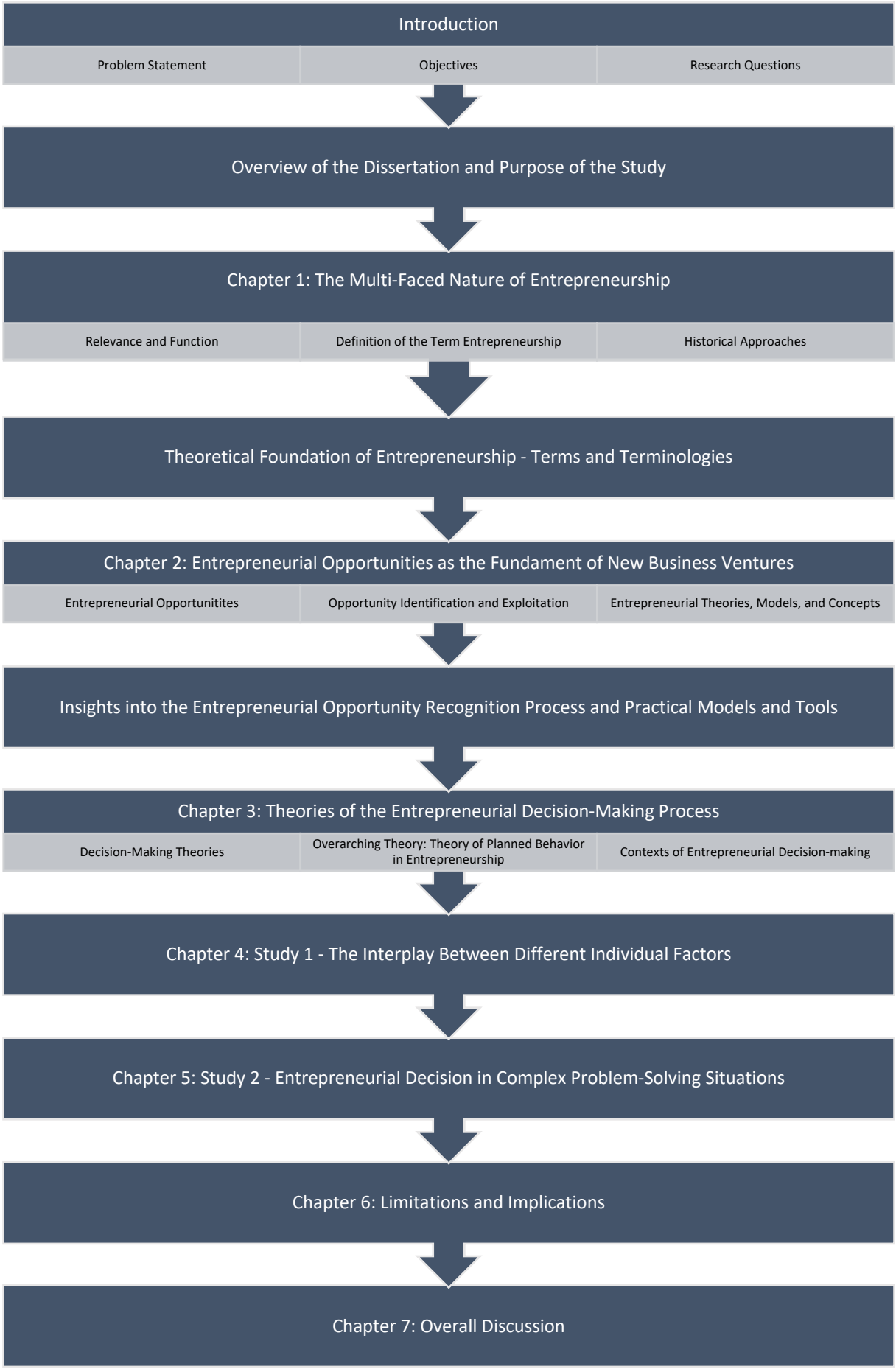
General Overview of the Dissertation



Introduction

Entrepreneurship is a phenomenon that has been subject to growing public interest in the last couple of decades. Numerous books, television shows, news articles, and movies provide insights into the promising career paths of entrepreneurs. In general, entrepreneurship draws a picture of great success. Countless companies come to mind when one hears the term *entrepreneur*. The start-ups have had a revolutionary impact on specific markets. For example, McDonald's influenced the fast-food market and led to numerous restaurant chains trying to copy their successful concept, Microsoft changed the game in the computer industry, Airbnb impressively introduced a new and simple idea for accommodation, and Facebook, Instagram, and WhatsApp took socializing to a whole new level, adapted to a rapidly digitized and connected world. Behind such success stories are entrepreneurs who took the right paths, made the right decisions, and perhaps had some luck, as well. One thing that is for sure is that throughout nearly the entire path, the entrepreneur has to make decisions under conditions of less-than-perfect information.

Entering a market with an innovative product and facing customers and competitors in a novel way does not allow full information and perfect predictability. How, then, can the right decisions be made? Situations in which someone is not necessarily fully informed require the use of intuition when making decisions. This applies to every domain of daily life, but especially to entrepreneurship. As such, decisions can generally be made in a twofold way: either through seeking information and doing so in an analytical way or in an intuitive, experience-based manner.

A major part of this work involves addressing the question of whether certain people are more prone to intuitive or analytical thinking and decision-making. Making decisions from the heart (intuitive) and making decisions from the head (analytic) are two justified principles that can both lead to great success. No research can uncover the *one and only* way of making decisions. Investigating entrepreneurship from a cognitive-psychological perspective is more about improving decisions at the margin. Revealing which aspects lead a person to make decisions one way or another opens the door for individuals to reflect and reevaluate their decision-making. This can, in fact, identify the situations in which a person tends to take cognitive shortcuts or perhaps falsely does not believe that experiences and intuition are enough for a fair decision.

This work contributes to the understanding of the relationship between cognition styles and decision-making logic in that it uncovers that intuitive people tend towards an effectual approach, while analytical people tend towards a causal one. Additionally, the dissertation provides an indication that self-efficacy and the ability to solve problems, as well as socio-demographics, impact the way in which potential entrepreneurs tackle decision-making situations. More interestingly, the work reveals that in real decision-making situations, it becomes observable that individuals do not always behave in the way their cognitive style might imply. In other words, people's actions do not always reflect their self-assessed behaviors. In the end, this work opens the door for future research but also calls for practical adaptation.
Investigating the relationship between cognition styles, decision logic, attitudes, entrepreneurial behavior, and the reflection of behaviors constitutes the core of the following dissertation. Chapter 1 will provide a general overview of entrepreneurship by looking through four different lenses: economic, technological, societal, and personal. After providing a thorough overview of entrepreneurship, Chapter 2 will handle entrepreneurial opportunities and the question of how they are recognized and exploited. Decision theories, and especially decision-making in the uncertain environment of entrepreneurship, constitute Chapter 3, before the first of two studies will be presented in Chapter 4. There, the relationship between decision-making and cognition styles will be explained by the use of the overarching theory of this work, namely the Theory of Planned Behavior. In a quantitative study, several relations of constructs related to entrepreneurial decision-making are revealed. A second qualitative study is presented in Chapter 5, where a further investigation of decision-making in the complex problem-solving environment of entrepreneurship is presented. A discussion of the study's limitations, implications, and the overall results finalize the work in Chapters 6 and 7.

This much in advance: entrepreneurs walk a fine line between success and failure. Many factors impact the entrepreneur who is torn between cognitive settings, decision logic, attitudes, and beliefs, which all impact their actual behavior. The following study intends to shed some light on entrepreneurial decision-making.

1 The Multi-Faced Nature of Entrepreneurship

1.1 Relevance and Function

Although entrepreneurship is not a particularly new phenomenon, researchers still speak of an *entrepreneurial revolution* that is happening across the world and comes along with fundamental changes. Entrepreneurs are said to be the "pioneers of today's business success" (Kuratko, 2016, p. 19). Baumol (1996) ascribes a central role to the entrepreneur: "when conjectures are offered to explain historic slowdowns or great leaps in economic growth, there is the group of usual suspects that is regularly rounded up – prominent among them, the entrepreneur" (p. 3). In order to understand the specific role of the entrepreneur within an economy, this chapter takes a closer look at empirical evidences rather than the sole conjectures discussed in the entrepreneurship literature.

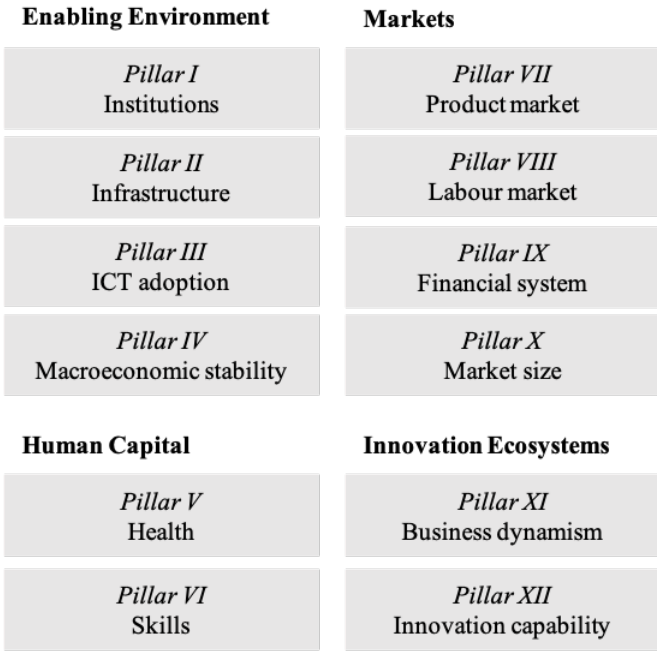
Firstly, a look at the macro-level is provided, which explains the relevance and function of entrepreneurship from an economic perspective; for instance, the impact of entrepreneurship on *economic growth* or *economic risk*. In the next step, the reflection on the technological perspective will establish the relationship between entrepreneurship and innovation, which illustrates the impact on societal factors such as improvement of life quality or the development of a culture of failure. Finally, at a micro-level, the personal perspective and the relevance of entrepreneurship for individuals (e.g., entrepreneurial competencies or entrepreneurial self-efficacy) are presented.

1.1.1 Economic Level

In his 1999 work, Acs raised the question: "Are small firms important?" Since then, many scholars have continued to investigate this question, particularly from the economic point of view (e.g., Acs, 1999; Acs & Armington, 2006, DeTienne et al., 2008; Grichnik, et al., 2017; Shane, 2018). The environmental context, including the economic situation of a nation in which entrepreneurial activities take place, defines, to some extent, the paths taken by the entrepreneurs. In higher-developed economies, *pioneers* discover different paths than in less-developed economies. Following Porter (2002), the Global Competitiveness Index divides economies into three sequential stages: *factor-driven*, *efficiency-driven,* and *innovation-driven*. The classification into the three categories by Porter depends on certain components such as infrastructure, the financial system, or the health care system. In this context, the World Economic Forum established twelve pillars of competitiveness to describe essential

components needed to form a functioning economy and measure the competitiveness of economies (see Figure 1).

Figure 1 Twelve Pillars of Economic Competitiveness



Source: Schwab, 2019

Economies in the factor-driven stage are marked by high rates of agricultural self-employment, presented by many small-scale manufacturing and service firms. With low-cost efficiencies in the production of commodities, factor-driven countries stay competitive; however, knowledge for innovation is neither created nor considered to be of high importance (Acs & Szerb, 2010). In the frame of the Global Entrepreneurship Monitor, the first economy from the factor-driven stage to appear in the 2019 report is India, ranked in 69th place. Entrepreneurial activities in factor-driven economies aim at securing basic business sectors such as primary education or basic health systems. Entrepreneurs highly rely on natural resources and focus on production-driven business models with low levels of innovation. In factor-driven economies "innovation accounts for only about 5% of economic activity" (Acs & Szerb, 2010, p. 4).

Furthermore, these countries are "highly sensitive to world economic cycles, commodity price trends and exchange rate fluctuations" (Porter et al., 2002, p. 17). In order to compete in the global market, economies in the factor-driven stage must shift their focus to the improvement of physical infrastructure and aim at the most efficient production practice to exploit economies of scale (Acs, & Szerb, 2010). Consequently, economies enter the efficiency-driven stage when their products and services become more sophisticated, because production takes place more

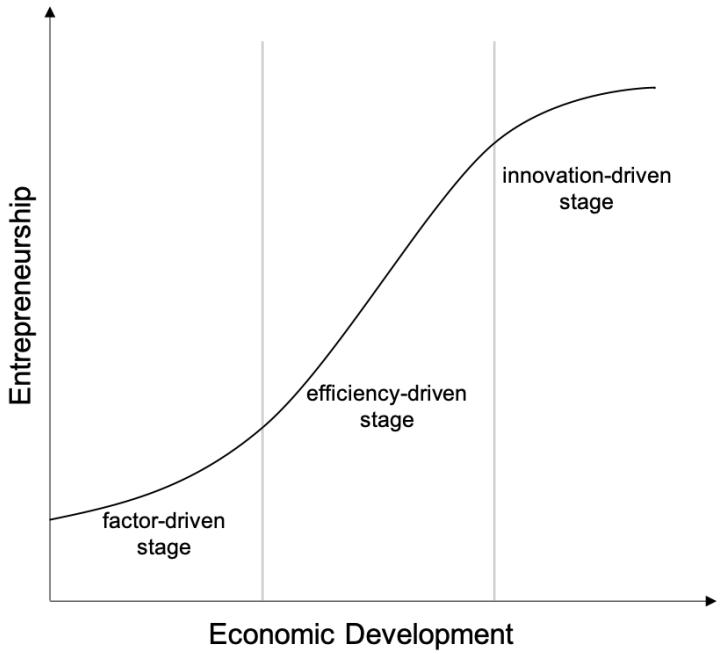
efficiently and the quality of products increases. However, technology is still accessed from abroad (Porter, 2002).

While self-employment rates decrease, capital and labor play a central role in efficient production, innovation also rises to 10% of total economic activity (Acs, & Szerb, 2010). Due to the heavy reliance on foreign capital flows, economies in the efficiency-stage are susceptible to financial crises (Porter, 2002). Within the 30 most competitive countries in the world, China is the only country that is in the efficiency-driven stage, ranked 28th out of 141 (Schwab, 2019). New venture creation in efficiency-driven countries profits from skilled labor and entrepreneurship and is moving towards growth and technology-orientation. The transition to the innovation-driven stage, which is the most developed stage, requires a high level of economic activity by individuals (Acs & Szerb, 2010).

The start-up of high-technology enterprises is fostered through public and private investment in research and development (R&D) and a direct governmental policy to foster innovation. Firms invest in the continual training of their employees and fierce competition and cooperation within industries, leading to competitive industrial clusters that operate globally (Porter, 2002). With regards to the Global Competitive Index 2019 (Schwab, 2019), within the 35 most productive and competitive economies in the world, 32 belong to the innovation-driven stage, two economies are in the transition stage to become innovation-driven (namely Malaysia and Chile), and one aforementioned nation (China) belongs to the efficiency-driven stage.

In innovation-driven economies, the expansion of markets and innovative technologies form activities that are considered *entrepreneurial,* and correspond with Schumpeter's definition of innovation. Entrepreneurs in such countries are opportunity-driven (the aspect of opportunity recognition will be considered more thoroughly in Chapter 2). Moreover, "in the innovation-driven stage when opportunities have been exhausted in factors and efficiency, innovation accounts for 30% of economic activity" (Acs & Szerb, 2010, p. 4). As seen in Figure 2, the relationship between a country's stage of economic development and the importance of entrepreneurship can be depicted in an S-shaped relationship, as entrepreneurial action plays only a small role in factor-driven economies and an increasingly important role in efficiency-driven ones. Once an economy becomes fully-developed, the increasing rate starts to level (Acs & Szerb, 2010). An analysis of the data presented by Schwab (2019) indicates that in economic figures, the 15 most competitive economies in the world (from a total of 141 economies) are responsible for around 33% of the world GDP. As all of these countries belong to the innovation-driven stage, the relevance of innovation-driven economies to the world economy becomes clear.

Figure 2 Stage of Economic Development and Importance of Entrepreneurship



Source: Acs & Szerb (2010)

Especially in such innovation-driven countries, entrepreneurship is seen to make two crucial economic contributions to society: a) providing new jobs and b) accelerating economic growth (Kuratko, 2016). For instance, in Germany, a total of 56.3% of employees (the majority) were working in SMEs in 2019 (Rudnicka, 2022). Entrepreneurship facilitates job growth when entrepreneurs conduct new venture creation processes and establish their startup (Baumol et al., 2007; Morris, 1998).

The establishment of new enterprises goes along with the creation of new vacancies on the job market as new employees are sought. Recent data from 2018 shows that SMEs in Germany are responsible for an increase of 580,000 newly created jobs in 2019 and a significant decrease of the unemployment rate down to the lowest level since 1991 (BMWi, 2019). Moreover, the number of people subject to social insurance increases means a decrease of governmental social expenditure and, consequently, rates that come close to full employment, suggesting higher levels of consumption and saving.

However, the significance of job creation by startups in relation to the overall jobs created within an economy has been discussed controversially. While some empirical findings show a relatively low impact of startups on the overall job creation in a region (e.g. Malchow-Møller et al., 2011; Haltiwanger et al., 2011), many scholars argue that new ventures rather play a crucial role for regional growth and employment creation (e.g. Cooke & Wills, 1999, Feldmann,

1996, Kuratko, 2016). Fritsch and Mueller (2008) present notable results from the German economy, which reveal the difficulty of this topic. First, empirical analyses that compared the startup rate to employment growth showed no significantly positive or even negative effects (Audretsch & Fritsch, 2002; Fritsch, 1997). Further studies that considered long-term effects showed a time lag in the effects (Audretsch & Fritsch, 2002). This time lag revealed that the effects of the new venture creation on employment growth could only be measured decades after the founding of a company. Entrepreneurship can have small effects on the employment rate in a region in the short term but also have a negative effect in the mid term, due to business failure. This means that more jobs are being cut under the shutdown of business than are being created. However, in the long run (between five and ten years) positive effects on the employment rate can be observed. This means that a fraction of startups that keep their business going and growing might not have a significant influence on the job market in the first years post-establishment, but after years or even decades, entrepreneurship can have a solid impact (Audretsch & Fritsch, 2002; Fritsch & Mueller, 2008). This positive correlation is stronger in highly innovative technology industries than other industries (Audretsch & Keilbach, 2004; Audretsch et al., 2006). It therefore remains obvious that entrepreneurship bears high potential in terms of job creation across industries and is not bound to a certain sector (e.g., Drucker, 1985; Kuratko, 2016; Morris, 1998).

Entrepreneurship contains the potential to create economic growth, not only through the creation of new jobs, but also through the creation of further aspects other than growth and employment (Morris, 1998). Entrepreneurship is, for instance, concerned with new and unique combination of resources that replace existing products (creation of innovation), the creation of possibilities for customers to exploit untapped opportunities (creation of value), the establishment of new ventures (creation of enterprise), the exchange of risks for the possibility of profit (creation of wealth), and the opportunity to modify one's own personal repertoire, approaches and skills (creation of change). The Global Entrepreneurship Monitor (GEM) is, at the moment, presumably the most comprehensive longitudinal study, which compares the entrepreneurial activity of countries on their economic, cultural, social, and political national conditions (e.g., infrastructure, economic education, support systems, or demand for innovation) (Bosma, 2012). Hence, entrepreneurial activity and the impact of entrepreneurship on economic development is investigated by this longitudinal study on a yearly basis. According to the results of the GEM's examination of 50 economies worldwide, entrepreneurship has seen an increase in importance over the last two decades: in some regions of the world, entrepreneurial activity reaches up to 35%, which means that more than one out

of three people have been or currently are conducting entrepreneurial action. In Germany, the figure reaches 7.6% in the report for 2019/2020. In comparison, economies such as the United States and Canada show higher numbers on entrepreneurial activity: 17.4% and 18.2%. However, to understand the relationship between entrepreneurial activity and economic growth, a closer look at a specific country—in this manuscript, the focus is on Germany—is required. Although regions differ considerably when it comes to the impact of entrepreneurship on economic growth (Fritsch & Mueller, 2008), the entrepreneurship landscape in Germany has a distinctive characteristic: the German economy is heavily dominated by small and medium-sized enterprises (SMEs), which are commonly called the *backbone* of the economy. Therefore, entrepreneurship is often represented through the figures of SMEs (Acs & Audretsch, 2010; BWMi, 2019; OECD, 2021; IfM, n. D.). Recent findings show that knowledge and entrepreneurship can be crucial drivers of economic growth in Germany (Fritsch et al., 2021).

In a strategy paper from 2019, the German Federal Ministry for Economic Affairs and Energy (BMWi) published a vision of how and why to strengthen SMEs and entrepreneurship in Germany. The question of *how* entails changes in policy and the strengthening of successful formats, though it will not be covered in detail here. The question of *why* is answered with a closer look at current figures. SMEs, which also include startups, account for over 99% of all businesses in Germany and 80% of all training places provided in the country (BMWi, 2019; IfM, n. D.). Data from the OECD shows that SMEs accounted for around 30% of the total turnover of firms in Germany in 2017 (OECD, 2021). Similar figures are found by the *Institut für Mittelstandsforschung* (IfM): 2.35 trillion Euro were generated by SMEs in Germany in 2019, which makes a contribution of 32.9% of total turnover and a net value added of 60.6% (IfM, n. D.). Such numbers not only explain why the research interest in entrepreneurship is increasing (e.g., Acs et al., 2014), they also justify why entrepreneurial activity is generally associated with positive attributes.

Wherever there is economic potential, a certain degree of economic risk appears as well. It is necessary for entrepreneurs to face these risks because, "if all individuals in the economy had perfect information, then all profit opportunities would be exploited instantaneously and there would be no further entrepreneurial role" (Gifford, 2010, p. 303).

So, what is the economic risk of starting a new venture? Many researchers try to answer this question by looking at potential consequences of firm failure for entrepreneurs (Cope, 2011; Shepherd et al., 2009; Ucbasaran et al., 2013). The truth is that most entrepreneurial new ventures tend to fail (Bruno et al., 1992; Peng et al., 2010; Shane, 2008). This is why some entrepreneurs calculate an affordable loss before establishing their startup and in such a way to

reduce the risk of a financial disaster (Dew et al., 2009; Sarasvathy, 2008). Still, the cost of a failed business is oftentimes overwhelming and difficult to recover from (Shepherd et al., 2009). If the startup does not turn into a success, business failure will "impose a financial cost on the entrepreneur in the form of a loss of or reduction in personal income" (Ucbasaran et al., 2013, p. 175). Especially when entrepreneurs chose some kind of financing model that makes them personally liable for the business failure, the risk of a huge personal financial impact is high (Shane, 2008). The resulting personal debt might then take years for the entrepreneur to clear and thus leave him with considerable economic damage (Cope, 2011). This personal economic damage can be transferred to a macroeconomic stage where the economy is especially entrepreneur-friendly (Peng et al., 2010) and provides policies that allow the reduction or elimination of personal liabilities to provide the entrepreneur with the possibility of a new start but on the other hand leaves the capital providers with considerable financial claims (Mathur, 2013; Ucbasaran et al., 2013). Shane (2008) analyzed data from US-American entrepreneurs, concluding that due to the fact that the majority of startups fail, "in reality, the typical entrepreneur starts a company that goes under" and, even if the business survives, the entrepreneur "makes less money than he would have made if he had worked for others" (p. 97). However, this is not unique for the United States. Shane (2008) argues that this is the case for most developed economies in the world, as it appears that only half of all new ventures still exist after five years and less than 30% exist after ten years. The income side does not provide more positive numbers: Self-employed people earn significantly less than people who work for someone else. Moreover, no matter how long a person is self-employed, statistically, they will always earn less on average than someone doing the same thing while employed by another company (Hamilton, 2000).

The bright side of the economic level of entrepreneurship is evident: jobs can be created in the long run and thus boost regional employment growth. Moreover, well-performing startups bear the potential to have a significant impact on economic growth and the creation of economic wealth. On the dark side, the risk of great financial damages remains observable and the probability of becoming one of the few wealthy startups remains extremely low.

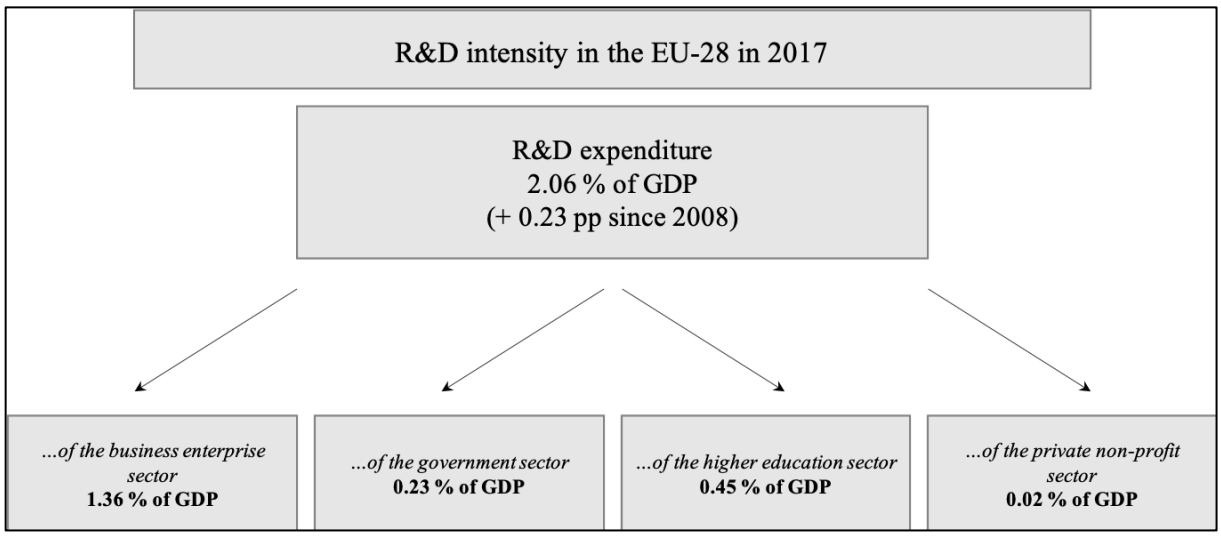
1.1.2 Technological Level

"Entrepreneurs innovate. Innovation is the specific instrument of entrepreneurship. It is the act that endows resources with a new capacity to create wealth" (Drucker, 1985, p. 30).

The above quote displays the strong bond between innovation and entrepreneurship. The attention of policymakers and scholars shifted to the question of how economies can profit from

innovation and create the highest possible level of innovative capabilities (Phan et al., 2005). Tellis et al. (2008) note that "innovation is critically important in contemporary economies. It is a key driver of the improvement in consumers' living standards, the growth and success of firms, and the wealth of nations. Investment in research and development (R&D) is essential for firms and nations to produce innovation and compete for the future" (p. 2). To reach this goal, governmental organizations, universities, and companies must invest in research and development in order to find and test promising ideas that might lead to the discovery of innovations. Expenditures for R&D are considered a valuable input for innovations (van Praag & Versloot, 2008). The latest data in Germany shows that 109.5 billion Euro have been invested in R&D in 2019, which amounts to 3.2 % of the total GDP and a total of 735,239 employees in the research and development sector (Destatis, 2021). A share of 69% of the total spending for R&D was allocated to the economic sector, 17.3% to universities, and 13.7% to extramural research institutions and the government sector (Destatis, 2021). The aspiration for innovation seems high, not only in Germany but also in the rest of Europe. The European Union set the goal for each country to reach a spending of 3% of the GDP in R&D (EU, 2019). To put Germanys percentage into comparison, R&D intensities in the EU ranged from 0.5% to 3.4% in 2019, with only Sweden (3.37%) spending a relatively higher percentage on R&D than Germany (EU, 2022). Striving for innovation can hence be considered a central aim of many economies and, due to the interplay of innovation and entrepreneurship, the latter moves into the focus as being a main source of innovation and technological improvement (see Figure 3).

Figure 3 R&D Intensity in the European Union



Source: EU (2022)

Aside from R&D expenditures, another indicator for the level of innovativeness and also the quality of research connected to these innovations are patents (van Praag, & Versloot, 2008). Patents aim to protect new knowledge. Hence, a policy on strong patent protection increases the incentive to conduct R&D and generate new knowledge, which then has a positive effect on entrepreneurship in terms of innovation and growth (Acs & Sanders, 2012). Findings show that small companies produce up to 16 times more patents than larger companies (Scarborough, 2016). Innovation-driven economies are the main innovators in the world, when measured by the number of patents. In 2000, the United States, Canada, Western Europe, and a handful of East-Asian countries, while accounting for just 15% of the world's population, accounted for 99% of patents issued for new inventions (Porter, 2002). Consequentially, entrepreneurial activity can be regarded as an important source of innovation and improvement.

However, conducting R&D, developing creative ideas, and discovering innovation is not performed by a state or institution, but by creative individuals. Entrepreneurs are said to be creative in their new venture processes (Sarasvathy et al., 2003). *Creative* means the ability to come up with new ways of looking at problems and opportunities and developing new ideas to solve them (Scarborough, 2016). Turning those creative ideas into inventions means applying creative solutions to the aforementioned problems and opportunities (Scarborough, 2016). Whenever a new idea or invention is applied to a business or other useful application, we speak of an innovation (Roberts, 2007). It was Schumpeter who used the phrase *creative destruction* to describe how innovative entrepreneurs continually come up with new products and methods and replace old ones, emphasizing the crucial role of entrepreneurship (Schumpeter, 1942).

Examples for creative entrepreneurs who stand for great success and innovative output are, for instance, Amazon.com Inc. founder Jeff Bezos, Apple Inc. founder Steve Jobs, or serial entrepreneur Elon Musk, who, amongst others, established companies such as PayPal Holdings Inc., SpaceX, and Tesla Incorporation (Lafontaine & Shaw, 2016). Whichever reason these founders had for becoming entrepreneurs, they were characterized by their great success.

In order to understand why some people generate more innovative output than others, researchers have attempted to decode the DNA of entrepreneurs to try to find out whether human capital, including "personality, education, experience, knowledge and skills" (Unger et al., 2011), plays an essential role in business success. The results are far from uniform. The research area of the personality of entrepreneurs became a major field of interest in entrepreneurship (e.g., Fisher & Koch, 2008; López-Nuñez et al., 2020). In order to understand why some entrepreneurs are more innovative and successful than others, several different streams have been exploited: some researchers indeed find a positive relationship between

personality traits and business success (Rauch & Frese, 2007) while others observe that such a relation does not exist (Gartner, 1989; Low & MacMillan, 1988). Additionally, several scholars took the configurational approach and considered aspects such as personal resources and the environment as important aspects for business success (Korunka et al., 2003). Others explained the complexity of the relationship between entrepreneurship and business success and introduced interaction models for new venture success, including organization, process, and environment as crucial factors for success (Gartner, 1985; Greenberger & Sexton, 1988). Others again found that human capital has an influence on the question of whether to start a new venture but not on the topic of how successful this new venture might be (e.g., Chandler & Hanks, 1998; Davidsson & Honig, 2003). Although results are not always consistent and leave room for debate, Shane (2008) concludes that many other factors are essential, such as the capabilities and competencies of the entrepreneur. Alvarez and Busenitz (2001) add that "the way some people think and make decisions allows them to function effectively in the pursuit of new inventions" (p. 764). Moreover, available resources determine whether entrepreneurial activity bears the potential to lead to innovation (Alvarez & Busenitz, 2001; Kellermanns et al., 2016). In conclusion, entrepreneurial success and performance can be regarded as a "nontrivial part of entrepreneurship research" (Alvarez & Busenitz, 2001, p. 770). Those who find the right combination of human capital, experience, personality, environment, and available resources might become the next Bezos, Jobs, or Musk of an innovation-driven society.

However, one question that still remains is: What are the causes for innovation? Within management literature, two concepts have been widely accepted: Whenever a new invention is researched, developed, and then pushed to the market, it is called a *technology-push* innovation (Di Stefano et al., 2012). In contrast to this, a *market-pull* innovation based on research and development that has been induced by the demand of customers on a market (Di Stefano et al., 2012). However, push-pull theory is oftentimes applied to the topic of entrepreneurial motivation (Shapero & Sokol, The social dimensions of entrepreneurship, 1982). Positive factors *pull* people to become entrepreneurs. Researchers list, for instance, the desire of independence, social development, financial success, recognition, or innovation as positive pull factors (Agarwal & Shah, 2014; Carter et al., 2003; van der Zwan et al., 2016). From a technological perspective, the latter is the most crucial aspect to entrepreneurship. In view of the fact that an increase of innovative capabilities is an aim of innovation-driven economies, entrepreneurship can be considered as successful whenever it is connected to a high level of innovative output.

However, there are also negative factors that actually *push* people into entrepreneurship. Literature shows that unemployed people sometimes struggle with finding a new job, and in such cases, self-employment remains the only opportunity available (Kuratko, 2016; Thurik et al., 2008; Rocha et al., 2015). Other push-factors might be the pressure to transfer a family business (Giacomin et al., 2011), dissatisfaction with one's current job (Hisrich & Brush, 1986) or the characteristic of being *unhireable* due to a lack of education or language skills (Sarasvathy, 2004). All these negative factors might push people to conduct entrepreneurial activity, although this would not be their preferred choice under perfect circumstances. Even though van der Zwan et al. (2016) conclude that "individuals are more likely to be pulled than pushed into entrepreneurship" (p. 277), the topic remains a controversial because, as stated before, entrepreneurship goes along with innovation and the innovative capabilities of an economy. Having said that, the argument of push and pull factors reveals that it remains essential to understand the motivations of entrepreneurs within an economy in order to estimate the potential level of innovation.

However, the technological level of entrepreneurship should be regarded from all sides. Although the disruptive implication of new products and technologies is conducted by both small new ventures and existing companies (Nambisan et al., 2019), the rate of highly-innovative entrepreneurs is still small (Shane, 2008). Despite exceptions, the majority of entrepreneurs are not innovative at all (Bhide, 2000; Shane, 2008). Among those who actually are innovative, some cross the border of legal entrepreneurship and enter the world of crime entrepreneurship.

Caused by the powerful mechanism of a competitive market, the pressure to innovate plays a crucial role in modern economies (Baumol, 2002). Environmental criminal entrepreneurs are no rarity. Kuratko (2016) lists examples of entrepreneurial syndicates that carry out illegal activities in order to stay competitive. Amongst them he finds "illegal fishing, illegal trade in wildlife and timber, smuggling of ozone-depleting substances, illegal disposal of asbestos, shipment of animal parts for health remedies, illegal trade in charcoal or trade in hazardous waste" (p. 129). Baumol (2002) stated that "modern organized crime can be businesslike or entrepreneurial" (p. 5) and crime entrepreneurship is an issue for both large corporations and small-scale new ventures. When entrepreneurship results in such damaging and negative consequences for society, one might speak of the destructive side of entrepreneurship (Shepherd, 2019). An example of a company that took a wrong turn caused by the pressure to innovate is the German car manufacturer Volkswagen. Using a new and innovative (but hidden and secret) technology, Volkswagen was able to present emission-friendly test-results for their

diesel cars, making them attractive for countries with a strict emission policy such as the United States. In truth, emissions outside of the testing facilities were much higher and, by the time Volkswagen's hidden technology was exposed, international regulations had long prohibited comparable technologies. This caused both enormous financial and reputational damages for a company that used an innovative technology for destructive entrepreneurship (Bay, 2015).

Summarized, a key element of entrepreneurship is innovation and, consequently, entrepreneurial activity also bears the potential to boost the economies' innovative capabilities (Kuratko et al., 2015). In the late 1950s, Robert Solow won a Nobel Prize in economics for showing that, in terms of the generation of additional outputs, innovation is more important than the sole addition of more inputs such as capital and labor (Baumol et al., 2007; Solow, 1956, 1957). The aim of innovation-driven economies is to provide a high level of innovative capabilities. By providing resources for R&D, the search for innovation is pushed forward. However, in the end, it is the individual that comes up with ideas and further develops them to inventions and innovations.

The question of why some people are more successful in being an entrepreneur than others is a major topic of interest within academic literature. Many factors, including human capital, personality, resources, environment, organization, the entrepreneurial process, capabilities, or competencies, determine how successful an entrepreneur turns out to be. However, social surroundings play a crucial role as well. Especially when people are not pulled but pushed into entrepreneurship, the risk that they will come up with less innovative or even criminal ideas increases.

1.1.3 Societal Level

Despite its positive effect on economic growth, innovation, and quality of life over the last century, industrialization has also raised concerns about the consequences for the natural and social environment (Dean & McMullen, 2007). Problems such as air pollution, surface-water degradation, toxic waste in groundwater, ozone depletion, climate change, destruction of ocean fisheries, desertification, deforestation, and threats to human health caused by chemicals in production processes and consumption have increased over the last decades (Dean, & McMullen, 2007; Kuratko, 2016). While these problems have caused long-term damages, they have not remained unnoticed. As a part of the 2030 Agenda for Sustainable Development, in 2015, the UN Member States named 17 goals as a "call to action to end poverty, protect the planet and improve lives and prospects of everyone, everywhere" (UN, 2015, para 1). The goals range from eliminating poverty and hunger to clean energy, climate action, and responsible

consumption and production (see Figure 4). Entrepreneurship can play a crucial role in reaching these goals. In the previous chapters, it became clear that entrepreneurship bears the potential to influence employment and economic growth but might also increase the innovative capabilities of economies which, in a wider sense, equals goals number eight and nine of the Agenda for Sustainable Development (see Figure 4). On a rather societal level, entrepreneurship might trigger further development and other goals as well.

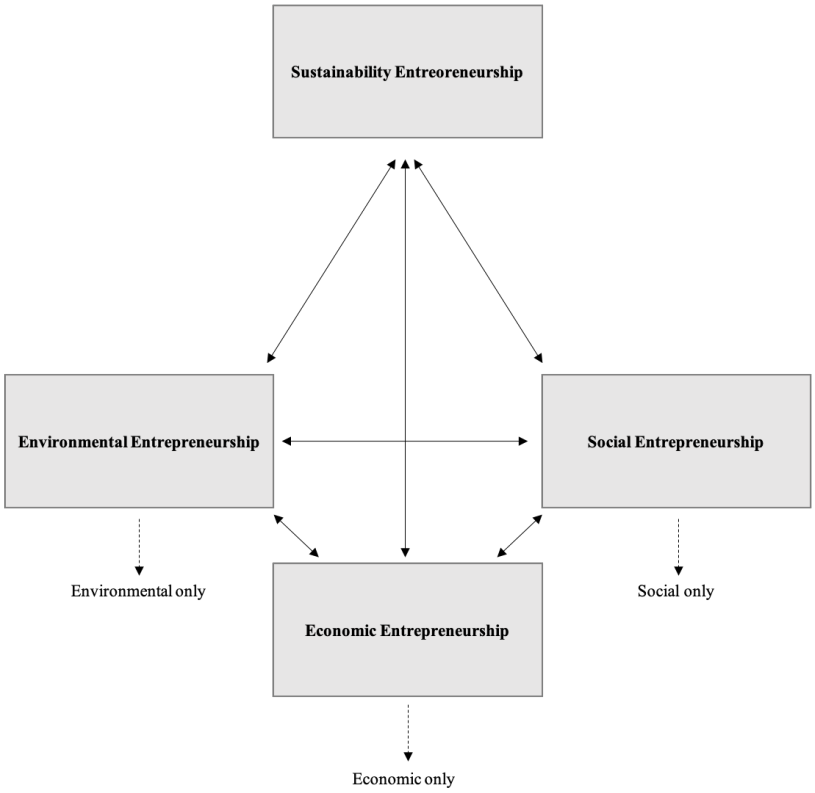
Figure 4 Sustainable Development Goals of the United Nations

Source: Sustainable Development Knowledge Platform of United Nations, retrieved from: https://www.un.org/sustainabledevelopment/news/communications-material/

Current research streams may be able to provide answers regarding how and where long-term damages are caused and the role of entrepreneurship (e.g., Dean, & McMullen, 2007; Kuratko, 2016). Scholars find that market imperfections such as non-efficient firm performance, externalities, imperfect pricing mechanisms, and unequal distribution of information exist and cause economic and environmental damages, which could be reduced by innovative entrepreneurial action (Cohen & Winn, 2007). It is said that entrepreneurs who discover an opportunity connected to the improvement of environmental conditions have the potential to "preserve ecosystems, counteract climate change, reduce environmental degradation and deforestation, improve agricultural practices and freshwater supply and maintain biodiversity" (Patzelt & Shepherd, 2011, p. 631). This particular view on entrepreneurship is called sustainable entrepreneurship and covers, amongst others, the aims defined by the United Nations to form better and more sustainable societies. According to Patzelt and Shepherd

(2011), "sustainable entrepreneurship is the discovery, creation, and exploitation of opportunities to create future goods and services that sustain the natural and/or communal environment and provide development gain for others" (p. 632). They furthermore add that *development gains for others* can be divided into three major aspects: *economic gain* (e.g., employment, economic growth, consumption), *environmental gain* (e.g., diminished air pollution, increased quality of drinking water) and *social gain* (e.g., increased life expectancy, education, equality). Kuratko (2016) concludes that sustainable entrepreneurship is based on these three gains, which he summarizes as the interrelated subtopics of *environmental entrepreneurship*, *economic entrepreneurship,* and *social entrepreneurship* (Figure 5). In order to understand the term sustainable entrepreneurship, a closer look on environmental and social entrepreneurship will be provided, as the economic level was already covered to a certain extent in the previous chapters. A look through the economic lens already revealed that entrepreneurship is closely connected to innovation and can serve as a booster for economic growth, employment growth, and life quality. Entrepreneurial action therefore does not stand in contradiction to the solution of social ills. On the contrary, innovative solutions bear the potential to combine entrepreneurship and sustainability. So, a continuity of economic development can be considered a feature of sustainability.

Figure 5 Sustainable Entrepreneurship and its Dimensions



Source: Kuratko (2016)

Oftentimes, entrepreneurship goes along with changes within a market. One source for market structure changes are market failures (Pigou, 1932). Market failures have a relation to social and environmental ills. It is generally assumed that entrepreneurs recognize failures, seek opportunities, and address the exploitation of these opportunities (Shane, & Venkataraman, 2000). Research on how markets fail due to environmental reasons is common. For instance, Pigou (1932) introduced the concept of private and social costs. Private costs are those incurred by a firm, while "social costs include the private costs as well as those incurred by society at large but not by the private producer" (Dean, & McMullen, 2007, p. 55). For example, if an energy provider uses resources (natural, human, etc.) for the production of electricity, it forms private costs, while emissions caused by the burning of lignite cause environmental effects in the form of natural damages or health danger, which are then considered social costs. Whenever social costs vary from private costs, a suboptimal allocation of resources results (Pigou, 1932). An inefficient allocation of resources creates a situation in which a "redistribution of goods or productive resources can improve the position of one individual without making at least one other individual worse off," and is therefore not pareto-efficient (Arrow & Debreu, 1954, p. 265). While in the widest sense such situations define *market failure*, entrepreneurs are seen to be actors that creatively seek opportunities in failed markets and help reestablish an equilibrium (Baron & Ensley, 2006; Shane & Venkataraman, 2000). Dean and McMullen (2007) connected the dots between environmental market failure and entrepreneurship and underlined the role of environmental entrepreneurship for sustainable global economic systems. Their results are shortly presented here, as they provide a comprehensive overview.

(1) Environmental market failures create a situation of high discrepancy between private and social costs at the expense of society. Entrepreneurs see opportunities in failed markets.
(2) The natural characteristics of environmental resources makes them prone to market failure. The resulting environmental problems lead to social and economic loss and therefore offer entrepreneurs the possibility to seek and exploit opportunities.
(3) The exploitation of these opportunities, for instance, through the establishment of environment-friendly new ventures or innovative production technologies, moves the market to a superior state of efficiency.
(4) Negative environmental impacts are reduced, resulting in a market with little social costs and higher social and economic gains. (Dean, & McMullen, 2007, p. 69f.)

Although it is recognized that entrepreneurship in general does not necessarily mean environment-friendly behavior or optimization of failed markets, scholars accepted sustainable entrepreneurship as a subdomain of entrepreneurship and environmental entrepreneurship as a subdomain of sustainable entrepreneurship, which bears great potential to help create disruptive ways to optimize markets and increase environmental conditions (Cohen, & Winn; Dean, & McMullen, 2007; Hart & Christensen, 2002).

Beside the environmental and economic benefits, the term *social entrepreneurship* gained in importance over the last decade (e.g., Hota et al., 2019; Zahra et al., 2014). Functioning as the third pillar of sustainable entrepreneurship, social entrepreneurship is concerned with business activities established for achieving social goals and creating social wealth (Mair & Martí, 2006; Shepherd & Patzelt, 2011). The relevance of the term social entrepreneurship became clear in 2006, when the social entrepreneur Muhammad Yunus received the Nobel Peace Prize for his Grameen Bank, a financial institution that "pioneered the development of micro-finance and created nearly 30 businesses designed to alleviate poverty" (Yunus et al., 2010, p. 308). By picking up the societal problem of poverty, Yunus' entrepreneurial new venture led to social benefit by providing millions of people with low or no income with micro-credits. Since then, profit maximization and public welfare appeared compatible. In order to understand the social impact of entrepreneurship more thoroughly, researchers worked on this topic extensively. Gupta et al. (2020) found 188 relevant papers concerned with social entrepreneurship in the period from 2007 to 2018. It is said that social entrepreneurship appears in each type of economy, whether it is innovation-driven or factor-driven, because social problems appear regardless of the form of the economy. These "social problems are viewed as potential opportunities that can be grabbed by developing products and services, thereby generating social value" (Gupta et al., 2020, p. 215). Social entrepreneurs take social problems and transform them to manageable problems (Seelos & Mair, 2005). By addressing social problems such as poverty, unemployment, gender inequality, health, or education, social entrepreneurship leads to a transformation towards social change and social wealth (Gupta et al., 2020; Mair & Martí, 2006). In doing so, society benefits from improving social conditions, and the elimination of social problems improves the life quality within an economy.

However, although economic, environmental, and social entrepreneurship might bear the potential to increase the life quality of society as a whole, the view on entrepreneurs within a society is oftentimes twofold.

On the one hand, the success stories of entrepreneurs might lead to a positive view on entrepreneurship and the creation of entrepreneurial role models, who are increasingly being

acknowledged as an influential factor for future career options (Bosma et al., 2012). Research in the field of psychology has already shown that individual decisions to exhibit a certain behavior are oftentimes influenced by the behavior and opinion of others (e.g., Ajzen, 1991; Shapero & Sokol, 1982). Whether it is a famous example from the media such as Steve Jobs or Elon Musk or a family member with previous entrepreneurial success, role models can positively influence entrepreneurial intentions and activities (Krueger et al., 2000). Bosma et al. (2012) found that role models in fact increase the self-efficacy of would-be entrepreneurs by inspiring them and serving as a source of learning. Research on regional networks underlines that role models might appear in various settings such as the media, family, workplace, university or neighborhood (Minniti, 2005; Wyrwich et al., 2018). Therefore, society plays a crucial role in encouraging people to become entrepreneurs and, in the best case, conduct sustainable entrepreneurship, providing society with environmental, economic, and social wealth.

So far, entrepreneurship sounds like a pure success story. However, on the other hand, as was already stated, most entrepreneurial new ventures tend to fail (Bruno et al., 1992; Peng et al., 2010; Shane, 2008). Therefore, finding a successful entrepreneurial role model might be a challenge. Regardless of whether economic, environmental, or social entrepreneurship is considered, whenever there are entrepreneurial successors, entrepreneurial failures are even more likely. Literature on new venture failure is not scarce (e.g., Cope, 2011; Shane, 2001). One research stream has taken on the question of how entrepreneurial failure influences societal attitudes towards entrepreneurship (e.g., Cardon et al., 2011; McGrath, 1999; Wyrwich et al., 2018). Entrepreneurial failure is connected to learning potential, providing society with the opportunity to learn from mistakes and improve entrepreneurial action in the future (Cope, 2011; Shepherd, 2003). However, the impact of failures on society might also be of a different nature. Mistakes do not necessarily motivate people to repeat their attempts, but might deter them from a certain action. This is also the case in the frame of entrepreneurship. The social perception of entrepreneurship might worsen with every failed attempt, causing an increasing fear of failure (Cardon et al., 2011). How entrepreneurial failure is regarded highly depends on the regional, social, and economic environment. In an over two decades-old article from the New York Times, Michael Lewis concludes that subcultures, “whether gender or region, profession, or class – seems to have [their] own code of failure: what kinds are acceptable, how to treat those who fail, rules that protect the status of the subculture and its members. Where Silicon Valley exalts failure, Wall Street punishes it ruthlessly” (Waldman, 1999). Against this background, it is observable that some regions in the world developed more entrepreneurial

action than others. A growing number of academic studies on regional entrepreneurship have found that regions differ significantly from each other and that some regions develop a positive view on entrepreneurship, seeing opportunities in failure, while others are deterred by failure and form averse implications and perceptions towards entrepreneurship (e.g., Armington & Acs, 2002; Delgado, et al., 2010; Lee et al., 2007). Rewards and sanctions from a society to a failed entrepreneurial approach may influence risk tolerance and entrepreneurial activity (McGrath, 1999). The GEM found that in Germany, 29.7% of people hold a fear of failure (Bosma et al., 2020). This fear of failure reduces entrepreneurial intentions and activity (Arenius & Minniti, 2005). Wyrwich et al. (2018) underline these findings with empirical data from Germany, suggesting that "failed entrepreneurs can discourage entrepreneurial intentions" (p. 18). In comparison to the United States, the fear of failure in Germany is still high (Metzger, 2019), which might be one of the reasons why fear-tolerant regions such as Silicon Valley in the U.S. or Cambridge in the UK became "entrepreneurial hotspots" (Wyrwich, 2018, p. 18). A study on the German culture of failure reveals that a more positive culture is needed in order to support entrepreneurship more intensely (Kuckertz et al., 2015). According to the authors, a more open view on failure within society, the economy, the media, politics, and science is needed in order to decrease the fear of failure and at the same time increase entrepreneurial activity.

As such, the societal feedback to entrepreneurship varies from the admiration of role models to the creation of a fear of failure. However, rather than just fearing failure, societies might also develop a stigmatization and condemnation of failure, creating a painful and traumatic experience for entrepreneurs (Singh et al., 2015). Once labelled a failure, society might develop a social devaluation, leading the entrepreneur to conceal the failed entrepreneurial attempt, ending in self-imposed distancing and a lack of confidence (Walsh, 2017; Singh et al., 2015). This underlines the need for a failure-friendly culture comprising all actors in a society. While some regions, such as Silicon Valley, already created such a culture, other regions have adapted their policies towards an entrepreneur-friendly environment. For instance, the European Commission introduced specific policy granting entrepreneurs a second chance in the possible event of failure, aiming at a more entrepreneurship-friendly environment (EU, n. d.).

In summary, the subtopic of sustainable entrepreneurship covers many highly relevant topics that are taken up by institutions such as the United Nations and national governments but also academic science and industry. Sustainable entrepreneurship entails economic, environmental, and social entrepreneurship, which can all lead to social wealth and economic gains. Successful entrepreneurship bears the potential to create entrepreneurial role models, and failures can act

as a learning opportunity. However, a risk remains that failed entrepreneurial attempts lead to stigmatization and fear of failure. Research shows that some regions in the world overcame this fear, while others are on track to do so.

1.1.4 Personal Level

After regarding entrepreneurship from a macro level and showing how entrepreneurial activity might influence the economy, technology, and society, it is now the time to consider the micro level and take a closer look at the entrepreneur as a person. Oftentimes, the entrepreneur is presented as the "folk hero of the industrial world" (Kets de Vries, 1977, p. 34); the person "who stand[s] alone and overcome[s] great odds to build companies through superhuman efforts" (Shane, 2008, p. 40).

Thanks to this generally positive attitude towards entrepreneurship, would-be entrepreneurs are attracted by a job that comes along with various benefits. However, the risks of entrepreneurship must also be considered. It has already been mentioned that being an entrepreneur goes along with the fact that most new ventures tend to fail. Hence, one question needs to be answered: What can people expect from being an entrepreneur and why do they take this obvious risk?

First of all, entrepreneurs design and create their own work environment. Under the belief that "individuals work hardest, and best, when they perceive what they do as meaningful […] entrepreneurs aim to secure highly enriched work environments" (Baron, 2010, p. 370). Such an enriched work environment bears various positive personal effects. Entrepreneurs seek new adventures that entail personal development on many levels (Kuratko, 2016). While the improvement of management skills such as learning to keep financial records, managing other people, and developing products and services is one pillar of personal development (Shane, 2008), another pillar is development in terms of personality and self-efficacy, which takes place when the entrepreneur concludes that they can actually be an entrepreneur, finds a meaningful opportunity, evaluates the opportunity, overcomes skepticism, including their own and keeps up with the changes in their self-definition as a result of their experience (McMullan & Vesper, 2000). By undergoing changes in both the personal and work environment, the entrepreneur pushes ideas forward that are of great relevance for themselves but also for others. This so-called *task-significance* (Baron, 2010) means that the entrepreneur establishes a fulfilling career that provides the opportunity for personal development but also enriches the lives of others, such as customers, consumers, or family members. In doing so, the entrepreneur learns to grow into the responsible role they have for themselves and for society, developing an entrepreneurial

passion that helps them to establish positive entrepreneurial self-efficacy (Cardon & Kirk, 2013). Thus, the passionate, hard-working and responsible entrepreneur reinforces the positive view that society generally has regarding entrepreneurs.

However, the entrepreneurial path does not seem to be a one-way road, but rather a path that reaches many crossroads. On the one hand, the effect on the entrepreneur's personality might take a positive turn, as explained in the previous passage. Nevertheless, it could also turn to a road where the entrepreneur develops negative personality traits.

In his frequently quoted article, Kets de Vries examines the dark side of entrepreneurship and finds that the same energy that drives an entrepreneur can also be destructive (Kets de Vries, 1985). Relatedly, research on the *Dark Triad of Personality* emerged, and considered narcissism, Machiavellianism, and psychopathy as possible outcomes of the entrepreneurial process (Paulhus & Williams, 2002).

Studies show a correlation between entrepreneurial intention and the personality traits of narcissism and psychopathy, explaining that entrepreneurs tend to possess the potential to develop negative traits throughout the entrepreneurial process (Cesinger et al., 2011). In that frame, narcissism describes the personality pattern characterized by a general feeling of superiority and entitlement, expressing itself in dominance, exhibitionism, and exploitation (Lee & Ashton, 2005). Furthermore, a large sense of self-importance, exaggerated self-esteem, imaginations of unlimited success, and power or the expectation of excessive admiration come along with narcissism (Cesinger et al., 2011). Psychopathy in turn, refers to a pattern of callous, remorseless manipulation and exploitation of others (Lee, & Ashton, 2005). A lack of loyalty and sense of guilt, impulsive, irresponsible, and antisocial behavior constitute the essence of psychopathy (Cesinger et al., 2011; Lee & Ashton, 2005). Kets de Vries goes even further, characterizing the entrepreneur as a lonely, isolated, and rather remote person that feels displaced and does not fit into their environment (Kets de Vries, 1977).

How the entrepreneur finally refines their personality traits depends on many factors, but it becomes obvious that personality development can take two opposing directions. The first direction is related to self-development, enrichment of skills, and social helpfulness, while the second bears the risk of developing negative personality traits such as those described by the Dark Triad of Personality.

Starting a new venture, entrepreneurs see a wide-open road in front of them. They choose a career path of high autonomy in order to become the creators of their own success (Baron, 2010), making them more satisfied with their flexible and controllable job (Shane, 2008). They also find themselves in a job environment that is characterized by a variety of skills, meaning

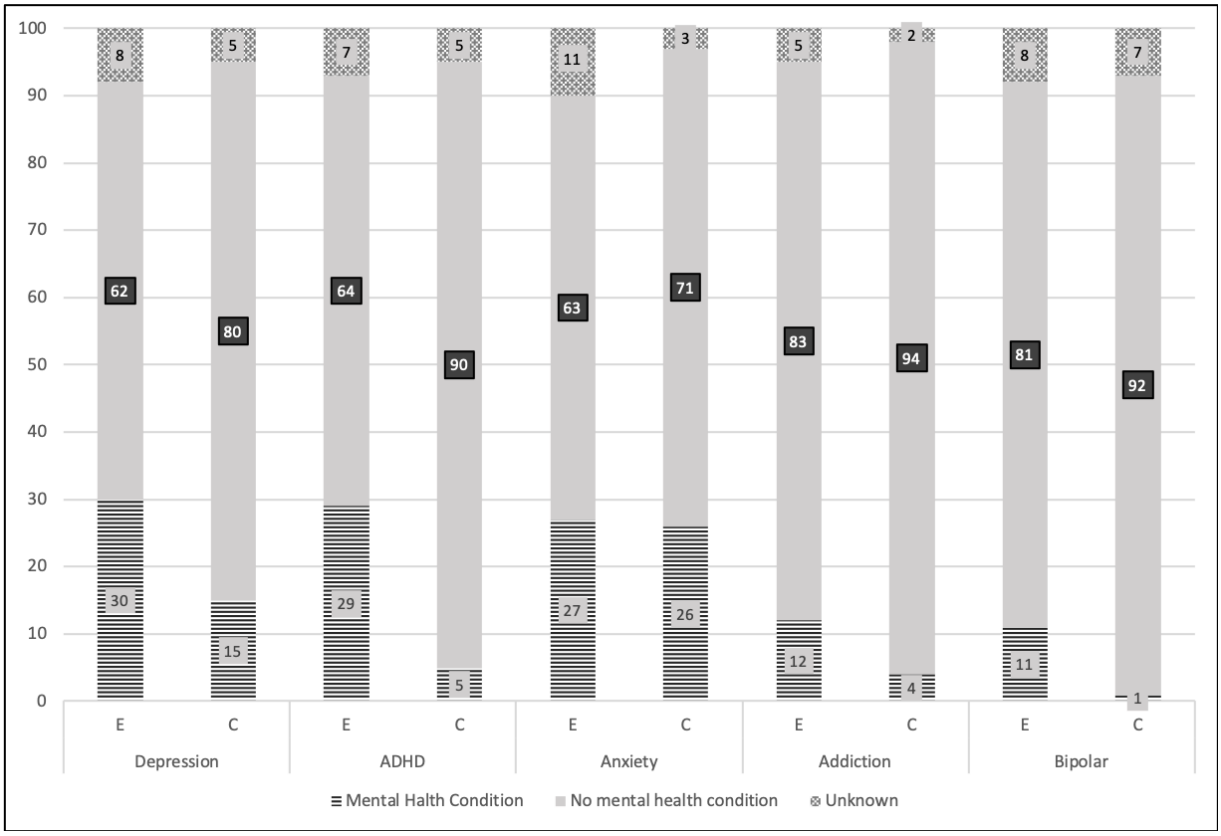
entrepreneurs are not forced to do the same thing over and over again but can use their talents and skills in the way they prefer (Baron, 2010). Being more self-reliant, independent, and responsible establishes higher "levels of motivation, satisfaction and performance" (Baron, 2010, p. 373).

However, what sounds like a dream job, can quickly become a challenge. Entrepreneurs pay the price of giving up their previous career path, making it harder to reenter their formed path after a possible failure (Ucbasaran et al., 2013). They might pay the opportunity cost of giving up a safe job that they cannot recover. Soon, the autonomy of being an entrepreneur can turn into a burden. The wide array of tasks, including taking care of the daily business, securing financial resources, developing products and services, developing business plans and strategies, or participating in marketing and sales, can become a major reason for stress (Chen et al., 1998). This stress might be reflected in:

- being constantly exhausted by pressure,
- losing sleep,
- placing more weight on work than on leisure,
- feeling unhappy,
- physical pain such as back problems, indigestion, insomnia, or headaches. (Blanchflower, 2004; Kuratko, 2016)

To put it simply, the autonomous life of an entrepreneur can quickly become overwhelming. Not being able to transfer responsibility to a supervisor or the burden of being financially dependent on one's own decisions and actions can become overwhelming both mentally and physically (i.e., health-wise) ways (Fried et al., 2008). More recent studies find that entrepreneurs are more likely than comparison participants to experience a mental health condition such as depression, ADHD, anxiety, addiction, or bipolar disorder (Freeman et al., 2019). The lifetime prevalence of mental health conditions among entrepreneurs and non-entrepreneurs can be seen in Figure 6.

Figure 6 Lifetime Prevalence of Mental Health Conditions among Entrepreneurs



Source: Freeman et al. (2019)

Within the literature, no reliable data concerning the suicide risk among entrepreneurs in comparison to other employment groups could be found. However, depression is "one of the strongest predictors of suicidal ideation" (Lueck, 2019, p. 884). Therefore, one might suppose that a life of high stress in combination with mental and physical health conditions bears a high risk of potential suicidal ideation. It is therefore safe to say that entrepreneurship can serve as a source of personal development and the opportunity for great wealth, but also the risk of putting one's own life on the line by living a life of potential stress and pain.

Coming back to the beginning of this chapter, the general view on the entrepreneur is not of a highly-stressed and unhealthy individual. On the contrary, entrepreneurs are labelled with expressions such as "folk hero" (Kets de Vries, 1977, p. 34) or "superhuman efforts" (Shane, 2008, p. 40). Although it was shown that such labelling simplifies the complex world of the entrepreneur, being an entrepreneur can indeed come along with aspects such as social renewal (Kuratko, 2016) or prestige (Anderson & Jack, 2000). As discussed in previous chapters, being successful as an entrepreneur means financial gains. However, social gains also effect the entrepreneur on a personal level. An increasing social status, high level of prestige, and positive

image are among the reasons for people to become entrepreneurially active (Giannetti & Simonov, 2003). Whenever people are successful in their entrepreneurial activity, social successes reward them as well. However, as we learned during this chapter, entrepreneurship is a path with many crossways that can take different turns. As such, the question remains as to how an entrepreneur's social status changes when they fail in their venture.

As was already stated, most entrepreneurial ventures tend to fail, consequently the culture of failure plays an essential role. While failure might serve as a source of learning (Cope, 2011; McGrath, 1999; Ucbasaran et al., 2013), it might also have a negative influence on the entrepreneur. The emotional and traumatic experience of entrepreneurial failure (Cope, 2011; Shepherd, 2003) can lead to a loss of social network (Harris & Sutton, 1986) and even lead to a form of social devaluation, which is characterized by social discreditation (Sutton & Callahan, 1987). This loss of social image in combination with the risk of financial ruin form the downside of entrepreneurship and reinforce fears of failure.

In conclusion, on a micro-level entrepreneurship can influence the individual in various ways (see Table 1).

Table 1 The Influence of Entrepreneurship

The influence of entrepreneurship on…	+	-
Personality	• Improvement of management and business skills • Development of passion, responsibility, and self-efficacy	• Development of psychopathy and narcissism • Suffering psychological and physical pain
Finance	• Possibility for financial independence and wealth	• Risk of personal bankruptcy
Job Perspective	• Enriched job environment with autonomy, flexibility, and variety of tasks	• Too much work leading to high pressure • Risk of leaving a successful career path
Social Recognition	• High level of social recognition, admiration, and prestige • Social renewal after being previously unacknowledged	• Bad view on failed entrepreneurs • Loss of social image • Social discreditation

An individual can potentially profit on many levels from entrepreneurial activities. Especially during a time of success, the entrepreneur might seek personal development, financial wealth, an interesting and diversified job, and a high reputation within society. However, entrepreneurial success is much more unlikely than entrepreneurial failure. In times of failure, the individual might face cognitive and physical pain, risk their finances, give up a solid career, and lose face within society. In addition, the entrepreneur, whether successful or not, is prone to developing negative personality traits. Being an entrepreneur can therefore be regarded as the promising attempt to become what Shane (2008) called the person "who stand[s] alone and overcome[s] great odds to build companies through superhuman efforts" (p. 40) under the risk of becoming the exact opposite.

1.2 Fuzzy Terminus - Definitions of Entrepreneurship

In the following section, the term *entrepreneurship* will be investigated in a twofold manner. At first, entrepreneurship will be separated from traditional management by revealing not only the different tasks of an entrepreneur and manager, but also by highlighting the great amount of new research streams that emerged in the frame of entrepreneurship. This enables an overview of the different research subjects that are enjoying increasing interest. Then, a historic overview of the term entrepreneurship will be given and a number of well-established approaches attempting to define the term entrepreneurship will be presented in a chronological manner. Emerging in the 18th century, the term entrepreneurship is still today not uniformly defined. Therefore, a list of definitional approaches will result in one that constitutes the basis in this elaboration.

1.2.1 Entrepreneurship as an Independent Research Stream

According to Drucker (1985), entrepreneurship is not a hidden, mysterious part of business administration but a separate discipline and, as with each discipline, it can be learned. In order to teach and learn entrepreneurship, researchers seek solid theories. Shane and Venkataraman (2000) opened their seminal work on the promise of entrepreneurship as a field of research by stating: "For a field of social science to have usefulness, it must have a conceptual framework that explains and predicts a set of empirical phenomena not explained or predicted by conceptual frameworks already in existence in other fields" (p. 217). Around the time of Shane and Venkataraman's call for action, the relatively young and still fragmented research field of entrepreneurship started to develop as an internationally accepted line of research (e.g.,

Busenitz et al., 2003; Davidsson & Gruenhagen, 2021; Schildt et al., 2006). In order to differentiate between general business administration and entrepreneurship, scholars regarded the tasks that entrepreneurs typically fulfill and compared them to the tasks that general managers usually fulfill, leading to the assumption that entrepreneurship takes a different point of view than classic business administration and management (Bygrave & Hofer, 1991; Frank, 2009). Entrepreneurship not only focuses on existing companies but oftentimes on the realization of a founding idea in the form of establishing an innovative startup (Liening, 2017). In that frame, the continuous discovery or creation of opportunities (Alvarez & Barney, 2007) distinguishes the field of activity of the entrepreneur and the manager. While managers usually *exploit* and *manage* existing opportunities, entrepreneurs are connected to the *search* and *development* of opportunities and ideas (Osterwalder et al., 2014). Therefore, managers and entrepreneurs differ in that they display specific competencies which they need to use most of the time (Liening, 2017). Table 2 shows the differences between managers and entrepreneurs.

Table 2 Comparison of Manager and Entrepreneur

Manager	Entrepreneur
▪ Plan	▪ Have/create visions
▪ Develop strategies	▪ Explore opportunities
▪ Organize	▪ Create something
▪ Manage personnel	▪ Initiate innovations
▪ Motivate	▪ Take risks
▪ Manage budget	▪ Manage resources
▪ Evaluate	▪ Take responsibility for changes
▪ Coordinate	▪ Implementation of ideas
▪ Supervise	

Source: Kuratko et al. (2011)

However, entrepreneurs need both entrepreneurial and managerial competencies. The latter becomes especially important when the business grows and the entrepreneur is faced with new tasks apart from searching for and developing opportunities and ideas (Galbraith, 1982; Mitchelmore & Rowley, 2010). It is therefore not appropriate to make a sharply selective separation of managerial and entrepreneurial competencies, but rather to acknowledge the set of competencies needed in a given situation is highly context-related.

Accepting that entrepreneurship is in fact a separate research discipline enables the establishment of new research streams. Schildt et al. (2006) identified research areas connected

to entrepreneurship that showed increasing interest during a time when this field was considered young and unexplored:

- "entrepreneurial networks and resource accumulation,
- corporate entrepreneurship and venturing,
- conceptualizations of entrepreneurial processes,
- value creation from corporate entrepreneurship
- alertness, opportunity creation, and creative destruction
- psychological characteristics of entrepreneurs
- qualitative research methods in entrepreneurship
- entrepreneurial firm survival and growth
- societal consequences of entrepreneurship and
- born-global firm" (pp. 403)

The above areas appeared to be of the highest interest for researchers.

Hence, different schools of thought emerged. Entrepreneurship researchers took, for instance, Kirzner's discovery theory (Kirzner, 1997) and placed it as a main theory of entrepreneurial action next to creation theory (Alvarez & Barney, 2007; Shane S., 2003). While discovery theory assumes that opportunities already exist independently of entrepreneurs and wait to be discovered by them, creation theory assumes that opportunities do not exist independently of the entrepreneur, but rather need to be created by them (Alvarez & Barney, 2007). In order to understand the setting in which entrepreneurial action and the discovery and creation of opportunities is taking place, further studies examined whether entrepreneurship is happening in a business or non-business context, leading to the emerged interest in corporate entrepreneurship (Covin & Miles, 1999; Kuratko et al., 2005) or social entrepreneurship (Zahra et al., 2009). On a macro-level, entrepreneurial ecosystems became a strongly focused body of research and attempted to reveal how ecosystems are organized and how they function (Acs et al., 2014; Spigel, 2017).

Other studies examined entrepreneurial cognition to better understand why some people exploit entrepreneurial opportunities and some do not (Dew et al., 2015; McMullen & Shepherd, 2006). More recently, scholars found that entrepreneurship is oftentimes an emotional journey, which is why the aspect of entrepreneurial emotion came to the fore and revealed the extreme experience that entrepreneurs undergo (e.g., Byrne & Shepherd, 2015; Cardon et al., 2005;

2012; Cardon & Kirk, 2013; Schindehutte et al., 2006). Furthermore, as the research discipline of entrepreneurship grew, the interest in not only the entrepreneur as a singular unit but entrepreneurs as a team increased as well. Empirical studies showed that entrepreneurial teams were more successful than single founders (Lechler, 2001), which is why entrepreneurial teams received considerable attention in entrepreneurship research (Klotz et al., 2014).

Considering a world full of new technologies such as cloud computing, social media, or 3D printing, the interface between entrepreneurial action and digital technologies opened another research area which is receiving more and more interest, namely, digital entrepreneurship (Grichnik et al., 2017; Nambisan, 2016).

In a nutshell, entrepreneurship has been established as an independent research stream over the last decades. Entrepreneurship is oftentimes researched from an organizational perspective or a perspective that focuses on the entrepreneur himself. Following the findings of Kuckertz and Prochotta (2018), who identify the most promising topical areas in entrepreneurship research, an overview of subcategories of entrepreneurship can be found in Table 3.

Table 3 Subcategories of Entrepreneurship

Organizational Perspective	**Individual Perspective**
Entrepreneurial Process	Entrepreneurial Behavior
Social Entrepreneurship	Psychology of Entrepreneurship
Entrepreneurship/innovation interface	Entrepreneurial Teams
Entrepreneurial Finance	Personality Traits
Economies of Entrepreneurship	Entrepreneurial Competencies
Corporate Entrepreneurship	Entrepreneurial Cognition
International Entrepreneurship	Entrepreneurial Emotion
Entrepreneurship Education	
Digital Entrepreneurship	
Family Businesses	
Entrepreneurial Ecosystems	
Entrepreneurial Methods	

1.2.2 Historical Approach to the Term Entrepreneurship

The term *entrepreneurship* has its origin in French. The literal translation of the expression *entreprendre quelque chose* can be translated into *undertaking something* or *taking action*. The Cambridge Dictionary goes one step further and defines entrepreneurship as the "skill in starting new business, especially when this involves seeing new opportunities" (Cambridge Dictionary, n. d.). However, this definition does not entail the entire meaning of

entrepreneurship. In fact, there is much scholarly debate surrounding the nature of entrepreneurship and how entrepreneurship should be defined. A look into the past reveals that the term entrepreneurship has been used for more than 200 years in the business and management context (Morris, 1998).

The term was arguably used for the first time around 1730 by Richard Cantillon, whose work *Essai sur la Nature du Commerce en Général* (English: Essay on the Nature of Trade in General) was published post mortem in 1755. Cantillon emphasizes that entrepreneurs are traders and merchants who buy products and sell them for an unknown price in the hope of making profit. They are faced with the uncertainty of making a profit or loss and, therefore, on the one hand, serve as the risk-bearers of the economy, and on the other hand, as drivers of the economy (Cantillon, 1755/2015).

Jean-Baptiste Say, inspired by the economic theories of Adam Smith, published his work *Traité D'Économie Politique* (English: A Treatise on Political Economy) in 1803. Although inspired by Smith, Say distinguished his work by assigning a central role within the economy to the entrepreneur. Aside from the risk-bearing function of entrepreneurs that Cantillon already mentioned, Say assigned the capacity of innovation to entrepreneurship by defining the manufacturer as an entrepreneur that "discovers a process, calculated either to introduce a new product, to increase the beauty of an old one, or to produce with greater economy" (Say, 1803/1971 p. 329), therefore, defining the entrepreneur as an intermediary between a regular worker carrying out his tasks and the work of a scientist (Boutillier & Uzunidis, 2014).

Many economists such as Léon Walras, Carl Menger, and Alfred Marshall followed around the end of the 19th and beginning of the 20th century with their underlining of the importance of the entrepreneur for the economy (Boutillier & Uzunidis, 2014). However, a milestone of entrepreneurship theory was laid with the work of Joseph Schumpeter, who identified the new combination of means of production (Schumpeter, 1934/1983) as a source of economic development and thus further emphasized the meaning of innovation for entrepreneurship. According to Schumpeter's theory, an entrepreneur does not necessarily run their own business. The new combination of existing resources, whether by an *independent* businessman or a *dependent* employee within an organization, constitutes what Schumpeter calls entrepreneur (Schumpeter, 1934/1983). Additionally, Schumpeter (1942/2003) introduced the process of "creative destruction" (p. 81) as a central aspect of entrepreneurship. The combination of existing resources and the resulting innovation of new products and services leads the consumer to overthink existing goods, resulting in the establishment of new businesses and the replacement of old ones. This creative destruction "revolutionizes the economic structure from

within, incessantly destroying the old one, incessantly creating a new one" (Schumpeter, 1942/2003, p. 83).

In the style of Cantillon, Frank Knight further developed the concept of risk and uncertainty in the frame of entrepreneurship in the beginning of the 20th century. According to Knight (1921), profit earned by the entrepreneur serves as a reward for the entrepreneur's risk-bearing in an uncertain environment. Furthermore, Knight calls it "unquestionable that the entrepreneur's activities effect an enormous saving to society, vastly increasing the efficiency of economic production" (p. 278). This is the case because Knight's entrepreneur fulfils two centrals roles. Firstly, he is the actor within the economy that responses to a loss of certainty and takes on the challenge to face an unknown future and secondly, he takes the role of the opportunity-seeker, creating a new perspective and profit from that (Emmett, 1999).

Contrary to Schumpeter's approach, Kirzner defines the entrepreneur as someone who discovers opportunities rather than creates them (Kirzner, 1973). This constitutes a discussion that reaches up to the present time, where it is generally acknowledged that both the discovery and creation of opportunities are valid components of entrepreneurship (Alvarez & Barney, 2007).

In his definition of entrepreneurship, economist Peter Drucker focused on the establishment of new small businesses, highlighting the creation of new markets, new customers, and new value (Drucker, 1985). This could be achieved not only by innovating, but by shifting "resources from areas of low productivity and yield to areas of higher productivity and yield" (p. 28). One of Drucker's examples is the establishment of McDonald's, which, in comparison to any traditional, small, privately owned restaurant was indeed an act of entrepreneurship, because the application of management techniques allowed the identification of value for the customer and the design of processes and tools of standardization, resulting in an entrepreneurial creation of new value and new market (Drucker, 1985). He additionally stated that "entrepreneurship is by no means confined solely to economic institutions" (Drucker, 1985, p. 23), which means that entrepreneurship does also finds application in a non-profit and social context.

In Table 4, an excerpt of definitions of entrepreneurship is provided. Since economists often attempted to define entrepreneurship by defining the entrepreneur in detail, the following table entails the most central aspects only.

Table 4 Definitions of the Term Entrepreneurship

Definition	Central Focus	Author, year
According to Cantillon, entrepreneurship is defined by any sort of self-employment in which the entrepreneur buys a good at a certain price in order to sell it at uncertain future prices (Murphy, 2015).	Self-employment, uncertainty	Cantillon, 1755
Entrepreneurs are the risk-taking profit maximizers who discover a process, designed either to introduce a new product, to increase the beauty of an old one, or to produce with greater economy (Kelly, 1971).	Risk-taking, driver of production, innovation	Say, 1803
Entrepreneurs are the individuals within a society who respond to a loss of certainty, take on the challenge to face an unknown future and take the role of the opportunity-seeker, creating a new perspective and profit from that.	Risk-taking, uncertainty	Knight, 1921
Entrepreneurs are innovators who carry out new combinations of means of production leading to economic development. New combinations of means of production can be new or better goods, new production methods, new markets, new sources of raw materials, or a new organizational form.	Innovation	Schumpeter, 1934
Entrepreneurship is the identification of market arbitrage opportunities by the use of an entrepreneurial alertness.	Opportunity discovery	Kirzner, 1973
Entrepreneurship is the act of innovation that endows resources with a new capacity to create wealth.	Innovation, Management	Drucker, 1985
Entrepreneurship is the creation of organizations.	Organization creation	Gartner, 1989
Entrepreneurship studies sources of opportunities; the process of discovery, evaluation, and exploitation of opportunities, and the set of individuals who discover, evaluate, and exploit them.	Process, Opportunity exploitation	Shane & Venkataraman, 2000

Approaches to understand entrepreneurship by defining the entrepreneur and his psychology were conducted in an extensive manner. The question of what differentiates entrepreneurs from non-entrepreneurs was originally addressed through attributes such as need for achievement (e.g., McCelland, 1961), locus of control, or risk-taking (e.g., Brockhaus, 1980); however, researchers soon found that such an approach did not wholly cover the definition of the term entrepreneurship (Brockhaus & Horwitz, 1985; Gartner, 1989; Venkataraman, 1997). Based on these thoughts, Shane and Venkataraman (2000) stated that entrepreneurship is closely connected to the exploitation of opportunities and therefore should be defined in a threefold way by studying "the sources of opportunities, the process of discovery, evaluation and

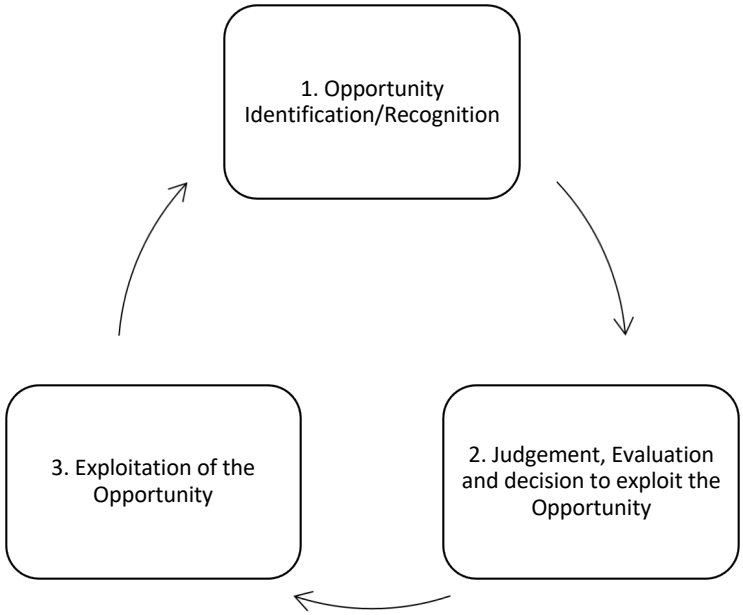
exploitation of opportunities and the set of individuals who discover, evaluate, and exploit them" (p. 218). As such, the definition of entrepreneurship is far from being obvious. The definitions that come closest to presenting a holistic picture include the following characteristics:

- "Identification and exploitation of entrepreneurial opportunities
- Innovation and novelty
- Securing of resources and formation of an enterprise/an organization
- Profit-orientation taking into account reasonable risks and uncertainties."
  (Volkmann et al., 2010, p. 4)

2 Entrepreneurial Opportunities as the Fundament of New Business Ventures

Since entrepreneurship was established as an independent research discipline, various theories, models, and concepts have emerged. In the following chapter a small fraction of them will be presented in order to illustrate the entrepreneurial process. There is a general consensus in entrepreneurship research that entrepreneurial action starts with the identification of an opportunity (e.g., Eckhardt & Shane, 2010; Kirzner, 1979). Following this identification, the judgement and evaluation of the opportunity takes place and finally the opportunity is exploited. According to Grichnik's Opportunity Map (2006), this process is illustrated in a simplified form in Figure 7.

Figure 7 Simplified Entrepreneurial Process



Source: Grichnik (2006)

Following this entrepreneurial process, the remainder of this chapter gives insights into the aspects of Figure 7, whereas opportunity identification/recognition and the evaluation are merged into one initial process before opportunity exploitation. Theories of opportunity identification will be examined and furthermore, methods and concepts of structuring and conducting the exploitation of these opportunities will be presented. Antecedents that influence the way in which opportunities are identified and evaluated will undergo a thorough examination.

2.1 Opportunity Recognition

"A Pessimist sees the difficulty in every opportunity; an optimist sees the opportunity in every difficulty".

This quotation by Sir Winston Churchill, prime minister of the United Kingdom during the 1940s can be applied suitably to the topic of entrepreneurial opportunity recognition. Opportunity identification (or recognition) is seen as "the most distinctive and fundamental entrepreneurial behavior" (Gaglio & Katz, 2001, p. 95) and serves as a distinctive feature between entrepreneurship and management (Busenitz et al., 2003; Shane & Venkataraman, 2000).

In the more than seven decades that have passed since the end of the second world war, the world has faced numerous disruptive trends such as globalization, digitization, and Industry 4.0. The world has also been shocked by fundamental crises such as the dot-com bubble in the early 2000s, the global financial crisis of 2007, the pandemic crisis of 2019 or, more recently, the energy crisis of 2022. Such exogenous shocks, whether positive or negative, might lead to technological, political, regulative, social, or demographic changes, which can, in turn, serve as a source of entrepreneurial opportunities (Schumpeter, 1934/1983).

Just to mention a few examples of recognized opportunities: General Electric introduced the highly innovative fluorescent light bulb during the Great Depression, Microsoft was formed during the 1973 oil crisis; Apple introduced the iPod when the dot-com bubble crashed and the 9/11 attacks took place, and Facebook and Twitter became modern giants during the global financial crises of 2007 (Kuratko, 2016). Thus, economic trends and economic crises have one aspect in common: they come along with the recognition and exploitation of new ideas. Oftentimes, these ideas root in changes in supply or demand due to economic changes which, in turn, open the door for entrepreneurial opportunities (Kirzner, 1997; Schumpeter, 1934/1983).

Entrepreneurship takes place when individuals recognize such opportunities and exploit them. However, it is not only exogenous shocks that cause changes in supply and demand, resulting in entrepreneurial activity. While opportunities might be recognized during crises, times of calm also see people who seek possibilities to initiate entrepreneurial action. In that frame, entrepreneurship as an independent discipline consists of versatile facets, such as academic, social, digital, corporate, ecological entrepreneurship, and many more, which can act as a root for identifying an entrepreneurial opportunity. Information asymmetries, previous innovation, or incongruencies in these fields might also be the source of opportunities (for a summary on opportunities see Frank & Mitterer, 2009).

Entrepreneurship depends on the recognition and exploitation of opportunities (e.g., Shane & Venkataraman, 2000; Venkataraman, 1997). Taking such opportunities and turning them into new ventures with innovative ideas, puts the entrepreneur and entrepreneurial theories in the focus of research (Alvarez, 2005; Shane, 2003; Shane & Venkataraman, 2000). Opportunity recognition allows to be the starting point for understanding the entrepreneurial process. In each circumstance, opportunity recognition relies on several aspects. Scholars found that for instance prior knowledge of a certain industry (Shane, 2001; McKelvie & Wiklund 2004), the entrepreneurs' social networks (Ozgen & Baron, 2007)), or a wide range of cognitive factors (Baron & Ensely, 2006) influence opportunity recognition. The latter takes up the question: "How does opportunity recognition actually occur in the minds of specific persons?" (Baron & Ensely, 2006, p. 1332). According to researchers in the field of entrepreneurial cognition, "all people share the same basic cognitive processes but entrepreneurs appear to face unique role demands that are accompanied by differences in the cognitive processes those role demands require" (Krueger & Day, 2010, p. 323). The discussion on entrepreneurial opportunity recognition led researchers to link entrepreneurial cognition with *pattern recognition* (Matlin, 2012). It seems possible that the perception of specific connections between apparently independent events function for detecting patterns in these connections which then bear the potential of revealing new venture opportunities (Baron & Ensely, 2006). Following the analogy of Shapero, people all have their *antennae*, but everyone has these antennae tuned to certain *frequencies* and *directions* (Krueger & Day, 2010). However, entrepreneurs are no exception to that, they just tuned to the recognition of patterns and opportunities. Or, remembering the quotation of Churchill, the entrepreneur does not see the difficulties in opportunities and tries to bypass them, but the entrepreneur is even seeking for difficulties and opportunities to solve them.

In the following chapters, further light will be shed on the question where opportunities come from, how decisions to exploit them take place and what kind of methods and concepts can be used to exploit them.

2.1.1 Discovery Theory

In his 1973 published book *Competition & Entrepreneurship,* Kirzner introduced discovery theory as a major explanation of how opportunities are recognized in entrepreneurship. In discovery theory, competitive imperfections shift markets away from the equilibrium and thereby create entrepreneurial opportunities (Kirzner, 1973). There are numerous reasons – so-called "exogenous shocks" (Alvarez & Barney, 2007, p. 14), that lead to market imperfections:

Technological changes, political and regulatory changes or social and demographic changes are examples of external events which create not only an imperfect market situation, but additionally lead to information asymmetries amongst the market participants (Shane, 2003). The entrepreneur is hence the actor that is predominantly searching the environment to discover opportunities in order to initiate entrepreneurial action (Alvarez & Barney, 2007). In discovery theory, entrepreneurial opportunities already exist and wait to be detected. Theorists oftentimes resort to the analogy of the Mount Everest (Alvarez & Barney, 2007). The mountain is there, whether someone intends to climb it or not and while some people do not bother to climb it, others will take on the challenge and ascend Mount Everest. Likewise, it is with entrepreneurial opportunities. They are existent and wait to be discovered. Consequently, any market participant could potentially seek and discover opportunities however, reality shows that not every individual sees and exploits entrepreneurial opportunities equally (Alvarez & Barney, 2007).

This might be the case, because entrepreneurs are assumed to be significantly different from other market participants in that they possess the ability not only to discover opportunities, but also to exploit them (Kirzner, 1973; Shane, 2003). An essential element that emphasizes the entrepreneur as different to other market participants is the element of entrepreneurial alertness. The term *alertness* was introduced by Kirzner (1973) who believed that people who have an alertness to recognize opportunities will in fact discover them and exploit them in a way that the market will shift from the state of disequilibrium to equilibrium (Kirzner, 1973). Since Kirzner's introduction of the term, *alertness* has been a central aspect in the explanation of opportunity recognition in entrepreneurship (e.g., Baron, 2006; Baumol, 1993; Gaglio & Katz, 2001). It is defined as "the ability to notice without search opportunities that have hitherto been overlooked" (Kirzner, 1979, p. 48).

This definition is comparable to Cantillon's (1755/2015) definition of the entrepreneur as someone who recognizes market opportunities by buying products and selling them on other markets. In order to verify the concept of alertness, (Sharma, 2019) further developed it and identified six core components of alertness which are: information searching and sensing, personality factors, knowledge and experience, social networks, cognitive ability and the environment, suggesting a broader view of entrepreneurial alertness. An additional factor that characterizes opportunity recognition is risk. While opportunities already exist, the probabilities of effort and success can be calculated beforehand. Therefore, opportunity identification and exploitation in discovery theory is seen as risky rather than uncertain (Kirzner, 1979). Uncertainty characterizes situations in which information on possible outcomes of an

opportunity or the probability of those outcomes cannot be collected (Alvarez & Barney, 2007). In the risky environment which discovery theory implies, the possible outcomes of opportunities can be weighted with probabilities to a certain extend.

In a nutshell, discovery theory presents entrepreneurial opportunities as the result of change processes which form a state of disequilibrium in a market. The entrepreneur is someone who reacts to these changes by showing a coordinative tendency and thus discovers and exploits the already existent opportunity. By doing so, the entrepreneur moves an imperfect market back to the equilibrium.

2.1.2 Creation Theory

The counterpart to discovery theory is creation theory. In creation theory opportunities "do not exist independent of economic actors, but are created by economic actors" (Alvarez, 2005, p. 112). Different from the analogy of Mount Everest in discovery theory, there are no pre-existing mountains in creation theory. Opportunities are not the results of disequilibria in a market, exogeny shocks or information asymmetries, but it is the entrepreneur who initiates the process of creative destruction and offers changes on the supply side of the market (Schumpeter, 1934/1983). Although creation theory is not a concept explicitly introduced by Schumpeter, some aspects of it go back to his work on opportunity recognition. Schumpeterian opportunities are those which destroy a market equilibrium through proactive entrepreneurial behavior (Schumpeter, 1934/1983). In creation theory, the entrepreneur acts, reacts and enacts in an exploring way and thus creates new products or services (Alvarez & Barney, 2005; Baker & Nelson, 2005). The emphasis is on *new*, as in creation theory the aspect of *innovation* is more present than in discovery theory.

Other than in discovery theory, the entrepreneur is not considered to be essentially different from the non-entrepreneur in creation theory. If any, differences between entrepreneur and non-entrepreneur appear after the process of opportunity creation and are not explicitly present before (Fueglistaller et al., 2019). According to Fueglistaller et al. (2019), coincidences and luck can be essential factors that influence whether someone becomes an entrepreneur or not. The entrepreneur reveals himself as such through his supply-oriented creation of an opportunity. Therefore, referring back to the Mount Everest analogy, an entrepreneurial opportunity does not exist without the entrepreneur. The creation of opportunities is a social process that requires the entrepreneur to initiate and conduct it. Without the entrepreneur creating a Mount Everest, there is none.

Due to the aspect that opportunities need to be created before they even exist, the collection of information on how probable certain outcomes are, is impossible. Therefore, decisions in creation theory are made under uncertainty (Alvarez & Barney, 2007). Even if the would-be entrepreneur collects data and spends a great amount of time analyzing and predicting certain outcomes, no probability distribution for the seized opportunity can be found ex ante (Miller, 2007). Or else, the different paths to the top of a mountain cannot be described when the mountain has not been created yet.
A comparison of creation and discovery theory can be found in Table 5.

Table 5 Comparison of Discovery and Creation Theory

	Discovery Theory	**Creation Theory**
Market Situation	Disequilibrium	Disequilibrium or Equilibrium possible
Market Equilibrium	Equilibrating	Equilibrium-disrupting
Opportunity Origin	Exogenous shocks	Endogenous creations
Existence of Opportunity	Opportunity exists independently of the entrepreneur	Opportunity does not exist without the individual creating it
Response	Reactive (Entrepreneurial Alertness)	Proactive (Creative Destruction)
Degree of Innovation	Less high	High
Decision-making Context	Risk	Uncertainty
Entrepreneur vs Non-Entrepreneurs	Initial major difference	Little initial difference, difference ex post

Although the distinction between creation and discovery theory respectively Kirznerian and Schumpetarian opportunity has established as a widely recognized possibility to understand the root of entrepreneurial opportunities (e.g., Alvarez & Barney, 2007; Grichnik, 2006; Kirzner, 1979), the concept of entrepreneurial opportunity has received some criticism, as well. Dimov (2011) noted that entrepreneurial opportunities are "theoretically exciting but empirically elusive" (p. 57). McKelvie et al. (2020b) add that opportunity recognition is a highly dynamic process which manifests in the fact that the introduction of new goods and services may not only take time, but also may be accompanied by constantly changing conditions. A rather static view on opportunity recognition is caused by the primarily conceptual work that has been done in this area and results in an undynamic way of explaining the entrepreneurial process (Scheaf et al., 2020). The recognition of an opportunity, whether as a process of discovery or creation, can thoroughly happen in a singular moment of the entrepreneur's life. However, it is probable

that various sources of information influence the perception of opportunities and lead the entrepreneur to consider opportunities from different angles and constantly reevaluating them (Pryor et al., 2016). These findings led recent studies remember to consider the aspect of time (McKelvie et al., 2020). Arguing that relatively little empirical work has emphasized the development of opportunity recognition over time, McKelvie et al. (2020b) express that initial views on potential opportunities might change with time. As time passes, the perception of opportunities might change.

Drawing conclusions from these findings, the increasing number of empirical studies on opportunity recognition implies that a strict distinction of theories such as discovery or creation is not always simple and applicable. Where an entrepreneur might create a new product or service today, market changes, new information and the reevaluation of the new product or service might not only take time, but also change the perception of opportunity recognition. Regardless whether the initial opportunity is discovered, created or recognized in another way, "an opportunity is always an opportunity to do something" (McMullen, 2015, p. 659)

2.2 Opportunity Exploitation

Once an opportunity has been discovered, created or otherwise recognized, the entrepreneur will intend to exploit this opportunity. Remembering the definitions of entrepreneurship, it already became clear that the entrepreneurial process is somewhat unique. Studies stress out that the entrepreneurial process is different to the managerial process (Covin & Miles, 1999). Kuratko et al. (2011) went further and made a clear distinction between entrepreneur and manager, stating that entrepreneurship is related to aspects such as creating, innovating, having visions, and taking risks, whereas the classic manager in a company is linked with activities such as strategic planning, organizing, and supervising. On that basis, the entrepreneurial methods and concepts are different to classic managerial concepts, as well. In what follows, a fraction of the numerous entrepreneurial methods will be presented in order to give insights into the way entrepreneurs exploit opportunities.

2.2.1 Customer Development

In order to properly exploit a business idea, Blank and Dorf (2012) start their Startup Owner's Manual with a simple statement: "Get Out of the Building!". What sounds like a demotivating termination phrase is in fact the introduction to the Customer Development process. This process aims at the most efficient exploitation of business ideas by the generation of valid business data in the early stages of the idea (Blank & Dorf, 2012).

The Customer Development process suggests that an entrepreneur will not find data on how customers react to his idea within his office. The entrepreneur needs to *get out of the building* in order to talk to customers, partners, and vendors and run tests with them in order to receive data. To do this in a structured way, the Customer Development process is divided into four steps (Blank & Dorf, 2012).

The first step is *customer discovery*. Here, the entrepreneur constructs hypotheses on his idea and develops a plan on how to test these hypotheses on potential customers. By this the entrepreneur aims to reveal whether his idea is actually one that he should pursue further or one that he should discard.

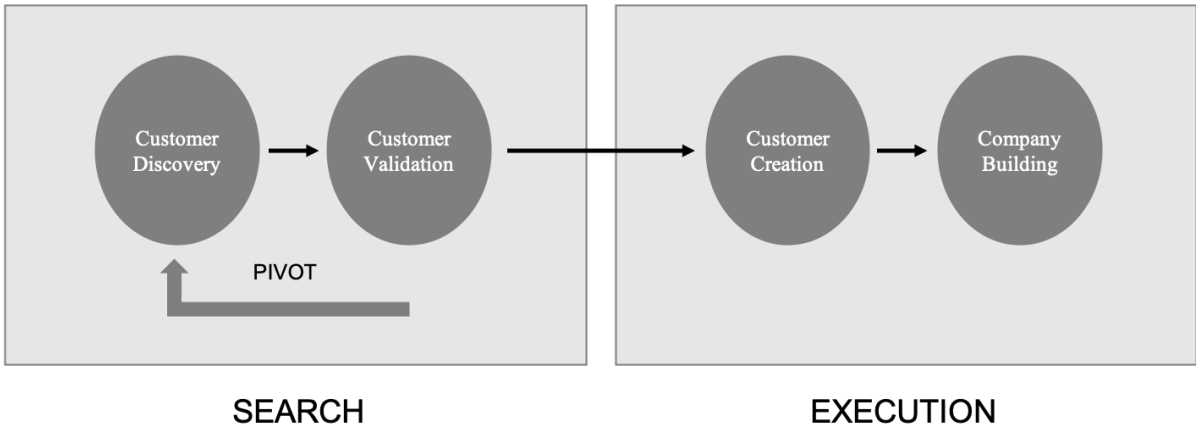
The second step is *customer validation*. Data on the business idea is gathered and evaluated. With this data the entrepreneur sees whether his idea really solves a customer problem or not. If not, he starts with the first step all over again and either pivots some aspects of the initial business idea or perseveres the idea and targets a different customer group. These first two steps can be an iterative process and therefore constitute the *search* phase of the Customer Development process.

The *execution* phase starts with the third step: *customer creation*. The idea in this step is to use the validated business idea to create and use customer demand by building a broad customer base.

Finally, the fourth step is *company building.* Based on the successful execution of the first three steps, the company around the business idea is built for scale with the aim of transitioning from customer development to a company that is constantly and sustainably creating value.

The Customer Development process is depicted in Figure 8.

Figure 8 Customer Development Process



Source: Blank & Dorf (2012)

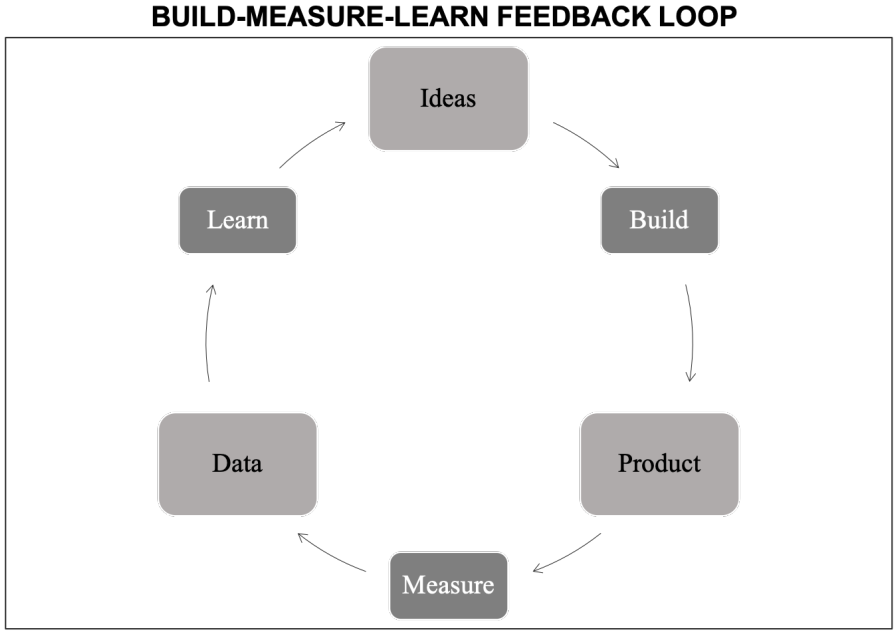
It becomes obvious that the Customer Development process aims at a better understanding of the customer's needs. Blank and Dorf suggest an "outward-looking learning mindset" (Shepherd & Gruber, 2021, p. 968), which means *going out,* collecting customer data and reshaping the business idea until it meets the wishes of the customer.

2.2.2 Lean Startup

Inspired by the ideas of his teacher Steve Blank, Eric Ries introduced the Lean Startup method in 2011. As his book title indicates, Ries aimed to explain *how todays entrepreneurs use continuous innovation to create radically successful businesses*. Inspired also by the lean manufacturing revolution that car producer Toyota successfully established (Liker & Convis, 2011), Ries, a serial entrepreneur, applied a similar concept to entrepreneurship. According to Ries (2011), the entrepreneurial process is featured by "extreme uncertainty" (p. 8) and as the entrepreneur recognizes an opportunity and develops an idea, he might be careful where, how, and with whom to share this idea in that uncertain context.

This is where the Lean Startup method explicitly suggests that ideas need to be tested, reshaped, and retested constantly. Taking the idea out to the uncertain world is a key element of this method. The Lean Startup idea is therefore based on the Build-Measure-Learn feedback loop (Figure 9).

Figure 9 Build-Measure-Learn Feedback Loop



Source: Ries (2011)

Following the Build-Measure-Learn feedback loop, it is the core activity of entrepreneurs to turn opportunities and ideas into products, directly measure how potential customers react to this product and learn whether to make changes to the product or to persevere (Ries, 2011). This should not only take the least time possible, it is also considered that entrepreneurs and startups do not have unlimited resources for planning and designing the perfect product. However, the first products are not meant to be perfect and therefore do not need to be particularly expensive (Ries, 2011). With the help of a so-called minimum viable product (MVP), entrepreneurs enter the Build-Measure-Learn feedback loop as fast as possible and can take new insights on how to adapt the product in an accelerated way. The MVP is the simplest version of the product that can be taken to the potential customer with the minimum amount of effort. While a classic product development approach involves a time-consuming and strictly planned product launch, the MVP intends to excite a learning and development process (Ries, 2011).

Although the Lean Startup is a practice-oriented method of how to put an opportunity or idea into practice, it still emphasizes a certain dynamic for the whole entrepreneurial process. Specifically, a dynamic within an uncertain environment, where feedback, whether good or bad can be gathered in order to plan the next step. Entrepreneurship is in fact different from management in that the constantly changing environment makes the prediction of the possibilities of certain outcomes impossible. For an innovative product, there is no experiential data. This is the reason why it is understandable why researchers find a basic understanding of entrepreneurship in the Lean Startup. The core idea of the Lean Startup cannot only be applied to the product launch, but to many other steps of the entrepreneurial process as well. Finding team members, conducting decisions-making, or reacting to shocks, - all these aspects of the entrepreneurial process underlie a dynamic of uncertainty and might profit from a constant trial and adaptation to an unpredictable future.

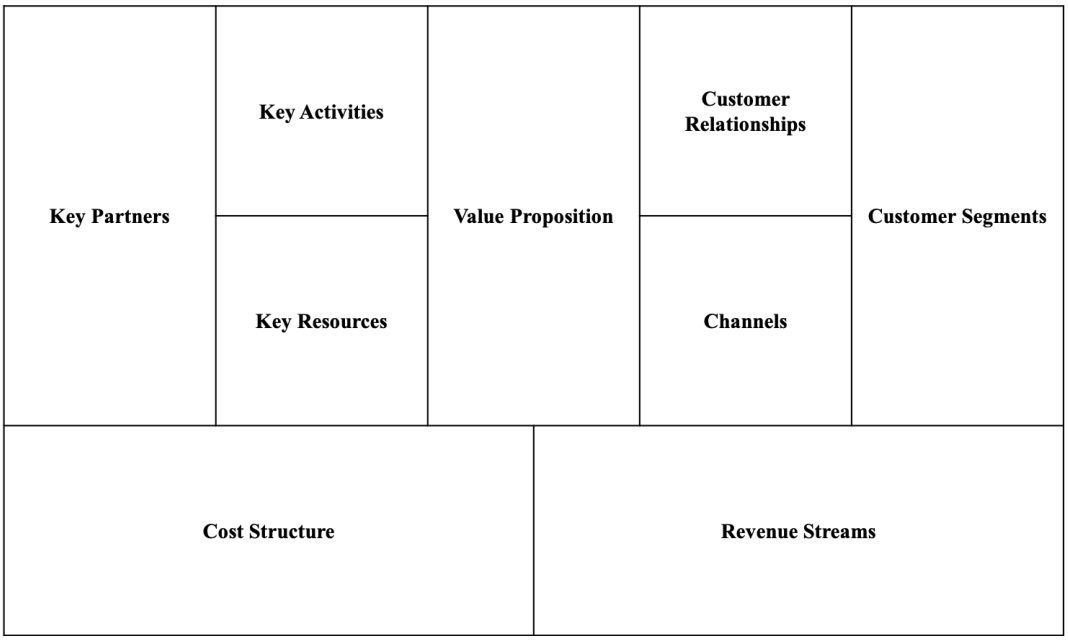
2.2.3 Business Model

Another method chosen by entrepreneurs to exploit their business opportunity is the use of a business model. Business models have always been widely used in entrepreneurial practice, while researchers have begun to increasingly deal with this topic within the last two decades (Morris et al., 2005). Although the term *business model* is often used in management and entrepreneurship literature, there is no uniform definition of the terminology (Morris et al., 2005). One detailed approach of a definition is delivered by Chesbrough and Rosenbloom (2002). They articulate the following functions of a business model:

- The business model presents the *value proposition* for the customers and users,
- it identifies a *market segment* by revealing potential users and specific revenue streams,
- defines the *value chain* of the startup and presents the structure and means needed to provide the certain product or service,
- estimates *cost structure* and *profit potential,*
- reveals the *value network* by showing suppliers, customers, complementors and competitors,
- and lastly, it formulates the *competitive strategy* needed to establish the idea in a market (p. 533).

In the context of entrepreneurship, business models open the chance to structure the business idea in a clearly arranged manner with a focus on not more than the core business. Osterwalder et al. (2005) clarified the concept of business models by identifying the nine most relevant fields that should be used for the clearest communication of a business model. In later works, Osterwalder et al. (2011) designed the Business Model Canvas as a planning tool (see Figure 10).

Figure 10 Business Model Canvas



Source: Osterwalder et al. (2011)

The BMC consists of the elements value proposition, key partners, key activities, key resources, customer relationships, customer segments, channels, cost structure and revenue structure. These elements shortly describe what the product is, who the customers are, how value is

delivered and what economic figures stand behind the business model (Osterwalder et al., 2011).

As a planning tool, the BMC opens the opportunity to clearly structure and communicate the business idea while operating in an otherwise uncertain environment. Moreover, as a practical tool, the BMC can be constantly adapted and reorganized which gives the entrepreneur especially in the beginning of the exploitation of a business idea enough flexibility for reshaping the final business model.

2.2.4 Market Opportunity Navigator

"The choice of the firm's market environment is one of the fundamental decisions of firm founders" (Gruber et al., 2013). Deciding to exploit an opportunity goes along with deciding to enter a specific market, which means defining the domain in which the entrepreneur wants to compete, create value, and achieve viability (Shepherd & Gruber, 2020). As it was described in the Customer Development process in Chapter 1.3.2.1, finding the right market can be an iterative process which demands the entrepreneur to pivot the initial strategy (Blank & Dorf., 2012). Therefore, entrepreneurs do not only use methods to answer the question *how* to play their idea, but moreover answer the question *where* to play (Shepherd & Gruber, 2021).

In order to provide a tool which addresses this question, Gruber and Tal developed the Market Opportunity Navigator (MON). The MON is designed to answer the following questions.

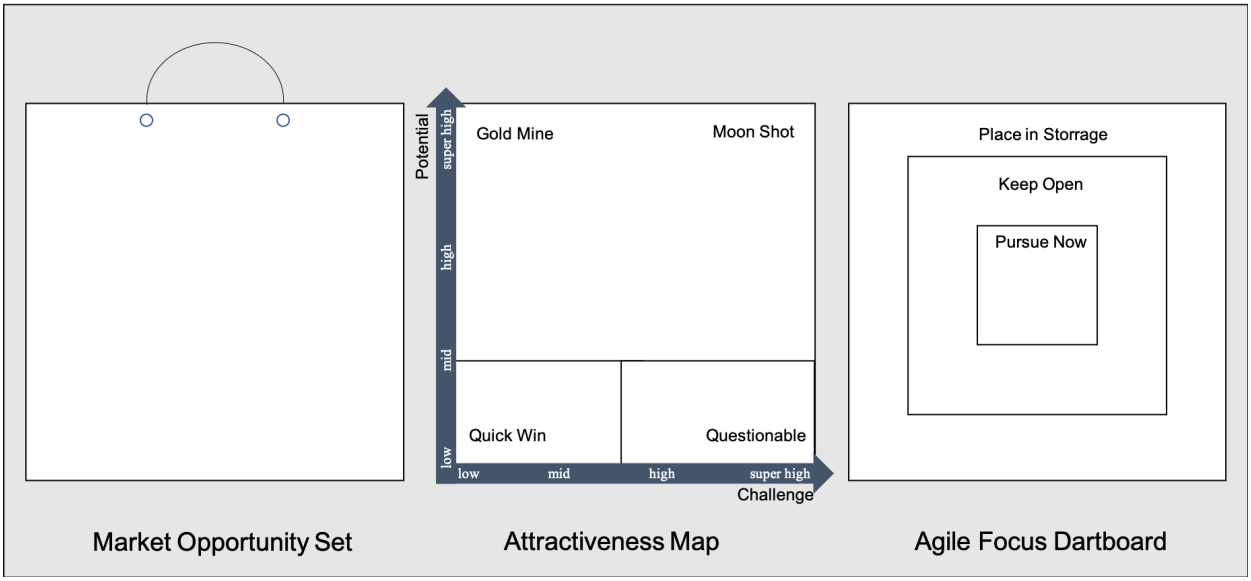
(I) Which market opportunities exist for us?

(II) What are the most attractive market opportunities for us?

(III) What market opportunities should we focus on? (Gruber & Tal, 2017)

Answering these questions follows a threefold set of components. The worksheets, used in practice can be found in Figure 11.

Figure 11 Market Opportunity Navigator



Source: Gruber & Tal (2017)

The first component is the *Market Opportunity Set.* There, the entrepreneur lists all potential market opportunities which he can address with his idea, capabilities, and resources. These potential market opportunities can differ decisively from each other. For instance, the entrepreneur might identify different sets of customers which his idea might address (Gruber & Tal, 2017).

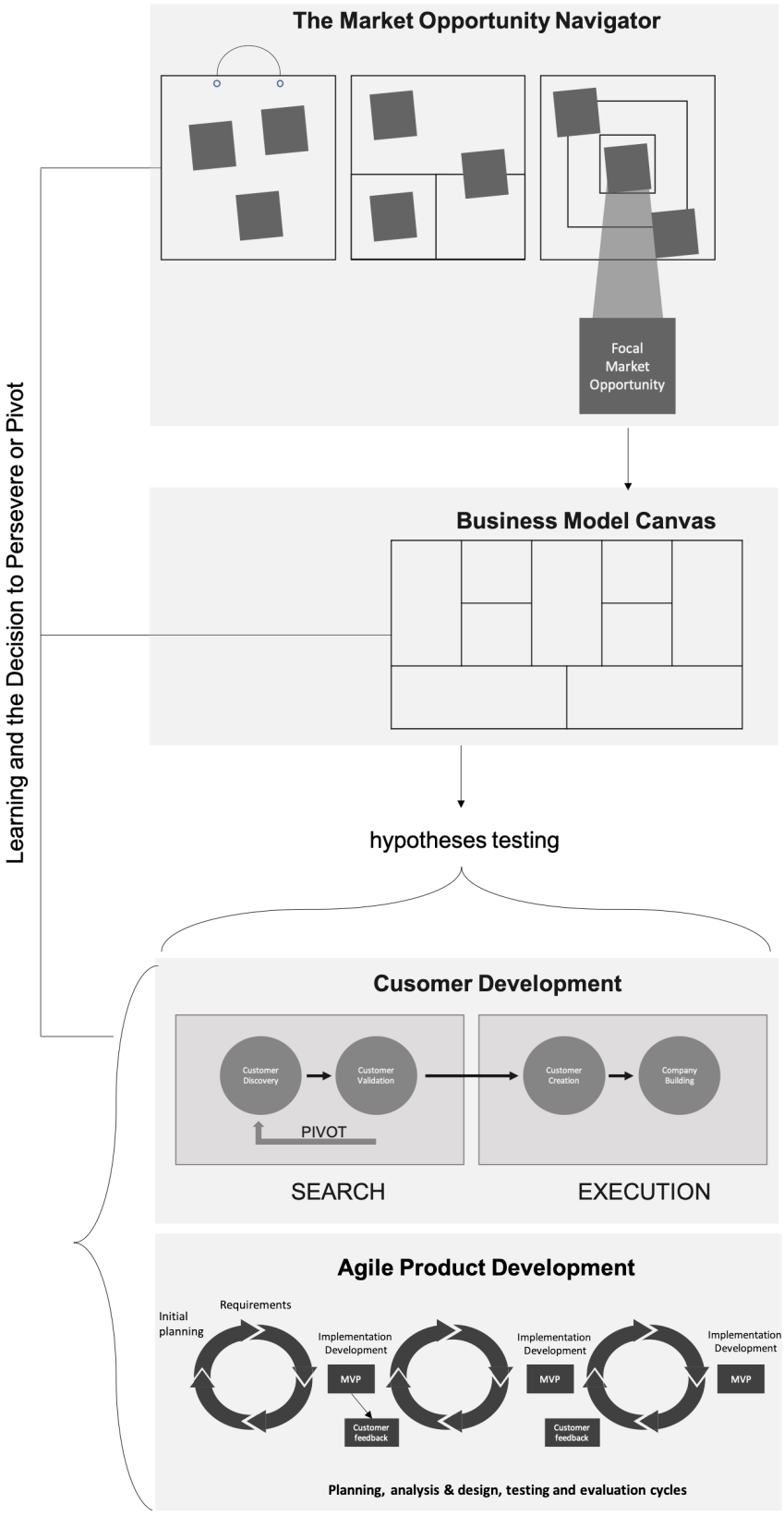
The second component is the *Attractiveness Map*. According to Shepherd and Gruber (2021) it is not only important for entrepreneurs to identify multiple opportunities which might root in their initial idea, but furthermore to understand the relative attractiveness of these opportunities and the level of uncertainty that might be linked to each of the opportunities. In order to do so, the Attractiveness Map puts the potential of a customer set in relation to the challenge of attracting this particular set (Gruber & Tal, 2017).

The third component is the *Agile Focus Dartboard* which depicts the focus strategy. While choosing the primary market opportunity that will be tackled with the business idea, further potential markets can be organized as opportunities for future growth, backup opportunities or even market opportunities that should be pursued in parallel (Gruber & Tal, 2017). By this, the entrepreneur keeps a future roadmap in mind which provides him with more certainty that pivoting will not necessarily result in starting everything all over again, but providing backup plans and alternatives.

Within their work on the MON, Gruber and Tal (2017) found that identifying market opportunities should be used in combination with other entrepreneurial tools. For instance, while the MON provides an overview on all the potential market opportunities, the BMC can

be used to zoom into the details of a specific market opportunity. The BMC allows the formulation of hypotheses which, in the frame of the Customer Development process, can be tested while the MVP is developed simultaneously. The collected data and results bear the potential to persevere or pivot the initial idea, offering the chance to adapt the strategy. This so-called Lean Startup Framework consists of the Market Opportunity Navigator, the Business Model Canvas, the Customer Development and entails parts of the Lean Startup idea. It is depicted in Figure 12.

Figure 12 Lean Startup Framework



Source: adapted from Shepherd & Gruber (2021)

With just a fraction of methods and concepts for opportunity exploitation introduced in this chapter, it becomes observable how intense entrepreneurship research in this field has become in recent years (e.g., Blank & Dorf, 2012; Gruber & Tal, 2017; Osterwalder et al., 2011; Ries, 2011). The relationship of opportunity identification and opportunity exploitation has to be stressed particularly, as there is no opportunity exploitation without opportunity identification. Short et al. (2010) put it in even more unequivocal words by stating that "without an opportunity, there is no entrepreneurship" (p. 40). Even the most creative use of concepts, the most intense utilization of methods, and the most hardworking entrepreneur are not promising entrepreneurial activity, when there is no opportunity (Short et al., 2010). Regardless of whether opportunities are created or discovered, the identification of opportunities is to a certain degree responsible to form an intention to take entrepreneurial action in the first place (Karimi et al., 2016). The translation of opportunity recognition to opportunity exploitation will therefore be a major issue throughout the underlying work.

3 Theories of the Entrepreneurial Decision-Making Process

3.1 General Decision Theories

Every day, people make numerous decisions. Some decisions appear trivial, and seem to be made almost subconsciously. Take, for instance, decisions such as whether to get up in the morning or stay in bed, what to wear before going out of the house, or what to eat at lunchtime. Other decisions might be generally regarded as more meaningful, such as the decision of whether to buy a new house or not, the decision of who to marry, or the decision to embark on a new career path. What all of these decisions and every economic decision have in common is the choice between two or more alternatives. In general, decision-making is understood as an individual (or agent) with a desire or goal rationally choosing between alternatives to reach these desires and goals, wherein a set of attitudes, norms, motivations, beliefs, or utilities of the choice are considered (e.g., Shepherd et al., 2015). Understanding how decisions are made and alternatives are chosen is likely a subject of interest because people make decisions. Following this motivation, the research stream of decision theory emerged. Decision theory comprises an interdisciplinary set of theories and models that explain the reasoning underlying a person's choices from different viewpoints such as economic, philosophic, psychologic, or statistic (Peterson, 2009).

Generally, a distinction between normative and descriptive decision theory can be drawn. Descriptive decision theories aim at the explanation and prediction of how individuals *actually* make decisions while normative theories seek to make a recommendation about what individuals are rationally required to do or *should do* (Peterson, 2009).

One normative approach was introduced by Jeremy Bentham in 1789 with the development of the concept of utilitarianism. In his book *An Introduction to the Principles of Morals and Legislation,* Benham discusses the question of what causes individuals to decide for or against a certain action. He states that "nature has placed mankind under the governance of two sovereign masters, *pain* and *pleasure"* (Bentham, 1789/2007, p. 1), meaning that all individuals are motivated by the pursuit of pleasure and the constant prevention of pain.

At this point, the term *utility* gains in importance. According to Bentham, utility is the ability to produce pleasure or happiness and therefore, actions correspond to the principle of utility when they promote pleasure and prevent pain. In that case, these actions can be regarded as morally right (Bentham, 1789/2007). The principle of utility approves or disapproves every action within a society and consequently, whenever decisions and actions make an impact on more than one person, the utility of all people involved needs to be considered. For instance,

robbing a bank might appear as causing pleasure for the potential robber and with the understanding of utility it might be regarded as morally approving when considering only that individual. However, the action of robbing a bank is linked to a great amount of pain for the employees of the bank, the institution itself, or for bystanders. Aggregating the pain and weighting it with the pleasure, robbing a bank should be considered an action that causes no utility for the community at all, making it an unmoral action.

Bentham also targets the question of how to measure the *amount* of pain or pleasure. How an action is considered depends on its intensity, duration, certainty or uncertainty, propinquity or remoteness, fecundity, and purity (Bentham, 1789/2007). The purity of a decision could be determined by the probability that the pain or pleasure will not be followed by pain or pleasure of the opposite kind. Applying this to the bank robbery example, although the initial pleasure for the potential bank robber seems to be high because gaining money through a heist causes pleasure, this action is followed by a high uncertainty of actually working out as planned and a low purity because the chance of being caught and punished might be regarded as relatively high. Bentham lists various aspects that can be considered pleasures and pains for humans. The list can be found in Table 6.

Table 6 Pains and Pleasures in Decision-Making

Pleasures	**Pains**
Sense	Privation
Wealth	Senses
Skill	Awkwardness
Amity	Enmity
Good name	Ill name
Power	Piety
Piety	Benevolence
Benevolence	Malevolence
Malevolence	Memory
Memory	Imagination
Imagination	Expectation
Expectation	Association
Association	
Relief	

Source: Bentham (1789/2007)

As seen in Table 6, the classification of pleasure and pain is not unambiguous. Some aspects can cause both happiness and pain. For instance, the pleasure of sense can include the pleasure of touch, the pleasure of intoxication, or the pleasure of health, while sense can also cause the pain of touch, the pain of intoxication, or the pains of a disease (Bentham, 1789/2007). Furthermore, Bentham adds that responses to pains and pleasures vary among individuals, wherein every individual strives for the maximization of utility.

In a nutshell, the purpose of utility theory is "to point out what we ought to do, as well as determine what we shall do" (Bentham, 1789/2007, p. 1). This can be classified as a typical normative theory. Decisions are made with the expectation of resulting pains or pleasures, always keeping in mind that the maximization of one's own pleasure and prevention of pain forms the source of motivation.

The further formalization of thoughts on utility was targeted by many theorists such as Bernoulli (1738/1954), von Neumann and Morgenstern (1944), and Savage (1954). The latter introduced a normative theory of decision-making under the special influence of uncertainty. According to Savage (1954), "decisions made in the face of uncertainty pervade the life of every individual and organization" (p. 6). Savage's theory of expected utility assumes that people attribute a personal numerical probability to the outcome of decisions and events (LeRoy & Singell, 1987). In order to keep explanations on a basic theoretical level, not all of his mathematical calculations and results will be described here in full detail.[1] However, the main structure of his theory will be explained in order to understand the normative approach to decision-making.

In Savage's theory, there is a set of expressions that must be defined. The *world* is the object a person is concerned about. The *states* are "a description of the world, leaving no relevant aspect undescribed" (Savage, 1954, p. 9). The individual has no control over the states, which is the initial reason for the prevailing uncertainty. A set of states is called an *event*. Reaching a decision means that one of two or more *acts* are chosen and the "*consequence* is anything that may happen" (Savage, 1954, p. 13) after the decision to act. An example should illustrate how the expressions of Savage's theory are typically applied. For an entrepreneurship-related example, see Table 7. In this example, it is assumed that the owner of a startup that sells technology products must decide how to behave in the upcoming period. It is unsure whether the current market share of the startup will grow, stay stable, or decline. However, decisions

[1] Leonard J. Savage's book The Foundations of Statistics from 1954 is oftentimes considered a groundbreaking and central work in the sense of a normative decision-making theory. For a detailed and comprehensive mathematical understanding of the theory, please enjoy further reading of Savage's work. Here, a largely result-oriented summary of the theory is provided, while the derivation and mathematical explanation is left out.

must be made as to whether to invest in an innovative new product and thus enter a second market, keep focusing on the initial product and market, or to sell the startup.

Table 7 Example of Normative Decision-Making in Entrepreneurship

	State = the startup's market share development		
Act	Growing	Stable	Declining
Invest in an innovative new product	Leadership in the previous and a new market	Competitive advantage in previous market	Loss of market share and financial trouble of dealing with two markets
Keep on producing the previous product	Leadership in the previous market	Average but solid position in one market	Uneasy and stressful situation within the firm
Resign and sell the startup	Selling the startup for a decent price	Receiving a price for the startup in line with market conditions	Selling below value, causing huge financial loss

In this example, nine possible consequences can be seen. Additionally, it is an assumption of the theory that "acts are functions from the state space to the outcome space, and the agent's preference ordering is taken to be defined over all such possible functions" (Steele & Stefansson, 2015, para. 3.1).

The individual's confidence in the actuality of the states is represented by a unique and personal probability function which, in combination with a personal utility function, constitutes the core of expected utility theory (Savage, 1954). For the example above, various factors influence the expected utility the individual might credit to the outcomes. As learned in Bentham's utility theory, money can be a driving factor, as well as skill, power, or a good name, which the entrepreneur could receive through successful decisions. This means that the individual does not make decisions on external measurable values, but weighs internal, personal, and thus subjective values in utility functions and probability functions. Each of the nine outcomes constitute an individual utility but also an individual probability. Decision-making is carried out under the premise that both are considered.

However, personal probabilities can oftentimes be vague, especially in uncertain environments. To counter this, the minimax rule for decision-making was developed (Savage, 1951; Wald, 1949). An explanation can be shown by applying the minimax rule to the initial example (see Table 8). The starting position is the entrepreneur that now quantifies the different outcomes with a utility. This might be the additional income the entrepreneur expects in the first month of a new period. These utilities can be found in Table 8.

Table 8 Example of Minimax and Maximax Rule

	State = the startup's market share development				
Act	**Growing**	**Stable**	**Declining**	**Row Maximum**	**Row Minimum**
Invest in an innovative new product	20.000	10.000	- 600	20.000	- 600
Keep on producing previous product	15.000	12.000	- 400	15.000	- 400
Resign and selling the startup	15.000	10.000	- 2.000	15.000	- 2000

The minimax rule minimizes the maximum possible loss that could result from a choice. In the example, the entrepreneur would consider the three worst case scenarios for each act, which is the particular row minimum, and choose the best of these three options (Laux et al., 2018). According to the maximin approach, the decision would be to keep on producing the previous product, because from all row minima, - 400 is the highest.

Analogous to this work is the maximax approach, in which the best cases are considered and the best of these outcomes is chosen (Laux, 2018). In the example, the row maxima would be considered and chosen to invest in an innovative new product, as the row maximum for this decision would be the highest (20.000).

As seen in this simplified example, decision-making under uncertainty can have different results depending on whether the individual is rather optimistic (maximax approach) or pessimistic (minimax approach). Further, regarding the findings of Savage (1951; 1954) and Wald (1949), in some situations, the expected utility influences decision-making. In this case, the individual relies on a unique and individual probability function, a utility function, and the combination of both as an expected utility function, which is used for a normative explanation of decision-making. Additional methods include the Hurwicz criterion, Laplace's principle, the dominance principle or the Savage-Niehans rule (e.g., (Dörner, 1983; Laux, 2018).

Criticism towards utility theory came from, among others, Allais (1953), Raiffa (1968), and Tversky (1975), opening the road for a descriptive theory called prospect theory. In their Nobel Memorial Prize-winning prospect theory, Kahneman and Tversky (1979) point out that the rational agent which was considered in utility theory does not reflect the *actual* behavior of people. This descriptive theory of economic behavior and decision-making revealed cognitive errors in decision-making under risk. A central aspect is the concept of loss aversion, which

describes how people weigh losses more heavily than they weigh equivalent gains, both defined in terms of a reference point (Kahneman & Tversky, 1979). Losing €500 is therefore connected to a greater loss of satisfaction than winning €500 is connected to a gain in satisfaction (see Figure 13). Moreover, prospect theory revealed that people tend to act risk averse when it comes to potential gains. Kahneman and Tversky (1979) illustrate this concept with a hypothetical choice problem: People were asked to choose between two alternatives of the following type.

A: 50% chance of winning €1,000[2], 50% chance of winning nothing;
B: 100% chance of winning €450.

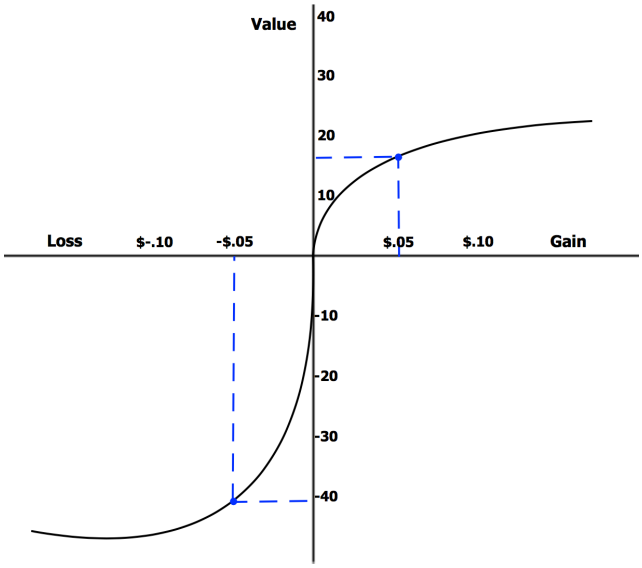
The results show that people tend to choose alternative B, behaving in a risk averse manner by deciding on the sure thing, while the riskier alternative A would possibly have a greater outcome. However, this effect turns around when considering loss in lieu of gains. For instance, two alternatives were provided again.

A: 80% chance of lose €4,000
B: Certain loss of €3,000.

In this instance, people tended to choose alternative A, behaving in a risk-seeking manner during the avoidance of losses (Kahneman & Tversky, 1979). The resulting value function is consequently formed in an S-shape, concave for gains and convex for losses, being steeper for losses than for gains (Kahneman & Tversky, 1979). A hypothetical value function can be found in Figure 13.
Similar to Simon's bounded rationality theory (Simon, 1955; 1979), prospect theory revealed that decision-making in general is far from being obvious and predictable, but is rather connected to individuals with limited rationality in their choices.

[2] In fact, Kahneman and Tversky conducted their research in Isreal, using the Isreali Schekel in their experiments. For reasons of simplification and unification, the Euro is chosen as the currency in the examples within this chapter.

Figure 13 Value Function with Typical S-Shape Depicting Loss Aversion



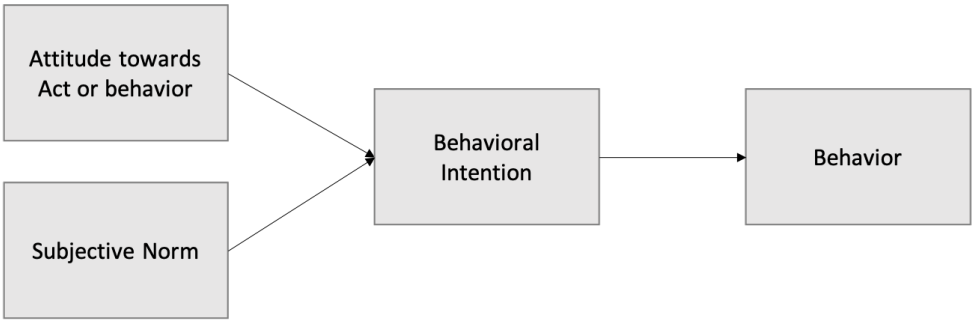
Source: Kahneman & Tversky (1979)

These findings go one step further and build on the *irrationality* of the decision-maker. In contrast to the rational agent (e.g., in Savage's theory), empirical results revealed that cognitive aspects such as biases and heuristics influence decision-making. "Biases and heuristics are decision rules, cognitive mechanisms and subjective opinions people use to assist in making decisions" (Busenitz & Barney, 1997, p. 12). Plenty of biases have been uncovered over the course of time. For instance, there is the overconfidence bias, the tendency to overestimate the capability of accomplishing a task (Moore & Healy, 2008); the planning fallacy, the false belief of completing more in a given time than actually possible (Buehler et al., 1994); representativeness, the generalization of phenomena based on just a few observations (Tversky & Kahneman, 1971); or the illusion of control, the personal success probability that is higher than the objective probability would warrant (Langer, 1975). These biases and heuristics show that individuals tend to be prone to errors in their decision-making, causing a discrepancy between the rational decision-maker and the actual decision-making of individuals. This discrepancy is covered in the remainder of this chapter. First, the theoretical basis will be deepened in the next section. Then, the question of how people think will be discussed in the following chapters. The findings on how people make decisions and how they think will be applied to the entrepreneurial context in chapter 3.2.2. Then, merging cognition styles and entrepreneurial decision-making will lead to the development of hypotheses for the two studies that will be covered in this thesis.

3.2 Theory of Planned Behavior

Examining how decisions are made is typically done either in the frame of normative descriptive decision theories. Typical descriptive decision theories such as prospect theory (Kahneman & Tversky, 1979) or bounded rationality theory (Simon, 1955; 1979) were briefly introduced in the previous chapter. Both theories investigate how individuals *actually* make decisions (Peterson, 2008) or, in other words, how people actually *behave* in a situation that requires decision-making. Understanding this mechanism requires understanding the (cognitive) processes that take place before a decision is made. Fishbein and Ajzen developed the *theory of reasoned action* (TRA) and thus created a cornerstone for the scientific approach to explain human behavior (Fishbein & Ajzen, 1975; Ajzen & Fishbein, 1980). Although not particularly being defined as a decision theory, TRA contains a considerable amount of attributes that imply commonalities to decision theories. Implying that people behave sensibly and rationally, TRA was firstly applied to the topic of political voting, stating that the concept of *intention* towards a certain behavior (in that case, voting) is a key predictor of the actual behavior (Ajzen et al., 1982; Ajzen & Fishbein, 1980). As determinants for intention, Fishbein and Ajzen (1975) introduced two constructs. Firstly, the *attitudes towards an act or behavior* are the personal beliefs about engaging in that behavior. This attitude towards behavior refers to the positive or negative aspects that an individual assigns to the behavior (Fishbein & Ajzen, 1975). In the case of voting, an individual would assess whether it is worth pursuing a behavior, what consequences this behavior brings, along and how these consequences are individually assessed. Secondly, *subjective norms* are the attitudes of important referent persons concerning the given behavior and the individual weighting of these attitudes (Fishbein & Ajzen, 1975). The subjective norm can be understood as a form of social pressure to perform a certain behavior. In the voting example, individuals refer to the behavior that others expect from them and evaluate their own motivation to comply with these expectations. The resulting model of the TRA can be found in Figure 14.

Figure 14 Theory of Reasoned Action



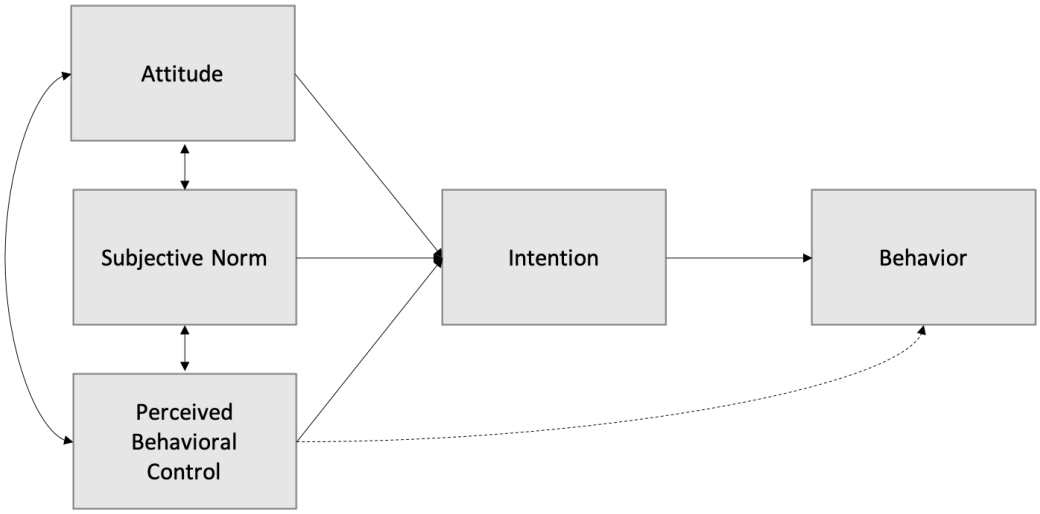
Source: Fishbein & Ajzen (1975)

One major limitation of the TRA is that even though individuals have their own intentions, "many goals and behaviors are not under complete volitional control" (Fishbein & Ajzen, 2010, p. 18). Based on the TRA, Ajzen (1991) extended the model to the theory of planned behavior (TPB) which contains the additional element of perceived behavioral control. Consequently, the TPB consists of five core elements (see Figure 15). A central factor in TPB (as in TRA) is the individual's *intention* to perform a certain behavior. Intentions entail all motivational factors that influence a behavior and can therefore be considered as indicators of the extent to which individuals are willing to make an effort to perform a certain behavior. It is a general statement in the TPB that the proximal determinant of willful behavior is the individual's intention to engage in that particular behavior (Ajzen, 1991). "As a general rule, the stronger the intention to engage in a behavior, the more likely should be its performance. It should be clear, however, that a behavioral intention can find expression in behavior only if the behavior in question is under volitional control" (Ajzen, 1991, p. 181). So, the intention to perform a certain behavior stems from the *attitude towards that behavior*, *subjective norms* and *perceived behavioral control*.

The attitude towards carrying out a certain behavior influences the intention to actually carry out that behavior. According to the TPB, attitudes and personality traits influence the degree to which a person is positively or negatively disposed towards the behavior. The subjective norm refers to the perceived social pressure to carry out that behavior while the third antecedent of intention is the degree of perceived behavioral control (PBC) which is understood as the perceived feasibility of performing the given behavior (Ajzen, 1991). In fact, subjective norms and attitudes towards a behavior reflect the desirability of the behavior, whereas PBC "reflects

perceptions that the behavior is personally controllable" (Krueger et al., 2000, p. 416). Finally, while attitudes towards a behavior or subjective norm influence behavior solely by their impact on intention, PBC influences behavior both independently and through the effect on intention (Ajzen, 1991).

Figure 15 Theory of Planned Behavior



Source: Ajzen (1991)

However, "just as intentions are held to have determinants, so the attitude, subjective norm, and PBC components are also held to have determinants" (Conner & Armitage, 1998). An individual's attitude towards a behavior consists of an their salient behavioral beliefs, which means that each individual associates an object with certain attributes, characteristics, or events (Ajzen, 1991). Similar to normative decision theories and their subjective utility function, TPB proposes that individuals link certain behaviors to an outcome that is either positively or negatively valued. In doing so, individuals automatically associate desirability or undesirability towards the behaviors, which in turn increases or decreases the intention to carry out that behavior. In terms of subjective norm, individuals not only regard social pressure and expectancy as drivers of the intention, but moreover consider the normative beliefs. This means that people tend to be concerned about important referent groups and specific individuals and their opinion towards the behavior in question (Ajzen, 1991). According to the TPB, perceived behavioral control is influenced by so-called control beliefs, which are defined by the absence or presence of required resources or opportunities. Control beliefs can, for instance, be influenced by personal past experience with the given behavior or second-hand information such as the experience of friends or family (Conner & Armitage, 1998). Consequently, "the more resources and opportunities individuals believe they possess, and the fewer obstacles or

impediments they anticipate, the greater should be their perceived control over the behavior" (Ajzen, 1991, p. 196).

TPB is a generic theoretical model that can be transferred to various specific disciplines. How versatile TPB actually is becomes obvious when regarding the high amount of references to the concept in academic citations. According to Elsevier's ScienceDirect database, the social psychological TPB was cited over 40,000 times (as of 2022) in various academic journals, which reveals its interdisciplinary relevance (ScienceDirect, 2022). Because of its versatile character, TPB was already successfully applied to all types of research fields, such as health sciences (Godin & Kok, 1996), tourism and leisure studies (Ulker-Demirel & Ciftci, 2020), environmental management (Cordano & Frieze, 2000), innovation (Marcati et al., 2008), and marketing (Pavlou & Fygenson, 2006). As Ajzen (1991) put it, "the theory of planned behavior provides a useful conceptual framework for dealing with the complexities of human social behavior" (p. 206). In the next chapter, Ajzen's theory will be adapt to the still largely unexplored world of entrepreneurship in order to descriptively understand why and how decisions are *actually* made by entrepreneurs.

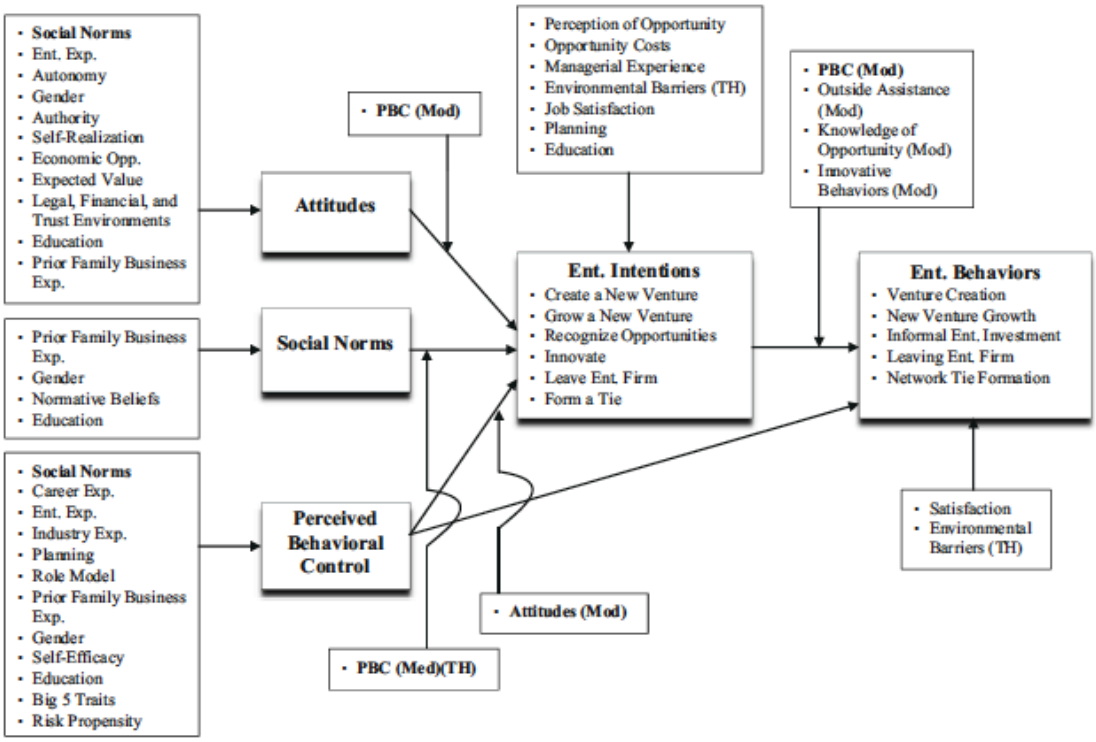
3.2.1 Theory of Planned Behavior in Entrepreneurship

Work in the field of psychological literature has proven that intentions are the best predictor of behavior (Krueger et al., 2000). In the frame of entrepreneurship, intentions are particularly interesting because the decision to engage in the entrepreneurial process does not happen by accident or as a reflex, but rather as a response to the conditions around the potential entrepreneur (Krueger et al., 2000). This response requires a certain degree of planning. It can be suggested that entrepreneurs willingly make decision such as whether or not to start a new business, whom to choose as co-founders, whether to enter into partnerships or how to react to changing market conditions. In order to investigate entrepreneurial decision-making, the theory of planned behavior (TPB) (Ajzen, 1991) "details the determinants of an individual's decisions to enact a particular behavior" (Conner & Armitage, 1998, p. 1429).

The theory of planned behavior was introduced as an intention-based model that also finds interdisciplinary application in entrepreneurship research (Ajzen, 1991; Lortie & Castogiovanni, 2015). Generally, entrepreneurial activity is linked with a behavior that is, at least to a certain degree, intentionally planned (Krueger et al., 2000). Even though opportunities might be suddenly discovered (Kirzner, 1997) and therefore call for relatively unplanned and spontaneous action (Krueger et al., 2000), one can conclude that most entrepreneurial action happens intentionally. Pre-organizational questions such as whether to initiate an

entrepreneurial career or not have therefore not only been linked with the discussion around opportunity discovery and creation (Alvarez 2005; Kirzner, 1997) but also to the question of how far different antecedents influence an entrepreneur's intention to carry out a certain behavior (Krueger et al., 2000). Previous entrepreneurship research already revealed many drivers of entrepreneurial intentions, such as personality traits (Obschonka et al., 2010) or past entrepreneurial experience (Dimov, 2010). With *intention* being a major driver of human behavior (Ajzen, 1991), TPB (as a whole, or single components of it) was applied in the field of entrepreneurship from an intention-driven perspective (e.g., Boyd & Vozikis, 1994; Dimov, 2007; Kickul et al., 2009; Kolvereid & Isaksen, 2006). The academic investigation revealed that the determinants of entrepreneurial intentions, namely, attitudes, subjective (or social) norms, and PBC, in turn, have their own determinants. Lortie and Castogiovanni (2015) have conducted an extensive literature review on TPB in entrepreneurship. The authors reviewed all entrepreneurship-related articles which not only cited TPB, but actively utilized it, resulting in a list of 42 articles (Lortie & Castogiovanni, 2015). Of these 42 articles, solely Kolvereid and Isaksen (2006) utilized the whole TPB, while the remaining articles investigated parts of the TPB in order to prove existing relationships between the variables or to reveal relationships with new variables and antecedents (Lortie & Castogiovanni, 2015). For example, gender was revealed as an antecedent to PBC, subjective norms, and attitudes towards behavior (Kolvereid, 1996; Zhao et al., 2005). Obschonka et al. (2010) found that personality traits such as openness, extraversion, or neuroticism influence PBC. Economic opportunity, authority, autonomy, and self-realization were furthermore revealed as antecedents to the attitudes towards behavior (Kolvereid & Isaksen, 2006). A summary of the findings can be found in Figure 16.

Figure 16 Summary of Findings on the Theory of Planned Behavior in Entrepreneurship



Source: Lortie & Castogiovanni (2015)

In the underlying work, Ajzen's TPB is used for explaining the cognitive processes a potential entrepreneur undergoes before deciding to exploit a business opportunity. Within the frame of TPB, entrepreneurial cognition styles and decision-making logics will be brought into context. Besides the expansion of the state of the art within these sub-areas of entrepreneurship literature, the practical purpose of this investigation is to enable entrepreneurs to receive a greater understanding of their own motives and decision options. Understanding how decisions are made, how they correlate with other external and internal factors, and how to make use of this understanding bears theoretical, but especially practical benefits to (potential) entrepreneurs.

3.2.2 The Conceptual Model Based on TPB in Entrepreneurship

In the following chapters, TPB will be discussed in the context of entrepreneurial decision-making. First, entrepreneurial *behavior* is defined as carrying out the process of opportunity exploitation. In chapter 2.2, methods to exploit opportunities were introduced. These methods provide insights into situations that require decision-making. For instance, the BMC structures the business model of a new venture, revealing that decisions concerning customer

identification and selection, market selection, pricing or human resources are crucial to achieving the previously set goal of successful new venture creation (Osterwalder et al., 2011). Effectuation theory (Sarasvathy, 2001) further introduces five principles from which the pilot-in-the-plane principle can be regarded as the overarching principle of effectuation. The remaining four principles can be translated into decision-making situations as well: the situation in which the entrepreneur needs to define if a goal-driven or means-driven approach should be chosen (bird-in-hand principle); the decision of how many resources should be allocated to the new venture approach (affordable loss principle); whether partnerships are sought or avoided (crazy quilt principle); or how to react to unforeseen incidents (lemonade principle). Although it appears impractical and nearly impossible to list all situations that require entrepreneurial decision-making, Heinrichs and Jaecklin (2017) identified the most critical incidents that typically emerge during the new venture process (see Table 9). Due to the high level of uncertainty that entrepreneurs face (Liening, 2017), "the entrepreneur's decisions and competences are key issues for the company's survival" (Heinrichs & Jaecklin, 2017, p. 133), especially in the early phase.

Table 9 Critical Entrepreneurial Decision-Making Incidents

Critical incidents which require entrepreneurial decision-making	Loss of orders because of a lack of human resources
	Bankruptcy of a key client
	Dissatisfied customer(s)
	Loss of orders to a competitor
	Lack of overview of the financial situation of the new venture
	Lack of support from the family towards entrepreneurship
	Stepping out of a member of the founding team

Consequently, decisions made in critical situations are crucial for the entrepreneur's future success.

Generally, the question of how an entrepreneur selects between different options can be observed by looking at the final proceedings of opportunity exploitation. The intention-building process that takes places before the final decision oftentimes remains unexplored. The TPB sheds light on this process by revealing the predictors of entrepreneurial intention. These predictors remain untouched in comparison to the original TPB, which therefore results in the following conceptual model.

While intention is generally seen to be a predictor of behavior, the conceptual model of this work implies entrepreneurial intention to be the process of opportunity recognition, identification, and evaluation, which in turn can be regarded as a crucial decision-making moment. This means that the intention to commence entrepreneurial action can be translated to the process of opportunity recognition and identification. Studies show the crucial relationship between intention and opportunity recognition (Bergner, et al., 2021; Karimi, 2016), which offers enough room to establish opportunity recognition as a central factor that influences the actual behavior of opportunity exploitation. Only when an opportunity has been identified can the exploitation of the idea take place. Thus, without opportunity recognition, there is no entrepreneurship (Short et al., 2010). In the style of the TPB, opportunity recognition is influenced by attitude towards behavior, subjective norms, and perceived behavioral control. While Lortie and Castogiovanni (2015) summarized the current state of the art in terms of predictors of these three variables, the aim of the underlying work is to place cognition styles and decision-making logics in the entrepreneurial process as well. The TPB allows the conceptualization of this placement and furthermore opens the option to verify other related constructs, which will be explained in the following thought example.

In terms of entrepreneurial decisions, for instance, a potential entrepreneur might recognize an unsatisfied need in a market. Among countless options of how to act in such a situation, the two most obvious options would probably be either to pursue the exploitation of the opportunity or to put it aside. Let the pursuit of the opportunity be considered the actual behavior of the entrepreneur, which is therefore under investigation of the TPB. The opportunity exploitation, involves the formation of a new venture through the use of the business model canvas, market opportunity map, or other tools and methods based on the recognition of the opportunity which, in turn, is influenced by a number of determinants. The intention to exploit the opportunity can be predicted by the determinants of the intention to make that decision (Ajzen, 1991). As already explained, the determinants of intention (or here, opportunity recognition) are the perceived behavioral control, subjective norm, and attitude towards the given behavior. They determine how far the entrepreneur intends to cement their intention for a certain decision or not.

One’s attitude towards behavior (in this case: opportunity exploitation) entails aspects such as the economic opportunity and expected value of the given behavior (Lortie & Castogiovanni, 2015). In the thought example, the entrepreneur estimates the value and opportunity costs of pursuing entrepreneurial action by considering potential economic gains, growing potential, and market share, as well as risks. However, one’s attitude towards behavior is also influenced

by additional antecedents. Studies also reveal gender differences in the entrepreneurial context, finding that men link financial success and innovation with entrepreneurship more than women (Carter et al., 2003), who connect other values such as personal enjoyment and the possibility to help others to entrepreneurship (Brush, 1992). A look at the Global Entrepreneurship Monitor additionally reveals that in almost each European country, there are more men than women becoming entrepreneurs (Bosma, et al., 2020). For this reason, gender differences should be investigated in the underlying context of entrepreneurial decision-making, as well. Other antecedents such as entrepreneurship education background, family business background, or attitude towards entrepreneurship in general are not only antecedents (Lortie & Castogiovanni, 2015) but also offer themselves for investigation of entrepreneurial decision-making and cognition styles. In a similar manner, cognition styles and decision-making logic can be considered not only as antecedents for opportunity recognition and thus intention-building but also as independent but coherent factors that influence general behavior in critical decision situations, transferring the bulk of the attention to this relationship.

Returning to the thought example, on the basis of several antecedents, the entrepreneur forms a positive or negative attitude towards opportunity exploitation which, in turn, influences their intention to carry out the behavior.

The second determinant that shapes intention according to the TPB is subjective norm. The subjective norm is determined by normative beliefs (Krueger et al., 2000). In the entrepreneurial context, the individual considers aspects such as prior family business experience, their entrepreneurship education, and societal expectations (Lorti & Castogiovanni, 2015). When there is an entrepreneurial background in the entrepreneur's family, they reflect on how their relatives recognized opportunities or how they would hypothetically act in a certain situation. If there is no family business background, the entrepreneur recalls their knowledge from entrepreneurship related education and thus evaluates what existing theories or models suggest they do in the given situation. Additionally, the entrepreneur reflects on what society expects them to do and how people around the entrepreneur would react if they exploited a recognized business opportunity.

The perceived behavioral control from Ajzen's (1991) TPB is oftentimes related to Bandura's (1977) concept of self-efficacy, which is defined as a personal expectation of how successfully one can execute courses of action required to deal with prospective situations. In the frame of entrepreneurship research, entrepreneurial self-efficacy (ESE) was developed in order to describe the extent to which the entrepreneur is confident in their own capabilities to master entrepreneurial tasks and processes (Boyd & Vozikis, 1994). In this context, self-efficacy not

only “affect[s] the choice of settings and activities, but it also affects skill acquisition, effort expenditure, and the level of persistence exhibited in the face of obstacles” (Boyd & Vozikis, 1994, p. 73). For this reason, entrepreneurial self-efficacy plays a crucial role in perceived behavioral control (Lorti & Castogiovanni, 2015), because the more an entrepreneur is convinced that their skills and competencies are suitable to master entrepreneurial tasks, the higher the level of perceived behavioral control should be. According to academic literature, a few more factors determine PBC. Role models can serve as a reference group in that their entrepreneurial decisions are regarded as correct and worthy of imitation (Krueger et al., 2000). Moreover, personality traits, prior industry and career experience, or business strategy and planning influence the PBC of an entrepreneur (Lorti & Castogiovanni, 2015). Gender also plays a crucial role in making entrepreneurial decisions. Literature reveals that women tend to choose not to become entrepreneurs because they fear a lack of control respective to self-efficacy (Maes et al., 2014; Minniti & Nardone, 2007). Based on our example, the entrepreneur considers how easy or hard it would be to exploit the opportunity on the basis of their experiences, personality, or self-efficacy. Another aspect that influences PBC is the aspect of decision-logic. Especially in the case of entrepreneurship, different decision-making styles have been developed in the recent past (e.g., Sarasvathy, 2001). Potential entrepreneurs can make their decision either in a causal or an effectual manner (both will be discussed in detail later in this chapter). However, the style in which decisions are generally made can function as an indicator of the extent to which control over a given behavior is perceived. Analogous to that, cognition styles (e.g., Cacioppo & Petty, 1982; Epstein et al.,1996) function as another indicator of PBC. With countless different cognition styles, one bipolar distinction exists between people who tend to make intuitive decisions and those who are more analytical (Epstein et al., 1996). A previous study by de Frias and Schaie (2001) already linked perceived environmental conditions to cognition styles, which opens the door for a wider interpretation and consideration of the thinking style of a potential entrepreneur as a determinant for PBC.

Another crucial factor is the individual’s problem-solving ability. Problem-solving has been of major research interest in the past (Jabri, 1991) and has also been implemented in the TPB (Shapiro & Watson, 2000). One might assume that individuals with a higher level of problem-solving skills might perceive their ability to exploit an entrepreneurial opportunity as being higher than those with lower problem-solving abilities. Consequently, PSA can be placed as an indicator of PBC, but also as a determinant of the attitude towards behavior, as proposed by Shapiro and Watson (2000). Certainly, the skill of problem-solving is put to the test in entrepreneurship. Not only does the entrepreneur face encounters where these skills are needed,

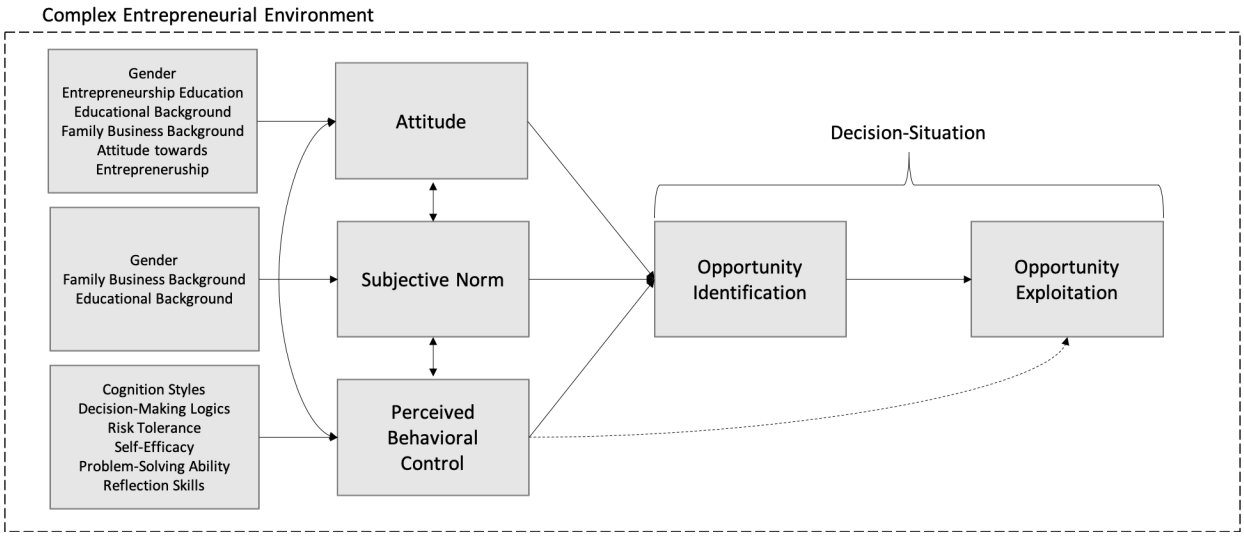
they are also asked to constantly learn by his actions (Cope & Watts, 2000). This in turn requires the skill of reflection, thus, the internal examination and exploration of actions and decisions (Boyd & & Fales, 1983).

The thought example plays a crucial role on whether the potential entrepreneur is an analytical or intuitive thinker, their level of self-efficacy, or how their decision-logic is formed. Combined with their level of risk propensity, problem-solving skills, and reflection ability, the PBC is formed and influences the way in which opportunity recognition and evaluation takes place.

Concluding in the style of TPB, a positive attitude towards opportunity exploitation, favorable subjective norms, and a high level of perceived behavioral control are the best predictors for this particular behavioral intention (Ajzen, 1991). The entrepreneur is much more likely to commence the opportunity identification process when their own attitude towards this behavior is positive, their social network is favorable to entrepreneurship, and they possess a high level of perceived behavioral control. Consequently, the positive intention makes the actual behavior more likely. Conversely, in cases where one of the three predictors of behavioral intention are not in favor of the actual behavior, the execution of that behavior becomes less probable and even less probable when two or all three determinants of intention are not in favor of the behavior (Ajzen, 1991).

The conceptual model of this work is grounded in the theory of planned behavior. It is noteworthy that some light has already been shed on several determinants for the attitude towards behavior, social norm, and perceived behavioral control in the course of time. However, some aspects have remained in the dark. There is a lack of insight concerning the question of what role cognition plays in entrepreneurial decision-making. More precisely, od whether the cognition style of a potential entrepreneur predicts their entrepreneurial decision-making logic or not. Exploring this relationship makes it possible to include other determinants that have already been uncovered and to examine them in the context of entrepreneurial decision-making. The resulting conceptual model (see Figure 17) therefore builds the foundation for the following empirical studies.

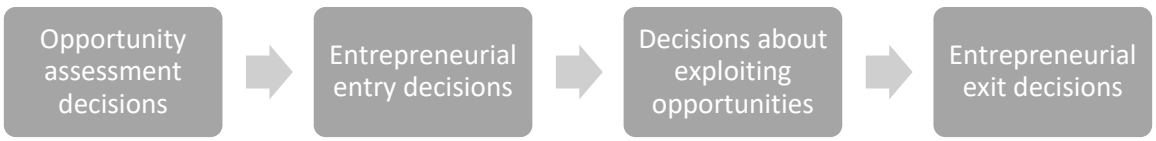
Figure 17 Conceptual Model



3.2.3 The Context of Opportunity Recognition and Opportunity Exploitation

Entrepreneurship differs from management. In the initial chapter of this dissertation, it was shown that the entrepreneurial context is in fact a unique one. In the quest to unlock the characteristics of entrepreneurial decision-making, the decision opportunities in entrepreneurship need to be revealed. Entrepreneurial activities can be roughly placed into a fourfold process (Figure 18). To provide a first overview on a fraction of the numerous decision-making opportunities but also to reveal the unique conditions of decision-making in entrepreneurship, a short run through the entrepreneurial process is discussed in the next section.

Figure 18 Fourfold entrepreneurial process



Source: Shepherd et al. (2015)

Throughout the entrepreneurial process, the individual encounters several events that call for decision-making. One of the first entrepreneurial decisions to be made should be the decision of whether or not to act on an opportunity that appears worth pursuing (McKelvie et al., 2011).

Once an individual recognizes something that could turn out to be an opportunity, they must evaluate these initial thoughts. Aside from pursuing an opportunity, the would-be entrepreneur can also decide not to follow the entrepreneurial path at all. The question of how to actually decide depends on the individual's consideration of their human capital, which includes previous education, training, experience, and skills. Findings show that the assessment of an opportunity greatly depends on human capital, as the perceived knowledge of customer demand and the skills of the entrepreneurial team are positively related to the positive evaluation of an opportunity (Choi & Shepherd, 2004). For this reason, the degree of entrepreneurship education as well as the team composition plays a crucial role in decision-making. However, recognizing an opportunity might be followed by actually starting an entrepreneurial career. Individuals make this decision with a consideration of their opportunity costs (Shepherd et al., 2015). Chapter 1 has shown that the risks of entrepreneurship, especially personal risks and gains, are weighed by the would-be entrepreneur, who must assess whether their current job or career opportunities are worth trading for an entrepreneurial career. The question of how much an individual is ready to lose, has an influence on their decision to pursue an entrepreneurial career. Risk-tolerant people are more likely to choose the career path of self-employment (Dew et al., 2009). Accordingly, the entrepreneur begins to build an intention to exploit an opportunity. This intention-building is not only crucial in general decision-making (Ajzen, 1991) but is also a central aspect in translating opportunities to entrepreneurial action (Bird, 1988; Dimov, 2010; Krueger et al., 2000). Thus, up to the point of choosing to exploit an entrepreneurial opportunity, the individual has already made several crucial decisions.

Subsequently, the amount of decisions multiply as the opportunity exploitation brings along strategic decisions and business planning. Exploiting an entrepreneurial opportunity means putting intentions to entrepreneurial action. A wide range of tools such as the BMC or the MON (see Chapter 2.2) can be used to structure the opportunity exploitation process and provide decision orientation for the entrepreneur. For instance, several funding alternatives need to be evaluated (Shepherd et al., 2015), entry markets need to be chosen (Gruber, 2017), and the final product or service needs to be produced one way or another (Gartner, 1985). However, a continuously operating new venture is not only connected to the typical tasks of planning, implementing, and managing, but at a certain point of the entrepreneurial process, the entrepreneur might be faced with an exist decision. Exiting could mean selling the firm, closing it due to poor performance, or selling one's stake in the firm (Shepherd et al., 2015). While deciding when and how to exit the new venture, the entrepreneurs' decision is influenced by many factors. They need to assess if their own decision logic fits to that of the new ventures

(Brigham et al., 2007), whether other (entrepreneurial) opportunities appear more desirable (Ucbasaran et al., 2010), or how to balance the financial and emotional costs of an exit (Shepherd et al., 2009).

Actually, the opportunities for decision-making appear endless in a business, but also in an entrepreneurial context. The process depicted here is, in reality, far from being linear and much more of an iterative and interactive mode (Alvarez & Barney, 2007). Many factors which will be discussed throughout the remainder of this chapter influence intention-building in the form of opportunity recognition and entrepreneurial action in the form of opportunity exploitation. Researchers even go one step further to assume that entrepreneurship involves a high degree of uncertainty and complexity (Liening, 2017; McMullen & Shepherd, 2006). Therefore, understanding the entrepreneurial decision-making context requires an understanding of entrepreneurial uncertainty as well.

3.2.3.1 The Meaning of Uncertainty Within the Entrepreneurial Context

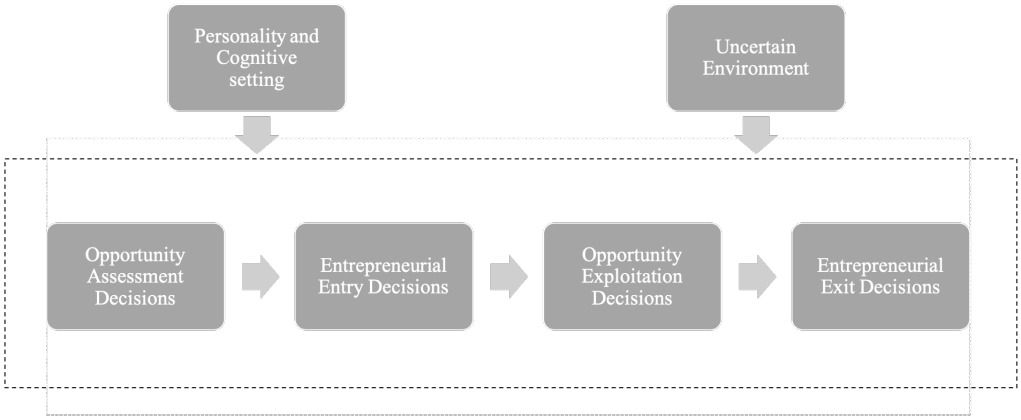
"*Without the element of uncertainty, the bringing off of even the greatest business triumph would be dull, routine, and eminently unsatisfying.*"

We begin this section with a statement by John Paul Getty, the wealthiest person in the world in the 1960s, describing the relevance of *uncertainty,* a construct which, back then, had already started its long and controversial journey. Uncertainty frequently comes along with expressions such as *complexity* and *risk* and oftentimes people use these words unconsciously and interchangeably in their everyday language. In various contexts, including the entrepreneurial context, researchers drew closer to the concept of uncertainty (e.g., Knight, 1921; Milliken, 1987; McKelvie et al., 2011). The entrepreneurial environment is described by its high degree of risk, dynamics, turbulence, and uncertainty (Shane, 2003; Wiltbank et al., 2009). Liening et al. (2016) find that "the outcome of a f[o]unding process cannot be estimated, even when the same tools and methods, which other entrepreneurs have successfully used before, are applied" (p. 101). Therefore, it is safe to say that "uncertainty constitutes a conceptual cornerstone for most theories of the entrepreneur" (McMullen & Shepherd, 2006, p. 133). While some scholars consider uncertainty as a given construct in entrepreneurship (Lanivich, 2015), others try to decrypt what is meant by the phenomenon of *uncertainty* (Knight, 1921; Liening et al., 2016; Luce & Raiffa, 1957; McKelvie et al., 2011; McMullen & Shepherd, 2006; Milliken, 1987). However, scholars have not yet agreed on a universal definition of uncertainty; therefore, a

variety of understandings exist (LeRoy & Singell, 1987). McMullen and Shepherd (2006) distinguish between two research streams, which are "each inspired by alternative conceptualizations of uncertainty:" (p. 133) one stream states that the level of *perceived uncertainty* constitutes the barrier between prospective entrepreneurs and actual entrepreneurial action, while the second stream highlights the differences in *motivation, attitude, or risk propensity* as the source of willingness to bear uncertainty (McMullen & Shepherd, 2006). Entrepreneurship appears to be a discipline that exposes entrepreneurs to challenging situations, since business failure and success depend on unknown outcomes in the future (McKelvie et al., 2011). It is proposed that both *knowledge* (on the amount of perceived uncertainty) and *motivation* (to bear uncertainty) form the uncertainty construct and function as the starting point for entrepreneurial action (McMullen & Shepherd, 2006). The entrepreneur is expected to be aware of the uncertainty of the venture's future caused by environmental uncertainties and also motivated to adapt to this uncertainty by making decisions in an appropriate way. Entrepreneurs either try to predict the future as accurately as possible or to control as many variables as possible in order to form the future outcome (Sarasvathy, 2001). Scholars have proposed that in an organizational context, the external environment in particular constitutes this so-called *something* that individuals try to predict (Duncan, 1972; Miles & Snow, 1978). Particularly in the field of entrepreneurship, the external environment, consisting of customers, suppliers, competitors, socio-political actors, and technology (Duncan, 1972; Porter, 1980), contains a high level of uncertainty, as the entrepreneur is not be able to predict probabilities regarding how the environment will react to the decisions of the startup. Therefore, Milliken (1987) distinguishes three distinct types of environmental uncertainty: *state*, *effect*, and *response*. State uncertainty constitutes the inability of an individual to predict how environmental components such as demographic shifts, socio-cultural trends, and preferences are changing. Effect uncertainty is the inability to predict the extent to which shifts in the environment might impact the firm, and thus involves a lack of understanding of cause-effect relationships. Finally, response uncertainty refers to uncertainty based on the lack of insight into possible response options in a changing environment and the individual's inability to predict the consequences of a chosen response (McKelvie et al., 2011; Milliken, 1987). Entrepreneurs typically face these types of uncertainty as they come across entrepreneurial decisions that must be made within the new venture process (see Figure 19). McMullen and Shepherd (2006) state that "it is important to note that a decision is a necessary but insufficient condition for the occurrence of entrepreneurship" (p. 134); therefore, uncertainty seems inevitable to any entrepreneur. With regard to Milliken's framework, it is suggested that those three types of uncertainty might be

simplified by asking three questions: (1) What's happening out there? (state), (2) How will it impact me? (effect), and (3) What am I going to do about it? The response, on the one hand, structures the entrepreneur's need to act and, on the other hand, constitute that the entrepreneurial world is neither fully determined nor fully random (Moya, 1990; McMullen & Shepherd, 2006).

Figure 19 Impactors on the Entrepreneurial Process



Theorists propose the concept of information as the counterpart of uncertainty (Downey et al., 1975; Duncan, 1972). Thus, the absence of information, which allows an objective prediction of the future, increases the level of uncertainty. In this context, uncertainty is seen as a sense of doubt that blocks or delays action (Lipshitz & Strauss, 1997). Moreover, it is linked to the success of action. No entrepreneurial action or delayed action caused by hesitance to cope with uncertainty decreases the chance of successfully initiating the new venture process. Literature in the field of business administration and entrepreneurship reveals the importance of action to enable success (Chesbrough, 2010; McMullen & Shepherd, 2006; Porter, 1980; Sarasvathy, 2001). However, taking action in entrepreneurship means exploiting opportunities which, in turn, means making crucial decisions and solving complex problems (Reymen et al., 2015). Solving problems in an uncertain environment can, in that frame, be regarded as an entrepreneurial skill (Stevenson & Jarillo, 1990), which has a major influence on the success of entrepreneurial action. However, the uncertain environment, which embraces entrepreneurship, not only functions as an external effect, which complicates decision-making and problem-solving, but is also present within the new venture. In fact, the organizational personnel component of entrepreneurial decision-making must also be considered (Duncan, 1972; Kamm, et al., 1990; Ensley & Pearce, 2001; West, 2007). Analyzing entrepreneurial decision-making means analyzing decision-making under uncertainty. In turn, uncertainty is

considered a lack of information, and decision theory (see chapter 2.1) has shown that even incomplete states of information lead to decisions. Consequently, "uncertainty constitutes a conceptual cornerstone for most theories of the entrepreneur" (McMullen & Shepherd, 2006, p. 132) and, therefore, it needs to be understood how entrepreneurs make their decisions under uncertainty.

3.2.3.2 Characteristics of the Decision-Maker in Entrepreneurship

In a research context, there are plenty of investigations of decision-making under uncertainty (e.g., Kahneman & Tversky, 1984; Savage, 1954). This topic is also attracting increasing interest in the frame of entrepreneurship (e.g., Baron, 2004; Busenitz & Barney, 1997; Simon, et al., 2000). However, in the quest of challenging the entrepreneurial process, two factors heavily influence the logic in which decisions are made. One factor is the uncertain environment, the other is the decision-maker's personality and cognitive setting.

However, one must ask: Who is a *typical* entrepreneur? In the early stages of entrepreneurship, research scholars agreed and proved that entrepreneurs are certainly different from non-entrepreneurs (e.g., Brockhaus, 1980; Carland et al., 1984; McCelland, 1961; Schumpeter, 1934/1983). It soon became the focus to consider the personality of entrepreneurs as a distinguishing feature. Rauch and Frese (2000) suggested a separate view on the emergence and success of entrepreneurs based on to personality traits. This led scholars to raise two distinct questions: (1) Do certain traits predict an individual's likelihood of becoming an entrepreneur? and (2) Do certain traits predict an entrepreneur's likelihood of achieving *successful* outcomes? (Kerr et al, 2018). The search for suitable and eligible personality traits remained far from being obvious (for extensive literature reviews, see Rauch, 2014; Kerr et al., 2018). Largely consistent findings in this research stream identified personality characteristics of (1) a high need for achievement, (2) an internal locus of control, and (3) risk-taking propensity (Korunka, 2003), concluding that entrepreneurs differ significantly from non-entrepreneurs. Moreover, and even more surprisingly, researchers argued that "the differences among entrepreneurs […] are much greater than one might expect; in fact, the diversity may be larger than the differences between entrepreneurs and non-entrepreneurs" (Gartner, 1985, p. 696). For instance, there may be an infinite number of reasons for people to become entrepreneurially active (Bosma et al., 2020). It has already been stated that most entrepreneurial new ventures fail; however, despite this negative forecast, there appears to be a group of people that still engages in entrepreneurship. Besides a high need for achievement, internal locus of control, and risk-taking propensity, another reason for that risky undertaking is (4) a high level of entrepreneurial self-efficacy

(ESE). In the frame of social cognitive theory, self-efficacy is defined as an individual's estimation of their "capabilities to mobilize motivation, cognitive resources, and courses of action needed to exercise control over events in their lives" (Wood & Bandura, 1989, p. 364). Researchers adopted this concept to the frame of entrepreneurship and introduced entrepreneurial self-efficacy as a construct to predict the likelihood of an individual becoming an entrepreneur. It is proposed that some people might avoid becoming an entrepreneur because of a lack of ESE while others become entrepreneurs because they perceive themselves to possess the necessary skills to become a successful entrepreneur (Chen et al., 1998). Thus, it is generally acknowledged that a high level of entrepreneurial self-efficacy goes along with the development of entrepreneurial intentions and actions (Boyd & Vozikis, 1994; Chen et al., 1998). However, even if exclusively individuals with a high level of ESE become entrepreneurs, one question still remains: why do only a fracture of startups become highly successful? To answer that question, researchers adopted a cognitive perspective on the *why* questions of entrepreneurship:

"(1) Why do some persons but not others choose to become entrepreneurs?
(2) Why do some persons but not others recognize opportunities for new products or services that can be profitably exploited?
(3) Why are some entrepreneurs so much more successful than others?" (Baron, 2004, p. 221).

(1) First, it appears contradictory that would-be entrepreneurs have a high level of ESE, but in reality, most startups fail. This shows that self-efficacy oftentimes does not reflect the real capabilities and can be influenced by optimistic bias (Shepperd et al., 1996), which is the false believe that the likelihood of experiencing success is high, even though objective data suggests the opposite. Optimistic bias is even underpinned by cognitive tendencies such as an illusion of control (Simon et al., 2000).
Although the entrepreneurial environment is characterized by a high degree of uncertainty, potential entrepreneurs might not regard the challenge of entrepreneurship as uncertain, but rather as risky. Following the illusion of control, the entrepreneur underestimates the risk and starts a new venture (Baron, 2004). The aspects of an uncertain entrepreneurial environment where the entrepreneur cannot control everything that is happening might be confused with an environment where probabilities of success are calculable. A false perception of risk causes major differences in the decision of whether to become an entrepreneur or not (Simon et al., 2000). This effect is even strengthened when small probabilities are overweighed in the style

of prospect theory (Kahneman & Tversky, 1979). Additionally, some people suffer from overconfidence bias, which means they overestimate their own capabilities and fail to assess the limits of their own knowledge (Moore & Healy, 2008). Overconfident individuals do not sufficiently revise their decisions and opinions after receiving new data (Simon et al., 2000).
(2) Second of all, the topic of opportunity recognition raises questions. The discussion on whether opportunities are created or discovered (chapter 2) dominates a large extent of literature on opportunity recognition. Gaglio and Katz (2001) established the concept of entrepreneurial alertness as "a distinctive set of perceptual and cognitive processing skills that direct the opportunity identification process" (p. 96). People possessing a high level of entrepreneurial alertness capitalize on the search for market disequilibria and possibilities for change. People who possess entrepreneurial alertness try to "rapidly sense, act, and mobilize, even under uncertain conditions" (Ireland et al., 2003, p. 967), and therefore have a stronger so-called entrepreneurial mindset than others. Those individuals must make rapid decisions on opportunity exploitation, as they are faced with the risk that others might exploit the opportunity before them. Therefore, their decision-making relies on the use of heuristics and incomplete information (Busenitz & Barney, 1997) which, in turn, accelerates decision-making and opportunity recognition.
(3) However, some entrepreneurs are more successful than others, and generally, it has been argued that significant differences exist between entrepreneurs (Gartner, 1985). Therefore, Baron (2004) concludes that successful entrepreneurs might not necessarily be more risk averse but are, to a higher extent, able to differentiate between risk and uncertainty. As such, successful entrepreneurs are able to gauge the risk of different strategies and actions, and thus be more effective decision-makers. Although entrepreneurial action calls for fast decisions, successful entrepreneurs are the ones that even in situations under pressure and incomplete information make their decisions carefully and strategically (Baron, 2004). Moreover, successful entrepreneurs might be more able to deal with the overconfidence bias as they evaluate newly retrieved data and more carefully assess their own market position.

Moreover, a successful handling of the perception of risk, opportunities, and behavioral flaws goes in line with a distinct level of self-reflection. Cope and Watts (2000) state that entrepreneurs sooner or later face critical events that can be described as "eruptions" (p. 113). Such eruptions can, for instance, include the misconception of risk and uncertainty, but also the evaluation of opportunities, as they go along with major consequences in terms of the success or failure of the entrepreneur. These eruptions might therefore occur in tandem with problems

that the entrepreneur needs to cope with. In that frame, a high problem-solving ability is said to be a major entrepreneurial skill (Stevenson & Jarillo, 1990), as it is seen to be the starting point for innovative ways of handling critical situations (Kirton, 1976). Moreover, learning from these critical situations is not less important. Critical situations bear the potential to initiate the process of reflecting on one's own behavior in order to learn and increase self-awareness (Cope & Watts, 2000). As such, self-reflection can be regarded as another crucial characteristic for entrepreneurs (Cope & Watts, 2000; Schön, 1984).

However, the characteristics of the entrepreneur unfold during decision-making. When decisions are made, scholars ask the *why* questions (Baron, 2004) and explain characteristics and personality. However, since entrepreneurs are very different from one another, entrepreneurial action should to be clustered in a different way. Decision-making logics offer one way to do so.

So far, the TPB appears to be a suitable theory as applied in the entrepreneurship context. Several determinants for intention-building have already been under investigation in previous studies (Lortie & Castogiovanni, 2015). To the author's best knowledge, one crucial aspect not fully covered in TPB that is of high importance for the entrepreneurship domain is cognition. According to Baron (2004), "everything we think, say, or do is influenced by mental processes – the cognitive mechanisms through which we acquire story, transform and use information" (p. 221). Although Baron (1998) argues that all people, whether entrepreneurs or not, share the same general cognitive processes, entrepreneurs are the ones who face unique challenges, which initiate special cognitive processes in order to cope with these challenges. As Shane (2001) noted, entrepreneurship ultimately arises from the actions of particular individuals and, therefore, an understanding how these actions and decisions came about remains largely unexplored. Therefore, the question might be raised as to how far the cognitive setting of an entrepreneur influences their decision-making. Furthermore, investigation is needed to understand if the cognitive setting of an individual predicts their behavior and entrepreneurial decision-making once the individual becomes entrepreneurially active.

The TPB's versatile manner suits the research purpose of this work. One the one hand, TPB enables the inclusion of entrepreneurial cognition styles and decision-making logics into the model. On the other hand, TPB offers a greater understanding of entrepreneurs' motives and decision options. In order to understand this investigation, cognition styles and entrepreneurial decision logics will gain additional attention in the following chapters.

3.2.4 Cognition Styles

The investigation of cognition styles is a popular stream in cognitive psychology (e.g., Epstein et al., 1996; Riding & Cheema, 1991; Webster & Kruglanski, 1994), but also increasingly gains in importance in entrepreneurship (e.g., Busenitz & Barney, 1997; Shepherd & Patzelt, 2018; Simon, 1959). Defining the term *cognition,* Baron (2004) states that "the cognitive perspective emphasizes the fact that everything we think, say, or do is influenced by mental processes – the cognitive mechanisms through which we acquire, store, transform, and use information" (p. 221). There are plenty of different cognition styles[3]. What they generally have in common is their bipolar dimension, meaning that cognition styles are usually of an "either-or" manner. An individual's mental mechanism to process information can, for instance, *either* be implicit *or* explicit (Weinberger & McCelland, 1991), intuitive *or* logical (Jung, 1964), or tolerant *or* intolerant (Gardner et al., 1959). Next to the extensive theoretical approach to understand the individual's cognition, a few practical instruments for "measuring individual differences in the degree to which people characteristically operate in one mode or the other" (Epstein et al., 1996) were developed. Although oftentimes defined as a measurement tool for individual *personality* (Furnham, 1996), the Myers-Briggs Type Indicator (MBTI) was identified by Epstein et al. (1996) as one of the first self-reporting scales to measure individual differences in thinking style, and therefore functioned as a reference for the further development of cognition styles. The MBTI, which is a self-reporting scale to distinguish one's level of introversion or extraversion, sensing or intuition, thinking or feeling, and judging or perceiving, was developed in order to classify individuals into specific personality types (Briggs & Myers, 1976). Overall, there are sixteen personality types in the MBTI with detailed descriptions of the behavior of these personality types (Briggs & Myers, 1976). Despite the general popularity of the MBTI, researchers argue that clustering individuals into behavioral types is challenging and does not properly reveal the specific cognitive style (Hicks, 1984). This is the case because people's behavior and decision-making logic might not be the same throughout their whole life but can change depending on the environmental and situational context. While a person can be partially introverted in some situations, the same person can be extroverted in other contexts (Barbuto, 1997). Remembering that decision-making oftentimes takes place in risky or uncertain environments, the static view of personality types might not always be the most suitable way to explain behavior. Especially in the case of entrepreneurship, chapter 2 revealed that entrepreneurship is about the identification of opportunities and the establishment of

[3] For a detailed listing see the works of Epstein et al., 1996 or Riding & Cheema, 1991.

innovative and novel organizations in the frame of uncertainty and risk. Apparently, information processing seems dynamic in the entrepreneurial context. A study by the Myers-Briggs Company on entrepreneurship investigated if certain MBTI types were more probable predictors of entrepreneurship than others (Hackston, 2017). The study revealed that there is no a general type of person that is prone to become an entrepreneur. The results even show a relatively balanced distribution when it comes to the 16 MBTI classifications (see Figure 20). These findings go in line with the previously introduced observations, which conclude that research on personality traits somehow reaches its limits in the frame of entrepreneurship (Gartner, 1989; Low & McMillan, 1988).

Figure 20 Myers-Briggs Type Indicator for Entrepreneurs

ISTJ* – The Inspector** N = 43	ISFJ – The Protector N = 19	INFJ – The Mentor N = 46	INTJ – The Strategist N = 79
ISTP – The Practicioner N = 7	ISFP – The Artist N = 4	INFP – The Idealist N = 48	INTP – The Logician N = 57
ESTP – The Animator N = 12	ESFP – The Presenter N = 14	ENFP – The Enthusiast N = 81	ENTP – The Innovator N = 51
ESTJ – The Administrator N = 29	ESFJ – The Advocate N = 22	ENFJ – The Counsellor N = 32	ENTJ – The Director N = 40

*(I = Introversion, E = Extraversion; S = Sensing, N = Intuition; T = Thinking, F = Feeling; J = Judging, P = Perceiving)

** The 16 possible personality types have been labelled with catchy type designations within the literature. While the labels might differ, Jankowski's (2016) labels are used for illustration here.

Source: Hackston, 2017; Jankowski, 2016

If anything, the results of the study show a slight dominance of intuition (Hackston, 2017), raising the question of whether intuition is a common characteristic of entrepreneurial cognition and decision-making. In fact, intuition has become a popular part of the dichotomy of human cognition. Epstein (1994) finds "that people are intuitively aware of two fundamentally different ways of knowing, one associated with feelings and experience and the other with intellect" (p. 710). Making intuitive decisions eliminates tedious cognitive processes and therefore bears the potential to accelerate the decision-making process. This might result in less rational and even less efficient decisions (Calabretta et al., 2017). Taking such cognitive shortcuts, so-called heuristics explains irrational thinking and decision-making, but moreover sets the basis for a general classification of human cognition into two modes. Tversky and Kahneman (1974, 1983) introduced and explained these cognitive shortcuts by dividing reasoning into an *intuitive* mode and a *logical* mode. Through a series of experiments but also with the support of subsequent researchers such as Nisbett and Ross (1980), the view of two distinctive processing modes of human cognition has emerged. Although sometimes using different wording, researchers present intuition in contrast to cognition in a two-fold system of human decision-making. Kahneman presented the findings of his studies with Tversky into the international best-selling book *Thinking, Fast and Slow* in 2011, and presented the theory of System 1, which is instinctive and emotional, and System 2, which is rather deliberative and logical, to the public.

In general, the main distinction in cognitive psychology can be found in the question of whether individuals process information in an intuitive or rather conceptual, logical, and thoughtful manner (Epstein et al., 1996). Based on previous work in this field, the two independent processing modes Need for Cognition (NFC) and Faith in Intuition (FI) gained attention and will be explained in the following sections.

3.2.4.1 Need for Cognition

Understanding a person's decision-making logic requires a deeper knowledge of how this person seeks and processes information. As shown in the previous chapter, making a decision can be seen as a consequence of information processing which, in turn, can be either more or less intense. Cognitive psychology implies that people "if not commonly enjoying, are at least commonly engaging in active information search and effortful problem solving" (Cacioppo et al., 1996, p. 197). How detailed and thoughtful decisions are made depends on the need for cognition of the decision-maker. The term *need for cognition* has initially gained relevance

since the work of Cohen et al. (1955), who defined NFC "as a need to structure relevant situations in meaningful, integrated ways. It is a need to understand and make reasonable the experiential world" (Cohen et al., 1955, p. 291). Further conceptualization of this construct describes NFC as a cognitive style, which implies the engagement in thinking, the need for understanding, and the enjoyment of intellectual activities (Cacioppo & Petty, 1982). People with a high NFC make use of their rational information-processing system, which "operates according to a person's understanding of conventionally established rules of logic and evidence" (Kirkpatrick & Epstein, 1992, p. 534). Individuals with a high NFC are described as those who naturally enjoy seeking, acquiring, and carefully thinking about information to make sense of their environments and understand relationships and events. People with a high need for cognition are those who have open and exploring minds and intellectually "connect the dots" through effortful thinking. In the second category, individuals with low NFC were characterized as dependable on the opinion of others and the extensive use of heuristics to create order and meaning in their own world (Cacioppo et al., 1996). When judging other people, individuals high in NFC are more likely to process all relevant information rather than make stereotypical judgements (Petty et al., 2009). Due to its non-context-specific character, NFC was investigated in various research areas and combinations to related constructs (e.g., Mussel, 2010). A high level of NFC is, for instance, associated with an openness to ideas or epistemic curiosity, which is defined as "the desire for knowledge that motivates individuals to learn new ideas, eliminate information-gaps, and solve intellectual problems" (Litman, 2008, p. 1586). NFC also positively correlates with an openness to ideas (Berzonsky & Sullivan, 1992). Ackermann et al. (1995) introduced the concept of typical intellectual engagement (TIE) and defined it as "a personality construct that represents an individual's aversion or attraction to tasks that are intellectually taxing" (p. 276). Unsurprisingly, researchers found a strong correlation between TIE and NFC, which are already very similarly defined (Woo et al., 2007).

An interim summary of this chapter reveals two insights so far. First, decision theory shows various approaches to understanding how decisions are made. Understanding the cognitive mechanisms of information processing might lead to a prediction of people's behavior and decisions. Especially in the frame of uncertainty, descriptive theory explains the significant role of cognitive errors and the use of heuristics, which serve as cognitive shortcuts to making decisions. Second of all, TPB can be used to explain the process of intention-building, which is crucial for decision-making. Lastly, the application to an entrepreneurial context is pending. As already mentioned, the entrepreneur must not only recognize opportunities and function as an innovator, but must also do so in a risky and uncertain environment. To the author's best

knowledge, it has so far not been investigated whether individuals with a high NFC are more likely to behave in an entrepreneurial manner. To address this question, the counterpart for the need for cognition will be described in the next chapter.

3.2.4.2 Faith in Intuition

Seymour Epstein introduced cognitive-experiential self-theory (CEST) in 1973, thus setting the stage for his investigation of human personality and cognitive processing (Epstein, 1973). In Epstein's theory, which was refined over many decades (e.g., Epstein, 1994; Epstein et al., 1996; Norris & Epstein, 2011; Pacini & Epstein, 1999), two parallel and interacting modes of information processing were introduced: a rational system and an experiential system. The experiential system is described as an automatic and unconscious style of problem solving and decision-making, while the rational system is built on a conscious reasoning system which considers logic and evidence (Norris & Epstein, 2011). Epstein uses a real-life phenomenon to describe the essence of his theory: the conflict between heart and head (Epstein, 1991). It is generally known that the metaphor of making a *heartfelt* decision means making an emotional, experience-based, and sometimes even irrational decision, while making a *head* decision implies a logical approach of rational information processing, thinking, and reflecting, with a rather low involvement of emotions. Epstein echoed the work of Tversky and Kahneman (1974; 1983), who introduced the concept of heuristics and concluded the existence of two general forms of reasoning, namely, an intuitive mode (called System 1) and a logical mode (called System 2). In CEST, the two systems can be clearly divided into experiential and rational. The experiential system is defined as being more holistic, with a rather effortless and automatic way of processing information and making decisions. Preferences not only depend on personal affection but also on past experience and emotions. Consequently, this system allows a fast processing with an immediate will to act. However, the rational system implies analytic and effortful information processing where the person depends on logical and rational reasoning. Information processing happens more slowly and is oriented towards delayed but thoughtful action (see Table 10).

Table 10 Comparison of the Experiantial and Rational Systems

Experiental system	Rational system
1. Holistic	1. Analytic
2. Automatic, effortless	2. Intentional, effortful
3. Affective: Pleasure-pain oriented (what feels good)	3. Logical: Reason oriented (what is rational)
4. Associationistic connections	4. Logical connections

5. Behavior mediated by "vibes" from past events	5. Behavior mediated by conscious appraisal of events
6. Encodes reality in concrete images, metaphors, and narratives	6. Encodes reality in abstract symbols, words, and numbers
7. More rapid processing: oriented toward immediate action	7. Slower processing: oriented toward delayed action
8. Slower and more resistant to change: Change with repetitive or intense experience	8. Changes more rapidly and easily: changes with strength of argument and new evidence
9. More crudely differentiated: Broad generalization gradient: stereotypical thinking	9. More highly differentiated
10. More crudely integrated: Dissociative, emotional, complex; contexts-specific processing	10. More highly integrated: Context-general principles
11. Experienced passively and preconsciously: we are seized by our emotions	11. Experienced actively and consciously: We are in control of our thoughts
12. Self-evidently valid: "Experiencing is believing"	12. Requires justification via logic and evidence

Source: Epstein (1991)

In order to make these two systems measurable, the rational-experiential inventory (REI) was developed (Epstein et al., 1996; Pacini & Epstein, 1999). Unlike many approaches that tried to explain cognitive styles in a bipolar manner, the REI used two unipolar dimensions to measure individual differences. This is rooted in the assumption that both systems operate in parallel and interact with each other (Epstein, 1991). As such, REI consists of two separate scales. One is a modified version of Cacioppo and Petty's NFC (1982) while the other scale, called faith in intuition, was developed due to the previous lack of measuring of the intuitive-experiential dimension (Epstein et al., 1996). Consequently, NFC is described as the rational, logical, and analytical cognitive style, it allows on to draw a link to the normative theory of decision-making, where the most efficient and rational decisions are aimed (see Chapter 3.1). In contrast, the experiential system, FI appears to be far from normative decision-making theories, since it depends on factors such as heuristics, emotions, and affections. NFC and FI indicated no significant correlation, showing that they are independent processing modes (Epstein et al., 1996). Studies in the context of game of chance situations confirm the difference between NFC and FI by revealing empirical evidence that a rational thinking style is connected to optimal choices and normatively *correct* solutions, whereas an experiential style is associated with a use of heuristic solutions (Epstein et al., 1996). The REI was moreover used by scholars to uncover whether the two cognitive styles correlate with other factors such as personality, psychological adjustment, relationships, gender, et cetera (Epstein et al., 1996). The findings show that, for instance, NFC is negatively correlated with racist attitudes, depression, alcohol

consumption, or stress in college life and positively connected with self-esteem, satisfaction, health, or SAT scores (Epstein et al., 1996). FI was associated with emotional expressiveness and extraversion, but also with naïve optimism and stereotypical thinking (Epstein et al., 1996; Pacini & Epstein, 1999). The extensive interest in cognitive processes and the successful use of the REI make this measurement instrument attractive for other disciplines. For instance, although the REI provides a comprehensive and valid measurement tool, a close link to the field of entrepreneurship has not yet been established. However, it is known that the entrepreneur needs to make decisions during the entrepreneurial process. Therefore, a closer look at entrepreneurship should disclose the characteristics of entrepreneurial decision-making and prevailing theories of decision-logics in order to link cognitive styles to entrepreneurial decision-making logics. This will be the main aim of the remainder of this chapter and the first study of this thesis.

3.2.4.3 Measurement Tool for Cognition Styles

Previous work in the field of cognitive psychology not only revealed theoretical approaches, but also fostered empirical work (e.g., Cacioppo & Petty, 1982; Epstein et al., 1996).

The investigation of human cognition goes back in time for at least multiple decades. Cohen (1955) not only conceptualized the so-called need for cognition for the first time but also initiated the search for an appropriate measurement tool. Certainly, the first most-recognized tool was developed by Cacioppo and Petty in 1982. In order to understand the extent to which individuals have a tendency towards a need for cognition, Cacioppo and Petty (1982) developed a comprehensive measurement scale. For quite some time, the NFC measurement scale was considered the second comprehensive and valid self-report measurement tool (next to the MBTI) in terms of thinking styles (Epstein et al., 1996). The NFC scale classifies people into two categories. In the first category, individuals with a high NFC are described as those who naturally enjoy seeking, acquiring, and carefully thinking about information to make sense of their environments and understand relationships and events. People with a high need for cognition are those who have open and exploring minds and intellectually connect the dots through effortful thinking. In the second category, individuals with low NFC were characterized as dependable on the opinion of others and the extensive use of heuristics to create order and meaning in their own world (Cacioppo et al., 1996). In general, Cacioppo and Petty (1982) defined NFC slightly differently than Cohen (1955) by describing it as a "stable personality trait that describes individuals' tendency to engage in and enjoy effortful cognitive activity" (Coelho et al., 2020, p.1871). The NFC measurement tool was empirically validated and further

developed at several points (Cacioppo & Petty, 1982; Cacioppo et al., 1983; 1984; 1996)[4]. Originally Cacioppo and Petty (1982) began with a 34-item version, which was later shortened to an 18-item version by Cacioppo and colleagues (1984). However, Epstein et al. (1996) introduced faith in intuition as the counterpart of NFC and made sure to develop an even more comprehensive measurement tool called Rational-Experiential Inventory (REI). The REI was developed in order to make the rational and experiential system measurable (Epstein et al., 1996; Pacini & Epstein, 1999). Unlike many approaches which tried to explain cognitive styles in a bipolar way, the REI used two unipolar dimensions to measure individual differences. This is rooted in the assumption that both systems operate in parallel and interact with each other (Epstein, 1991). As such, REI consists of two separate scales. One is a modified version of Cacioppo and Petty's NFC scale (1982) and contains 19 items, while the other scale, called faith in intuition, was developed due to the previous lack of measuring of the intuitive-experiential dimension, and contains twelve items (Epstein et al., 1996). The original version of the REI can be found in Table 11.

Table 11 Rational-Experiential Inventory (REI) Scale

Scale and item	
Need for cognition	**Faith in Intuition**
I would rather do something that requires little thought than something that is sure to challenge my thinking abilities. (R)	My initial impressions of people are almost always right.
I don't like to have the responsibility of handling a situation that requires a lot of thinking. (R)	I trust my initial feelings about people.
I would prefer complex to simple problems.	When it comes to trusting people, I can usually rely on my "gut feelings."
I try to anticipate and avoid situations where there is a likely chance I will have to think in depth about something. (R)	I believe in trusting my hunches.
I find little satisfaction in deliberating hard and for long hours. (R)	I can usually feel when a person is right or wrong even if l can't explain how I know. I am a very intuitive person.
Thinking is not my idea of fun. (R)	I can typically sense right away when a person is lying.
The notion of thinking abstractly is not appealing to me. (R)	I am quick to form impressions about people.
I prefer my life to be filled with puzzles that I must solve.	I believe I can judge character pretty well from a person's appearance.

[4] Cacioppo and Petty provide a comprehensive overview of studies that used the NFC scale successfully (see Cacioppo & Perry, 1996, p. 200 ff.)

Simply knowing the answer rather than understanding the reasons for the answer to a problem is fine with me. (R)	I often have clear visual images of things.
I don't reason well under pressure. (R)	I have a very good sense of rhythm.
The idea of relying on thought to make my way to the top does not appeal to me. (R)	I am good at visualizing things.
I prefer to talk about international problems rather than to gossip or talk about celebrities.	
Learning new ways to think doesn't excite me very much. (R)	
I would prefer a task that is intellectual, difficult, and important to one that is somewhat important but does not require much thought.	
I generally prefer to accept things as they are rather than to question them. (R)	
It is enough for me that something gets the job done, I don't care how or why it works. (R)	
I tend to set goals that can be accomplished only by expending considerable mental effort.	
I have difficulty thinking in new and unfamiliar situations. (R)	
I feel relief rather than satisfaction after completing a task that required a lot of mental effort. (R)	

Source: Epstein et al. (1996)

The usage of the REI in German-speaking areas called for a translation of the scale. Keller et al. (2000) presented a valid 29-item (15 NFC; 14 FI) German version of the REI. More recently, additional tools for measuring NFC and FI were developed. A 6-item version of the NFC scale was, for instance, developed by Coelho et al. (2020). Alternative ways of measuring NFC and FI were provided by Koudstaal et al. (2019), who measured the response time of a large sample of entrepreneurs (N = 1928) to strategic choices in order to distinguish between intuitive (FI) or contemplative (NFC) decision-makers.

3.2.5 Entrepreneurial Decision-Making Logics

So far, findings show that entrepreneurs are, in fact, distinct from both other entrepreneurs and non-entrepreneurs. What all entrepreneurs have in common is the fact that they are faced with numerous occasions in which decisions need to be made. Within the entrepreneurial context, not every piece of information, every market situational development, customer reaction, competitor's movement, et cetera, can be predicted. Therefore, entrepreneurs can rely on cognitive shortcuts—heuristics and biases—or they can at least try to do the exact opposite and

decide in the most thorough way possible. Scholarly interest in entrepreneurial decision-making is rising (e.g., Busenitz & Barney, 1997; Grégoire & Cherchem, 2020; Shepherd et al., 2015). In the last two decades, entrepreneurial decision-making has been separated into two distinct perspectives. The traditional perspective on entrepreneurship is oftentimes described by the term *causation,* while a rather modern view is called *effectuation* (Sarasvathy 2001; 2008). Sarasvathy (2001) provides a vivid example to distinguish effectuation and causation by describing the process of cooking dinner. A chef can choose a meal, create a list of "ingredients needed, shop for them and then actually cook the meal" (Sarasvathy, 2001, p. 245). This is a process of causation. In this example, the meal would be a given and the chef would select between different options of how to cook it most effectively. In the second case, the chef still wants to cook dinner, but chooses a different approach. The chef looks through the fridge and the kitchen in order to find potential ingredients which are then used to cook a meal. In this scenario, the ingredients are given and the chef needs to select between many possible ways to combine them for a dinner. This is a process of effectuation (Sarasvathy, 2001). Both effectuation and causation are oftentimes used to understand and explain entrepreneurs' decision-making logic. In the following chapters, both decision-making logics will be introduced.

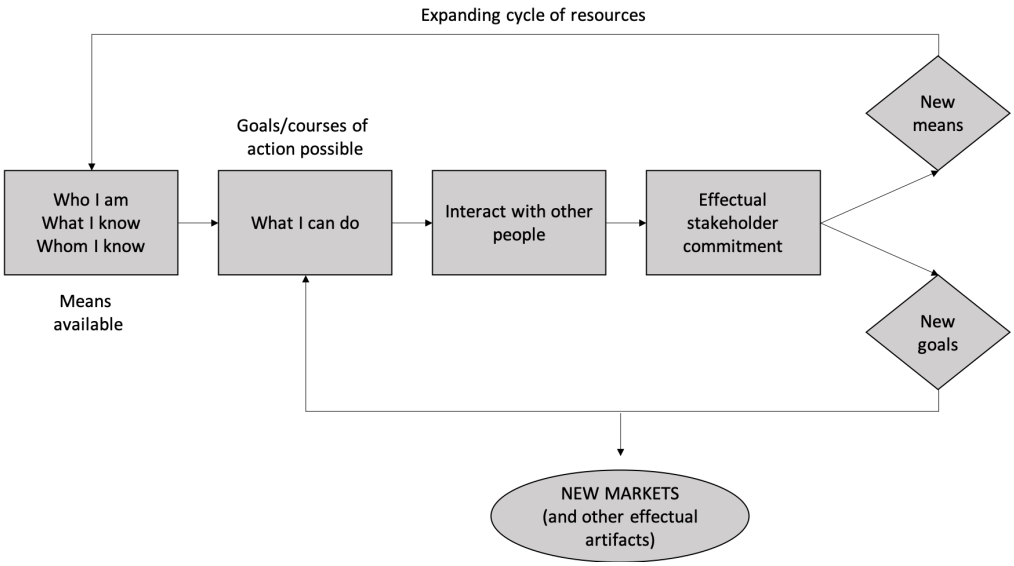
3.2.5.1 Effectuation

Since Shane and Venkataraman (2000) called entrepreneurship a promising but still largely unexplored field of research, many scholars rolled up their sleeves and began to explore a distinctive theory of entrepreneurship. In the discussion of whether entrepreneurial opportunities are discovered or created (Alvarez & Barney, 2007), a noteworthy body of literature drew on the ideas of opportunity discovery by Kirzner (1973), underlining the importance of an alertness entrepreneurs need to entail in order to find and exploit opportunities (e.g. Gaglio & Katz, 2001; McMullen & Shepherd, 2006). However, questions were raised over whether traditional models are sufficient to explain the relatively new research field of entrepreneurship. According to Liening et al. (2016), numerous traditional economic models lost their persuasiveness because of their dependence on linear conditions, which become increasingly unrealistic in a complex world. The idea that the same initial conditions will lead to the same results is especially criticized in the context of entrepreneurship, because the world in which entrepreneurs find themselves can be regarded as complex, given that "the outcome of a funding process cannot be estimated, even when the same tools and methods, which other entrepreneurs have successfully used before, are applied" (Liening et al., 2016, p.101). Within

the emerging field of entrepreneurship, scholars suggest that entrepreneurial processes are likely to involve activities that are interdependent and non-linear (McKelvey, 2004). Considering the non-predictive character of entrepreneurship in combination with complexity and uncertainty (Knight, 1921), Sarasvathy (2001) introduced effectuation as an alternative approach and theory of entrepreneurship that could be positioned at the opportunity creation-side of the discussion.

According to effectuation theory, a certain set of means is seen as given, and the entrepreneur selects between possible effects which can be created with those means (Sarasvathy, 2001). The given means are the identity of the entrepreneur (who I am), their knowledge base (what I know) and their social networks (whom I know) and serve as a starting point for an effectual approach (Sarasvathy, 2008). Depending on how the entrepreneur combines the given set of means, it might happen that either new means will emerge and once again allow a new combination of given means or new goals are derived which in turn require the adaptation of the business model. The dynamic effectual process is depicted in Figure 21.

Figure 21 Effectual Process



Source: Sarasvathy (2008)

In order to sharpen the idea of effectuation, Sarasvathy (2008, p. 15f) developed five core principles, which are listed in Table 12.

Table 12 Five Principles of Effectuation

The bird-in-hand principle	This is a principle of means-driven (as opposed to goal-driven) action. The emphasis here is on creating something new with existing means rather than discovering new ways to achieve given goals.
The affordable-loss principle	This principle prescribes committing in advance to what one is willing to lose rather than investing in calculations about expected returns to the project.
The crazy-quilt principle	This principle involves negotiating with any and all stakeholders who are willing to make actual commitments to the project without worrying about opportunity costs or carrying out elaborate competitive analyses. Furthermore, who comes on board determines the goals of the enterprise. Not vice versa.
The lemonade principle	This principle suggests acknowledging and appropriating contingency by leveraging surprises rather than trying to avoid them, overcome them, or adapt to them.
The pilot-in-the-plane principle	This principle urges relying on and working with human agency as the prime driver of opportunity rather than limiting entrepreneurial efforts to exploiting exogenous factors such as technological trajectories and socioeconomic trends.

Source: Sarasvathy (2008)

According to the bird-in-hand principle, the entrepreneur starts with a set of means, which are their identity, knowledge base, and social networks (Sarasvathy, 2008). These means can be considered as given, as the entrepreneur had them independently of their current entrepreneurial approach. The importance of prior knowledge, experience, and social networks has already been proven in entrepreneurship literature (e.g., Klotz et al., 2014; Ucbasaran et al., 2013; Shepherd, 2003; Wiklund & Shepherd, 2003). To Sarasvathy (2008), "the three categories of means are not mutually exclusive and independent" (pp. 80) and also determine the resources that the entrepreneur has. Therefore, the bird-in-hand principle constitutes the starting point for the effectual entrepreneur. The affordable-loss principle implies that the effectual entrepreneur makes their decisions based on what they are willing to lose and invests a specific amount of

resources accepting that these resources might be lost (Fisher, 2012). To calculate such an affordable loss, the entrepreneur needs to be aware of their financial situation and estimate their "commitment in terms of the worst-case scenario" (Sarasvathy, 2008, p. 81). The affordable-loss principle comes close to the minimax rule (Savage, 1951; Wald, 1949) which was introduced earlier in this chapter and constitutes a decision-logic aimed at minimizing the maximum possible loss that could result from a choice (in this case: founding a new venture). In order to reduce the high degree of uncertainty in the entrepreneurial context (Liening, 2017), the crazy-quilt principle builds on "alliances and precommitments from stakeholders" (Sarasvathy, 2008, p. 88). Similar to the bird-in-hand principle, that options that the entrepreneur *actually* has appear more valuable than which options that they *could* have. This means that the effectual entrepreneur considers every commitment a possible stakeholder wants to make and thus increases his network and decreases uncertainty rather than selecting target stakeholders that may show no commitment at all (Sarasvathy, 2008).

Another way of reducing the negative impact of uncertainty is formulated by the lemonade principle. In effectuation theory, unexpected events are embraced and turned into profitable opportunities in order to reach unanticipated goals rather than predefined ones (Fischer, 2012). The somehow overarching principle is the pilot-in-the-plane principle, which implies a non-predictive logic that is present in all other principles as well (Sarasvathy, 2008). Both causal and effectual entrepreneurs seek to control the future. However, while causal entrepreneurs predict the future to control it, effectual entrepreneurs do not try to predict what appears highly uncertain and almost unpredictable but rather strive to shape the future in order to control it (Sarasvathy, 2001; 2008).

Effectuation raised major interest in the field of entrepreneurship. A bulk of researchers have been pushing effectuation as a theory of entrepreneurship ever since (e.g., Alsos et al., 2019; Coviello & Joseph, 2012; Grégoire & Cherchem, 2020; Perry et al., 2012; Read et al., 2009; Wiltbank et al., 2006). Supporters of effectuation such as Fisher (2012) believe that effectuation is one of a few viable theories of entrepreneurship. However, like every thought, thoughts about effectuation should be reflected upon in detail. While the community of supporters for effectuation seems to grow based on the rising amount of research done in this field, some scholars critically conclude that additional research on effectuation is still needed in order to test and verify effectuation as a theory (Chiles et al., 2007; Perry et al., 2012). Generally, both streams, supporters, and detractors of effectuation agree upon the argument that "scholarly work on effectuation is as yet incomplete, inconsistent in places and probably far from obvious in application" (Read et al., 2016, p. 5). Probably the most heated debate about effectuation was

ignited by Arend et al. in 2015. While acknowledging the strengths of effectuation, the weaknesses, such as insufficient testing and incomplete argumentations were pointed out by the authors (Arend et al., 2015). Reactions to this criticism were in turn provided by Read et al. (2016), Reuber et al. (2016), Gupta et al. (2016) and also a deepened criticism by Arend et al. (2016). This discussion revealed that effectuation is a highly interesting area of entrepreneurship that is worth researching. Conclusions within the academic literature suggested that effectuation theory "represents a pattern of reasoning that focuses on the future and grounds sense making in the recognition of available means and conceptualizations of some future state created from those means" (McKelvie et al., 2011, p. 286).

Although effectuation might not necessarily be a fully developed and proven theory, some researchers suggest that effectuation represents the dominant pattern of reasoning employed by entrepreneurs (Sarasvathy et al., 2003), thus, it remains essential to shed light on the question of how (effectual) entrepreneurs make decisions. The link between entrepreneurial uncertainty and effectuation becomes obvious when considering the central axiom of effectuation theory, which states that entrepreneurs do not focus on a prediction of an uncertain future but rather on controllable aspects of an unpredictable future (Sarasvathy, 2001).

Although critics acknowledge that effectuation provides valuable insights, there is still further research necessary to fully appreciate effectuation as a consistent theory of entrepreneurship.

Aside from critical thoughts on effectuation, a major amount of work has already been done and, for instance, allows the consideration of effectuation as a theoretical approach to explain success in new product development (Coviello & Joseph, 2012) or corporate R&D projects (Brettel, et al., 2012). Other scholars imply that effectuation is a transformative approach to strategic decision-making under uncertainty for both new ventures and established firms (Wiltbank et al., 2006). Additional findings show that entrepreneurs who chose an effectual decision-making logic have a high proclivity to form networks (Perry et al., 2012) which, in turn, can serve as accelerators for business success.

Effectuation is in fact a decision logic, which plausibly explains a way of making decisions in (and out of) the entrepreneurial context. Similar to the discussion on cognition styles, the theory of effectuation has a bipolar character. Therefore, the counterpart of effectuation will be described in the next chapter.

3.2.5.2 Causation

While introducing effectuation as a theory of entrepreneurship, Sarasvathy also established the term *causation* in order to explain the traditional view of entrepreneurial action that has

prevailed until then (Sarasvathy, 2001). The core principle of causation is that the future is predictive (Sarasvathy, 2008). According to causal logic, the future is a continuation of the past, and therefore, gathering information and strategic planning are necessary and useful for reaching defined goals (Dew et al., 2009). The causal logic furthermore constitutes a goal orientation, which means that goals determine actions and that expected return is the motivation to counter risk (Dew et al., 2009). Just like the chef in the example from the previous chapter, the causal entrepreneur is goal-oriented in the way that he sets that goals that determine his actions. Entrepreneurs that act according to the causal decision-logic seek competitive analyses. They have a competitive attitude towards outsiders and desire to limit the disclosure of business processes and details to others (Sarasvathy, 2008). Thus, the causal decision-logic implies that entrepreneurs do not particularly strive for a large number of partnerships but rather stick to a predefined plan. However, predefined strategies and plans might reach their limits in the highly uncertain entrepreneurial context. Causal entrepreneurs prefer to avoid situations of uncertainty. Each situation that was not foreseen appears as an obstacle (Dew et al., 2009). Applying a causal decision-logic, entrepreneurs will define a goal, look for a market, and discover an entrepreneurial opportunity. In comparison to the effectual entrepreneur, the causal entrepreneur puts considerably more time into gathering information concerning the market, competitors, and setting goals (Sarasvathy, 2001; 2008). The differences between causal and effectual logic can be found in Table 13.

Table 13 Differences between Effectual and Causal Logics

Issue	Causal approach	Effectual approach
View of the future	The future is seen as a continuation of the past and hence, accurate predictions are possible and useful.	The future can be shaped by eager individuals. Therefore, a prediction of the future is nearly impossible and not considered useful.
Basis for taking action	Goals are determined upfront and actions are derived from these goals.	Goals emerge by imagining possible actions with a given set of means.
View of risk and resources	Opportunities are pursued on the basis of the expected return.	Opportunities are pursued on the basis of the loss the individual could afford to lose.
Attitude towards outsiders	Competitive analyses protect the individual from outsiders. The	Entering into partnerships offers the opportunity to create new

	competitive attitude maximizes one's own share of the opportunity.	markets and shape the trajectory of the opportunity with committed partners.
Attitude towards unexpected events	Accurate predictions minimize the risk of unexpected events that generally should be avoided.	Unexpected events are seen as chances to rethink possibilities and leverage new opportunities.

Source: Dew et al. (2009)

In sum, effectuation and causation can be regarded as opposite decision-logics. However, although oftentimes presented in contrast, both logics are not in competition with each other. Entrepreneurs conducting an effectual approach are not necessarily more effective than those applying a causal approach. Both decision-making logics can appear alternately or even simultaneously (Sarasvathy, 2001). Reymen et al. (2015) provide empirical evidence that both effectual and causal decision-making appears in new ventures over time. In that frame, effectual decision-making is conducted in the early phases of the new venture process, while causal decision-making is conducted in later stages. Causation, which builds on processes of planning and analyzing, appears possible whenever enough valid data can be collected in order to minimize risk and uncertainty. Reymen et al. (2015) furthermore add that decision-making logics are so intertwined that an effectual approach might shift to a causal one and back to an effectual logic again. These findings are in line with the work of several effectuation researchers (Dew et al., 2009; Read et al., 2009) who find that it is not only the aspect of time which influences the decision-making logic, but also the aspect of experience.

Experienced entrepreneurs tend to tackle uncertainty by the use of an effectual or nonpredictive logic and the use of heuristics, while non-experienced entrepreneurs rely on predictive techniques (Dew et al., 2009; Read et al., 2009). Although one might imply that entrepreneurial experience grows over time, the findings by Reymen et al. (2015) do not necessarily contradict the findings by Dew et al. (2009) or Read et al. (2009). In the highly uncertain context of entrepreneurship, the entrepreneur might be forced to use an effectual approach to cope with the uncertain environment because resources and time are scarce in the beginning, whereas after a while, reliable data concerning the market or customers is available and in need for use. At this point, the entrepreneur opens the door for causal reasoning. While entrepreneurs collect experience, their decision-making logic might once again shift to an effectual approach (Dew et al., 2009).

The entrepreneurial decision-making context, however, is characterized by unpredictability, uncertainty, and even complexity. Therefore, effectuation and causation are dynamically used by entrepreneurs (Reymen et al., 2015). Both appear in reality and form two major pillars of entrepreneurial decision-making, which earn considerable attention in research.

3.2.5.3 Measurement Tools for Decision-Making Logics

Analogous to the empirical work in the area of cognitive psychology, the search for measurement tools also became a central aspect in the frame of effectuation theory. Researchers aimed to strengthen the overall assumption of two distinctive decision-logics in entrepreneurship. McKelvie and colleagues (2020a) identified 77 empirical studies on the measurement between effectuation and causation, revealing the major research interest in this area. Probably the most widely used tools are the ones developed by Brettel et al. (2012) and Chandler et al. (2011). The former developed a "multi-factor measurement model of effectuation and causation" (p. 167) on the basis of 123 expert interviews which they validated with a second study containing a sample of 400 interviews. The focus was laid on entrepreneurial behavior and the impact on R&D project performance by letting respondents indicate a preference for effectuation and causation as polar opposites. Chandler et al. (2011) chose to develop a solely quantitative measurement tool. Their pilot study consisted of 35 semi-structured interviews with entrepreneurs from which a measurement scale was derived. This scale was tested and then reshaped after using it in a sample of 111 entrepreneurs. Then, the final version of the measurement scale was used with 196 entrepreneurs, leaving a valid effectuation scale with 20 items from which 13 consider effectuation and seven consider causation on a five-point Likert scale (Chandler et al., 2011).

Table 14 Measurement Tool for Effectuation & Causation

Scale and item

Causation	Effectuation
We analyzed long run opportunities and selected what we thought would provide the best returns	We experimented with different products and/or business models.
We developed a strategy to best take advantage of resources and capabilities	The product/service that we now provide is essentially the same as originally conceptualized.
We designed and planned business strategies	The product/service that we now provide is substantially different than we first imagined.
We organized and implemented control processes to make sure we met objectives	We tried a number of different approaches until we found a business model that worked.
We researched and selected target markets and did meaningful competitive analysis	We were careful not to commit more resources than we could afford to lose.

We had a clear and consistent vision for where we wanted to end up	We were careful not to risk more money than we were willing to lose with our initial idea.
We designed and planned production and marketing efforts	We were careful not to risk so much money that the company would be in real trouble financially if things didn't work out.
	We allowed the business to evolve as opportunities emerged.
	We adapted what we were doing to the resources we had.
	We were flexible and took advantage of opportunities as they arose.
	We avoided courses of action that restricted our flexibility and adaptability.
	We used a substantial number of agreements with customers, suppliers and other organizations and people to reduce the amount of uncertainty.
	We used pre-commitments from customers and suppliers as often as possible.

Source: Chandler et al. (2011)

In both cases, the distinction between causation and effectuation as well as the distinction between NFC and FI, existing self-reporting scales were already developed and validated by previous researchers.

3.2.6 The Construct Problem-Solving

Way back in 1969, Peter Drucker reinterpreted the hitherto prevailing role of managers. In a changing world, accelerated by technological progress, Drucker called for a number of obsolete assumptions which needed to be reconsidered. Amongst others, one central assumption of Drucker was that "entrepreneurial innovation will become the very heart and core of management" (p. 52). Managers confronted by problems, have had "the ability to do better rather than the courage to do differently" (Drucker, p. 50). So, Drucker called for a new view on management and entrepreneurial tasks more than 50 years ago and many of his assumptions became reality in the course of time. Not only did entrepreneurial innovation become a major function in business and management (e.g., Covin & Miles, 1999), moreover, knowledge, and information were being used in the most productive manner in order to solve economic problems and result in economic and social development (e.g., McKelvie & Wiklund, 2004; Schwab, 2019), which goes in line with Drucker's point of view. Drucker's new view on

management with an emphasis on entrepreneurial problem-solving led others to further develop these thoughts. Kirton (1976) followed the observation that people produce varying solutions to seemingly similar problems and divided people into *adaptors* and *innovators*. In the context of a problem to be solved, adaptors aim to "do things better" while innovators try to "do things differently" (Kirton, p. 622). Adaptors are concerned with resolving problems with tried and understood solutions, while innovators discover both, problems and new solutions to them. While the former is said to be characterized by conformity and precision in given structures, the latter tends to approach tasks in unusual ways and takes control in unstructured situations (Kirton, 1976). While the problem-solving style thus determines innovative behavior, it appears reasonable that problem-solving is considered a major entrepreneurial skill (Stevenson & Jarillo, 1990). Whichever mode to cope with problems is chosen effects not only the level of innovativeness, but also the quality of the final performance. Hoy and Hellriegel (1982) argued that it is "one of the basic tasks of managing an organization includes the identification, analysis, and solution of problems" (p. 308). Regardless of whether a startup or a large organization is managed, the own problem-solving ability is crucial for the organization's success (Hoy & Hellriegel, 1982). Literature suggests that managers possess a relatively stable cognitive process in terms of gathering and processing information which in turn is defined as their problem-solving style (Kilmann & Herden, 1976). In Chapter 1, different risks of entrepreneurship have been identified. Whether social, personal or economic risk, the entrepreneur needs to adapt his way to approach occurring problems. In that frame, findings do not unanimously support a higher risk-taking propensity for entrepreneurs (Brockhaus, 1980), but suggest that entrepreneurs tackle problems in a more flexible way while managers chose more rational and logical approaches (Hoy & Carland, 1983; Smith et al., 1988). Findings by Buttner and Gryskiewicz (1993) support this view by showing that entrepreneurs tend to have a more innovative problem-solving style than their managerial counterparts in larger organizations. Kirzner's (1979) discovery theory underlines the importance in actively seeking for entrepreneurial opportunities, identifying problems and solving them in an innovative manner. Still, more recent concepts such as effectuation theory (Sarasvathy, 2001) claim that entrepreneurs have to find and solve a number of problems with innovative approaches. Therefore, the ability and style of problem-solving is considered a major factor in entrepreneurial behavior and success. There are still question marks in the academic literature, which factors influence or even determine the problem-solving style. In terms of gender and age, Buttner and Gryskiewicz (1993) did not find significant differences amongst entrepreneurs. This supports the assumption by Kirton (1987), that the problem-solving style is relatively

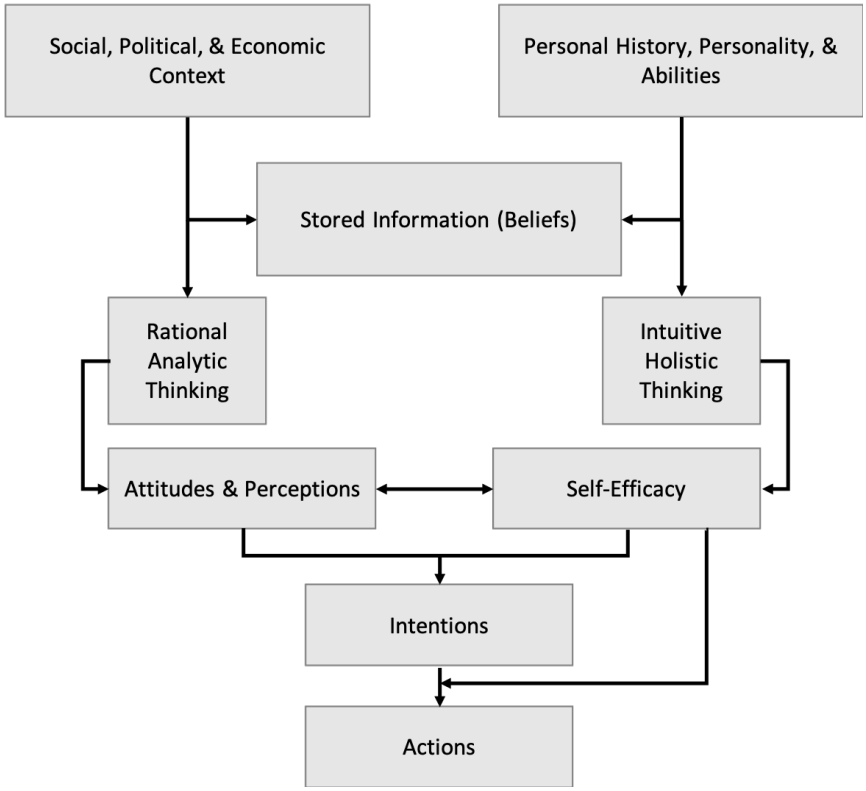
stable and roots in early childhood. As problem-solving was considered to be a part of the entrepreneurial cognition function, the classification by Kirton was specified by Jabri (1991), with the introduction of a logical and intuitive problem-solving mode. While the logical approach goes in line with the adaptor and can be considered as a rational problem-solver, the intuitive mode can be connected to the innovator. While the ability to solve problems differ, the relevance for entrepreneurship becomes clear. Some researchers applied this topic already to entrepreneurship and set a cornerstone for further investigation (e.g., Dinh et al., 2021). The mode of opportunity recognition (Kirzner, 1979), innovativeness (Kirton, 1976), company performance (Hoy & Hellriegel, 1982) or creativity (Dane et al., 2011) are connected to the problem-solving style. Therefore, an investigation of entrepreneurs problem-solving style potentially opens ways of predicting future outcomes within the entrepreneurial process.

3.2.7 The Construct Self-Efficacy

Whether in the entrepreneurial context or any other scenario of daily life, many factors influence the possibility to achieve desired goals. For instance, prior experiences, knowledge, and competencies influence human action (Beierlein et al., 2012). Bandura (1977) introduced the concept of self-efficacy and set a cornerstone for a psychologically-centered explanation of human action. Self-efficacy refers to the assessment of the own abilities and competencies to plan and execute actions successfully in order to achieve set goals (Bandura, 1977). It "concerns people's beliefs in their capabilities to mobilize the motivation, cognitive resources, and courses of action needed to exercise control over events in their lives" (Wood & Bandura, 1989, p. 364). Consequently, self-efficacy refers to the level of believe to control certain aspects of the environment and the outcome of certain decisions. According to Bandura (1986), self-efficacy or self-referent thinking, mediates between knowledge and action. Individuals with a high level of self-efficacy thus show a higher probability of taking action. Findings show that people with a higher level of self-efficacy tend to set more challenging goals, show higher endurance and more efficient problem-solving strategies (Bandura, 1997; Pajares, 1996). People with a high self-efficacy furthermore cope better with difficult career-related tasks (Stumpf et al., 1987), adapt better to new technology (Hill et al., 1987) and generally have a more intrinsic interest in tasks, spend more effort and are more resistant to obstacles and setbacks (e.g., Bandura, 1977; 1982; 1986; Wood & Bandura, 1989). Although self-efficacy can be related to various aspects of everyday life, it is not a static construct, but experiences and learnings can alter the level of self-efficacy over time (Bandura, 1997). Moreover, self-efficacy is domain specific which means that individuals can have a high self-efficacy in one area, while having low self-efficacy

in another area (Bandura, 1989; 1997). Scholars argue that every individual possesses a general self-efficacy, which influences all other areas to a certain degree as well (Beierlein et al., 2012). While, for instance, a general self-efficacy correlates positively with optimism or satisfaction at work, it negatively correlates with depression, stress, and fear (Luszczynska et al., 2005).
Next to an application of the concept of self-efficacy to various different domains (for an overview see Beierlein et al., 2012), the concept was also specifically applied to entrepreneurship. Boyd and Vozikis (1994) implemented entrepreneurial self-efficacy in Bird's (1988) model of entrepreneurial intentionality and connected ESE to rational and intuitive types of entrepreneurs (see Figure 22).

Figure 22 Revised Model of Bird's (1988) Contexts of Entrepreneurial Intentionality



Source: Boyd & Vozikis (1994)

According to Boyd and Vozikis (1994), new ventures develop through the *intention* to establish a new venture, which draws similarities to the TPB (Ajzen, 1985). Intentions are formed by attitudes and perceptions, as well as self-efficacy, whereas the former is developed through rational analytic thinking and the latter through intuitive holistic thinking (Boyd & Vozikis, 1994). These findings were deepened for instance by Chen et al. (1998), confirming the model and indicating that self-efficacy is positively related to the likelihood of being an entrepreneur.

4 Study 1: The Interplay Between Different Individual Factors

In his introduction to the TPB, Ajzen (1991) summed up that the theory "is, in principle, open to the inclusion of additional predictors" (p. 199). Although previous research in entrepreneurship revealed an appreciable number of predictors, the underlying work already revealed, to a certain extent, that the TPB (Ajzen, 1991) might be missing one essential aspect when adapted to entrepreneurial decision-making, namely, cognition. In order to explain the adaptation of the TPB to entrepreneurial decision-making, two crucial aspects of decision-making, namely, cognition styles and entrepreneurial decision logics, were introduced. To the author's best knowledge, the interplay between both has not yet been of major interest in entrepreneurship research and therefore constitutes the core of the first empirical investigation of the underlying work.

The entrepreneurial context is surrounded by uncertainty. Even if entrepreneurs apply exactly the same methods that other successful entrepreneurs applied before, there is no guarantee for success (Liening et al., 2016). The parameters in the entrepreneurial environment are hardly predictable, but still every erroneous decision can harm the venturing process. No matter if it is the strategic decision to design a business model or the pressing need for a decision in the face of unexpected events or crises, the challenge is that entrepreneurs face numerous occasions in which they need to select between different options for action.

How such decisions are finally made is the major objective of decision theory. Decision theory shows that the recommendation of what people *should do* (normative theories) is in fact oftentimes different from what people *actually do* (descriptive theories). The investigation of descriptive decision theory revealed the use of cognitive shortcuts such as heuristics (e.g., Tversky & Kahneman, 1974; 1983). Scholars found that there is a bipolar function in cognitive processing: individuals either entail the motivation to actively search for information and enjoy thoughtful and effortful problem solving or they rely on their intuition and make so-called heartfelt decisions (Cacioppo et al., 1996; Epstein, 1994; Pacini & Epstein, 1999). While managerial and organizational research recognizes the difference between *need for cognition* or *faith in intuition*, in the context of entrepreneurship, two different decision logics have emerged: *effectuation* and *causation*. With the introduction of effectuation and causation, Sarasvathy (2001) changed the understanding of entrepreneurial decision-making. Entrepreneurs either decide in a means-oriented manner (effectuation) or in a goal-oriented manner (causation). Whether individuals have a *need for cognition* or *faith in intuition,* or apply

effectual or *causation*-oriented approaches, these decision logics and cognition styles change the way in which decisions are made.

Based on these insights, the question emerges of whether an individual's cognitive style is an indicator for how this person would behave in entrepreneurial situations.

Consequently, the following research questions arise:

- Is there an interplay between the constructs of perceived behavioral control?
- What is the relationship between cognition styles (need for cognition/faith in intuition) and decision logics (effectuation/causation) of potential entrepreneurs?
- How do problem-solving ability and entrepreneurial self-efficacy relate to the cognition styles and decision logics of potential entrepreneurs?

4.1 Research Questions, and Hypotheses Development

As discussed before, the exploitation of an entrepreneurial opportunity can be interpreted as entrepreneurial behavior that stems from recognizing this opportunity beforehand. Therefore, what Ajzen (1991) calls *intention* and *behavior,* is here translated into the interplay between opportunity recognition and opportunity exploitation. Still, intention-building relies on attitudes, social norms, and PBC which, in turn, have their own determinants, which interplay with each other as well. In the first study, this relationship will be investigated before the second study offers insights into opportunity identification and exploitation.

Within the frame of a two-stage empirical study, the research questions will be investigated on the basis of the conceptual model in order to test the hypotheses that are derived in the following subchapters.

4.1.1 Interplay between Effectuation, Causation, Faith in Intuition and Need for Cognition as Constructs of Perceived Behavioral Control

The investigation of cognition styles and entrepreneurial decision-making logics suggests similarities indicating a certain relationship. The NFC postulates that people not only engage in thinking but even enjoy the active search for information in order to understand the decision-making context. Individuals with a high level of NFC do not rely on heuristics, but intellectually connect the dots to make reasonable and sophisticated decisions (Cacioppo et al., 1996). Regarding the causal entrepreneur, similarities become visible. Drawing back to the analogy of the chef who wants to prepare a meal, the causal entrepreneur seems to have much in common

with the characteristics of a high level of NFC. The causal chef has a given goal and collects all information possible in order to make a well-designed plan to prepare the meal. Heuristics do not play a crucial role in this process, as the causal chef clearly prefers head decisions over heart decisions. The chef would not intuitively invent a meal with given means or regards to their own skills, but rather consider planning how to gather all the ingredients needed. Thus, this work assumes that individuals with a high tendency towards NFC also have a preference for causation-based approaches (H1a).

Concerning the effectual chef, it is exactly the other way around. The effectual chef does not necessarily use his head less, but uses it simply in another way. By acting in a means-oriented manner, the effectual chef looks for ingredients already present and intuitively creates possible options of meals in their mind. The final preparation of the meal requires cognitive action as well, however, in effectuation, intuition seems to play a much larger role than in causation. Although effectuation is presumably connected to intuition more than cognition, it does not mean that effectual entrepreneurs think less than causal entrepreneurs. Both decision logics are regarded as suitable depending on the situation (Fisher, 2012; Sarasvathy, 2008). Therefore, this study presumes that individuals with a strong tendency for faith in intuition show a high correlation for effectual approaches (H1b).

Although both cognition styles operate independently, it is furthermore hypothesized that a high level of FI means lower scores of NFC due to the unipolar character of these cognition styles. The hypothesis is, therefore, that FI negatively correlates with NFC (H2a).

Reality in entrepreneurship shows that entrepreneurs switch between causal and effectual decision-making (Reymen et al., 2015), leading to the hypothesis that there is no negative correlation between effectuation and causation (H2b). However, similarities between the NFC and causal decision-making as well as FI and effectual decision-making lead to the conjecture that there is a correlation between cognition styles and entrepreneurial decision logics. The main body of literature on effectuation investigated decision-logics in start-ups (e.g., Chandler et al., 2011; Fisher, 2012) or even established companies (e.g., Brettel et al., 2012; Dew et al., 2009). Little is known about the individual before deciding to take a walk down the entrepreneurial road. The question arises of whether previous cognitive settings predict the future behavior of entrepreneurs in situations where decisions need to be made.

The overall hypotheses are therefore:

H1a: NFC positively correlates with causation.

H1b: FI positively correlates with effectuation.

H2a: NFC negatively correlates with FI.

H2b: Causation does not negatively correlate with effectuation.

4.1.2 Interplay between Problem-Solving and Faith-In-Intuition

Two modes of problem-solving were introduced by Koestler in 1964: associative thinking and bisociative thinking. While associative thinking is based on habit or set routines, which could easily be expressed in words or symbols, bisociative thinking occurs when two different strings of thoughts are combined and create a "nonhabitual thought which is only made known by judgment, decision, or action" (Jabri, 1991, p. 976). Entrepreneurship is particularly connected to the novel combination of ideas and thoughts in order to create or discover and then seize business opportunities. Bisociative thinking enables people, especially entrepreneurs, to deal with the chaos and uncertainty of an oftentimes contradicting entrepreneurial environment (Liening, 2016) by offering the opportunity to produce more innovative and original business ideas (Ko, 2004). Findings show that bisociative thinking has a positive influence on opportunity identification (Ko & Butler, 2006), justifying the assumption that bisociative thinking might benefit the entrepreneurial journey. A person with a high level of bisociative thinking is a person with a high problem-solving ability (Jabri, 1991) and consequently entrepreneurial potential. Combining several so-called "matrices of thought" (Jabri, 1991, p. 976) allows entrepreneurs to bring creative structure into the uncertain environment of a founder. What Kirton (1976) called adaptors and innovators was translated by Jabri (1991) into associative and bisociative thinkers. While both can be solid problem-solvers, the bisociative thinker (or innovator) appears to be the more suitable problem-solver when it comes to entrepreneurial challenges because of his ability to take risks and search for new means of opportunity exploitation. Ko and Butler (2006) state that, for instance, prior knowledge and experience can be helpful for the identification of opportunities, but bisociative thinkers are more likely to successfully exploit these opportunities. In conclusion, while bisociative thinking is connected to innovation (Kirton, 1976), problem-solving (Jabri, 1991) and opportunity identification (Ko & Butler, 2006), parallels can also be drawn to cognition styles. As was already argued in earlier parts of the underlying work, the cognition style of an individual potentially predicts their decision-making logic as an entrepreneur. However, bisociative thinking also seems to be related to FI cognition style. The theoretical parallels appear undeniable. As mentioned earlier, the bisociative thinker combines information and thoughts in a novel way in order to innovatively solve problems. A person high in FI tries not to look for logical and rational connections but rather mediates vibes from past events and experientially

finds solutions (Norris & Epstein, 2011). Rather than analyzing every minute detail of a problem, people with a high level of FI face challenges using a more holistic approach, considering the contextual setting and building the next steps on experience, perceptions, and all other pieces of data that are available for rapid decision-making (Epstein, 1991).
Consequently, this leads to the assumption that there is a relationship between FI and bisociative thinking, which in turn can be expressed as a form of problem-solving. Therefore, the resulting hypothesis is:
H3a: Problem-solving ability positively correlates with FI.

4.1.3 Interplay between Problem-Solving and Effectuation

Entrepreneurship is about novelty. It entails moving into new markets, seizing new customers, introducing new resources, and/or the new combination of markets, customers, and resources (Smith & Di Gregorio, 2017). However, thinking of something new does not equally mean thinking of something in an entrepreneurial way. Koestler's (1976) definition of *bisociative* thinking relies on a strict delineation from the term *associative* thinking. Projecting these thoughts onto entrepreneurship opens a viewpoint on the emergence of entrepreneurial action. Starting with Koestler's (1976) thoughts, bisociative thinking refers to a "creative association of concepts, ideas, or objects from two or more contexts (or categories) that are usually considered completely unrelated" (Wood et al., 2012), which is distinct from conventional or even trivial associations that are made otherwise (Koestler, 1976). In the past two decades, a solid amount of entrepreneurship research has similarly argued that simply having a new idea is by far not enough to initiate entrepreneurial action (e.g., Dimov, 2011; McMullen & Shepherd, 2006; Sarasvathy, 2001; 2008). Sarasvathy's (2001) effectuation theory builds on the core idea that the future is unpredictable but is certainly something that can be influenced if sets of means are combined efficiently and opportunities are created and exploited. Sarasvathy (2001) underlines that the notion of uncertainty in entrepreneurship is central. Therefore, causal approaches, which heavily rely on goal-orientation, become less viable (Sarasvathy, 2001). Because of this uncertainty, previous market trends or forecasts become less reliable in the entrepreneurial context. Copying the strategies of a successful other entrepreneur does not go in line with having similar success (Liening, 2016). In that frame, researchers have combined effectuation and innovation (e.g., Brettel et al., 2012; Roach et al., 2016). It is important to note that a causal approach does not mean the absence of innovation. Oftentimes, many different factors influence whether an entrepreneur is able to choose between effectual and causal approaches. Internal, but also external factors such as firm size, age,

governmental regulations, location, networks, partnerships or type of innovation do not even allow one to choose between effectual or causal approaches (Roach et al., 2016). However, research has shown that creative action produces innovation typically not by pre-existing goals, but rather with a focus on what the individual actor can actually control (Barnes, 1991). This goes in hand-in-hand with the effectual approach towards entrepreneurship, where means from potentially different contexts might be combined or reshaped in order to initiate the creative entrepreneurial process. While effectuation can be seen as a design process (Sarasvathy, 2003), it becomes especially applicable in a "context of competitive environmental pressures, where the uncertainties and complexities of global competition and technological disruption easily overwhelm" (Roach et al., 2016, p. 218) predictive strategies.

Following the logic of thought that bisociative thinking is connected to *innovator*-type individuals, it is possible to conclude that effectual decision-makers relate to that type of thinking as well. Therefore, it is assumed that individuals who tend to identify as bisociative thinkers contain an effectual mindset rather than a causal one.

H3b: Problem-solving ability positively correlates with effectuation.

4.1.4 The Interplay between Self-Efficacy and Cognition Styles

The relationship between intuitive or rational thinking and ESE has gained interest in the academic literature. For instance, Kickul et al. (2009) found that intuitive decision-making is especially useful for entrepreneurs in the opportunity identification stage of the new venture creation process, while cognitive decision-making gains in importance when it comes to the planning and marshalling of resources in the implementation stages of the new venture process. By presenting these findings, Kickul et al. (2009) underline that "while analytic and intuitive individuals may present similar levels of entrepreneurial intentionality, they may arrive there by different cognitive paths" (p. 450). So, while both cognition styles might lead to the same level of entrepreneurial self-efficacy, the question remains of whether individuals with one cognition style are more prone to developing self-efficacy than others. As the literature suggests, there might be a stronger relationship between intuitive cognition styles and self-efficacy (Boyd & Vozikis, 1994), as self-efficacy relies on implicit factors such as beliefs and motivation, which correspond with intuitive thinking. On the other hand, the literature suggests that rational or analytical thinking results in a more explicit form of analyzing probabilities and chances in order to form perceptions and attitudes towards reaching set goals. Consequently, it is hypothesized that an intuitive cognition style positively influences self-efficacy while an

analytic cognition style negatively correlates with self-efficacy. These assumptions result in the following hypothesis:

H4a: FI positively correlates with self-efficacy.
H4b: NFC negatively correlates with self-efficacy.

4.1.5 Interplay between Self-Efficacy and Effectuation/Causation

Especially in the context of entrepreneurship, self-efficacy gained in interest (e.g., Baum & Locke, 2004; Boyd & Vozikis, 2004: Chen et al., 1998). It is widely proposed that ESE is a crucial entrepreneurial attribute that helps entrepreneurs to extract business opportunities from highly uncertain and barely predictable environments. As already presented in the introduction chapter of the underlying work, many factors influence the question of whether a new venture opportunity is exploited or not. Personal factors such as experience, personality, or abilities play a central role. Social, political, and economic variables such as market trends or displacement also influence the formation of entrepreneurial intentionality (Bird, 1988). While personal factors can be identified relatively clearly, the external environment in particular is characterized by an extreme uncertainty (Alvarez & Barney, 2007; Ries, 2011). This uncertainty is encountered by entrepreneurs with the aim of controlling as many factors as possible (Sarasvathy, 2008). According to effectuation theory, this approach fosters the shaping of the future rather than the prediction of it (Dew et al., 2009; Sarasvathy, 2001). Due to the high level of uncertainty, a prediction of social, political, or economic trends appears impractical in the entrepreneurial context. According to Sarasvathy (2001), causal entrepreneurs do rely on a predictive and goal-oriented strategy, while effectual entrepreneurs act in a means-oriented way. Both approaches might lead to success, but work differently. For instance, the causal entrepreneur relies on explicit data such as competitive analyses, accurate predictions of future events to minimize unexpected events, and clearly defined goals (Dew et al., 2009; Read et al., 2009). The feedback on whether the entrepreneur entails the ability to conduct the new venture process appears clear and measurable. In contrast, the effectual entrepreneur might try lots of different ideas, depending on their affordable loss, take unexpected events as chances to leverage new opportunities, and attack the future in a nonpredictive way (Sarasvathy, 2001; 2008). The cognitive evaluation of one's personal performance seems more complex for effectual entrepreneurs, as their flexible approach permits averting negative events and demanding the perseverance of the entrepreneur. It is assumed that effective acting and decision-making fosters the creation of a strong ESE. The

effectual entrepreneur tries different approaches and alters ideas and sets of means. Therefore, it appears inevitable that effectual entrepreneurs create a high level of ESE. In turn, causal entrepreneurs rely on more explicit data and feedback; therefore, it is assumed that the relation to ESE is not strong.

H5a: ESE positively correlates with effectuation.
H5b: ESE negatively correlates with causation.

Finally, Table 15 provides an overview of the hypotheses that will be investigated in the following studies.

Table 15 Overview of Hypotheses

H1a: NFC positively correlates with causation.
H1b: FI positively correlates with effectuation.
H2a: NFC negatively correlates with FI.
H2b: Causation does not negatively correlate with effectuation.
H3a: Problem-solving ability positively correlates with FI.
H3b: Problem-solving ability positively correlates with effectuation.
H4a: FI positively correlates with self-efficacy.
H4b: NFC negatively correlates with self-efficacy.
H5a: ESE positively correlates with effectuation.
H5b: ESE negatively correlates with causation.

4.2 Study Design

4.2.1 Measurement Tools

In this section, the measurement tools that were chosen, adapted, and applied in the frame of the underlying study are discussed. For reasons of comparison, a 7-point Likert-type scale was used for all of the following measurement tools. The participants of the study rated their level of agreement on a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree). All scales were pretested with a small group of students before implementation.

Need for cognition. This construct was measured using the instrument developed by Epstein et al. (1996), which consists of 19 items. Keller et al. (2000) translated 14 items into German. The remaining five items (e.g., “I would prefer complex to simple problems”) were translated (e.g., “Komplexe Probleme ziehe ich simplen Problemen vor”).

Faith in intuition. For measuring faith in intuition among the participants, a combination of Epstein et al. (1996) and Keller et al. (2000) was used again. Keller et al. (2000) provide nine translations for the original twelve-item scale by Epstein et al. (1996). The remaining three items were translated (e.g., "Ich glaube, ich kann meinen Gefühlen vertrauen").

Effectuation. To measure the level of effectual decision-making, the scale developed by Chandler et al. (2011) was applied. The scale is divided into the following constructs: *experimentation*, *affordable loss*, *flexibility* and *pre-commitments*. All 13 items were translated into German (e.g., "Bei der Gründung eines Unternehmens würde ich darauf achtgeben, nicht mehr Ressourcen einzusetzen, als ich bereit bin zu verlieren" or "Bei der Gründung eines Unternehmens würde ich Handlungsabläufe vermeiden, die meine Flexibilität und Anpassungsfähigkeit einschränken").

Causation. In order to measure causation, the measurement tool by Chandler et al. (2011) was utilized. This scale forms the complementary part of the effectuation scale and contains seven items that were translated into German (e.g., "Bei der Gründung eines Unternehmens würde ich Kontrollprozesse einführen und sicherstellen, dass Meilensteine erreicht werden").

Problem-Solving. Jabri's (1991) scale was applied to measure problem-solving abilities. The scale consists of two subscales which measure associative thinking and bisociative thinking. The nine items of the bisociative thinking scale were applied to measure problem-solving abilities. This scale was translated into German (e.g., "Ich habe Gefallen daran, nach neuartigen Ansätzen zu suchen, die zu dem Zeitpunkt eigentlich nicht erforderlich waren").

Self-efficacy. For general self-efficacy, the short scale developed by Beierlein et al. (2012) was utilized. This scale consists of three items and exists in both English and German versions. The German version includes items such as "Die meisten Probleme kann ich aus eigener Kraft gut meistern" and was applied in the underlying study.

4.2.2 Procedure

The study was conducted in two phases. In the first phase, four scales (effectuation, causation, FI, NFC) were used on a smaller sample (N = 279), while in the second phase, the study was complemented by two further scales (ESE, PSA) and tested on a larger sample (N = 412). In order to use the existing scales described in the *Measurement Tools* chapter, several adaptations were necessary in the frame of translation. The initial items and translations can be found in Appendix A, and the additions can be found in Appendix C. Cross-cultural research and especially the translation of scales comes along with issues that need to be addressed (Dörnyei & Taguchi, 2010). The simple literal translation of items does not consider the culturally

relevant adaptation in terms of providing a comprehensible translation that still maintains the meaning of the original item. Hence, the validity of a translated scale is not provided per se, which is why the use of existing and valid translations appears reasonable. Keller et al. (2000) translated the NFC/FI scale into German. However, some adaptations were made by the authors. Concerning NFC, the authors translated 14 of 19 items, while in terms of FI they translated nine out of twelve items and added six new items, resulting in a 15-item FI scale. In the frame of the underlying study, the original work by Epstein et al. (1996) was chosen as a basis. Where possible, the translations of Keller et al. (2000) were used. However, concerning the NFC items, five translations had to be done manually, while the rest was adopted. For the FI items, all twelve original items by Epstein et al. (1996) were used by adopting Keller et al.'s (2000) nine translated items and manually translating the remaining three. Additionally, Keller et al. (2000) introduced six novel items that were also incorporated into the final questionnaire in order to improve reliability. Eventually, 37 items constructed the cognition-related part of the questionnaire. To the author's best knowledge, a valid translation of the Chandler et al. (2011) measuring tool for effectuation and causation into German has not yet been completed, therefore, the 20 items were manually translated into German.

Regarding the second phase of the study, Beierlein et al.'s (2012) self-efficacy scale, which is available in German, was added to the questionnaire. Moreover, Jabri's (1991) problem-solving scale was translated and implemented as well.

An online survey tool was used in order to create a questionnaire for digital use. In addition to the adapted items, the questionnaire got the common frame. A short welcome text was placed at the beginning, stating the background of the researcher, the time frame of around ten minutes, a data privacy statement, and the notice that the study was conducted for research purposes only and had no commercial background (see Appendix B). While the NFC/FI items measure general cognitive processes, the items were in no need for further clarification. However, effectuation/causation measures the specific decision-making logics of *entrepreneurs;* therefore, a clarification was needed in order to ensure non-entrepreneurs (potential entrepreneurs) were part of the study, as well. As such, a short text was inserted, explaining that participants should imagine being on the verge of taking an innovative business model to the market and asking them how they would hypothetically behave ("*Stellen Sie sich vor, Sie möchten eine innovative Geschäftsidee realisieren. Bei der Gründung eines Unternehmens müssen Sie mehrere unternehmerische Entscheidungen treffen. Bitte lesen Sie die folgenden Aussagen und kreuzen Sie das Kästchen an, das auf Sie zutrifft. Die Zahl eins bedeutet, dass Sie der Aussage ganz und gar nicht zustimmen, und sieben bedeutet, dass Sie der Aussage voll*

und ganz zustimmen.”). Consequently, the questions/statements were arranged into a subjunctive form.

Next to demographic data such as age, gender, and highest school degree or field of study, some additional questions were implemented in the study. For instance, participants were asked whether they attended entrepreneurial classes or events in order to reveal previous entrepreneurial experience. Beyond that, a self-reflective question directly asked participants to classify themselves as either an intuitive or analytic person, while a second question asked participants to assess their own decision-making as means-oriented or goal-oriented. The implementation of these two questions allowed the researchers to determine whether the participants consider themselves as the type of thinker (in terms of cognition style) and decider (in terms of decision-making logics) that was indicated by the corresponding items.

The survey was created by using the online survey creator Limesurvey. This survey creator was chosen due to its ability to create clearly structured surveys with the essential ability to ensure participant confidentiality. The purpose of the study was indicated in a short text at the beginning of the survey. It was stated that the study deals with the topic of entrepreneurial decision-making and that there were no right or wrong answers. Additionally, it was stated that there was no commercial background and that data would be processed anonymously. The self-assessment scales concerning NFC/FI, effectuation/causation, problem-solving, and self-efficacy were answered on a 7-point Likert-type scale.

A pretest was conducted before the actual start of the study. A questionnaire pretest comprises the evaluation and testing of a questionnaire before it is administered in the actual survey (Lenzner et al., 2016). The conduction of a pretest involves a number of advantages.

The overall purpose of a pretest is to test the

- comprehensibility of the questions,
- difficulties that participants have reading the questions and statements,
- participants’ interest and attention,
- frequency distributions,
- order of questions,
- potential skip patterns,
- duration of answering the questions. (Converse & Presser, 1986; Lenzner et al., 2016).

There is no specific rule for how many people should participate in a pretest. Academic literature suggests a number of participants between N = 10 and N = 200 (Prüfer & Rexroth, 1996). In the underlying case, the pretest was conducted by a number of N = 12 participants for the first questionnaire and N = 14 for the second questionnaire. The pretests indicated that no

major adaptations were necessary. However, minor aspects such as punctuation errors were eliminated thanks to the pretest. The overall understandability, duration, and technical functionality were validated by this procedure so that the surveys could be finalized.

Data collection was conducted by implementing the questionnaires in lectures and seminars at a mid-sized German university. Over the course of a year, numerous different groups of students could be used. By applying a snowball system, participants acquired further participants for the studies. Additionally, the surveys were distributed via social media channels.

In terms of data processing, both datasets resulting from the two studies were merged in order to conduct a correlation analysis. Only fully completed questionnaires were concluded in the analysis. Using the statistics software SPSS, the data was prepared by recoding inverse items, which appeared in the NFC scale only. The ordinal level of Likert-type scales was changed by transforming the items belonging to one construct to metric mean values which, in turn, allowed the use of Pearson's correlation (Kuckartz et al., 2013). Demographic data was also transformed beforehand in order to allow the calculations presented in the follow chapter.

4.2.3 Sample

Krueger and Brazeal (1994) stated that "before there can be entrepreneurship there must be the potential for entrepreneurship" (p. 91). In the frame of the first study of the underlying work, potential entrepreneurs were asked to complete a questionnaire consisting of the already mentioned self-assessment scales. Before that, it was necessary to define who *potential entrepreneurs* actually are. The literature shows that there is no clear definition of this term and that entrepreneurs can emerge from countless different settings and backgrounds (e.g., Krueger & Brazeal, 1994). According to Shapero (1982), *nutrient-rich* environments are the seedbeds of potential entrepreneurs. In this metaphor, *nutrients* "include social and cultural support, information and tacit knowledge, as well as more tangible resources" (Krueger & Brazeal, 1994, p. 92). An especially nutrient-rich environment in the university setting (Geuna & Muscio, 2009). Universities are not only incubators of the new labor force but also accumulate knowledge via research activities. Next to teaching and researching, knowledge transfer is known as the third mission of universities (Geuna & Muscio, 2009). The generation of tangible and intangible knowledge and the transfer into the industry and economy more often brings policymakers onto the agenda to support university-centered entrepreneurship (e.g., ESC, 2022). Additionally, students have become a relatively popular sample in entrepreneurship research (Autio et al., 2001; Liñan & Chen, 2009). Therefore, it is presumed that universities

form nutrient-rich environments and students of all fields of study bear the potential to become entrepreneurially active at some point. Consequently, students were chosen as suitable participants for the underlying study. Additionally, as the researchers attempted to also include people who recently finished their studies and still have a larger academic knowledge base than professional work experience, those who finished their studies within the past twelve months were also considered *students*.

The studies were conducted between the first half of 2021 and the beginning of 2022. Both the first and the second questionnaire were distributed through several channels, but mostly online. In the style of a snowball system, participants were asked to recruit other participants. This procedure resulted in a total of N=279 students for the first study and N=412 students in the second study. While both questionnaires focused on the same sample population and contained the same items (plus additional items), the samples can be combined into a singular model. Consequently, descriptive statistics reveal that 51.4% (N=355) of the participants were female while 48.3% (N=334) were male. The remaining 0.3% (N=2) identified as diverse. The majority of participants were 22-27 years old (N=431, 62.4%). A total of 15.5 % (N=107) of the participants were 21 or younger, 14.3% (N=99) were between 28 and 33 years old, while 7.8% (N=54) were 34 or older. Unsurprisingly, the vast majority of students declared to have the general matriculation standard (91.3%, N=631), which is generally obligatory to study at a university in Germany. Forty-six students (6.7%) noted having the advanced technical college certificate and 14 people (2.2%) ticked *other.* Both bachelor's master's students participated in the study. Therefore, 329 students (47.6%) had no university degree and 276 students (39.9%) already had a bachelor's degree. Forty-three participants (6.2%) indicated that they already held a master's degree, 16 had a diploma, and eight to had a PhD. Thirteen participants ticked *other*. Concerning the semester of study, the sample was heterogenous. While 11.6% (N=80) of students indicated participating being the tenth semester, 51 participants indicated being in semester zero, meaning they were no longer studying or had not begun studying yet (7.4%). The remainder of students were distributed relatively equally from semester one to ten. Among those students, most participants were in their fifth semester (11.6%, N=80) and the least number of students were in their tenth semester (3.9%, N=27). Four-hundred-and-seventy (68.0%) participants stated that they were employed, while 221 participants (32.0 %) indicated not being employed at the moment. Finally, 226 participants (32.7%) already attended entrepreneurship-related founding events, while the majority (N=465; 67.3%) had not yet attended such events. An overview of the demographics can be found in the frequency table (Table 16).

Table 16 Sociodemografic Data

Demographic	Characteristic	Frequency	Percentage	Cumulation
Gender	Male	334	48.3	48.3
	Female	355	51.4	99.7
	Diverse	2	0.3	100
Age	<=21	107	15.5	15.5
	22-27	431	62.4	77.9
	28-33	99	14.3	92.2
	>=34	54	7.8	100
Highest school diploma	Advanced technical college certificate (Fachhochschulreife)	46	6.7	6.7
	General matriculation standard (*Abitur*)	631	91.3	98.8
	Other	14	2.2	100
University degree	Bachelor	276	39.9	39.9
	Master	43	6.2	46.1
	Diploma	16	2.3	48.4
	PhD	8	1.2	49.6
	State Exam	6	0.9	50.5
	None	329	47.6	98.1
	Others	13	1.9	100
Semester of study	0	51	7.4	7.4
	1	70	10.1	17.5
	2	69	10.0	27.5
	3	55	8.0	35.5
	4	52	7.5	43.0
	5	80	11.6	54.6
	6	46	6.7	61.2
	7	61	8.8	70.0
	8	51	7.4	77.4
	9	49	7.1	84.5
	10	27	3.9	88.4
	>=11	80	11.6	100
Currently employed	Yes	470	68.0	68.0
	No	221	32.0	100
Attendance of entrepreneurship-related founding events	Yes	226	32.7	32.7
	No	465	67.3	100

4.3 Results

4.3.1 Interplay between the Constructs of PBC

As mentioned, the first study uses the scales of effectuation, causation, NFC, FI, problem-solving ability, and self-efficacy. All six scales were adopted from previous, valid research and therefore, testing for reliability came with no larger surprises. In order to test the internal consistency of the scales, Cronbach's Alpha (Cronbach, 1951), was used. Cronbach's Alpha can be considered the most widely applied index in terms of the reliability of scales. It can take values between zero and one, with values closer to zero showing no consistency at all. The interpretation of Cronbach's Alpha values differs according to different disciplines (Cortina, 1993; Streiner, 2003). Generally, values >= 0.7 are considered good, values >= 0.8 are considered very good, and scores >= 0.9 might "indicate unnecessary redundancy rather than a desirable level of internal consistency" (Streiner, 2003, p. 103). Each Cronbach's Alpha in the underlying study reached at least a good value (>=0.7). The effectuation scale ranked lowest, with a Cronbach's Alpha of 0.721, while the remaining scales all reached a value between 0.849 and 0.886, indicating very good consistency of the scales and therefore a high reliability of the study (Table 17).

Table 17 Cronbach's Alpha in Study 1

Scale	Number of Items	Cronbach's Alpha
Need for Cognition (NFC)	19	0.849
Faith in Intuition (FI)	18	0.856
Causation	7	0.864
Effectuation	13	0.721
Problem-Solving	9	0.886
Self-Efficacy	3	0.852

Descriptive statistics regarding self-reported cognition styles and decision-logics reveal that the participants tend towards causal decision-making (Mean = 5.461). However, this does not mean the absence of effectual decision-making (Mean = 4.995) and goes in line with previous research stating that both effectuation and causation can appear simultaneously (Galkina & Jack, 2021; Sarasvathy, 2001; Smolka et al., 2018). Problem-solving and self-efficacy are ranked with mean values of 4.6042 and 5.3633. The mean values for FI and for NFC are relatively close to each other, with a tendency towards a higher analytical cognitive style (see Table 18).

Table 18 Descriptive Statistics in Study 1

Scale	N	Minimum	Maximum	Mean	Standard dev.
Causation	691	1.00	7.00	5.46	0.99
Effectuation	691	1.46	6.62	4.99	0.68
Faith in Intuition	691	1.33	7.00	4.40	0.84
Need for Cognition	691	1.63	6.68	4.87	0.80
Problem-Solving	412	1.67	7.00	4.60	1.09
Self-Efficacy	412	1.00	7.00	5.36	1.04

Further descriptive statistics reveal that 61.1% of the participants assessed themselves as analytical thinkers (NFC) while 38.9% identified as intuitive thinkers (FI). The span between resource-orientation (effectuation) and goal-orientation (causation) is similar. The majority of participants (61.5%) identified as resource-oriented, while the remaining 35.8% identified as goal-oriented (see Table 19).

Table 19 Self-Assessments Study 1

Self-assessment	N	Percentage
Cognitive Style	**691**	
Analytic (NFC)	422	61.1
Intuitive (FI)	269	38.9
Decision-making Logic	**691**	
Resource-oriented (Effectuation)	425	61.5
Goal-oriented (Causation)	266	38.8

To test the aforementioned hypotheses, bivariate correlation was conducted. The scale level of the variables used called for Pearson's r, because for each scale, a mean value was calculated, transforming the scale level to a metric level (Kuckartz et al., 2013). The results can be found in Table 20.

Table 20 Study 1: Bivariate Correlations

	(1)	(2)	(3)	(4)	(5)	(6)
Faith in Intuition (1)	1					
Need for Cognition (2)	-0.234**	1				
Causation (3)	0.083*	0.278**	1			
Effectuation (4)	0.204**	0.080*	0.351**	1		

Problem-Solving (5)	-0.070	0.466**	0.221**	0.162**	1	
Self-Efficacy (6)	0.131**	0.387**	0.299**	0.149**	0.357**	1

** The correlation is significant at the 0.01 level (2-tailed)

* The correlation is significant at the 0.05 level (2-tailed)

Data reveals a relationship between an analytical cognition style (NFC) and causation (0.278), confirming hypothesis H1a. A weak correlation between FI and effectuation (0.204) could be observed, confirming hypothesis H1a, which assumed a connection between an intuitive thinking style and effectual decision-making. The results show a negative correlation between NFC and FI (-0.234), which goes in line with hypothesis H2a. A relatively large correlation can be observed between causation and effectuation, with Pearsons's $R = 0.351$, $p < 0.01$. This reflects hypothesis H2b.

Further results reveal no correlation between PSA and FI, rejecting hypothesis H3a. However, PSA shows a correlation with effectuation (0.162), such as suggested in hypothesis H3b. Additionally, FI correlates with ESE (0.131), confirming hypothesis H4a. However, hypothesis H4b, which suggested a negative relation between NFC and ESE, could not be confirmed (0.387). Similarly, hypothesis H5a postulates a positive correlation between ESE and effectuation (0.149), and could be confirmed, but ESE also shows a positive relation with causation (0.299), rejecting hypothesis H5b, which assumed a negative relationship.

Table 21 Study 1: Hypotheses Rejection and Acceptance

H1a: NFC positively correlates with causation.	✓
H1b: FI positively correlates with effectuation.	✓
H2a: NFC negatively correlates with FI.	✓
H2b: Causation does not negatively correlate with effectuation.	✓
H3a: Problem-solving ability positively correlates with FI.	X
H3b: Problem-solving ability positively correlates with effectuation.	✓
H4a: FI positively correlates with self-efficacy.	✓
H4b: NFC negatively correlates with self-efficacy.	X
H5a: ESE positively correlates with effectuation.	✓
H5b: ESE negatively correlates with causation.	X

4.3.2 Socio-Demographic Differences among Potential Entrepreneurs

Aside from analyzing and testing the overarching hypotheses, this study also took a closer look at the individual factors of the sample that can additionally have a relevance on cognition styles and decision-making logics, as well as the two constructs of self-efficacy and problem-solving ability. Five additional socio-demographic variables were included in the analysis: gender,

employment status, entrepreneurial experience considered as prior knowledge, self-assessment of cognition style, and self-assessment of decision logic. For all of the following t-tests and Levene's tests, a significance level of $p < 0.05$ was used. This procedure goes in line with suggestions by Perneger (1998).

In the case of the two self-assessments, it was of interest to investigate whether people assess themselves in the same way, as the answers within the questionnaire would indicate. This means that participants answered the questions on the particular measurement scales but also answered two additional questions that directly called for self-assessment as either intuitive (FI) or analytic (NFC) and either goal-oriented (causation) or means-oriented (effectuation). In order to pursue this question, two independent t-tests were conducted.

In the first case, the sample was divided into people who assess themselves to be goal-oriented (causation) and people who think of themselves as means-oriented (effectuation). A t-test was conducted to compare 1.) effectuation scores and 2.) causation scores for people who assess themselves as means-oriented and those assessing themselves as goal-oriented. In the case of effectuation scores, there is a significant difference in the scores of resource-orientation ($M = 5.05$, $SD = 0.64$) and goal-orientation ($M = 4.91$, $SD = 0.71$) conditions; $t (689) = 2,74$, $p = 0.006$, which means that people who assess themselves as resource-oriented score higher on the effectuation scale than people who assess themselves as goal-oriented. This suggests a suitable self-assessment by the participants. Equally suitable self-assessments can be shown in the case of causation, where there is also a significant difference in the scores of resource-orientation ($M = 5.37$, $SD = 1.02$) and goal-orientation ($M = 5.60$, $SD = 0.93$) conditions; $t (689) = -3,74$, $p = 0.002$.

In both cases, the Levene Tests showed significance Sig. > 0.05, calling for equality of variances. Also, the two-tailed significance level was $p < 0.05$, so the null hypotheses, which assumed that there is no significant difference in mean values, could be rejected. Overall, the group statistics finally show that one's self-assessment is a significant indicator of their scoring on the corresponding scale (see Table 22).

Table 22 Interindividual Differences: Decision-Logic

	Decision-Logic	*N*	*M*	*SD*	*SEM*	*F*	*Sig*[5].	*t*	*df*	*p*
Effectuation	Resource-oriented	425	5.05	0.65	0.03	0.629	0.428	2.744	689	0.006
	Goal-oriented	266	4.91	0.72	0.04					
Causation	Resource-oriented	425	5.37	1.02	0.05	2.711	0.1	-3.07	689	0.002
	Goal-oriented	266	5.61	0.93	0.06					

In the second case, the procedure was identical. The data set was split into people who think of themselves as analytical and people who assess themselves as intuitive. In the case of NFC results, there is a significant difference in the scores of people who assess as analytical (M = 5.07, SD = 0.7) and those who assess as intuitive (M = 4.55, SD = 0.84); t (689) = 8.69, p = <0.001, which means that people who assess themselves to be analytical score higher on the NFC scale than people who assess themselves as intuitive. By contrast, people that self-assessing as analytical (M = 4.09, SD = 0.78) differ significantly from people that self-assess as intuitive (M = 4.88, SD = 0.69), t (689) = 13.62, p = <0.001, in that self-assessed intuitive people score higher on the FI scale than analytical people on the FI/NFC and effectuation/causation scales. Participants' self-assessment goes in line with the results reached on each of the cognition and decision-making scales.

Table 23 Interindividual Differences: Cognition Style

	Cognition Style	*N*	*M*	*SD*	*SEM*	*F*	*Sig.*	*t*	*df*	*p*
Need for Cognition	Analytic	422	5.07	0.7	0.03	6.328	0.012	8.69	689	<.001
		269	4.55	0.85	0.05					
Faith in Intuition	Intuitive	422	4.09	0.78	0.04	2.651	0.104	-13.63	689	<.001
		269	4.9	0.7	0.04					

The scales were then analyzed regarding participants' experience with entrepreneurship. In this case, attendance of entrepreneurship-related events was considered to be an indicator of entrepreneurial experience. The question was whether entrepreneurial experience can serve as

[5] In cases where equality of variances could not be provided, tests for unequal variances were conducted and only the results from the utilized tests are indicated in the tables.

an indicator for cognition styles, decision-making logics, problem-solving ability, and self-efficacy. Data reveals that entrepreneurial experience has no significant influence on the NFC, t (689) = 0.77, p = 0.44 and no significant influence on self-efficacy, t (410) = 1,69, p = 0.09. Entrepreneurial experience does have a significant influence on the score of the FI scale in that the scores of people with experience (M = 4.51, SD = 0.78) are higher than the scores of people who have no prior entrepreneurial experience (M = 4.34, SD = 0.86); t (485.3) = 2.5, p = 0.013, meaning that people with entrepreneurial experience tend to have a more intuitive cognition style. People with entrepreneurial experience (M = 5.67, SD = 0.87) also score higher on the causation scale than people with no experience (M = 5.36, SD = 0.67), t (689) = 3.81, p = <0.001. The results are analogue for the scoring on the effectuation scale, t (689) = 3, p = 0.003, revealing that the scores are significantly higher for people with entrepreneurial experience (M = 5.1, SD = 0.69) than people with no experience (M = 4.94, SD = 0.67). Accordingly, people who have previous entrepreneurial experience tend to score slightly higher on both causation and effectuation scales. Moreover, people with prior experience (M = 139, SD = 0.95) have a significantly higher problem-solving ability than people with no prior experience (M = 4.51, SD = 1.14), t (324.44) = 2.745, p = 0.006. Equality of variances, however, could not be proven in the case of problem-solving ability.

Table 24 Interindividual Differences: Entrepreneurial Experience

	Ent. Experience	*N*	*M*	*SD*	*SEM*	*F*	*Sig.*	*t*	*df*	*p*
Need for Cognition	Yes	226	4.90	0.76	0.05	0.315	0.58	0.77	689	0.442
	No	465	4.85	0.82	0.04					
Faith in Intuition	Yes	226	4.51	0.78	0.05	1.023	0.31	2.42	689	0.016
	No	465	4.34	0.86	0.04					
Causation	Yes	226	5.67	0.87	0.06	2.987	0.08	3.81	689	<.001
	No	465	5.36	1.03	0.05					
Effectuation	Yes	226	5.10	0.69	0.05	0.862	0.35	3.00	689	0.003
	No	465	4.94	0.67	0.03					
Problem-Solving	Yes	139	4.80	0.95	0.08	6.245	0.01	2.75	324.44	0.006
	No	273	4.51	1.14	0.07					
Self-Efficacy	Yes	139	5.48	0.92	0.08	2.67	0.10	1.69	410	0.091
	No	273	5.30	1.09	0.07					

In the second case, the relevance of the current employment status was tested. This test revealed that being currently employed (M = 4.42, SD = 0.84) has no greater influence on the FI scale than not being employed (M = 4.36, SD = 0.85), t (689) = 0.92, p = 0.36. In the case of causation,

employment (M = 5.49, SD = 0.92) and no employment (M = 5.41, SD = 1.12) show neither equality of variances nor significant differences, t (365,92) = 0.87, p = 0.385. Effectuation is also not influenced by employment status (M = 5.01, SD = 0.67, for employment; M = 4.97, SD = 0.69 for no employment), t (689) = 0.93, p = 0.49. Problem-solving is also not significantly influenced by employment status (M = 4.67, SD = 1.12 for employment; M = 4.46, SD = 1.01), t (410) = 1.89, p = 0.06. However, two variables are, in fact, influenced by the question of whether a potential entrepreneur is currently employed or not. Firstly, NFC is shown to be significantly influenced by current employment (M = 4.92, SD = 0.78) and no employment (M = 4.76, SD = 0.82), t (689) = 2.46, p = 0.01, with a tendency of employed people to have a higher score on the NFC scale. Secondly, employment (M = 5.51, SD = 1.0) and no employment (M = 5.05, SD = 1.05), t (410) = 1.89, p < 0.001 are connected to the self-efficacy of a potential entrepreneur. The results show that employed people have a higher self-efficacy than non-employed ones.

Table 25 Interindividual Differences: Employment Status

	Employment	*N*	*M*	*SD*	*SEM*	*F*	*Sig.*	*t*	*df*	*p*
Need for Cognition	Yes	470	4.92	0.78	0.04	0.68	0.41	2.46	689.0	0.01
	No	221	4.76	0.82	0.06					
Faith in Intuition	Yes	470	4.42	0.84	0.04	0.02	0.89	0.92	689.0	0.36
	No	221	4.36	0.85	0.06					
Causation	Yes	470	5.49	0.92	0.04	6.05	0.01	0.87	365.92	0.385
	No	221	5.41	1.12	0.08					
Effectuation	Yes	470	5.01	0.67	0.03	1.74	0.19	0.70	689.0	0.49
	No	221	4.97	0.69	0.05					
Problem Solving	Yes	278	4.67	1.12	0.07	1.94	0.16	1.89	410.0	0.06
	No	134	4.46	1.01	0.09					
Self-Efficacy	Yes	278	5.51	1.00	0.06	0.26	0.61	4.31	410.0	<.001
	No	134	5.05	1.05	0.09					

The third case dealt with gender differences. Within the whole sample, two people identified as diverse. As this number is too small for a statistical analysis, the two datasets were left out for the investigation of gender differences. The t-tests uncovered a number of insights. Starting with the non-relations, the t-test showed that gender (male, M = 5.4, SD = 1.05; female, M = 5.34, SD = 1) shows neither equality of variances nor significant impact on self-efficacy, t (392.245) = -0.67, p = 0.499. In the case of causation, equality of variances was not given; however, males (M = 5.32, SD = 1.04) show significantly lower scores than women (M = 5.6,

SD = 0.91), t (663) = 3.84, p < 0.001. This means that women have the tendency to score higher when answering questions about causal or goal-oriented decision-making in the new venture context. The higher scoring in causation does not mean an absence of effectual thinking. Women (M = 5.08, SD = 0.62) also score slightly but significantly higher on the effectuation scale than men (M = 4.91, SD = 0.71), t (687) = 3.24, p = 0.001). Therefore, the results show that both decision-making logics can be equally distinctive, with no clear *either*-or differentiation. In the case of problem-solving abilities, data reveals that men (M = 4.82, SD = 1.06) score significantly higher than women (4.34, SD = 1.06), t (408) = -4.5, p < 0.001. Finally, the results show significant differences in gender concerning the NFC and FI cognition styles. For NFC, men (M = 5.02, SD = 0.8) score higher on the scale than women (M = 4.73, SD = 0.77), t (687) = -4.91, p < 0.001. This underlines that men tend toward an analytic cognition style. On the other hand, women (M = 4.6, SD = 0.83) score significantly higher on the FI scale than men (M = 4.18, SD = 0.8), t (687) = 6.69, p < 0.001, showing that women tend to be more intuitive thinkers than men.

Table 26 Interindividual Differences: Gender

	Gender	N	M	SD	SEM	F	Sig.	t	df	p
Need for Cognition	Female	355	4.73	0.77	0.04	0.031	0.86	-4.91	687	<.001
	Male	334	5.02	0.80	0.04					
Faith in Intuition	Female	355	4.60	0.83	0.04	0.108	0.74	6.69	687	<.001
	Male	334	4.18	0.80	0.04					
Causation	Female	355	5.60	0.91	0.05	4.791	0.03	3.84	662.9	<.001
	Male	334	5.32	1.04	0.06					
Effectuation	Female	355	5.08	0.62	0.03	3.752	0.05	3.24	687	0.001
	Male	334	4.91	0.71	0.04					
Problem-Solving	Female	179	4.34	1.06	0.08	0.006	0.94	-4.5	408	<.001
	Male	231	4.82	1.06	0.07					
Self-Efficacy	Female	179	5.34	1.00	0.07	0.514	0.47	-0.67	392.245	0.499
	Male	231	5.40	1.05	0.07					

4.4 Discussion

The results of the first study will be discussed and analyzed in the next chapter. First, the relationship between the main constructs will be examined and brought into comparison with previous research findings. Then, the impact of socio-demographic differences between participants such as experience or gender will be brought into context. As this study focuses on

analyzing the constructs of PBC, it can be considered as a preliminary stage for the second study, which continues to analyze the TPB as a whole.

4.4.1 Discussion of the Main Constructs

The cognition style of an individual is rooted deeper in their personal history and background than the decision-making logic in an entrepreneurial context. In one of the previous chapters, Krueger and Day's (2010) citation of Shapero, who said that all people have antennae, but everyone has their antennaes turned to different frequencies and directions, was used. The results from the previous chapter now offer the opportunity to return to Shapero's analogy and discuss which factors influence decision-making through an entrepreneurial lens. The first study distinguishes between two cognition styles and two decision-making modes. The cognition style called NFC, is based on logical connections, analyses, and conscious, intentional reasoning (Epstein et al., 1996). Sarasvathy's (2001) formulation of causation refers to a goal-orientation and mostly linear and predictable way of making analyses and decisions. Moreover, Sarasvathy (2001) also defined the term effectuation as somewhat of the antipole of causation. Although Sarasvathy (2008) states that both effectual and causal logics can be used by the same person, there still can be a clear tendency for entrepreneurs to be either effectual or causal in certain situations during the new venture creation process. The results here show that even before the entrepreneurial journey begins, the decision-making logic can be predicted to a certain extent by the cognition style of an individual.

People who would generally be called *heartfelt* seem to have their antennae programmed to an effectual decision-making in entrepreneurial decision contexts, while people who generally make *head* decisions are susceptible to turn on the causation wave. The awareness of a person of which personal cognition style is more pronounced is therefore immensely important. Sarasvathy (2001) argues that in more uncertain environments, causal approaches lose their efficiency. Novice entrepreneurs tend towards a causal approach while experts prefer an effectual logic (Sarasvathy, 2008). Once analytical people become aware of the intuitive side of thinking, an effectual decision-making logic becomes more probable, which in turn increases their probability of successfully coping with the uncertain entrepreneurial environment. By contrast, heartfelt, intuitive people must be aware of the more analytical mode of thinking in order to use causal approaches whenever it appears suitable in the new venture creation process. For instance, when products and markets become more mature, the degree of uncertainty might decrease as well. In a scenario like this, planning-based decision-making can be a promising

success factor (Reymen et al., 2015) which is why an awareness of the cognition styles is essential.

In the discussion, both hypotheses-confirming results and surprising, unexpected results will be examined. As assumed, cognition styles and the decision-making styles showed correlations with each other in the assumed directions: Individuals high in NFC also exhibit a high preference towards causation. To ensure this result and for better interpretation, the interplay between NFC and effectuation was also tested and displayed a negative correlation. This result aligns with the findings provided by Scrull (1981) and Scrull et al. (1985), who investigated the relationship between need for cognition and causal or explanatory thinking. Similar results were identified in a study by Lassiter et al. (1991), which confirmed that people with a tendency towards a high NFC are associated with a greater tendency for causal processing. This means that individuals high in NFC tend to find explanations for their inconsistent behavior (explanatory thinking). Further existing studies include that by Cacioppo and Petty (1982), which proved that individuals with high NFC showed stronger enjoyment while solving more challenging tasks, or that of Cacioppo et al. (1983), who showed that subjects high in NFC are more likely to be convinced by the quality of arguments compared to people with low NFC.

Corresponding with the relationship between NFC and causation, this work identified a correlation between FI and effectuation. In the frame of the underlying work, an effectual decision-making logic showed a positive connection to an intuitive, experiential FI system (Epstein et al., 1996). Indeed, individuals that showed a higher tendency towards both FI and effectuation also showed a low or, more precisely, negative tendency towards causational thinking, which underlines the positive correlation between FI and effectuation. In contrast, Sanker's analysis (2016) rejected the hypothesis that a person's intuition causes a preference for effectual or causational decision-making. Her research focused on the behaviors and thinking styles of novice entrepreneurs, which is, in the widest sense, comparable to this study, although Sanker's sample was relatively small, comprising 69 participants. However, the results revealed opposite findings. The same applies to people with a cognitive preference: the influence of NFC did not have an impact on the individual's causal and effectual decision-making process. However, a few sub-scales of effectuation did show a correlation to intuitive thinking (Sanker, 2016). More so, Sanker's findings show that participants have a higher tendency towards NFC than FI (2016). This phenomenon was also observed in the study at hand. The sample showed higher means for NFC compared to FI. This is also true for both genders. Moreover, the study revealed that participants showed higher values for causational processing than effectual processing. These results support the findings from Sanker (2016).

Agreeing with Sanker, previous theories argue that effectuation is a form of entrepreneurial expertise (Read & Sarasvathy, 2005). This means that effectuation depends on entrepreneurial experience and expertise and can be develop throughout time. Additionally, learning processes can contribute to the development of intuition (Blume & Covin, 2011). Since both studies at hand focus on novice and nascent entrepreneurs, the participants' entrepreneurial expertise is not as developed as that of experienced or serial entrepreneurs. This could be an explanation for the stronger tendency towards NFC and causation constructs. Salas et al. (2010) state that "Fast and affect-rich intuitions play a large role in the decisions people make" (p. 942). In many specific domains, experts rely on their intuition, which is "developed through extensive practice and experience" (p. 942). Moreover, they speak of *expertise-based intuition*. According to the literature, "expertise is at the root of effective intuitive decision-making in complex organizational settings, and therefore understanding how to develop and manage effective intuition in organizations is, in part, linked to an understanding of human expertise" (Salas et al., 2010, p. 3). Therefore, the study assumes that based on the low-level of entrepreneurial expertise, participants tend to be higher in NFC and causational-based processes.

A further explanation can be found in the intense focus of higher education institutions on teaching causational thinking and problem-solving approaches. Both secondary and tertiary teaching levels are still emphasizing the cause-and-effect-relationship for solving complex problems (Hendricks, 2001). Seifert et al. (2022) state that the ability to use reason to explain causal relationships is highly emphasized in teaching and learning, and this has also been argued by previous studies (Blalock, 1987; Jenkins, 1994; Kuhn, 1993, 2005; Miller, 1996; Ryder, 2001). As already mentioned, this type of reasoning and thinking in causal relationship has its limits, as previous studies pointed out (Sarasvathy, 2001; Dew et al., 2015). Causal thinking is oriented on set goals and objectives, while effectual thinking allows goals and objectives to emerge as the entrepreneurial process progresses. Although the causal thinking and reasoning approach has its limitation in entrepreneurship, students of entrepreneurship are still exposed to this type of thinking. Therefore, it is recommended to apply a more effectual-oriented approach in entrepreneurship education in order to properly prepare and acclimate students to the highly uncertain entrepreneurial reality.

A further surprising result is that problem-solving positively correlates with NFC and causation instead of FI and effectuation, as hypothesized. Since using the bisociative scale of the problem-solving measurement tool, the suggestion was that problem-solving would have a positive correlation with faith in intuition and effectuation. Surprisingly, the result was reverse. Initial thoughts therefore suggest that problem-solving in a traditional way through causal thinking

and cause-and-effect reasoning enhances NFC and causation. One explanation could be that the selected subscale of problem-solving (Jabri, 1991) is not suitable to measure the effectual and intuitive mode of thinking. This means that the bisociative thinking scale does not reflect intuition-based and effectuation-based thinking and processing. Further testing by using other problem-solving scales is required to analyze whether other scales might show a positive correlation with faith in intuition and effectuation as contrasting constructs to the rather traditional approaches NFC and causation.

A different explanation could be that problem-solving itself includes the steps of identifying causes and therefore relates to NFC and causation. This means that individuals that tend to prefer the causal thinking approach also tend to enjoy problem-solving more, and thus show a positive tendency towards it. Other literature states that causational thinking approaches increase one's problem-solving abilities (Rokhmat et al., 2017). Furthermore, problem-solving is understood as a high-level cognitive ability (Rokhmat et al., 2020), which implies that the nature of the construct is more strongly related to the causational approach and the deliberative process, which requires a high involvement of our cognitive activities.

In a different study, Rokhmat et al. (2022) "revealed that PSA [problem-solving abilities] is the ability of students to express their ability to choose or deductively predict various possible consequences of a phenomenon, which contains one or more causes given, and is able to identify how one or more of these causes can produce a selected or predicted result" (p. 2). Based on this definition, it can be assumed that problem-solving abilities already contain causational approaches.

Another interesting result in this study is that self-efficacy is significantly related to all the other constructs. However, ESE showed stronger correlations with NFC and causation compared to faith in intuition and effectuation. This finding reflects the results in prior work (Elias & Loomis, 2002; Chen et al., 2021). These studies supported such a positive correlation. For instance, Elias and Loomis (2002) investigated whether academic performance could be predicted based on NFC and academic self-efficacy. Their results supported the hypothesis. Chen et al. (2021) also proposed that NFC might have a significant influence on adolescents' creative self-efficacy, and their results could prove that NFC had a beneficial effect on adolescents' creative self-efficacy. It seems that there is a connection between NFC and self-efficacy in general, which can also be applied to entrepreneurial self-efficacy. Since NFC and causation have a positive correlation, there is no surprise that ESE also showed a positive correlation to causation.

The analysis also revealed that ESE showed a significantly positive correlation to problem-solving. This finding corresponds with other studies (e.g., Zimmermann and Ringle (1981)) that show an interplay between self-efficacy and problem solving. Furthermore, Hoffmann (2005) investigated the influence of self-efficacy beliefs on problem-solving performance and problem-solving efficiency. The results proved an interaction between problem complexity and self-efficacy for both problem-solving accuracy and efficiency. This underscores that individuals with high self-efficacy are also more efficient problem solvers. It is therefore recommended to increase entrepreneurship students' self-efficacy, since this has a positive impact on problem-solving skills in general.

4.4.2 Discussion of the Interindividual Differences

One surprising result of the underlying study was that participants assess themselves adequately. This means that their initial assessment of whether they would consider themselves as a rather logical/rational-driven person or an intuition-driven person corresponds with their actual score on the scales. The result implies a high tendency towards the self-concept. It seems that participants do have a good perception of themselves. The literature discusses the importance of knowing oneself and suggests that having a good self-concept has multiple positive effects such as an increased understanding of others. As Böckler et al. (2017) stated, "understanding others' feelings, intentions, and beliefs is a crucial social skill both for our personal lives and for meeting the challenges of a globalized world" (p. 197). Moreover, Schlegl et al. (2009) suggested that "a number of philosophical and psychological theories suggest the true self is an important contributor to well-being" (p. 473). For instance, a study conducted by García-Martínez et al. (2022) shows that self-concept can serve as a mediating factor between resilience and academic achievement. University students with high levels of resilience tend to be better at handling academic difficulties and to understand the effort required to invest for achieving academic success. Further results from Böckler et al. (2017) indicate that a close relationship between understanding oneself and understanding others goes along with an improvement in social intelligence. One explanation for the good self-estimation in the underlying study is that the participants were in a mature educational stage. A study by Blanch-Hartigan et al. (2019) suggested that medical students are more accurate with their self-assessment the later they progress in their medical study time. This might also apply to this study. Participants are mostly pursuing their masters' degrees; therefore, the self-assessment shows a high degree of accuracy, reflecting a good level of social skills.

A further interesting finding is that entrepreneurial experience does not correlate with self-efficacy. In contrast to previous studies, data reveals that entrepreneurial experience has no significant influence on self-efficacy. The literature would suggest that more experience means a stronger level of self-efficacy (Chandler & Jansen, 1997). Hence, the more entrepreneurial experience students have, the higher their entrepreneurial self-efficacy should be. However, the results from this study find opposing results, confirming, for instance, the work of Hallak, et al. (2011), who investigated the link between the entrepreneurial experience and entrepreneurial self-efficacy of entrepreneurs in the tourism industry, finding that entrepreneurial experience was not related to ESE (Hallak et al., 2011).

One possible explanation for the non-correlation could be that an authentic and lasting experience was missing. The literature argues that "mastery experience" is required in order to have a strong impact on a person. According to the literature, mastery experience involves a certain level of task difficulty and the person's invested effort in order to promote meaningful experiences for the learner and thus increase their self-belief and self-efficacy (Bandura, 1986). Entrepreneurial experience has often been associated with prior knowledge or entrepreneurial education. Prior knowledge refers to the information on a particular topic. Prior knowledge can be acquired through entrepreneurial learning and education (Gimeno et al. 1997) or entrepreneurial professional experience (Evans & Leighton 1989; Cooper et al. 1994). Prior knowledge and experience can have a positive impact on entrepreneurial competencies such as the recognition of entrepreneurial opportunities or innovativeness (Shane 2000; Shepherd & Patzelt, 2018; Venkataraman 1997). Empirical studies suggested that prior knowledge positively affects entrepreneurial self-efficacy (Bae et al, 2014; Walter & Block, 2016; Yeh et al., 2021). As an example, Yeh et al. (2021) provide evidence that there is a positive link between entrepreneurship education and entrepreneurial self-efficacy. More specifically, "entrepreneurial education was found to influence Internet entrepreneurial self-efficacy positively, and thereby to contribute to the four Internet entrepreneurial performance measures (i.e., financial, customer, internal, and learning and growth). The results indicate that entrepreneurial self-efficacy can mediate between entrepreneurial education and entrepreneurial performance" (Yeh et al., 2021, p. 1). This finding could neither be confirmed by the results of the underlying study nor by the study conducted by Hallak et al. (2011). While Hallak et al. (2011) could not find any evidence that entrepreneurial experience has an effect on entrepreneurial performance, results in this area remain fractured.

Regarding the FI scale, entrepreneurial experience showed a significant positive correlation. This means that people with entrepreneurial experience tend to score higher on the intuitive

cognition scale than people who have no prior entrepreneurial experience. This corresponds with previous literature, which argues that experience and expertise tend to enforce intuition-based thinking and decision-making styles. Intuition is rooted in experience and expertise; therefore, the literature also speaks of expertise-based intuition (Salas et al., 2009). Salas et al. (2009, p. 941) called this an "intuition rooted in extensive experience within a specific domain." It seems that the greater the expertise, the greater the speed and effectiveness of the decisions (Salas et al., 2009). Additionally, Rubinstein (2016) argued that a shorter response time to given tasks and decision-making situations reflects an intuitive cognition mode, relying on instincts or experiences that allow for an overall faster decision-making process.

Interestingly, a comparable, positive interplay was also revealed between entrepreneurial experience and the scales of causation and effectuation. People who have previous entrepreneurial experience tend to score slightly higher on both. Since effectuation correlates with the intuition-based cognition style, it is not surprising that entrepreneurial experience is positively correlated with effectuation. However, entrepreneurial experience seems to have an interaction with causation as well. It appears that experience is in the position to have a connection to both an effectual decision-making style as well as a causation-based decision-making style. One assumption could be that expertise enhances the process of finding patterns and connecting them with previous schemata involving knowledge representation (Hoffmann, 1998). This means that a higher amount of expertise means more prior knowledge available, and this knowledge needs to be processed in a logical and deliberate manner. Previous studies state that expertise enhances cognitive abilities (e.g., memory and reasoning) (Hardy et al., 2015). Another assumption might be that entrepreneurial experience enhances and enables an entrepreneurial mindset (Shepherd & Patzelt, 2018), which in turn might foster thinking in an entrepreneurial way. While both effectuation and causation describe entrepreneurial decision-logics, individuals with entrepreneurial experience might score higher on both. However, this interaction certainly needs further exploration in order to draw plausible interpretations.

The enforcement of cognitive abilities might also be an explanation for the positive correlation between entrepreneurial experience and problem-solving ability. For instance, a study conducted by Hardy et al. (2015) showed that participants that had received previous comprehensive training "showed greater improvements than controls on speed of processing, short-term memory, working memory, problem solving, and fluid reasoning assessments."

Regarding employment status, the findings revealed that NFC shows a significant correlation with employment status, as employed people tend to have significantly higher scores on the NFC scale than non-employed individuals. The initial assumption would imply that

employment would enable the collection of experience and therefore enhance professional experience and the development of expertise. On the other hand, this would enforce the intuition-based cognition style. However, the results seem to suggest the opposite: participants that are currently employed have a higher tendency towards NFC.

Finally, findings concerning gender differences open new insights for the discussion regarding sex differences within certain constructs. As Chowdhury and Endres (2005) stated, "Women entrepreneurs are generally suggested to have characteristics somewhat different from their male counterparts" (n. p.). These includes characteristics such as self-confidence, self-esteem or self-efficacy. First, the study showed no correlation between gender and self-efficacy. This means that gender does not have an effect on self-efficacy. This varies from previous research. Multiple studies suggest that women show a lower self-efficacy than men. Dickerson and Taylor (2000) propose that "some women may be reluctant to pursue certain tasks because they lack confidence in their ability to succeed" (p. 191). Hackett and Betz (1981) also agree with this perception, arguing "that largely as a result of socialization experiences, women lack strong expectations of personal efficacy in relation to many career-related behaviors and, thus, fail to fully realize their capabilities and talents in career pursuits" (p. 326). This would lead to the hypothesis that women will show lower self-efficacy compared to their male counterparts. Expectedly, this study does not correspond with the previous findings.

Within the entrepreneurship research, the results of entrepreneurship studies showed similar findings with the generic studies discussed above. Chowdhury and Endres (2005) reported that men showed significantly higher entrepreneurial self-efficacy compared to women. Dempsey and Jennings (2014) also "demonstrate that the significantly lower ESE of the young women in the sample was attributable to their lower level of prior entrepreneurial experience, their lower level of positive and negative affect towards entrepreneurship and their higher likelihood of receiving failure feedback due to their actual performance on an opportunity evaluation task" (p. 28).

However, entrepreneurship studies also revealed that entrepreneurial self-efficacy increases more strongly among women than men (Wilson et al., 2007). This means that entrepreneurship education has a stronger impact on women than men. Thus, entrepreneurship education programming is highly important for the development of entrepreneurial self-efficacy and entrepreneurial action, which needs high attention and focus by educators of entrepreneurship. Aligned with this phenomenon, previous studies also suggest that education and training is able to improve women's self-efficacy (e.g., Sweida & Reichard, 2013).

Regarding cognition style, male participants showed significantly lower scores in NFC than female participants. This indicates that women have a higher tendency towards causal thinking or goal-oriented decision-making in the entrepreneurial context. This complies with past literature, which postulates that women have a preference towards an analytical and deliberative approach to problem solving. Women also tend to make more assured and thoughtful decisions and less decisions resulting from impulsive behavior. The results seem to reflect the past literature (Allinson & Hayes, 1996; Sadler-Smith, 1999). One line of reasoning suggests that men showed a slightly higher degree of entrepreneurial experience (33.8% for men, 31.1% for women). In addition, men showed a slightly higher level of self-efficacy. Although this result is not significant and the results do not display a significant effect, higher self-efficacy can mediate between experience and the use of intuition-based decision-making approaches.

In the context of gender differences in preferences for rational and experiential thinking, studies showed small but consistent effects (Sladek, et al., 2010). However, studies also recommend including age as an important factor to analyze gender differences (Cacioppo et al., 1996). Similar to this study, Tanaka et al. (1988) conducted empirical research on the NFC. The findings revealed that there was a gender difference wherein women tended to have a higher preference for the subscale of cognitive persistence than men. This result is not aligned with our findings.

Surprisingly, women also score slightly higher on an effectuation scale compared to their male counterparts. Based on the result that women score higher on causation, the suggestion would be that female participants also showed a lower value for effectuation. Instead, women scored higher than men on both scales. Furthermore, women showed a lower tendency towards NFC. This is an unexpected result, since NFC showed a positive correlation towards causation. In contrast, male participants scored higher on the NFC scale, although they displayed a lower value for causation. This is an ambivalent result that does not correspond with previous results. It is therefore recommended to conduct a more explorative methodological approach in order to investigate this phenomenon between the genders.

Within the context of entrepreneurship research and effectuation, a number of studies have contributed to the discussion of gender differences (e.g., de Melo et al., 2019; Jisr & Maamari, 2014; Chen, 2012). As an example, de Melo et al. (2019) provided evidence for a positive correlation between female gender and the causation-based approach. This corresponds with the findings of this study. A further study investigated by Chen (2012) showed that male student entrepreneurs are more likely to apply the effectuation-based approach than female student entrepreneurs. This also does not correspond with the results from this study. However, it is

necessary to mention that the context varies. Chen's study examines Chinese students while this study focused on German students. Therefore, the social context and entrepreneurial understanding needs to be investigated and explored to draw clear conclusions on gender differences.

Finally, gender differences were also visible regarding problem-solving. As mentioned, the result of the underlying study exhibited that men have higher scores concerning problem-solving abilities than women. To provide an explanation on this topic, we need to look at research in other disciplines that offers insights into cognitive ability differences between men and women. For instance, in the mathematical problem-solving context, several studies have contributed to the knowledge regarding gender differences (Ganley & Vasilyeva, 2011). Gender can be used to make a prediction regarding certain outcomes of problem-solving tasks. In such research, men tend to be better performers in problem-solving involving mathematical reasoning than women (Halpern, 2000).

Other studies also argue that social context is highly important regarding how participants perform on problem-solving and is less dependent on gender. For instance, Ramírez-Uclés and Ramírez-Uclés (2020) could not observe interaction between mathematical abilities and gender regarding differences in spatial habilities. Duffy et al. (1997) only showed gender differences in the aspect of problem-solving when it came to high ability students. Additionally, this result is only true for the test, which is not considered difficult, while on the more abstract and complex test, both genders seem to perform equally. It is necessary to mention that previous research around the early 19th century focusing on gender differences was mostly driven by an "attempt to support or refute social beliefs about appropriate roles for women and men" (Hyde & McKinley, 1997, p. 30). Furthermore, such conducted studies tended to explicitly "search for differences that could account for men's supposed greater intellect, which was assumed to explain women's subordinate social position and confinement to the roles of wife and mother" (Hyde & McKinley, 1997, p. 30). This study has the intention to solely search for gender differences or to show differences emerging from economic roles. Indeed, the results should be interpreted with caution, since they are only based on a self-reporting scale.

5 Study 2: Entrepreneurial Decision in Complex Problem-Solving Situations

According to Liening et al. (2016), coping with the "unpredictable and unstable environment is a crucial success factor for entrepreneurs in entrepreneurial processes" (p. 94). As already discussed in earlier chapters of this work, entrepreneurs are influenced by a number of internal and external factors when it comes to making entrepreneurial decisions. The quantitative first study of this work applied the theory of planned behavior to entrepreneurial decision-making and revealed that the cognition style of a potential entrepreneur serves as a predictor of the person's decision-making style. However, as in the case of most economic explanatory models, linear conditions can barely be assumed in entrepreneurship (Liening et al., 2016). An increasing complexity in the economic environment (Wallner, 1999) is especially characterized by complex problems, which consist of a large number of elements relevant for the solution and, in turn, are interconnected, dynamic, and intransparent, causing so-called *polytelic* situations (Funke, 2010).

The economic and, more specifically, the entrepreneurial environment, consists of the contradiction of simplicity and complexity. Elements might appear simple and understandable at first glance: The potential entrepreneur is in the comfortable situation of quickly getting to know the individual steps of the entrepreneurial process. However, the results of this process are barely predictable and uncertain (Liening et al., 2016; Townsend et al., 2018; Wiltbank et al, 2006). Moreover, the summation of results turns the entrepreneurial process into an incalculable, complex situation (Funke, 2010) in which, even the best-orchestrated set of well-designed decisions, does not guarantee success or even the slightest reliable prediction of future events.

The entrepreneur, or someone planning to become an entrepreneur, can be conceptualized as being in a given state of trying to reach a desired goal. In between, however, there are obstacles and challenges which have to be faced. This, in turn, is defined as a problem (Mayer, 1992). The act of overcoming the obstacles and challenges involves entrepreneurial problem-solving. The (potential) entrepreneur needs to deal with a large number of elements (*complexity*), concerning all the aspects such as financing, team composition, market strategy or competitive strategy, which are highly interconnected (*connectivity*), as each decision influences all other decisions to a certain degree. Furthermore, states can alter dynamically in the entrepreneurial context (*dynamics*) and are far from being disclosed (*intransparency*). The approach for how

to reach the desired goal state is not linear (Liening et al., 2016), as the entrepreneur can still choose from different approaches such as causal or effectual approaches (Sarasvathy, 2001) which, in turn, go along with different facets of probability and coordination (*polytely*), resulting in what Dörner et al. (1983) and Dörner and Funke (2017) call complex problem-solving. Liening et al. (2016), differentiate complexity from simple, complicated, and random situations, and compare the complex problem-solving situation within the entrepreneurial context to raising a child: there are a countless number of books and information regarding how to do it right, and even empirical data that underlines certain methods that worked in the past; however, every family (or, in the example, every new venture) is faced with all kinds of different focuses, values, internal and external expectations, and crises that may appear.

After the first study of this work showed quantitative insights into cognition styles and the influence on entrepreneurs' decision-making style, it appears consequential to investigate how this relation is actually implemented in practice. In order to conduct this investigation, the research focus of the second study was laid on the micro-level and an in-depth analysis of personal decision-making in the entrepreneurial context. The overall questions that this study aims to answer is: *How do potential entrepreneurs behave in problem-solving situations*?

5.1 Theoretical Basis and Research Focus

The study presented in the previous chapter mostly handled determinants of intention-building and their relations, thus, it still remains open to investigate whether qualitative cases in fact reflect the findings. The previous findings are based, to a large extent, on self-assessments, which indeed are legitimate measurement tools, but might be flawed at times as well. Dunning et al. (2004) stated that self-assessments and self-predictions are sometimes not accurate, as people tend to overestimate their own capabilities and estimate more desirable behavior. Consequently, the second study sets the focus on a micro-level and investigates the extent to which self-assessment matches actual behavior when it comes to making entrepreneurial decisions. The question to be answered is whether individuals high in NFC in fact show analytical approaches when faced with entrepreneurial decision situations and whether people high in FI do the same. In both cases, and as stated at the beginning of this thesis, understanding entrepreneurial cognition and decision-making opens the door to improve decision-making at the margin. Understanding and learning from decisions works through thorough reflection of one's own behavior.

As extensively addressed in the previous chapter, researchers in the field of cognition have largely agreed on the existence of two thinking-modes that are present in every person's mind.

One is somewhat analytical and the other is intuitive (e.g., Cacioppo et al., 1996; Epstein et al., 1996; Jung, 1964; Tversky & Kahneman, 1974). While working on this topic, it is not the aim to simply cluster people into one category or the other. Quite the opposite, once realizing that there is, in fact, an analytic and intuitive mode of thinking and deciding, it appears to be the most sophisticated strategy to enable people to make the most of both modes. Creating a general understanding of the two thinking modes opens the door for a comprehensive utilization of one's own cognitive potential. Enabling people to use both cognitive systems requires a certain degree of self-reflective learning. Boyd and Fales (1983) suggest that "reflective learning is the process of internally examining and exploring an issue of concern, triggered by an experience, which creates and clarifies meaning in terms of self, and which results in a changed conceptual perspective" (p. 100). Thus, self-reflection is a form of self-dialogue which, in the case of cognition, might allow intuitive people to exploit their analytical mode, and vice versa. Schön's work, *the reflective practitioner* (1984) introduced two forms of reflection: reflection-in-action and reflection-on-action. In the first form, reflection happens during a certain experience, while the latter happens after this experience is concluded. The first stage in each reflection process, however, is ignited by the awareness of uncomfortable feelings and thoughts, which arise from the realization that during a certain experience or situation, one's own applied knowledge was insufficient (Atkins & Murphy, 1993). The second stage involves a critical and constructive analysis of the situation, examining one's own feelings, competencies, and knowledge. The third stage consists of the development of a new perspective on the situation (see Figure 23).

Figure 23 Reflective Process

Source: Atkins & Murphy (1993)

Reflection has shown its importance in a number of different domains, such as teaching (Bengtsson, 1995), therapy (La Torre, 2005), leadership (Nesbit, 2012), and social work (Yip, 2006). Burgoyne and Hodgson (1983) applied the principle of reflective learning to managerial action. Grounded in the theory of Bateson (1972), Burgoyne and Hodgson (1983) established three levels of learning.

Level 1 is the type of learning that takes place when a manager receives a piece of information that is relevant at the immediate moment but has no "long term effect on their view of the world in general" (p. 393).

Level 2 is the type of learning wherein aspects of a current situation are transferable to another situation.

Level 3 is not situation specific, but much more fundamental, as it applies to becoming conscious about general conceptions of how the world around the manager works and how values and perceptions drive behavior.

Reflective learning can, therefore, even be applied to the everyday experiences of individuals. Reflecting on one's personal behavior and decisions but also on the drivers of certain behaviors or decisions can facilitate a crucial learning process for the future. Cope (2000) states that "learning through experience is a continues process which every individual lives through, and, as such, learning is an extremely complex, dynamic phenomenon" (p. 107). Applying the

concept of reflection on entrepreneurship, Cope (2000) indicates how important it is for entrepreneurs to learn from critical events by reflecting on them properly.

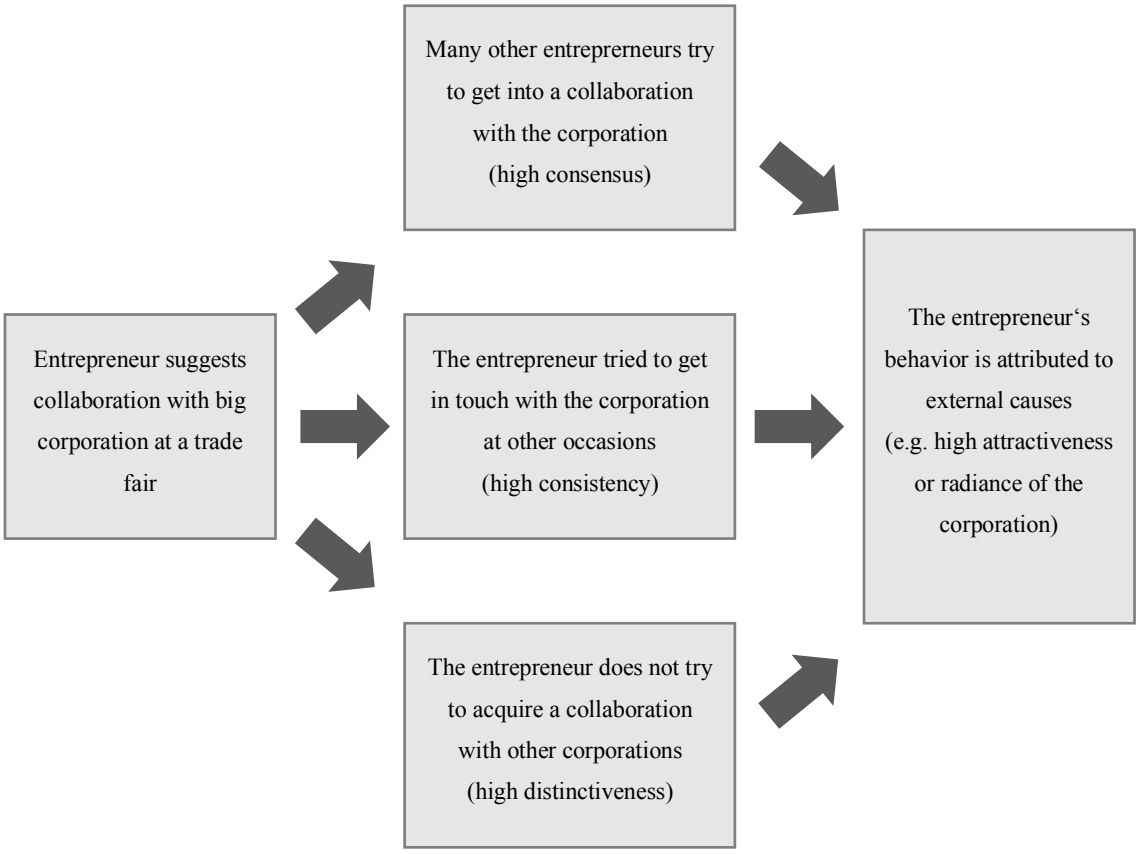
The entrepreneur operates in a highly dynamic and complex environment (Liening, 2017) where they try to further develop their business alongside their own personal skills. Taking a step back and examining one's own manner of how decisions were made in a particular entrepreneurial situation opens the door for level 2 and level 3 learning, increasing the potential of building a robust skillset for future decisions. In particular, forming an understanding for intuitive and analytical decisions bears the potential to reassess how and why particular decisions are made in a certain context and moreover enables the entrepreneur to navigate through the bumpy road of the business lifecycle more smoothly.

Closely related to the topic of self-reflection is causal attribution. Attribution theory handles "how people make causal explanations, about how they answer questions beginning with "why" (Kelley, 1973, p. 107). When individuals perform an activity, they attribute the outcome of that activity to the action of causal forces (Davis & Davis, 1972). If, for instance, a student fails on a test, they might ask themselves whether their knowledge of the subject was too little or whether the test was too difficult (Kelley, 1973). Or, when an entrepreneur does not manage to acquire external capital, they might perceive that the venture capitalist did not understand their idea or that their company pitch was not clearly articulated. According to Kelly's covariation principle (Kelley, 1972; 1973), three major types of information are considered when evaluating the outcome of an activity. The first is the consensus, or the extent to which other people react to a given stimulus or event in the same manner as the person we are evaluating. The second is consistency, or the extent to which the person reacts to the same stimulus or event on other occasions. And third is the distinctiveness, the extent to which a person reacts in the same manner to other, different stimuli or events (Branscombe & Baron, 2013, p. 106).

According to Kelley (1972, 1973), people attribute others' behaviors to internal causes when consensus and distinctiveness are low but consistency is high. In contrast, people attribute others' behaviors to external causes when consensus, consistency, and distinctiveness are all high. To illustrate these ideas, imagine a thought example of an entrepreneur who is in the first steps of the business venturing process and visits a trade fair in order to gain some insights into the market situation. At this trade fair, the entrepreneur gets in touch with a big corporation that has been in the market for decades. After talking for some time, the entrepreneur suggests initiating a collaboration with the corporation. The evaluation of whether the entrepreneur made the decision to talk about a collaboration due to external or internal causes depends on information related to the three factors of consensus, consistency, and distinctiveness.

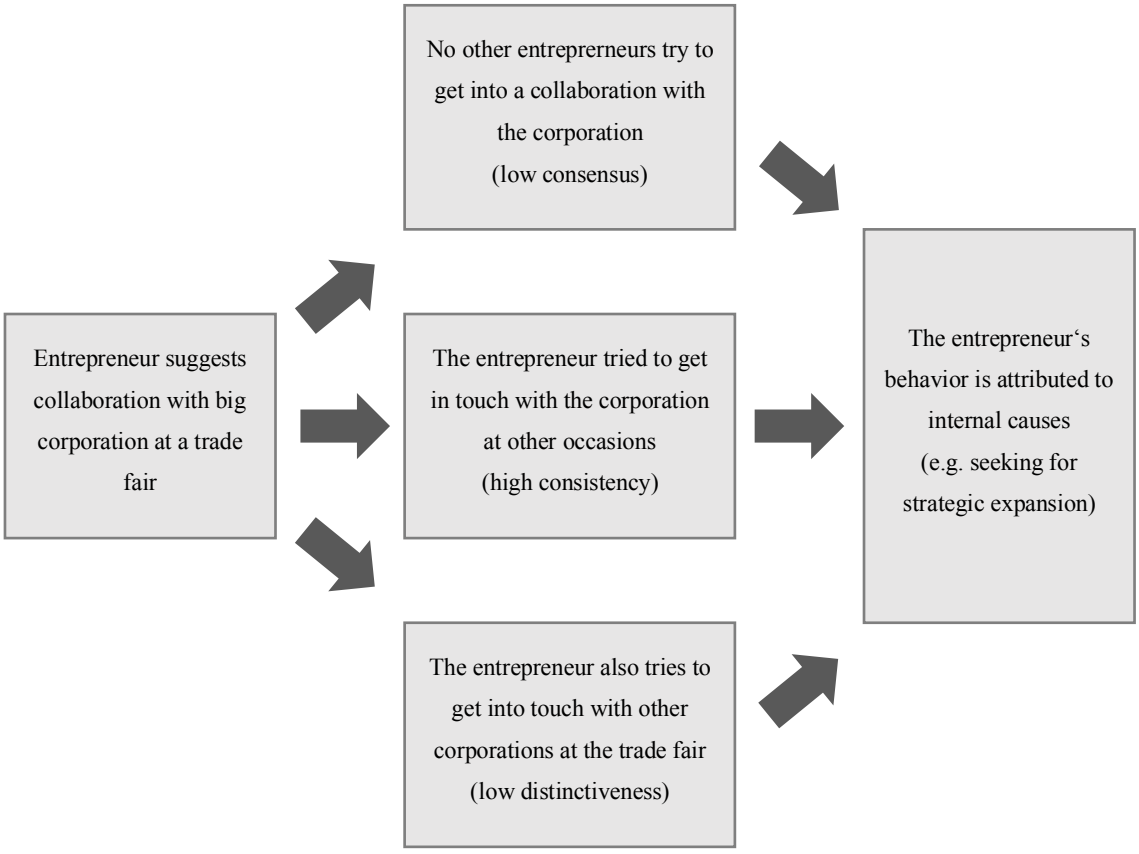
In the first example, it becomes observable that other entrepreneurs also engage eagerly in acquiring collaborations with the particular corporation at the trade fair (high consensus). The entrepreneur also had previous talks with the corporation outside of the trade fair (high consistency) and seems not to seek collaborations with other companies at the trade fair (high distinctiveness). In such a situation, one will most likely attribute the entrepreneur's behavior to external causes, such as a high attractiveness or radiance of the corporation (see Figure 24).

Figure 24 Example for External Attribution of Causes



In contrast, it could become observable that it is fairly unfamiliar for other entrepreneurs to seek collaborations at the trade fair (low consensus). However, the entrepreneur has tried to establish a collaboration with the corporation outside of the fair (high distinctiveness) and has also tried to get into touch with other corporations at the trade fair (low distinctiveness). In this case, one would probably attribute the entrepreneur's behavior to internal causes—the entrepreneur might simply be looking for ways to expand their company through merging with a larger market player (see Figure 25).

Figure 25 Example for Internal Attribution of Causes



In the first example, the entrepreneur followed an externally attributed path. They neither *intended* to conduct this behavior nor did they have full *control* over the circumstances that made the outcome happen. According to Shaver et al., (2001), these two factors, namely intention and control, play a crucial role in entrepreneurship, as “new businesses are not created by accident” (p. 6) and need a certain involvement of intention. Evaluating situations opens the door to assessing in which way a person attributes causes to specific incidents.

Especially in solving case studies, participants on the one hand have a lot of information to process and on the other hand assess the attribution of causes. In a wider sense, internal attribution is an indicator of a rather analytical approach, as actions are rather intentionally-driven and stem from a deeper understanding of control. External attribution is linked with a form of “situational pressure” (Kelley, 1973, p. 107), which means external causes urge a person to adapt and make decisions in a less intentionally planned manner. Therefore, external attribution aligns with the core factors of intuitive decision-making, which finally leads to the core assumption that entrepreneurial decision-making relies on a certain number of factors that affect each other in a domino-like effect. This means that rather stable tendencies in behavior such as attribution might give insights on the cognition style and finally the decision-making logic of a person. In any case, these assumptions fit the TPB (Ajzen, 1991) approach of the

underlying work. Based on the theoretical basis, the second study intends to provide answers for the following research questions:

How do potential entrepreneurs reflect on their cognition styles, decision logics, and actual behavior?

How do potential entrepreneurs attribute the mistakes of other entrepreneurs?

What role do cognition styles and decision logics play in the reflection and attribution process?

5.2 Study Design and Procedure

The purpose of the second study within the underlying thesis was to further investigate decision-making processes in complex entrepreneurial situations in order to classify the role of cognition styles in this context and to reveal the crucial relationship between opportunity identification and opportunity exploitation. A mixed-methods approach was conducted in order to enrich the quantitative results from the previous study with further qualitative insights.

Thus, the second study consisted of four major components:

- the self-assessment scales known from the previous chapters,
- a case study that potential entrepreneurs had to solve,
- a written reflection, and
- a semi-structured interview.

First, the participants of the study took the survey, which was also used in the previous quantitative study. The survey contained a self-assessment for the constructs of FI, NFC, causation, effectuation, self-efficacy, and problem-solving ability, as well as additional factors such as employment status and entrepreneurial experience. As such, the individual scores of the participants could be recorded. In addition to the aforementioned constructs, it not only appeared interesting how potential entrepreneurs would behave in certain entrepreneurial decision situations, but moreover, how their intention to become a real entrepreneur might be influenced by these constructs. In that frame, entrepreneurial intention was identified as a major research topic in entrepreneurship (e.g., Doanh & Trang, 2019; Kolvereid, 1996; Krueger & Brazeal, 1994; Krueger et al., 2000; Liñan & Chen, 2009). In line with the argumentation of the underlying work suggesting that entrepreneurial cognition and decision-making logics influence perceived behavioral control, which in turn influence intention-building, the focus of the underlying second study was to test the entire model of Ajzen's theory of planned behavior (1991), which, at the beginning of this work was identified as the overarching theory. Doanh

and Trang (2019) applied the TPB on entrepreneurship, which is why their measurement scale was adapted in this work.

A 7-point Likert-type scale was used in order to fit the scale into the same format as described in Chapter 4.2.1 (1 = strongly disagree, 7 = strongly agree). The scale by Doanh and Trang (2019) consists of 19 items, from which 14 were applied. The remaining five items concerning self-efficacy were not adopted, as self-efficacy was already a component of the questionnaire (adapted from Beierlein et al., 2012). The four items on perceived behavioral control were translated and implemented in the study (e.g., "Ich wäre in der Lage, ein überlebensfähiges Unternehmen zu gründen"). Furthermore, all three items concerning subjective norms were translated (e.g., Wenn ich beschließen würde, eine Firma zu gründen, würde meine engste Familie diese Entscheidung gutheißen"). The same applies to Doanh and Trang's (2019) four items on attitudes toward entrepreneurship (e.g., "Eine Karriere als Entrepreneur wäre attraktiv für mich"). Lastly, the four items on entrepreneurial intention were translated as well (e.g., "Ich würde alle Anstrengungen unternehmen, um mein eigenes Unternehmen zu gründen und zu führen").

Second, each participant received one out of three case studies which dealt with a startup in the early stages of a new venture process. Each case study was based on interviews with real entrepreneurs and their stories. The participants were asked to read the case study, analyze the reasons for the entrepreneur's problems, and define possible solutions and action plans. After doing so, the study participants were divided into groups of two to three people. Within these groups, a joint solution to the case study was to be developed.

Third, each individual wrote a reflective essay on the case study solution process, both within the group and individually. Reflective essays are a popular tool for experiential learning (Bennion et al., 2020). Reflecting and explicitly writing down thoughts is said to be a valuable cognitive confrontation with a topic, which potentially opens the door for complex problem-solving (Bennion et al., 2020; Heinrich et al., 2015).

Fourth, semi-structured interviews were conducted with each participant. In addition to the reflection essays, the interviews introduced the chance to dig deeper into the problem-solving process of each individual. The interviews had an average duration of 16:37 minutes.

5.3 Data recruitment, Collection and Procedure

The study was conducted during the winter semester 21/22. The participants were recruited from a mandatory seminar in the master's program of teacher education. The seminar is focused on selected entrepreneurship (education) topics. The students had visited entrepreneurship-

related lectures and seminars in the past and therefore already had some prior knowledge regarding entrepreneurship. In advance of taking the survey, students had to fill out a questionnaire regarding their cognition and decision-making style and entrepreneurial self-efficacy (identical with the scales that were used in study 1). An online questionnaire was developed and sent to the participants. In this seminar, students were asked to solve an entrepreneurial problem-situation in a case study. In total, three case studies were developed that served as a problem-situation and were distributed to the students (see Appendix D). While solving and developing a solution for the specific question, students were asked to write down their thoughts and problem-solving processes in a reflection essay. The reflective essay followed an open structure in order to provide participants room for creative writing and thought collection. However, the reflective essay was divided into three, two-part sections with a few questions as an orientation and support of triggering the reflection of the idea process of the participants. In addition, a reflective interview that supported the reflective essay and allowed for the chance to ask open and unsolved questions arising from the reflective essay was conducted. Furthermore, the interview served as a source of validation for the reflective essay and the quantitative scales. Following the reflective interviewing approach of Roulston (2010), the reflective interview guide was structured. The guide included both closed and open questions and can be considered as a semi-structured interview (see Appendix E). The combination of quantitative and qualitative processes ensured that both quantitative and qualitative data could be collected, compared, and analyzed, based on a mixed methods approach.

5.4 Data Analysis and Interpretation

In study 2, a reflection critique and an online questionnaire was conducted. Maloney et al. (2013, p. 618) described the reflection as defining, criticizing, and restructuring the knowledge that informs and guides. Furthermore, "reflective practice is seen as a potential means for enabling life-long learning, facilitating self-improvement from everyday clinical encounters, and promoting an up-to- date knowledge base" (Maloney et al., 2013, p. 618).

Thus, two reflective processes were included in study 2: a reflective essay and an interview.

The quantitative approach was converted and analyzed with the statistic software SPSS Version 28. The reflective essays and interviews were transcribed through the video processing tool Adobe Premiere Pro. Content analytic research procedures are dedicated to the systematic evaluation of content. The coding procedure breaks down the data material in a rule-guided manner. There are various procedures and variants in the academic context. The most-used

methods are proposed, for instance, by Mayring. Following one of Mayring's (2015) approaches, a summarizing content analysis, which reduces the text material to a short text while retaining the essential content, was conducted. There were two cycles of coding. In the first cycle, similar answers were identified, and in the second cycle, the answers were grouped into broader categories. The two cycles were independently coded by two researchers—first, individually, and later, collectively, by comparing the codings. After reviewing the codes, the interpretation was discussed by both researchers in order to identify categories and sub-categories for the codes that support a common understanding of the data.

5.5 Sample

The study was conducted in the last quarter of 2021 and the first quarter of 2022. All participants were currently completing their master's studies with at least one study focus on economics. Descriptive statistics reveal that four participants were male while ten were female. Half of the sample was 27 years old or younger while the other half was older than 27. The youngest participant was 25, the oldest was 35, and the average age was 28.07 years. In terms of employment, half of the sample (N = 7) indicated that they were currently employed while the other half answered this question in the negative. In terms of entrepreneurship-related founding events, eight participants (57.14%) stated that they have already attended such events while six participants (42.86%) did not.

Table 27 Demographics Study 2

Demographic	Characteristic	Frequency	Percentage	Cumulation
Gender	Male	4	28.57	28.57
	Female	10	71.43	100
Age	<= 27	7	50.0	50.0
	> 27	7	50.0	100
Currently employed	Yes	7	50.0	50.0
	No	7	50.0	100
Attendance of entrepreneurship-related founding events	Yes	8	57.14	57.14
	No	6	42.86	100

Descriptive statistics should be regarded with caution, as the N was sufficient for qualitative analysis on an individual base but not for overall calculations on a quantitative level. Generally, ten constructs construed the survey. Considering the mean values of scoring on each scale, causation is ranked with the highest value (6.04). Moreover, effectuation (5.08), self-efficacy (5.64), and entrepreneurial intention (5.23) were, on average, answered with scores >= 5 (rather agree). Faith in intuition (4.80), need for cognition (4.66), subjective norm (4.86), and perceived behavioral control (4.74) scored slightly above the neutral answering option. Solely personal problem-solving ability (3.81) was considered rather negatively among the participants.

Table 28 Descriptive Statistics Questionnaire Study 2

Scale	N	Minimum	Maximum	Mean	Standard dev.
Causation	14	5.14	7.00	6.04	1.34
Effectuation	14	4.38	6.08	5.08	0.49
Faith in Intuition	14	4.00	6.11	4.80	0.66
Need for Cognition	14	3.42	6.32	4.66	0.77
Problem-Solving	14	2.00	6.66	3.81	1.42
Self-Efficacy	14	4.67	7.00	5.64	0.86
Attitude Towards Behavior	14	1.00	6.33	3.05	1.44
Subjective Norm	14	2.67	6.00	4.86	1.24
Perceived Behavioral Control	14	2.33	7.00	4.74	1.37
Entrepreneurial Intention	14	3.00	7.00	5.23	1.33

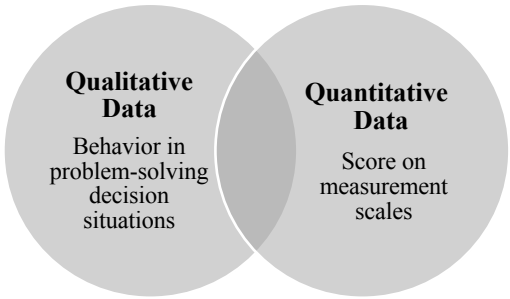
In terms of the semi-structured interviews, the interviews had an average duration of 16:37 minutes, with the shortest interview lasting 9:39 minutes and the longest lasting 26:46 minutes. The time indication refers only to the discussion of the content of the case study and does not include greeting or concluding words.

5.6 Results: Cognition Styles

Based on two sources of data (reflection essays and reflection interview), insights into cognitive processes and motives of behavior in entrepreneurial decision-situations were generated. The reflection essays bring together a duet of cognitive insights. On the one hand, the individuals in this study filled out the self-reported scales. This quantitative data could therefore be allocated to either an intuitive or analytic type. On the other hand, the participants solved a case study and provided both a written reflection essay and a reflection interview in order to describe their case solution process, which in turn provided valuable qualitative insights and the possibility

to reveal certain cognitive tendencies in problem-solving decision situations. The combination of data is depicted in Figure 26.

Figure 26 Combining Quantitative and Qualitative Data



Still, it remains a central premise that entrepreneurial cognition is not expressed in a bipolar *either-or* manner, but in two unipolar dimensions (Epstein et al., 1996). In the quantitative part of this study, this means that individuals in fact might score high in NFC, which does not automatically mean that they score low in FI. This works similarly in the qualitative part of this study. In some cases, both reflection essays and interviews show indications for NFC and FI. An analysis of the data led to the allocation of the participants to a certain group; however, not in an *either-or* manner, but more in a *rather-than* manner.

To analyze the quantitative data, in the first step, the participants were divided into two major groups: The first group contained people that scored higher on the NFC scale than the FI scale and the other group contained people who scored higher on NFC scale than the FI scale (see Table 29).

Table 29 Study 2: Cognition Styles & Actual Behavior

Cognition Style					
NFC = group 1			**FI = group 2**		
No.	*NFC score*	*FI score*	*No.*	*NFC score*	*FI score*
P1	4.89	4.00	**P3**	4.53	4.89
P2	6.32	4.11	**P4**	4.42	4.72
P6	5.05	4.17	**P5**	4.16	5.00
P8	4.95	4.00	**P7**	3.58	4.22
P12	5.42	5.33	**P9**	3.42	5.00
P13	4.89	4.78	**P10**	4.74	5.72

			P11	3.79	6.11
			P14	5.11	5.22

Six participants belong to the analytic *group 1* while eight participants belong to the intuitive *group 2*. Starting with group 1, there is still an inconsistency observable. It seems that all participants do not show the same cognition style as their scoring on the scale might indicate. In the next step, patterns were generated based on the participant's behavior documented in the reflection essays and interviews. The groups could be further divided into three different types, which were identified in the analysis. For this purpose, indication for NFC (e.g., "I researched", "I documented", "I reflected", "I used the method …", "I lacked additional information" "I used additional sources") and for FI (e.g., "I had the idea", "I thought about it", "I quickly had an idea", "It just came to my mind") were determined.

5.6.1 Results Group 1 – Preference for NFC

Type 1 describes people that assess themselves *correctly*, which means their score on the NFC/FI scale matches their behavior in entrepreneurial decision-making settings. They do not only score higher on the NFC scale, but moreover show a tendency towards an analytical problem-solving and decision-making. Out of the six participants in group 1, two could be assigned to Type 1. For instance, participants in Type 1 demonstrated not to have more specific information in their case study which they consider necessary in order to provide a sophisticated solution:

> Participant 13: "*The overview I provided made it clear that certain information was missing from the case study in order to better assess the situation of the entrepreneur and to develop as precise a solution approach as possible.*" (r.e.)[6]

> Participant 8: "*Some information could have contributed to finding a solution for the case study.*" (r.e.)

This goes in line with previous findings in the academic literature. For instance, Liu and Zhang (2008) examined the effect of NFC on the information search performance and found that people high in NFC use more documents and additional material to solve given tasks than

[6] "r.e." indicates quotations from the reflection essay, while "int." indicates a quotation from the interview

people scoring low in NFC. Similar results were presented by Ho (2005) who found that people high in NFC acquire more information and process this information more thoroughly than those low in NFC. Mokhtari et al. (2013) also confirmed these findings by revealing a correlation between NFC and information seeking behavior, concluding that NFC enhances the performance in stating and formulation information which is needed, seeking and searching this information and finally evaluating and criticizing it. So, it is not surprising that participants which belong to group 1, Type 1 in the underlying study called for additional materials or information.

When confronted with the first steps of the case solution process, participants in Type 1 showed an analytic approach by searching in a structured and thoughtful manner, while keeping track and recording their findings:

> Participant 8: *"I structured the research work in such a way that I first entered simple keywords such as "organic seal requirements" or "loan requirements" into the Google search engine and obtained a first impression from the first, supposedly most relevant entries. Once that was done, I tried to confirm the initial information from more informal sources, such as newspaper articles on relevant, official websites, such as the website of the Federal Environment Agency or a financial institution."* (r.e.)

> Participant 13: *"I first thought about what was given in the text. I first wrote it out in bullet points and sorted it so that I had an overview and then thought about how these problems arose."* (int.)

> Participant 13: "*This was done by searching for keywords such as "financing options for startups", "subsidies for startups", "credit for startups without startup capital" or "startup - lenders". During this research I came across other important keywords, such as "business plan" and recorded them. I documented the results I found during my research*" (r.e.)

These results confirm the findings by Ho (2005) and Mokthari et al. (2013). Through the explanation of their information processing style, the participants showed that decisions were made with as little information gaps as possible. This confirms Epstein et al.'s (1996) findings

that intuitive people rely on heuristics, while rational people do in fact take their time to process information and data without shortcuts.

Compared to Type 1, participants in Type 2, however, showed a different pattern. They scored high on the NFC scale, but show almost no indications of analytical decision-making, but an intuition-led approach. Three participants belong to this type: participant 12, 1, and 2.
For instance, participant 12 explains in the reflection essay that he prefers to propose ideas and work with them rather than clearly articulated concepts. More so, he argued that not all ideas need a thorough clarification and needs to be understood entirely:

> Participant 12: "*The idea that [the entrepreneur][7] should open a flagship store and establish a franchise brand. […] not every task has to be explained in the smallest detail, but can also be understood in a rough context."* (r.e.)

In the interview, the participant further explained the process and revealed the intuition-led motivation in his[8] approach more clearly:

> Participant 12: "*I didn't give it much thought at all. It just popped into my head ah, okay, she can just do that."* (int.)

In this context, participant 12 scored second-highest in NFC within the whole sample. Still, finding a solution to the case study came with no further research or structured approach, but the sole idea to open a flagship store and establish a franchise brand. The participant even claims himself that not all executed tasks need detailed explanation, which represents an indicator for a rather intuitive approach.

Another participant in fact displayed signs of on analytical approach:

> Participant 1: "*I clustered the information into information about the startup, information about the founder, and information about the current problem*." (r.e.)

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[7] The case studies contained the names of entrepreneurs. For reasons of simplicity, the names are replaced by the term *the entrepreneur*.
[8] In terms of simplicity and anonymity, the masculine form is used for all participants.

However, throughout the case solution process, the participant showed indications that ideas came to his mind in a random way, based on experience rather than analytical proceedings, therefore calling for an intuitive approach:

> Participant 1: "*After thinking about it for a while, I finally came up with two extensions for [the entrepreneurs'] business model."* (r.e.)

> Participant 1: "*I was looking for an alternative to a bank loan. Crowdfunding came to my mind."* (r.e.)

This participant even compared the own approach to the one of his team members:

> Participant 1: "*My colleague was more informed about what kind of help was available, especially in times of Covid-19. My focus was on staying persistent with the authorities and getting on their nerves until they eventually come up with something."* (int.)

In the most extreme form of type 2 participants, participant 2 showed no indication for an analytic problem-solving approach at all. Quite the contrary, although scoring high on the NFC scale, he solely indicated intuitive approaches which were reflected by no further elaborated statements, such as "it would therefore be possible to focus more on the households of potential customers. Due to the pandemic, people may be at home more than usual". In this example the participant clearly missed out to discuss in how far specific customer segments could be identified and processed and rather interjects mere thoughts.

During the interview, when confronted with the problem-solving approach, the participant reflected that some aspects of his approach clearly lacked the analytic part, which the participant explained he would have followed.

> Participant 2: "*That was more of an analytical decision, I would say, although if it was to be an exact analysis, then I would have had to look for more information […]. I would have had to look to see if there was an academic study on this.*"

Thus, although the participant realized how to behave and to act in an analytical thinking way, he still behaved in an intuitive manner. This goes along with findings by Pennycook et al. (2016) who state that "'intuitive' individuals may or may not detect the need to think analytically about the problem, but they decide nonetheless to 'go with their gut'". However, it is not an unanimous explanation where such an inconsistent cognitive behavior stems from. One explanation could be that people realize different approaches, but since there is no righteous way to solve the problem, people tend to follow their cognition style preference. Other possible explanations can be, for instance, a flawed self-assessment. Some researchers claim that "people's self-views hold only a tenuous to modest relationship with their actual behavior and performance" (Dunning et al., 2004, p. 69). Kruger and Dunning (1999) add to this discussion that people hold "miscalibrated views about themselves" (p. 1132) due to limit knowledge in an area. An individual might think of himself as an analytical type, whereas missing knowledge on cognition types could be a reason of misinterpreting the own behavior. At times, it might even be more reliable to let other people assess the behavior or the outcome of another person's action in order to learn about this person's cognition style (Dunning et al., 2004). Therefore, the underlying mixed-method approach once again proves its significance, as standalone self-assessment at least to a certain degree opens room for distorted results.
Beyond that people might try to engage in desirable behavior and while neither an analytical nor an intuitive behavior per se could be labelled as *desirable,* in terms of solving a case study, participants might assume that they are expected to conduct analytical problem solving. In the case of participant 2 it became particularly clear that the self-assessment, but also statements within the interview indicated an analytical approach, while the actual analysis of the behavior called for a purely intuitive problem-solving approach.

Type 3 participants however, are those who scored high in NFC, but showed a relatively balanced decision-making with both analytical and intuitive approaches. A type 3 person is torn between intuitive ideas which quickly come to mind and the need for an analytical verification of these ideas. This becomes observable in the following example. The participant started with an intuitive approach and rough ideas:

> Participant 6: "*I tried to read through the case study without any evaluation or considerations, in order to first get a rough overview of the company's history. However, this proved to be very problematic, as the first ideas or suggestions for improvement popped up in my mind right at the first reading*". (r.e.)

However, the participant quickly turned to an analytical problem-solving approach:

> Participant 6: "*However, before I started thinking about the case study, I researched keywords like 'affiliate marketing' and 'guerrilla marketing campaign' online, in order to be able to judge the approaches of the entrepreneurs correctly*." (r.e.)

> Participant 6: "*In order to deal with the problems in the best possible way, I have thought of keywords in advance, which I would like to research online or in books, in order to be able to point out successful suggestions for solutions*." (r.e.)

This participant showed that both an analytical and an intuitive cognition style may appear sequentially, which is why Epstein et al. (1996) suggested to consider them separately on two unipolar rather than one bipolar scale. Support can be found within the work of Zang (2013) who argued that cognition styles can be dynamic rather than static in complex problem-solving situations.

5.6.2 Results Group 2 – Preference for FI

Group 2 consists of participants who scored high on the FI measurement scale. One might therefore expect those people to be intuitive in their decision-making, which would be shown for instance through a more experience-based approach to the case study and a less systematic and analytical approach. Similar to group 1, group 2 can be divided into three different types.

Type 1 participants not only showed high scores of FI, but also an intuitive approach to the solution of the case studies. For instance, did brainstorming appear as a valuable method to approach the case study. While brainstorming, the participants indeed used a method which relies on structuring thoughts in a certain manner, however, the generated ideas are solely based on thoughts and intuitions.

> Participant 4: "*When I read the case study, suggestions for change came directly to my mind about how to fix individual problems. […] The method I used was brainstorming and comparing different possible solutions.*" (r.e.)

> Participant 14: "*The method I used was mainly brainstorming, then I created a kind of mind map of the problems and sorted them by urgency*." (r.e.)

One participant even stated, that he himself recognized the intuition in his approach:

> Participant 4: "*That was intuitive. So, I really read the case study and to me it was immediately clear that that's kind of the main problem*." (int.)

Type 2 participants in group 2 where those, who scored high on the FI scale, but showed a tendency towards analytical approaches. Even the first steps of the problem-solving approach were conducted well thought out:

> Participant 9: "*My first step in finding a solution was therefore to enter 'steps to successful self-employment' into the Google search engine, which yielded numerous scientific and unscientific contributions.*" (r.e.)

> Participant 9: "*For me, it was more analytical. So, I googled a lot or researched, how the founder can proceed and not just say, 'this and that is happening now'.*" (int.)

The particular case of participant 9 shows indications that the person knows well about the own analytical case approach, but still scored considerably higher on the FI scale. The quotes of participant 9 clearly propose that an analytical approach by doing research and looking up scientific and unscientific articles. A similar case is given by participant 11, who conducted research on effects of Covid-19 pandemic on companies and to analyze how other startups solved their problems as well as to search for alternative financing options.

> Participant 11: "*First, I researched the internet to see what solutions other companies were pursuing to get out of the Covid-19 pandemic. I also researched alternative financing options for startups and for companies that have already been established for a longer period of time*." (r.e.)

> Participant 11: "*Through this research, I also went further into the depths. I have picked out literature*." (int.)

Participant 11 scored by on FI scale, while the reflection interview and the reflection essay revealed a clear analytical approach. This goes in line with type 2 participants from the previous group and in a certain way follows on from the previous discussion. The participants in group 2, type 2 both clearly scored higher on the FI measurement scale than the NFC scale, still their problem-solving was done in an analytical way. Dunning et al. (2004) remarked that "the views people hold of themselves are often flawed" (p. 98), which is why the analysis of actual behavior, as done in this study, opens the door for better understanding cognitive approaches not only on the collective level, but furthermore on the individual level, as well.

For instance, participant 5's scoring on the FI scale indicated a relatively intuitive person. While evaluating first results and analyzing different options for problem-solving, participant 5 showed a typical group 2, type 2 behavior by thoroughly analyzing the problem and possible solutions.

> Participant 5: "*I looked for possible solutions to the various problems in the literature. I reflected on some of these solutions critically with regard to possible advantages and disadvantages. It became clear that many different aspects have to be taken into account when solving problems, which makes it impossible to find a "simple" solution to the difficulties*." (r.e.)

> Participant 5: "*Wherever I saw that there was a problem or that something was problematic, that something was going to be difficult, I wrote that down and then I listed it in a table. So, I looked at it and said, 'Okay, where are the commonalities?' For example, decision-making, position distribution, that was all about the team*." (int.)

In the case of participant 7, a need for additional information and data characterized parts of the reflection essay, calling for an analytical approach. Also, this participant criticized the founder which was described within the case study, underlining the analytical problem-solving approach:

> Participant 7: "*In general, the founder appeared to me to be very disorganized. From my point of view, she informed herself little about the basics and acted rather intuitively*." (r.e.)

One explanation could be that people believe that the analytical approach, which the education system has trained them and usually convey this approach as the 'right' way, is what the researcher and educator wants to hear. There might be a general opinion, that analytical decisions must be better (Hogarth, 2003). This might stem from the fact that teaching and learning oftentimes targets a more analytical problem-solving and decision approach (Hogarth, 2003), while the development of intuition is seldomly targeted (Burke & Sadler-Smith, 2006). It might therefore be an explanation why people with a higher score on the FI scale shift to an analytical approach when facing the quest of decision-making. Because management education directs students into a form of "rational-analytic paradigm" (Sadler-Smith & Burke, 2007, p. 240), analyzing situations and shifting from a possible, initially intuitive approach to an analytic way, might appear as the "correct" solution to students.

Within the academic literature, this has been vividly discussed. Intuition is said to be especially important in situations which are loosely structured (e.g., Klein, 2003; Sadler-Smith & Sparrow, 2008), however, evidence shows that a considerable share of managers at least "often" use their intuition in the workplace (Burke & Miller, 1999). Especially entrepreneurs are frequently forced to make decisions with limited information available (Dutta & Crossan, 2005) and in a highly complex environment (Liening, 2017). In order not to fall into the so-called "analysis paralysis" (Sadler-Smith & Burke, 2007, p. 241), an intuitive approach in entrepreneurship might in fact be desirable, but far from the way potential entrepreneurs are normally taught. This might be one explanation for the respective type 2 participants in group 2.

A further explanation could be that participants have a different self-concept of themselves. They believe to be intuitive and actually an analytical and systematic type. Education-oriented studies often show that the students are bad at self-assessment (Chemers et al., 2001; Dunning et al., 2004). Burnett et al. (1999) argue that promoting students' self-concepts is critical for the educational outcome and can improve academic achievement.

Analogous to group 1, also group 2 entails type 3 participants which do not allow interpretation for tendencies towards one cognition style or the other. A total of two participants belong to this type and quotations show that these people are torn between the need and plan to analyze

elements and the intuitive way of implementing ideas and sole thoughts in the decision-process, as well:

> Participant 3: "*Since I myself have little experience with marketing, I researched again on the Internet and came to the conclusion that the founders need a good social media presence. […] From my professional experience, I took the idea that they can cooperate with other companies*." (r.e.)

> Participant 3: "*So I would say with the measures and with the supports with the funding, I took a more analytical approach. […] But yes, that was purely intuitive and it worked well. That's why I thought 'okay, you can leave it like that'."* (int.)

> Participant 10: "*During the individual work phase, the case study was first developed in terms of content by recording important aspects in bullet points, so that the foundation problem could then be analyzed and a solution approach could be created. […] Based on these thoughts on the initial situation, I developed first ideas for the development of a solution approach*." (r.e.)

Overall, the participants can be divided into four different categories. The first category A entails individuals from group 1 and group 2, type 1. Those are people who generally show a problem-solving behavior which reflects their respective score on the self-assessment scales. Four participants, two for each cognition style show this expression. This means that a considerably low number is actually behaving in a way, the self-assessment scales would indicate. This also suggests that only a few people show that same behavior they have filled out in the self-report scale. The sole performance in a self-assessment cognition test therefore only seems to be a limited source of indication. In category B, allegedly analytic people show intuitive decision-making behavior. The reasons why people in this group shift from analytic to intuitive can be diverse. Entrepreneurship is in fact a domain which makes deciding complex. While many elements come together in entrepreneurship, barely one of these elements can be calculated or predicted. Entrepreneurs can neither rely on past data, nor can they guarantee the outcome of their action. Market conditions change, customers, but also competitors shift preferences and cause unpredictability for the entrepreneurs. This might explain why previously analytical people shift to a more intuitive-driven approach when it comes to entrepreneurial

decision-making situations. Conversely, category C consists of intuitive people who show a rather analytical approach in entrepreneurial problem-solving situations. The reasons for this might have been established far before the actual task of solving entrepreneurship-related problems. Schools and higher education institutions often teach analytic-driven approaches. Well-articulated and provable decisions are generally welcome while intuitive decisions might rather testify that a student is unprepared or unmotivated. However, categories B and C account for three and four participants, respectively. Group D consists of individuals that show no clear expression of cognition styles or a mix of both. In total, half of the participants evidently showed that they behave differently from their self-assessment ranking. Therefore, the test results and reality are not the same. A (potential) entrepreneur might belong to a certain cognitive style according to the self-reporting scales, but when entrepreneurial reality strikes, additional factors seemingly influence their behavior. The academic literature has already hinted into this particular phenomenon and showed that biases, desirability, available data, as well as also education styles influence behavior. It is safe to say that the entrepreneurial mind has not been entirely unlocked so far. It is likely that it will never be unlocked. Still, regarding the impact that education and especially education on cognitive styles can have, it opens the road for success for entrepreneurs.

Table 30 Summary of Self-Assessment Types

	Group 1 = NFC	Group 2 = FI	Sum
Type 1, self-assessment matches behavior	2	2	4
Type 2, self-assessment opposesbehavior	3	4	7
Type 3, self-assessment and behavior show no clear expression	1	2	3
Sum	6	8	14

	Category A
	Category B
	Category C
	Category D

5.7 Results: Attribution of Causes

The attribution of causes was integrated into the data material. Participants were asked in the reflection interview whether the causes for the problems in the case study were internal or

external and thus, to test their causal attribution. In the next section, the results will be presented between the two groups.

5.7.1 Results Group 1 – Preference for NFC

The analysis of the results showed that, first, individuals with high statistical NFC are more likely to show a slight tendency toward internal attribution than individuals with statistical high FI. This is a highly interesting but unsurprising result, since high- (relative to low-) need-for-cognition individuals enjoy being engaged in more extensive, causal processing, and are thus more cautious and prepared in decision-making and therefore more likely to consider other individuals as less prepared. Therefore, it can be suggested that high NFC individuals tend to show internal attribution. One explanation is therefore that those persons who think and act more analytically also find it more difficult to comprehend when people act intuitively and do not approach the matter systematically. Therefore, high NCF individuals are more likely to see an internal attribution, meaning the cause of the emergence of the problem within the founder (self-inflicted problem). In the following section, participants with high NFC and their attribution argumentation are displayed. (Lassiter et al. 1991)

The first group of participants are people with a high need for cognition.

> Participants 13: "*The problems could have been avoided in advance. Because the entrepreneur had no knowledge in this area, she made these mistakes. But I think that if she had gone in there with more knowledge and maybe had gotten professional help in advance, she wouldn't have made these mistakes. So I do think that problems could be prevented.*" (int.)

> Partcipant 9: "*No, those were own and homemade problems. I think that could have been avoided in any case. Starting with the logo. That was already somehow like she had a board in front of her head and a cat and vegan healthy products. (...) So, I found that very naive or, as I said, uninformed. So, I find the problems were already very homemade. It wasn't something where you say that was totally unexpected, like, for example, that their production machine broke down.*" (int.)

> Participant 8: "*Well, I think that such problems do occur, definitely, also in reality. But I also think they could have been avoided in general. If I'm starting*

from scratch, now, of course, it's probably relatively difficult to keep track of so many set screws, I'll say. But with enough research or investigation or advice from experts, I think it could have been avoided." (int.)

These participants showed a high NFC score and also demonstrated an NFC-related behavior in their reflective essay and interview. As previously assumed, the results revealed that those individuals also tend to argue with internal attribution. This means that the causes for the problem situation is caused by the actor themselves and not by the external environment.

Participant 1: "'*What are the best measures that we take now to contain the pandemic, but also not shut everything down?' From that point of view, I don't think it was foreseeable. (...)Also in other industries you see that they have been affected the same way and probably face the same kind of decisions or have the problems and then I think that's not so predictable.*" (int.)

Participant 2: "*I would say that it was unforeseeable, because who could have guessed that Covid-19 would suddenly paralyze the entire economy to such an extent? So, I don't think any of us in real life really expected that there would suddenly be lockdowns in which life in general would be greatly restricted and in which economic activity would also be restricted as a result. That's why, as I said, I think this was an unforeseeable problem.*" (int.)

In contrast, these results show that individuals with high NFC scores show signs of external attribution. However, in the reflective essay and interview, the data revealed that they tend to show less NFC behavior. Instead, these subjects tend to show a rather intuitive approach and, therefore, used argumentation of external attribution. This shows that they are basically intuitive in their approach and therefore also consider the cause of crises externally.

5.7.2 Results Group 2 – Preference for FI

A second group of participants are subjects with high FI. Persons who think and act more intuitively can show understanding for intuitive-acting persons and therefore evaluate the cause of problems more externally. It is understandable that subjects with relatively high FI tend to make their judgment based on their guts, feelings, experience, and expertise. These aspects are not based on data and cannot be retrieved from given facts. Moreover, these aspects have a

certain level of risks and the chance of failure. Therefore, it can be assumed that people high in FI can better relate to failed situations and tend to judge the actors less. Instead, they might tend toward seeing external sources as the causes for the arising problem. However, attribution in this group is very balanced. In the next section, the participants and their indication for certain attributions are demonstrated and discussed.

> Participant 14: "*So, according to my view and attitude, I have to say, I wondered a lot how you can run into such startups so blindly.*" (int.)

> Participant 4: "*The fact that that might not be the best distribution of roles might have been figured out beforehand.*" (int.)

These participants showed high score in FI and also demonstrated a rather faith-in-intuition-related behavior in their reflective essays and interviews. It appears that these subjects tend to evaluate the causes for mistake as attributable to the person by mentioning the blindness of the founder in entering the entrepreneurial process and the wrong setting of roles within the entrepreneurial teams. This shows a clear indication for self-created problems and thus internal attributions.

> Participant 11: "*In itself, [the situation was] unpredictable, because such a pandemic situation was just not yet present, and you cannot just look up how to deal with it or which consequences are awaiting you. But such a pandemic situation is, of course, something completely different. That's why I would say unpredictable.*" (int.)

In this case, the participant showed a high FI score. However, in their reflective essay and interviews, they tended to work analytically and therefore rather see external causes for the problem situation. Participants often pointed out the unpredictability of the problem. It could be that these participants can relate with crises and failed problem situations and tend to find less causes for blame within the actor(s), but instead tend to use an external attribution.

5.8 Results: Opportunity Identification and Recognition

As already discussed in study 1 of this work, several factors influence the extent to which individuals build perceived behavioral control over the entrepreneurial journey, how they form a subjective norm, and which factors constitute the attitude towards entrepreneurship. While the TPB could thus be extended for additional determinants of intention, the underlying second study was at last able to uncover insights into the relationship between intention and actual opportunity exploitation. Throughout the case study work, it was a viable option for the participants to choose to resign from the entrepreneurial path. Out of the 14 participants, only one participant decided that in the frame of the case study, it would be better for the entrepreneur not to further exploit the opportunity.

> Participant 14: "*Entrepreneurship is really such a huge field for me with so many risks and uncertainties that I would say I don't dare to do it. So, for me it was kind of, 'oh my God, so much has gone wrong'. She [the entrepreneur] should rather look for a permanent job, pay everything back, then she'll leave it in the past."* (int)

Regardless of whether opportunities are discovered or created (Alvarez & Barney, 2007), the perception that opportunities exist stimulates an individual's effort to commence the new venture creation process (Edelman & Yli-Renko, 2010; Karimi, 2016). So, while the cases in this study were already predetermined, it was surprising that all except one participant were keen to find solutions in order to outline possible ways of opportunity exploitation while a valid option was to opt out. However, although the results need to be regarded with caution, it becomes a central insight of this study that a recognized opportunity seems to strengthen the persistence of potential entrepreneurs to, in fact, exploit this opportunity. This goes in line with Krueger et al. (2000) who state that intention is the best predictor of actual behavior, but also that the perception of an opportunity can ignite the cognitive process of intention-building which, in turn, can lead to entrepreneurial action. Results here suggest that the sheer recognition of entrepreneurial opportunities strengthens entrepreneurial intention, affirming the close relationship between opportunity recognition and intention (Karimi, 2016). Some research has revealed that the perception of opportunities and entrepreneurial intention is even higher when individuals perceive entrepreneurship as desirable (Reitan, 1997). Taking a cautious look at the descriptive data of this study (see Table 28), the data does not fully support the results by Reitan (1997), as the attitude towards behavior scored the lowest mean value of all constructs (3.05).

Nevertheless, entrepreneurial intention still scored relatively high (5.23), which goes in line with the fact that 13 out of 14 participants searched for solutions and only one person considered opting out for the entrepreneur in the case study.

Overall, the results justify the conceptual model and its adaptation concerning the replacement of *intention* by *opportunity identification.* Additionally, although the results cover a very small sample, the mixed-methods approach revealed a close relationship between opportunity identification and opportunity exploitation, supporting the overall assumption of the TPB (Ajzen, 1991). While the qualitative approach offered a deeper insight into the discrepancy between self-assessment and actual behavior of individuals, the supporting quantitative questionnaire opened doors for future, more extensive investigations.

6 Limitations and Implications

Two studies were presented in the underlying work. A quantitative study in chapter 4 and a qualitative study in chapter 5. Both studies go along with a number of research limitations which, in turn, open the door for implications and will be discussed in the following section.

6.1 Limitations and Implications - Study 1

The quantitative study was divided into two phases. While the initial purpose of the study was to reveal the relationship between cognition styles and decision-making logics, the aim was to test a minor part of the entire conceptual model. As the research process revealed additional potential, more variables were added in order to provide even more sophisticated results. Still, in the frame of the overarching theory—namely the TPB—the study did not cover the entire conceptual model, as testing the whole TPB would require an even larger sample size. Although there is generally no "one-size-fits-all solution to address this issue" (Memon et al., 2020), many approaches suggest a sample-to-item-ratio ranging from at least a 5-to-1 ratio (Hatcher, 1994; Suhr, 2006) to a 20-to-1 ratio (Costello & Osborne, 2005), where higher ratios are considered better (Memon et al., 2020) Testing the whole conceptual model would include up to about 100 items, requiring at least around 2000 participants, which appeared as not feasible during the planned time frame and considering the limited access to the sample of the research study. Moreover, the motivation of the participants and the quality of their answers were questioned.

The literature suggests that a high number of questions will compromise the data quality (Meade & Craig, 2012, p. 438). This means that participants providing answers without reading the content or only with low motivation will affect the accuracy of the responses (Huang et al, 2012). Therefore, only a part of the conceptual model was focused. However, the relevance of testing the entire conceptual model for a larger sample with interactive components in the survey to activate participants' attention is acknowledged. Further studies are welcomed to test the entire conceptual model on a larger sample to provide more validated results, which could also open the door for additional conclusions.

Another limitation considers the adjustment of the p values within the data analysis. Conducting the testing of multiple hypotheses on the same sample opens the debate for an adjustment of the p values caused by the increased risk of type I errors (e.g., Lachlan & Spence, 2006). However, measurements such as the Bonferroni correction are criticized in various research

areas and applied inconsistently due to an increased probability of type II errors and discordant handling (e.g., Armstrong, 2014; Feise, 2002, Lachlan & Spence, 2006). Perneger (1998) argues that a series of practical issues remain unclear, such as the question of whether unpublished tests should also be included in the correction of the p value. Due to the fact that the conducted t-tests were applied in order to investigate relations beyond the overarching hypotheses, the p value was held consistent at a 5%-level. Considering the risk of both type I and type II errors, "there is an important difference between what data say and what the researcher (or reader) believes to be true" (Perneger, 1998, p. 1237). Therefore, the findings in the underlying work are discussed thoroughly with the persistent aim to reach comprehensible conclusions without the use of Bonferroni adjustments (Jones & Rushton, 1982; Perneger, 1998).

Moreover, it needs to be stressed that both research studies were conducted in a specific spatial context, namely at a German university located in North Rhine-Westphalia. The results might have differed if the studies were replicated and conducted in other parts of Germany. Likewise, results might have been different when conducting the studies in other countries. Consequently, the results are context-specific and not generalizable and should therefore be handled with caution. In order to validate the results, it is suggested to replicate and conduct this study at other (international) universities in order to give insights into potential similarities and differences within the relationship of cognition styles, decision logics, and all other constructs. Moreover, the scales in use were selected from a wide array of measurement tools within the academic literature. Oftentimes, more than one valid measurement tool exists for similar constructs (e.g., Brettel et al., 2012; Chandler et al., 2012). The conceptual model is open for the interchange of scales in order to verify the results. This applies, for instance, for the ESE construct.

In the underlying work, the scale by Beierlein et al. (2012) was used, though it would have been possible to use the scale by Chen et al. (1998). The former was used for research-pragmatic reasons. Beierlein et al. (2012) provide a shorter and adaptable scale that is already available in a German version and was applied in order to keep the questionnaire at a moderate length. It is recommended to conduct the study using Chen et al.'s (1998) scale to provide comparable data. Furthermore, it is suggested to include even more constructs to gain an even wider insight from future studies. For instance, risk-tolerance (Gilliam et al., 2010) could be implemented as another construct of interest. Other suggested relationships could be revealed by collecting data on family business or educational background.

Another limitation considers the results. The study revealed correlations, but no causation. While cognition styles and decision-making logics evidently impact each other, it is impossible to reveal the direction of this relationship. Therefore, implications on the relationship between the constructs need to be handled with caution. Following the suggestion by Kuckartz et al. (2013), additional information must be used or subsequent studies and experiments must be performed in order to gain more insights on the direction of the uncovered relationships. Further studies are encouraged to unlock causation and thus provide evidence of the hypotheses. For instance, an experimental design could open the door for observation of the respective constructs. Future researchers are welcomed to utilize both the quantitative and the qualitative study to design an additional experiment.

Moreover, the formulated hypotheses arise from a theoretical foundation based on the selected literature. Although the derivation of hypotheses was based on extensively researched academic literature and discussed in detail, there is still literature that would propose different constellations of the constructs. For instance, while here it was argued that ESE should have a strong relationship to FI, data pointed in the other direction, linking ESE and NFC. This logic of argumentation could be found in some of the existing literature (e.g., Elias & Loomis, 2006; Chen et al., 2021).

Lastly, the study contained self-reporting scales. Researchers acknowledge that responders of self-reporting scales are prone to be biased and answer in a prosocial way (Brenner & DeLamater, 2016). Therefore, it is recommended to conduct observational video studies, rather than self-reporting scales, in order to assess participants.

6.2 Limitations and Implications – Study 2

The qualitative study also contains a number of limitations. For example, the in-depth data is based on relatively short reflection essays and also relatively short interviews. While the participants already committed to conduct exercises and self-reporting scales, much larger involvement was impossible to obtain. The type of data determines the methodological approach. Therefore, other methodologies were already excluded and study 2 does not provide any theoretical conclusions. Further studies are recommended to generate more elaborate data by conducting in-depth interviews that allow working with approaches such as grounded theory (Corbin & Strauss, 2015) or phenomenology (Berglund, 2007; Cope, 2011; Seymour, 2006). These methodological approaches also offer potential for generating novel theories.

Concerning the sample, the number of participants in the qualitative study was relatively small and contained people with moderate entrepreneurship knowledge. This was due to pragmatic

reasons and the availability of suitable participants. Further studies could not only increase the sample size but also choose participants who have more experience with entrepreneurship in order to reach a more in-depth exposure to the subject, as suggested and conducted by previous researchers (e.g., Autio et al., 2001; Kolvereid, 1996; Liñan & Chen, 2009).

The data was acquired either in a written or spoken form. The explanation of the problem-solving process by the participants could therefore be different from their real behavior. Originally, it was planned to conduct a video analysis which could have tracked the behavior in decision-making situations visually. Unfortunately, Covid-19 altered the methodology towards an online-based approach. Although the results provide satisfyingly deep insights, it is still highly recommended to replicate the qualitative study with observational methods, such as think-aloud protocols (Ericsson & Simon, 1993).

It also needs to be acknowledged that the samples in studies 1 and 2 were not identical. The second study aimed to test the entire conceptual model while the first study focused on the determinants of PBC. Future studies could investigate the entire conceptual model on a quantitative basis and choose participants from their sample to participate in a qualitative second part.

Lastly, the participants worked on their own case solutions and, later, on a common group solution. In the end, the influence of group dynamics has not been analyzed in the underlying study. Again, Covid-19 cancelled the actual plan of conducting a video study in which the groups would gather and discuss their results and approaches in order to propose a collective solution. Working together physically in groups became no longer possible, which is why the group work was switched to online-sessions. These sessions were impossible to attend and track simultaneously. Future studies could follow the initial suggestion and investigate the influence of the group within the problem-solving process through a video analysis.

7 Overall Discussion

Major research interest in entrepreneurship has been devoted to topics related to the entrepreneurial mind and behavior (Baron, 2004; Sarasvathy, 2001; Shane & Venkataraman, 2000). While it remains far from obvious how entrepreneurs think and decide, this dissertation aimed at revealing certain relationships between the cognitive setting, decision-logics, and actual behavior of the entrepreneur. In order to understand whether people with a certain cognitive setting are prone to becoming causal or effectual decision-makers, the relationship between cognition styles and decision-making logics was investigated in the first step of the study. The research distinguished between individuals who make so-called *head decisions,* and therefore show a high analytical cognitive setting, and individuals who make decisions *from the heart,* and therefore tend to be intuitive thinkers. Results show that analytical people have a tendency towards causal decision-making while intuitive people prefer the effectual style of entrepreneurial decision-making. While the entrepreneurial environment is characterized by a high degree of dynamism and uncertainty (Liening, 2017), it oftentimes appears non-trivial for entrepreneurs to select between decision modes. This is caused by a large number of determinants that interact with each other. Problem-solving abilities, self-efficacy, prior experience, or gender are just a few of these factors.

While intuitive decisions require specific experience, analytical decisions rely on information and data (Salas et al., 2010). Entrepreneurs are clearly oftentimes lacking in both. This might be one explanation for previous academic findings that show that entrepreneurs tend toward a rather effectual reasoning, especially in early phases of the new venture creation process and become more effectual during later stages (Reymen et al., 2015). Still, entrepreneurs need to recognize and make use of different decision-making options in order to cope with the highly uncertain environment they face.

The results of this study offer an opportunity for changes at the margin for entrepreneurial decisions. While in some situations intuitive or effectual decisions might promise significant success, other situations call for analytical or causal decision-making. Successful entrepreneurs must understand that both constitute legitimate forms of decision-making, which have their place within the uncertain context of entrepreneurship.

The individual cognitive setting correlates with entrepreneurial decision logic. Therefore, understanding one's own individual cognitive setting appears crucial for potential entrepreneurs in such a way that individuals gain knowledge on cognitive settings and the accompanying susceptibility for certain decision logics. Mastering the entrepreneurial journey, however, is not

only associated with occasional changes in decision logics (Reymen et al., 2015; Sarasvathy, 2001) but even requires active shifting in order to deal with complex problems. In that frame, this work revealed that problem-solving ability is significantly higher among people with an analytical cognitive setting than for intuitive people. This might imply that unexperienced entrepreneurs, who cannot rely on a high level of experience-based intuition, also deemphasize their highly important problem-solving ability. Moreover, entrepreneurial self-efficacy is crucial to initiating the entrepreneurial process (Chen et al., 1998), and results showed a higher level of self-efficacy for people with an analytical cognition style in comparison to intuitive people. Therefore, potential entrepreneurs, who tend to make heartfelt decisions, are slightly lacking when it comes to the expression of crucial attributes such as self-efficacy and problem-solving ability. These insights call for action. Intuitive people should aim to enhance their self-efficacy and problem-solving ability. This could be achieved through a more intuition-based teaching approach, showing how effectual approaches are legitimate options for entrepreneurial problem-solving and success. This could also mean to enhance (potential) entrepreneurs to actively include experts in their new venture process. Entrepreneurs might not have enough intuition-based experience to cope with all the hurdles in the beginning of the entrepreneurial path. The enhancement to actively search for others, who can contribute with expertise, might increase the likelihood for intuitive decisions to be fruitful and result in major learnings for the entrepreneur.

Experienced-based teaching by implementing regional entrepreneurs might contribute to a stronger attraction for intuitive individuals towards entrepreneurship, and this should be further investigated in future studies. However, the strong need for analytical approaches, especially in the early stages of entrepreneurship (Reymen et al., 2015), calls for an improvement of analytical skillsets as well, which could be taught by using the various entrepreneurial methods in realistic settings.

Conversely, analytical people might show a higher level in the attributes of problem-solving ability and self-efficacy, but instead of mentally hardening this cognition style, the need for intuitive approaches needs to be stressed. Again, effectual approaches might enhance this effect and open the toolbox for handling complex entrepreneurial decision situations, even at the beginning of the entrepreneurial journey. Future studies could investigate the impact of effectuation-oriented teaching on the habits of analytical thinkers.

The second study showed somewhat opposing results when it comes to self-assessments. In the quantitative study, a good fit between self-assessment and scoring on the scales was observed. The qualitative study, however, revealed that individuals oftentimes behave differently from

what their own self-assessment states. In half of the 14 investigated cases, individuals expressed the opposite cognitive style to the one they assessed themselves to possess. This discrepancy between how potential entrepreneurs perceive themselves and how they in fact make decisions reveals great potential for further investigation of the antecedents, but again, also the possibilities to adapt entrepreneurship education. Self-reflective learning (Boyd & Fales, 1983) appears to be a valuable tool for helping students to analyze their own action and decisions in order to learn from them. A key aspect of learning could be a more applicable view of oneself and one's own, sometimes unconscious, mode of decision-making.

Moreover, this goes in line with practical implications as well. Entrepreneurs might switch between decision modes with a growing experience (Reymen et al., 2015), but still a balanced ratio between intuitive and analytic approaches might enrich the toolbox of entrepreneurs. So, entrepreneurship-supporting entities such as universities, incubators, clusters, or consultants could stimulate an active debating of cognitive-psychological topics. This could, in fact, enhance the transition from opportunity recognition to opportunity exploitation, as entrepreneurs learn to overcome cognitive biases and make realistic use of their abilities in the entrepreneurial context.

Once again, the analogy of Shapero that states that every individual has an *antennae* tuned to certain *frequencies* and *directions* (Krueger & Day, 2000) appears suitable. The entrepreneurial mind can be regarded as an antennae which is, by design, tuned towards opportunity exploitation, which relies on the previous identification of opportunities. The way a potential entrepreneur sets the frequencies to recognize and later exploit an entrepreneurial opportunity relies on many factors. The uncertain entrepreneurial environment not only opens a discontinuous and disruptive road for the entrepreneur but also challenges the beliefs, attitudes, cognitive preferences, and decision-logics that the entrepreneur might display under safer, regular circumstances. While the entrepreneur faces situations with less-than-perfect information, a combination of fast, intuitive and effortful, analytic approaches appears to be the most aspirational setting of frequencies.

In reference to the title of this work, (potential) entrepreneurs are constantly torn between analytical and intuitive cognition, which is displayed in their decision-making processes. Entrepreneurship requires a constant adjustment of one's own antennae in order to enable changes at the margin. Awareness and reflection on their decisions can surely empower entrepreneurs to tune their frequencies into the right direction and improve the interplay between *head* decisions and *heartfelt* decisions.

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9 Appendix

Appendix A
Scales and Translations used for the Quantitative Study

Need for cognition (Epstein et al., 1996)	Translation (Keller et al., 2000)
I would rather do something that requires little thought than something that is sure to challenge my thinking abilities. *	Ich würde lieber etwas tun, das wenig Denken erfordert, als etwas, das mit Sicherheit meine Denkfähigkeit herausfordert. *
I don't like to have the responsibility of handling a situation that requires a lot of thinking. *	Ich trage nicht gern die Verantwortung für eine Situation, die sehr viel Denken erfordert. *
I would prefer complex to simple problems.	Komplexe Probleme ziehe ich simplen Problemen vor.
I try to anticipate and avoid situations where there is a likely chance I will have to think in depth about something. *	Ich versuche, Situationen vorauszuahnen und zu vermeiden, in denen die Wahrscheinlichkeit groß ist, dass ich intensiv über etwas nachdenken muss. *
I find little satisfaction in deliberating hard and for long hours. *	Ich finde wenig Befriedigung darin, angestrengt stundenlang nachzudenken. *
Thinking is not my idea of fun. *	Denken entspricht nicht dem, was ich unter Spaß verstehe. *
The notion of thinking abstractly is not appealing to me. *	Abstrakt zu denken reizt mich nicht. *
I prefer my life to be filled with puzzles that I must solve.	Ich möchte, dass mein Leben mit Denkaufgaben gefüllt ist, die ich lösen muss.
Simply knowing the answer rather than understanding the reasons for the answer to a problem is fine with me. *	Es genügt mir, einfach die Antwort zu kennen, ohne die Gründe für die Antworrt auf ein Problem zu verstehen. *
I don't reason well under pressure. *	Unter Druck kann ich nicht logisch denken. *
The idea of relying on thought to make my way to the top does not appeal to me. *	Die Vorstellung, mich auf mein Denkvermögen zu verlassen, um es zu etwas zu bringen, spricht mich nicht an. *
I prefer to talk about international problems rather than to gossip or talk about celebrities.	Ich ziehe es vor über internationale Probleme zu diskutieren als über Klatsch und Tratsch von Prominenten.
Learning new ways to think doesn't excite me very much. *	Ich finde es nicht sonderlich aufregend, neue Denkweisen zu lernen. *
I would prefer a task that is intellectual, difficult, and important to one that is somewhat important but does not require much thought.	Ich würde lieber eine Aufgabe lösen, die Intelligenz erfordert, schwierig und bedeutend ist, als eine Aufgabe, die zwar irgendwie wichtig ist, aber nicht viel Nachdenken erfordert.
I generally prefer to accept things as they are rather than to question them. *	Ich akzeptiere die Dinge meist lieber so wie sie sind, anstatt sie zu hinterfragen. *
It is enough for me that something gets the job done, I don't care how or why it works. *	Es genügt, dass etwas funktioniert, mir ist egal, wie oder warum. *

I tend to set goals that can be accomplished only by expending considerable mental effort.	Ich neige dazu, mir Ziele zu setzen, die nur mit hoher mentaler Anstrengung zu erreichen sind.
I have difficulty thinking in new and unfamiliar situations. *	Das Denken in neuen und unbekannten Situationen fällt mir schwer. *
I feel relief rather than satisfaction after completing a task that required a lot of mental effort. *	Wenn ich eine Aufgabe erledigt habe, die viel geistige Anstrengung erfordert hat, fühle ich mich eher erleichtert als befriedigt. *
Faith in Intuition (Epstein et al., 1996); partial translation: Keller et al. (2000)	**Translation (Keller et al., 2000)**
My initial impressions of people are almost always right.	Mein erster Eindruck von anderen ist fast immer zutreffend.
I trust my initial feelings about people.	Wenn es um Menschen geht, kann ich meinem unmittelbarem Gefühl vertrauen.
When it comes to trusting people, I can usually rely on my "gut feelings."	Wenn die Frage ist, ob ich anderen vertrauen soll, entscheide ich normalerweise aus dem Bauch heraus.
I believe in trusting my hunches.	Ich glaube, ich kann meinen Gefühlen vertrauen.
I can usually feel when a person is right or wrong even if I can't explain how I know.	Ich erkenne es meistes, ob eine Person recht oder unrecht hat, auch wenn ich nicht erklären kann, warum.
I am a very intuitive person.	Ich bin ein sehr intuitiver Mensch.
I can typically sense right away when a person is lying.	Ich spüre es meistens sofort, wenn jemand lügt.
I am quick to form impressions about people.	Ich kann mir über andere sehr schnell einen Eindruck bilden.
I believe I can judge character pretty well from a person's appearance.	Ich denke, dass ich den Charakter einer Person sehr gut nach ihrer äußeren Erscheinung beurteilen kann.
I often have clear visual images of things.	Ich habe meistens eine klare visuelle Vorstellung von Dingen.
I have a very good sense of rhythm.	Ich habe ein gutes Rhythmusgefühl.
I am good at visualizing things.	Ich bin gut darin, mir Dinge vorzustellen.
Keller et al. (2000)	***see left: items developed in German by Keller et al. (2000)***
Bei Kaufentscheidungen entscheide ich oft aus dem Bauch heraus.	
Wenn ich mich (mit dem Auto/Rad) verfahren habe, entscheide ich mich an Straßenkreuzungen meist ganz spontan, in welche Richtung ich weiterfahre. Wenn ich mir eine Meinung zu einer Sache bilden soll, verlasse ich mich ganz auf meine Intuition.	
Bei den meisten Entscheidungen ist es sinnvoll, sich auf sein Gefühl zu verlassen.	

Ich vertraue meinen unmittelbaren Reaktionen auf andere.	
Der erste Einfall ist oft der beste.	
Effectuation (Chandler et al., 2011)	**Translation (Bei der Gründung eines Unternehmens würde ich…)**
We experimented with different products and/or business models.	...mit verschiedenen Produktideen und/oder Geschäftsmodellen experimentieren.
The product/service that we now provide is essentially the same as originally conceptualized.	...erwarten, dass sich mein finales Produkt der ursprünglich entwickelten Idee sehr ähnelt.
The product/service that we now provide is substantially different than we first imagined.	...erwarten, dass sich mein finales Produkt stark von der ursprünglichen Idee unterscheiden.
We tried a number of different approaches until we found a business model that worked.	...einige verschiedene Ansätze ausprobieren, bevor mein finales Geschäftsmodell feststeht.
We were careful not to commit more resources than we could afford to lose.	...darauf achtgeben, nicht mehr Ressourcen einzusetzen, als ich bereit bin zu verlieren.
We were careful not to risk more money than we were willing to lose with our initial idea.	...darauf achten, nicht mehr Geld zu riskieren, als ich bereit bin zu verlieren.
We were careful not to risk so much money that the company would be in real trouble financially if things didn't work out.	...nicht so viel Geld riskieren, um das Unternehmen in ernsthafte Schwierigkeiten zu bringen, falls es mit der Gründung nicht klappt.
We allowed the business to evolve as opportunities emerged.	...dem Unternehmen ermöglichen, sich weiterzuentwickeln, wenn sich Marktchancen ergeben.
We adapted what we were doing to the resources we had.	...meine Handlungen an meine verfügbaren Ressourcen anpassen.
We were flexible and took advantage of opportunities as they arose.	...flexibel bleiben und Marktchancen nutzen, sobald diese sich ergeben.
We avoided courses of action that restricted our flexibility and adaptability.	...Handlungsabläufe vermeiden, die meine Flexibilität und Anpassungsfähigkeit einschränken.
We used a substantial number of agreements with customers, suppliers and other organizations and people to reduce the amount of uncertainty.	...eine Vielzahl an Absprachen mit Kunden, Lieferanten und anderen Orgainsationen und Personen vereinbaren, um Unsicherheiten zu reduzieren.
We used pre-commitments from customers and suppliers as often as possible.	...so oft wie möglich Vorabverpflichtungen mit Kunden und Lieferanten in Anspruch nehmen.
Causation (Chandler et al., 2011)	**Translation (Bei der Gründung eines Unternehmens würde ich…)**
We analyzed long run opportunities and selected what we thought would provide the best returns	...langfristige Marktchancen analysieren und die auswählen, die nach meiner Meinung, die besten Gewinne erzielen werden.
We developed a strategy to best take advantage of resources and capabilities	...Strategien entwickeln, die meine vorhandenen Ressourcen und Fähigkeiten bestmöglich nutzen
We designed and planned business strategies	...Geschäftsstrategien planen und entwickeln.
We organized and implemented control processes to make sure we met objectives	...Kontrollprozesse einführen und sicherstellen, dass Meilensteile erreicht werden.

We researched and selected target markets and did meaningful competitive analysis	...Zielmärkte untersuchen und auswählen sowie umfangreiche Wettbewerbsanalyse durchführen.
We had a clear and consistent vision for where we wanted to end up	...eine klare und logische Vision wohin sich mein Unternehmen entwickeln soll.
We designed and planned production and marketing efforts	...Produktions- und Marketingmaßnahmen planen und entwickeln.
Problem-Solving (Jabri, 1991)	**Translation**
Being confronted with a maze of ideas which may, or may not, lead me somewhere	Ich habe Gefallen daran, mit einer Reihe von Ideen konfrontiert zu werden, die irgendwo hinführen könnten oder auch nicht.
Pursuing a problem, particularly if it takes me into areas I don't know much about	Ich habe Gefallen daran, ein Problem anzugehen, insbesondere wenn es mich in Bereiche führt, über die ich nicht viel weiß.
Linking ideas which stem from more than one area of investigation	Ich habe Gefallen an der Verknüpfung von Ideen, die aus mehr als einem Forschungsbebiet stammen.
Being fully occupied with what appear to be novel methods of solution	Ich habe Gefallen daran, mich voll und ganz mit neuartigen Lösungsmethoden zu beschäftigen.
Making unusual connections about ideas even if they are trivial	Ich habe Gefallen daran, unübliche Verbindungen zu Ideen herzustellen, auch wenn sie trivial sind.
Searching for novel approaches not required at the time	Ich habe Gefallen daran, nach neuartigen Ansätzen zu suchen, die zu dem Zeitpunkt eigentlich nicht erforderlich waren.
Struggling to make connections between apparently unrelated ideas	Ich habe gerne damit zu kämpfen, Verbindungen zwischen scheinbar nicht verwandten Ideen herzustellen
Spending time tracing relationships between disparate areas of work	Ich habe Gefallen daran, Zeit damit zu verbringen, Beziehungen zwischen unterschiedlichen Arbeitsbereichen nachzuollziehen.
Being 'caught up' by more than one concept, method or solution	Ich habe Gefallen daran, von mehreren Konzepten, Methoden oder Lösungen " aufgehalten " zu werden.
Self-Efficacy (Beierlein et al., 2012)	**German scale used**
In schwierigen Situationen kann ich mich auf meine Fähigkeiten verlassen.	In schwierigen Situationen kann ich mich auf meine Fähigkeiten verlassen.
Die meisten Probleme kann ich aus eigener Kraft gut meistern.	Die meisten Probleme kann ich aus eigener Kraft gut meistern.
Auch anstrengende und komplizierte Aufgaben kann ich in der Regel gut lösen.	Auch anstrengende und komplizierte Aufgaben kann ich in der Regel gut lösen.

* reversed items

Appendix B
Questionnaire exported from Limesurvey

Teil A: Persönliche Angaben

Bitte beantworten Sie die folgenden Fragen:

A1. Welches ist Ihr Geschlecht?

	männlich	weiblich	divers
Mein Geschlecht ist...	☐	☐	☐

A2. Mein Alter ist...

☐☐☐☐☐☐☐☐☐☐

A3. Was ist der höchste Schulabschluss, den Sie erreicht haben?

- ☐ ohne Schulabschluss
- ☐ Hauptschulabschluss
- ☐ Realschulabschluss
- ☐ Fachhochschulreife, Abschluss Fachoberschule
- ☐ Allgemeine oder fachgebundene Hochschulreife/Abitur
- ☐ Sonstiges

Sonstiges

A4. Haben Sie bereits einen Hochschulabschluss? (Wenn ja, geben Sie Ihren höchsten Hochschulabschluss an)

- ☐ Bachelor
- ☐ Master
- ☐ Diplom
- ☐ Staatsexamen
- ☐ Promotion
- ☐ keinen Hochschulabschluss
- ☐ Sonstiges

Sonstiges

A5. Wie lautet der Studiengang, den Sie derzeit absolvieren?

A6. **Haben Sie ein Vertiefungsfach? Wenn ja, bitte spezifizieren Sie Ihre Antwort (z. B. Marketing, Produktion & Logistik, Controlling)**

Ja ☐
Nein ☐

A7. **In welchem Hochschulsemester studieren Sie?**

A8. **Sind Sie erwerbstätig?**

Ja ☐
Nein ☐

A9. **Haben Sie Gründungsveranstaltungen besucht? (z. B. Entrepreneurship-Vorlesung oder -Seminare, Geschäftsmodellierung, Startup-Messe oder Vorträge etc.)**

Ja ☐
Nein ☐

Teil B: Umfrage Teil I

B1. Bitte lesen Sie die folgenden Aussagen und kreuzen Sie ein Kästchen an, das auf Sie zutrifft. Die Zahl eins bedeutet, dass Sie mit der Aussage ganz und gar nicht zustimmen, und sieben bedeutet, dass Sie ihr voll und ganz zustimmen.

	1 = stimme ganz und gar nicht zu	2	3	4	5	6	7 = stimme voll und ganz zu
Ich würde lieber etwas tun, das wenig Denken erfordert, als etwas, das mit Sicherheit meine Denkfähigkeit herausfordert.	☐	☐	☐	☐	☐	☐	☐
Ich trage nicht gern die Verantwortung für eine Situation, die sehr viel Denken erfordert.	☐	☐	☐	☐	☐	☐	☐
Komplexe Probleme ziehe ich simplen Problemen vor.	☐	☐	☐	☐	☐	☐	☐
Ich versuche, Situationen vorauszuahnen und zu vermeiden, in denen die Wahrscheinlichkeit groß ist, dass ich intensiv über etwas nachdenken muss.	☐	☐	☐	☐	☐	☐	☐
Ich finde wenig Befriedigung darin, angestrengt stundenlang nachzudenken.	☐	☐	☐	☐	☐	☐	☐
Denken entspricht nicht dem, was ich unter Spaß verstehe.	☐	☐	☐	☐	☐	☐	☐
Abstrakt zu denken reizt mich nicht.	☐	☐	☐	☐	☐	☐	☐
Ich möchte, dass mein Leben mit Denkaufgaben gefüllt ist, die ich lösen muss.	☐	☐	☐	☐	☐	☐	☐
Es genügt mir, einfach die Antwort zu kennen, ohne die Gründe für die Antwort auf ein Problem zu verstehen.	☐	☐	☐	☐	☐	☐	☐
Unter Druck kann ich nicht logisch denken.	☐	☐	☐	☐	☐	☐	☐
Die Vorstellung, mich auf mein Denkvermögen zu verlassen, um es zu etwas zu bringen, spricht mich nicht an.	☐	☐	☐	☐	☐	☐	☐
Ich ziehe es vor über internationale Probleme zu diskutieren als über Klatsch und Tratsch von Prominenten.	☐	☐	☐	☐	☐	☐	☐
Ich finde es nicht sonderlich aufregend, neue Denkweisen zu lernen.	☐	☐	☐	☐	☐	☐	☐
Ich würde lieber eine Aufgabe lösen, die Intelligenz erfordert, schwierig und bedeutend ist, als eine Aufgabe, die zwar irgendwie wichtig ist, aber nicht viel Nachdenken erfordert.	☐	☐	☐	☐	☐	☐	☐
Ich akzeptiere die Dinge meist lieber so wie sie sind, anstatt sie zu hinterfragen.	☐	☐	☐	☐	☐	☐	☐
Es genügt, dass etwas funktioniert, mir ist egal, wie oder warum.	☐	☐	☐	☐	☐	☐	☐
Ich neige dazu, mir Ziele zu setzen, die nur mit hoher mentaler Anstrengung zu erreichen sind.	☐	☐	☐	☐	☐	☐	☐
Das Denken in neuen und unbekannten Situationen fällt mir schwer.	☐	☐	☐	☐	☐	☐	☐
Wenn ich eine Aufgabe erledigt habe, die viel geistige Anstrengung erfordert hat, fühle ich mich eher erleichtert als befriedigt.	☐	☐	☐	☐	☐	☐	☐

Teil C: Umfrage Teil II

C1. Bitte lesen Sie die folgenden Aussagen und kreuzen Sie ein Kästchen an, das auf Sie zutrifft. Die Zahl <u>eins</u> bedeutet, dass Sie mit der Aussage ganz und gar nicht zustimmen, und <u>sieben</u> bedeutet, dass Sie ihr voll und ganz zustimmen.

	1 = stimme ganz und gar nicht zu	2	3	4	5	6	7 = stimme voll und ganz zu
Mein erster Eindruck von anderen ist fast immer zutreffend.	☐	☐	☐	☐	☐	☐	☐
Wenn es um Menschen geht, kann ich meinem unmittelbarem Gefühl vertrauen.	☐	☐	☐	☐	☐	☐	☐
Wenn die Frage ist, ob ich anderen vertrauen soll, entscheide ich normalerweise aus dem Bauch heraus.	☐	☐	☐	☐	☐	☐	☐
Ich glaube, ich kann meinen Gefühlen vertrauen.	☐	☐	☐	☐	☐	☐	☐
Ich erkenne es meistes, ob eine Person recht oder unrecht hat, auch wenn ich nicht erklären kann, warum.	☐	☐	☐	☐	☐	☐	☐
Ich bin ein sehr intuitiver Mensch.	☐	☐	☐	☐	☐	☐	☐
Ich spüre es meistens sofort, wenn jemand lügt.	☐	☐	☐	☐	☐	☐	☐
Ich kann mir über andere sehr schnell einen Eindruck bilden.	☐	☐	☐	☐	☐	☐	☐
Ich denke, dass ich den Charakter einer Person sehr gut nach ihrer äußeren Erscheinung beurteilen kann.	☐	☐	☐	☐	☐	☐	☐
Ich habe meistens eine klare visuelle Vorstellung von Dingen.	☐	☐	☐	☐	☐	☐	☐
Ich habe ein gutes Rhythmusgefühl.	☐	☐	☐	☐	☐	☐	☐
Ich bin gut darin, mir Dinge vorzustellen.	☐	☐	☐	☐	☐	☐	☐
Bei Kaufentscheidungen entscheide ich oft aus dem Bauch heraus.	☐	☐	☐	☐	☐	☐	☐
Wenn ich mich (mit dem Auto/Rad) verfahren habe, entscheide ich mich an Straßenkreuzungen meist ganz spontan, in welche Richtung ich weiterfahre.	☐	☐	☐	☐	☐	☐	☐
Wenn ich mir eine Meinung zu einer Sache bilden soll, verlasse ich mich ganz auf meine Intuition.	☐	☐	☐	☐	☐	☐	☐
Bei den meisten Entscheidungen ist es sinnvoll, sich auf sein Gefühl zu verlassen.	☐	☐	☐	☐	☐	☐	☐
Ich vertraue meinen unmittelbaren Reaktionen auf andere.	☐	☐	☐	☐	☐	☐	☐
Der erste Einfall ist oft der beste.	☐	☐	☐	☐	☐	☐	☐

Teil D: Umfrage Teil III

Stellen Sie sich vor, Sie möchten eine innovative Geschäftsidee realisieren. Bei der Gründung eines Unternehmens müssen Sie mehrere unternehmerische Entscheidungen treffen. Bitte lesen Sie die folgenden Aussagen und kreuzen Sie das Kästchen an, das auf Sie zutrifft. Die Zahl eins bedeutet, dass Sie der Aussage ganz und gar nicht zustimmen, und sieben bedeutet, dass Sie der Aussage voll und ganz zustimmen.

D1. Bei der Gründung eines Unternehmens würde ich…

	1 = stimme ganz und gar nicht zu	2	3	4	5	6	7 = stimme voll und ganz zu
langfristige Marktchancen analysieren und die auswählen, die nach meiner Meinung, die besten Gewinne erzielen werden.	☐	☐	☐	☐	☐	☐	☐
Strategien entwickeln, die meine vorhandenen Ressourcen und Fähigkeiten bestmöglich nutzen.	☐	☐	☐	☐	☐	☐	☐
Geschäftsstrategien planen und entwickeln.	☐	☐	☐	☐	☐	☐	☐
Kontrollprozesse einführen und sicherstellen, dass Meilensteile erreicht werden.	☐	☐	☐	☐	☐	☐	☐
Zielmärkte untersuchen und auswählen sowie eine umfangreiche Wettbewerbsanalyse durchführen.	☐	☐	☐	☐	☐	☐	☐
eine klare und logische Vision entwickeln, wohin sich mein Unternehmen entwickeln soll.	☐	☐	☐	☐	☐	☐	☐
Produktions- und Marketingmaßnahmen planen und entwickeln.	☐	☐	☐	☐	☐	☐	☐
mit verschiedenen Produktideen und/oder Geschäftsmodellen experimentieren.	☐	☐	☐	☐	☐	☐	☐
erwarten, dass sich mein finales Produkt der ursprünglich entwickelten Idee sehr ähnelt.	☐	☐	☐	☐	☐	☐	☐
erwarten, dass sich mein finales Produkt stark von der ursprünglichen Idee unterscheidet.	☐	☐	☐	☐	☐	☐	☐
einige verschiedene Ansätze ausprobieren, bevor mein finales Geschäftsmodell feststeht.	☐	☐	☐	☐	☐	☐	☐
darauf achtgeben, nicht mehr Ressourcen einzusetzen, als ich bereit bin zu verlieren.	☐	☐	☐	☐	☐	☐	☐
darauf achten, nicht mehr Geld zu riskieren, als ich bereit bin zu verlieren.	☐	☐	☐	☐	☐	☐	☐
nicht so viel Geld riskieren, um das Unternehmen in ernsthafte Schwierigkeiten zu bringen, falls es mit der Gründung nicht klappt.	☐	☐	☐	☐	☐	☐	☐
dem Unternehmen ermöglichen, sich weiterzuentwickeln, wenn sich Marktchancen ergeben.	☐	☐	☐	☐	☐	☐	☐
meine Handlungen an meine verfügbaren Ressourcen anpassen.	☐	☐	☐	☐	☐	☐	☐
flexibel bleiben und Marktchancen nutzen, sobald diese sich ergeben.	☐	☐	☐	☐	☐	☐	☐
Handlungsabläufe vermeiden, die meine Flexibilität und Anpassungsfähigkeit einschränken.	☐	☐	☐	☐	☐	☐	☐
eine Vielzahl an Absprachen mit Kunden, Lieferanten und anderen Orgainsationen und Personen vereinbaren, um Unsicherheiten zu reduzieren.	☐	☐	☐	☐	☐	☐	☐
so oft wie möglich Vorabverpflichtungen mit Kunden und Lieferanten in Anspruch nehmen.	☐	☐	☐	☐	☐	☐	☐

Vielen Dank für Ihre Teilnahme an der Studie!

Appendix C

Additions to the initial questionnaire (Appendix A)

Theory of Planned Behavior in Entrepreneurship (Doanh & Trang, 2019)	**Translation**
Entrepreneurial Intention	
I will make every effort to start and run my own firm	Ich würde alle Anstrengungen unternehmen, um mein eigenes Unternehmen zu gründen und zu führen.
I am determined to create a firm in the future	Ich wäre entschlossen, in Zukunft eine Firma zu gründen
I have a very seriously through of starting a firm	Ich hätte eine sehr konkrete Idee, eine Firma zu gründen.
I have the firm intention to start a firm some day	Ich hätte die feste Absicht, eines Tages ein Unternehmen zu gründen.
I will make every effort to start and run my own firm	Ich würde alle Anstrengungen unternehmen, um mein eigenes Unternehmen zu gründen und zu führen.
Attitude Toward Entrepreneurship	
A career as an entrepreneur is attractive for me	Eine Karriere als Entrepreneur wäre attraktiv für mich.
Being an entrepreneur would entail great satisfactions for me	Entrepreneur zu sein, würde mir große Befriedigung verschaffen.
Among various options, I would rather be an entrepreneur	Von allen beruflichen Optionen, würde ich am liebsten Entrepreneur werden.
Subjective Norm	
If I decided to create a firm, my closest family would approve of that decision	Wenn ich mich entschließen würde, eine Firma zu gründen, würde meine engste Familie diese Entscheidung gutheißen.
If I decided to create a firm, my closest friends would approve of that decision	Wenn ich beschließen würde, eine Firma zu gründen, würden meine engsten Freunde diese Entscheidung gutheißen.
If I decided to create a firm, people who are important to me would approve of that decision	Wenn ich beschließen würde, eine Firma zu gründen, würden die Menschen, die mir wichtig sind, diese Entscheidung gutheißen.
Perceived Behavioral Control	
To start a firm and keep it working would be easy for me	Ein Unternehmen zu gründen und es am Laufen zu halten, wäre für mich ein Leichtes.
I am prepared to start a viable firm	Ich wäre in der Lage, ein überlebensfähiges Unternehmen zu gründen.
I can control the creation process of a new firm	Ich wäre in der Lage, den Gründungsprozess einer neuen Firma kontrollieren.
I know the necessary practical details to start a firm	Ich würde die notwendigen Details zur Gründung einer Firma kennen.

Appendix D

Case Studies

Case 1

Lehrstuhl Entrepreneurship und Oekonomische Bildung

Lernziele

Nach Bearbeitung dieser Fallstudie sind Sie in der Lage…

- die aktuellen Schwierigkeiten des Startups zu erörtern.
- die Gründe und Ursachen für diese Schwierigkeiten zu analysieren.
- Handlungsoptionen für das Unternehmen zu gestalten.
- Ihre Handlungsoptionen reflektiert zu begründen und darzustellen.

Executive Summary

Die Gründung eines Unternehmens ist alles andere als einfach. Rund 50 Prozent aller Start-ups scheitern in den ersten zwei Jahren. Nach drei Jahren haben 80 Prozent aufgegeben, und nach mehr als fünf Jahren ist höchstens noch jedes zehnte Start-up auf dem Markt. Gründe für das Scheitern sind vielfältig. In dieser Fallstudie geht es um ein Startup aus der Lebensmittelbranche, das aktuell mehreren Krisensituationen ausgesetzt ist.

Das Startup

SUPERFOOD:

Gesunde, vegane und vegetarische Produkte für eine nachhaltige Zukunft! Das ist die Geschäftsidee der Einzelgründerin Nicole. Als ausgebildete Ernährungsberaterin ist gesundes Essen ein wichtiges Anliegen für sie. Ihre große Leidenschaft, das gesunde kochen, hat sie zu ihrem Beruf gemacht. So entstand die Idee des jungen Startup *Superfood*.

The Vegan Way – Heikles Beziehungsgeflecht des Startups Superfood

Vegane Ernährung ist stark im Trend und spricht in der heutigen Zeit eine immer größer werdende Zielgruppe an. Immer mehr und vor allem jüngere Menschen verzichten bewusst auf eine Ernährung tierischen Ursprungs. Hierzu zählt auch Nicole, die den Trend für vegane Lebensmittel schon früh entdeckte, bevor dieser überhaupt en vogue wurde. Nicole ist Gründerin und CEO des Startups *Superfood*. Das junge Unternehmen stellt proteinreiche Lebensmittel her, die einerseits alle wichtigen Nährstoffe enthalten und gleichzeitig ressourcenarm produziert werden können. Zum Sortiment gehören mittlerweile unter anderem Saucen, Pasten, Smoothies oder auch Nussriegel. Die Idee für vegane Lebensmittel entwickelte die gelernte Ernährungswissenschaftlerin bereits vor 10 Jahren, doch der Gedanke, die Idee in ein echtes Unternehmen umzuwandeln, kam Nicole erst vor wenigen Jahren.

Angefangen hat alles mit veganen Brotaufstrichen. Brotaufstriche sind schnell zubereitet, frisch und vor allen Dingen eine gesunde Alternative zu den „Zuckerbomben aus dem Supermarkt“ – wie Nicole sie nennt. Sie werden im Nullkommanichts und kinderleicht fertig gerührt. Dazu bedarf es wenige Zutaten und Handgriffe, - schon ist der vegane Brotaufstrich fertig.
Als Vegetarierin und spätere Veganerin interessierte sich Nicole schon immer für gesunde Ernährung. In den Anfangsphasen kreierte Nicole kleine vegane Pasten auf Familienfesten. Nach über 16 Jahren als Ernährungsberaterin bei einer großen Krankenversicherung wollte Nicole nun den Schritt in die Selbstständigkeit wagen und ihr eigenes Startup gründen. Ihre unbefristete Anstellung gab sie dafür schweren Herzens auf. Zu dieser Entscheidung hatte sie vor allem ihre Lebenspartnerin Katja ermutigt, die Nicole bei der Entstehung der Geschäftsidee und der Entwicklung der ersten veganen Brotaufstriche und Pasten eng begleitete und unterstützte.
Nach der Anmeldung als Kleingewerbetreibende benötigte Nicole für das junge Startup einen frischen, zeitgemäßen und vor allem einheitlichen Markenauftritt. Das Thema Marketing und Werbung lag Nicole am Herzen, denn es ging darum, sich mit einem Logo und Slogan nachhaltig in den Köpfen der potenziellen Kunden festzusetzen und sich damit von der Konkurrenz abzusetzen. „Viele junge Unternehmen vernachlässigen gerne diesen Aspekt“, erzählt Nicole. Den Begriff „Valley of Death“ hatte Nicole im Zusammenhang mit Startups gehört, daher war sie gewarnt und wollte in den schwierigen Anfangsphasen komplett auf fremde Finanzierung verzichten und setzte ihr privates Sparvermögen für die Umsetzung der Geschäftsidee ein. Da eine professionelle Werbeagentur zu teuer war, engagierte Nicole eine gute Freundin ihrer Lebenspartnerin Katja. Helene, die als gelernte Grafikdesignerin bereits mehrere Marketingaufträge für Existenzgründer und -gründerinnen umgesetzt hatte, sollte für Nicole ein konzeptioniertes, einheitliches Erscheinungsbild für das Startup *Superfood* entwerfen und somit die Marke des Unternehmens vorantreiben. Hierfür gab Nicole eine Voranzahlung von 1.000 EUR aus, damit Helene dem Unternehmen ein eigenes Logo und ein einheitliches Unternehmensdesign entwerfen konnte. Dazu kamen noch 600 EUR an Druckaufträgen für Flyer, Visitenkarten und Unternehmensbroschüren. Die einzigen Vorgaben von Nicole lauteten: „Schlicht aber elegant sollte es sein und bitte möglichst schnell fertig!“. Außerdem sollte eine schwarze Katze mit auf das Design. Denn ihr schwarzer Kater war eine wichtige Inspiration und ständiger Begleiter im Gründungsprozess. Ansonsten bekam Helene freie Hand bei der Gestaltung.

Nach dreimonatiger Arbeit übergab Helene Logo und Werbematerialien an Nicole, die anschließend ihre Produkte auf verschiedenen Foodmessen professionell mit neuem Unternehmensdesign vertreten konnte. Während die Produkte bei den Messebesuchenden

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auf positive Resonanz stießen, waren die Meisten jedoch über das Logo des Unternehmens verwundert. Obgleich Händler oder potenzielle Kunden, alle fragten sich, warum eine schwarze Katze als Logo gewählt wurde. Sowohl auf Produkten, als auch auf Flyern und Visitenkarten war die Silhouette einer schwarzen Katze mit elegant geschwungenem Schwanz zu sehen. Daneben in kursiver Schriftart der Unternehmensname *Superfood*. Da fiel es Nicole zum ersten Mal wie Schuppen von den Augen und sie dachte sich: „Ja, die haben ja echt recht. Da habe ich voll am Markt vorbei gearbeitet." Dass potenzielle Kunden falsche Assoziationen mit dem Unternehmenslogo verbinden könnten, wurde Nicole nun klar. Nicole war nicht nur über ihre eigene Unachtsamkeit verärgert, sondern auch über die der Grafikdesigner. „Helene hat schon für etliche Startups Unternehmenslogos konzipiert. Dass ihr dieser Fehler nicht aufgefallen ist, wundert mich schon sehr", erzählt Nicole. „Das Ganze kam in den Papiermüll und ich musste mir was anderes überlegen", stellt Nicole enttäuschend fest. Diese Fehlinvestition war ein herber Schlag für sie.

Nicole meldete das Feedback von den Teilnehmenden der Foodmesse an Helene zurück, die anschließend einen zweiten Versuch startete. Diesmal wirkte Nicole aktiv an der Entwicklung des Corporate Designs mit. „Ich habe ihr gesagt, was alles auf dieses Etikett drauf muss." Statt einer Katze entschied sich Nicole nun für ein Logo bestehend aus einem bunten Mix an Gemüse und Nüssen mit dem Slogan: *The Vegan Way of Life*. Mit neuem Logo und Design ging Nicole mit ihrer Webseite online und Nicole registrierte ihre Marke beim Marken- und Patentamt. Endlich konnte Nicole sich wieder vermehrt dem Kreieren der Aufstriche, Pasten und Saucen widmen, damit sie nun ihre Produkte über die Webseite anbieten konnte.

Zunächst schienen sich die Marketingbemühungen auszuzahlen und das Geschäft langsam in Fahrt zu kommen. Nach vier Monaten gingen jedoch zwei Schreiben bei Nicole ein. Das erste Schreiben war eine Klage von Wettbewerbern und der Verbraucherzentrale aufgrund falscher Kennzeichnung von veganen Lebensmitteln. Die Produkte von Nicole enthalten das Biosiegel, obwohl ihr dieses nicht zusteht. Nicole erläutert: „Die richtigen Etiketten des Lebensmittelstandards müssen eingehalten werden. Es gibt ein Lebensmittelrecht. Dieses gibt sogar die Größe vor, die Schriftform, die Buchstaben und wie groß sie sein müssen. Auch wo was auf dem Etikett gedruckt werden darf. Und ich durfte kein Biosiegel nutzen. Ich durfte auch das Wort „Bio" nicht benutzen. Nirgendwo." Das zweite Schreiben kam vom Deutschen Patent- und Markenamt. Zu allem Überfluss hatte Nicole gegen das Markenschutzrecht verstoßen. Die Registrierung der Marke sei nicht möglich, da sie bereits existiert und in einem anderen Land registriert wurde. Nun droht Nicole für die Verwendung des Biosiegels und einer bereits registrierten Marke eine Strafe in fünfstelliger Höhe. Dabei stehen die finale Auszahlung an Helene für ihre Arbeit am Unternehmensdesign i.H.v. 2.000 EUR sowie die ersten Produktionskosten für die Herstellung der Pasten und Saucen i.H.v. 6.000 EUR noch aus. Mit ihren Ersparnissen kann Nicole diese Summen nicht begleichen…

Impulsfragen und Aufgabenstellung

Nicole befindet sich in einer komplexen Situation. Versetzen Sie sich in die Situation von der Gründerin. Wie gehen Sie an das aktuelle Problem heran, um eine optimale Lösung zu finden? Welche Aspekte müssen Sie hierzu berücksichtigen und nach welchen Informationen suchen Sie, um eine Lösung für die Situation zu finden?

- Erarbeiten Sie einen Lösungsansatz aus der Perspektive der Jungunternehmerin aus.
- Begründen, reflektieren und dokumentieren Sie stichpunktartig Ihre Gedanken, Ideen und Strategien bei der Gestaltung des Lösungsansatzes.
- Verfassen Sie ein Reflexionsessay, welches Ihren Lösungsvorgang ausführlich beschreibt und schildert.

Lernziele

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Das Startup

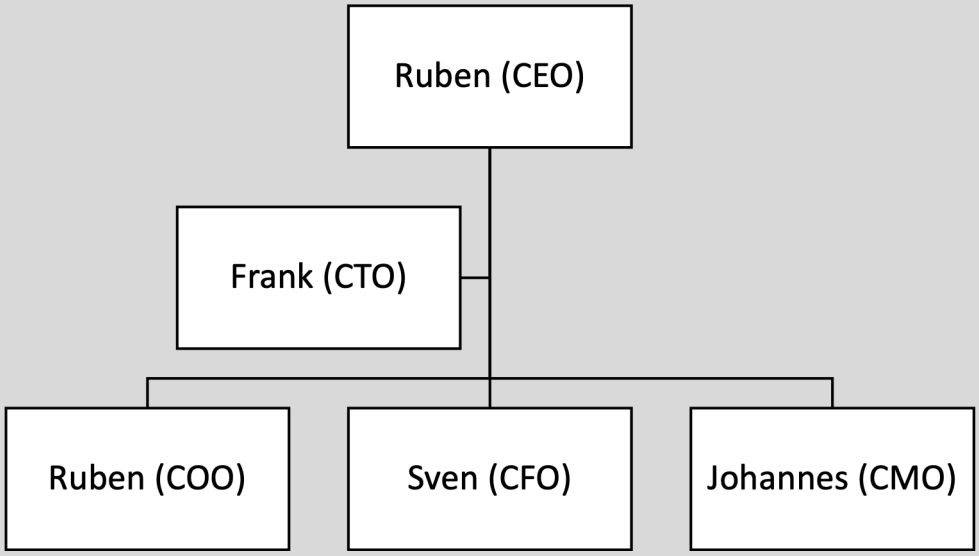
THE COUP:

Mit Rabattaktionen neue Kunden gewinnen ist mittlerweile ein wichtiges Kommunikations- und Marketinginstrument von vielen großen aber auch kleinen Unternehmen. Eine App, die eine Vielfalt an Angeboten und Rabatten bündelt, ist das Startup The Coup.

The Coup – Mit uns sparen Sie mehr

Heutzutage locken etliche Unternehmen ihre Kunden mit Gutscheinaktionen, Rabattdeals, Coupons oder Promo Codes und erwarten sich dadurch maßgeblich steigende Absatzzahlen. Als mittlerweile unverzichtbares Element gilt das sogenannte *Affiliate Marketing*, bei dem Unternehmen ausgewählten Vertriebspartnern eine Provision dafür zahlen, dass diese über ihre Kanäle Werbung für das Unternehmen machen. Dem internetaffinen Kunden entgehen somit keine neuen Produkte, exklusiven Angebote oder spannenden Deals. Was zahlreichen Kunden jedoch missfällt ist der Fakt, dass mittlerweile so gut wie jedes Unternehmen seine eigene App hat und viele Vorteile nur bei Nutzung dieser App greifen. Das bedeutet für den Kunden, dass das Onlineshoppen an die Bedingung geknüpft ist, mehrere Apps zu benutzen. Wird dann mal der Speicher auf dem Handy knapp, kann man die Apps nicht mehr nutzen. Eine App die das ständige Switchen zwischen den verschiedenen Apps umgeht und alle Rabatte übersichtlich in einer App verwaltet, wäre eine tolle Lösung. So entstand vor knapp drei Jahren die Geschäftsidee von Ruben und seinen Mitgründern. Ruben war Mitte zwanzig und verfolgte bereits während seines Wirtschaftswissenschaftsstudiums mit dem Schwerpunkt Marketing das Ziel, eine eigene App zu erstellen.

Gemeinsam mit seinem Studienfreund Frank, einem Informatiker, feilte Ruben in jeder freien Minute an der Entwicklung ihrer App, die es ermöglichen sollte, digitale Coupons in nur einer App zu bündeln. Je länger und intensiver sich die beiden mit ihrer Idee auseinandersetzten, desto ernster wurde auch der Gedanke, dass sich daraus ein tragfähiges Geschäftsmodell erstellen ließe.
In der Folge besuchten Ruben und Frank verschiedenste Gründerevents, um ihr Netzwerk zu erweitern sowie wichtige Inspirationen und Feedback für ihre Appentwicklung zu sammeln. Auf einer dieser Veranstaltungen lernten Ruben und Frank ihre späteren Mitgründer Johannes und Sven kennen. Johannes war Mitte vierzig und hatte bereits über 20 Jahre im Vertrieb von diversen großen Konzernen gearbeitet. Von den ständigen Dienstreisen und langen Arbeitstagen hatte der Familienvater allerdings mittlerweile genug und suchte nach einer neuen beruflichen Herausforderung, die ihm mehr Zeit für seine Familie ermöglicht. Sven, Anfang 30, stand ebenfalls bereits im Berufsleben und arbeitete seit über sechs Jahren als Digital Manager eines Technologieunternehmens. Auch Sven war von einem beruflichen Tapetenwechsel nicht abgeneigt und erhoffte sich vor allem eine Aufgabe mit mehr Gestaltungs- und Entscheidungsfreiheit, da sein Vorgesetzter nicht für kreative Offenheit und Innovation bekannt war.
Die vier angehenden Gründer waren sich sofort sympathisch und konnten sich eine gemeinsame Unternehmensgründung gut vorstellen. In einem frisch renovierten Coworkingspace in Berlin tüftelt das agile Gründungsteam täglich an der Entwicklung einer führenden App für mobile Coupons. Es vergingen einige Wochen mit zahlreichen Video- und Telefonkonferenzen zwischen den vier Gründern. Die Geschäftsidee konnte immer weiter verfeinert werden und einer offiziellen Unternehmensgründung stand nun nicht mehr viel im Wege. Lediglich bei der Festlegung der Rollen waren sich die Gründer nicht immer einig. Ruben beharrte auf seine Position als Chief Executive Officer, da es schließlich seine Gründungsidee war und er den Gründungsprozess initiiert hatte. Gegen die Rolle des Geschäftsführers sprach jedoch, dass Ruben weder umfangreiche Berufserfahrung noch fundiertes Gründerwissen besaß und auch fachlich wenig technisches Verständnis für das Programmieren mitbrachte. Johannes hatte zu Beginn bereits die Rolle des CEO angestrebt, da er seiner Ansicht nach die meiste Berufs- und Lebenserfahrung besaß und das Unternehmen am besten führen könnte. Jedoch konnte er sein Vorhaben nicht durchsetzen. Johannes' Argument, dass aufgrund von Rubens fehlender Gründungserfahrungen dem Startup bei den Gesprächen mit potenziellen Investoren in eine ungünstigere Verhandlungsposition bringen könnte, teilte Ruben nicht und setzte sich gegen die Gruppe als CEO durch. Frank und Sven stritten sich hingegen um den Posten des Chief Technology Officers. Da beide versierte Informatiker waren, fiel die Entscheidung schwer. Allerdings hatte Frank bereits den ersten Algorithmus der App geschrieben und war von der Geburtsstunde der App mit an Bord, sodass sich Ruben dafür entschied, Frank als CTO und zugleich, da Frank sein Vertrauen genießt, als seinen stellvertretenen Geschäftsführer zu installieren. Johannes musste sich letzten Endes entscheiden mit der Rolle als Chief of Marketing zufriedengeben und tröstete sich damit mehr Zeit für seine Familie zu haben.



Entstehung der kritischen Situation

Anfang Dezember 2020 geriet das junge Unternehmen in eine äußerst kritische Lage. „Es gab zu viele Baustellen, die überwunden werden mussten", gab Ruben zu. Im Bereich Marketing hatte Johannes mittlerweile eine Strategie entwickelt. Eine Guerilla-Marketingkampagne sollte für eine prominente Platzierung von Werbung auf den Campus der Hochschulen in der Region Berlin sorgen. Diese Kampagne sorgte dafür, dass erste Nutzer der App akquiriert werden konnten. Zudem hatte Johannes gleichzeitig eine Handvoll seiner Unternehmenskontakte, die er im beruflichen Kontext gesammelt hatte, anrufen und davon überzeugen können, eine Kooperation mit dem Startup in Betracht zu ziehen.

Ruben war jedoch nicht sehr überzeugt. Von Johannes als erfahrenen Vertriebler, hatte er sich mehr erwartet, als eine dreistellige Nutzerzahl und einige Unternehmenskontakte. Schließlich waren seit der Unternehmensgründung bereits sechs Monate vergangen. „Wir haben zwar Unternehmenskontakte, aber die sehe ich eher als Testkunden und es fehlen die zahlungswilligen Kunden, damit das Geschäftsmodell funktioniert" meldete Ruben an seine Mitgründer zurück. Zudem war ihm die Reichweite einfach zu gering. Ruben war verärgert über die erfolgslosen Werbemaßnahmen von Johannes und warf ihm vor, den Vertrieb schleifen zu lassen und stattdessen zu viel Zeit im Homeoffice zu verbringen.

Die roten Zahlen kurz vor Weihnachten brachten Ruben in eine brenzlige Situation. Um sich irgendwie ins neue Jahr zu retten entschied er sich, die Zahlung von Gehältern an das Management vorerst auszusetzen. „Schließlich hatten wir uns alle auf die Selbstständigkeit geeignet. Und wenn man als Selbstständiger kein Geld verdient, verdient man eben kein Geld", konsternierte Ruben. Johannes und Sven konnten diese Entscheidung nicht teilen, was offen kommuniziert wurde und für erste Spannungen im Team sorgte.

Doch nicht alles war negativ. Unter den Unternehmenskontakten von Johannes befand sich ein großes, deutsches Telekommunikationsunternehmen, welches sich bereit erklärte, in das Startup zu investieren und das Unternehmen somit voranzutreiben. Noch vor Weihnachten wollten die Gründer den Vertrag für eine siebenstellige Summe durchbringen. Die Gespräche zwischen Johannes und dem Vorstand des Telekommunikationsunternehmens hatten jedoch immer „zwischen Tür und Angel" stattgefunden und waren bisher sehr formlos. Um den Investitionsvertrag also zu verhandeln und abschließen zu können, trafen die vier Gründer in der Konzernzentrale ein, um mit Vorstand und Rechtsabteilung einen Vertrag auszuhandeln.
Die CFO des Telekommunikationsunternehmens war eine alte Bekannte von Johannes, Frau Dr. Greve. Sie zeigte sich wenig überzeugt von Rubens und Franks Pitch. Als Geschäftsführer halte sie die beiden für „nicht geeignet, da sie schlichtweg keinerlei Berufserfahrung mitbringen". „Die einzige Möglichkeit" so Greve, sei ein Wechsel in der Führungsetage. Ein Vertrag könne nur zustande kommen, wenn Johannes künftig als CEO auftritt oder eine externe Führungsperson installiert wird. Das junge Startup musste diese Nachricht erst einmal verdauen und so wurden die Verhandlungen ins neue Jahr verschoben.
Ruben und Johannes begannen einen Konflikt darüber zu führen, wer künftig CEO des Unternehmens sein sollte. Doch auch im restlichen Team herrschte Uneinigkeit. Sowohl Frank als auch Sven hatten ursprünglich den Plan CTO zu sein. Sven konnte sich mit der Tätigkeit des CFO nicht wirklich identifizieren und verstand es nie, warum Ruben in die Rolle des CFO drängte. Ihm lag es nicht, sich Tag ein und Tag aus nur mit Unternehmenszahlen zu beschäftigen. Er war ein kreativer und technologieinteressierter Mensch. Ihm fehlte das Basteln an neuen Programmen und das Schreiben von neuen Codes. Er war zunehmend unzufrieden mit seiner Rolle. Da kam es Sven sehr entgegen, als gegen Jahresende die ersten Kundenbeschwerden eintrafen, die sich über funktionelle Schwierigkeiten der App beschwerten. Die Anzahl an Kunden, die auf ihren Rabatt warteten, erhöhte sich. So war es nicht verwunderlich, dass sich die Bewertungen im Internet verschlechterten. Als Grund sah Sven den nicht funktionierenden Code, der von Frank geschrieben wurde. Der permanente Streit zwischen den beiden frustrierte Sven zunehmend, insbesondere weil er der Ansicht war, dass Ruben sich stets auf die Seite von Frank schlug. So kam es, dass Sven kurz nach Neujahr ein Jobangebot vom Konkurrenten erhielt und mit dem Gedanken spielte, das Unternehmen zu verlassen.
Beim potenziellen Investor sickert nun die Nachricht durch, dass Sven das Startup verlassen möchte. Dies war nun Grund genug für den Investor komplett vom Vertrag abzuspringen, da sie nun gar kein Vertrauen in das Startup hatte.

Impulsfragen und Aufgabenstellung

Ruben befindet sich in einer komplexen Situation. Versetzen Sie sich in die Situation von dem Gründer. Wie gehen Sie an das aktuelle Problem heran, um eine optimale Lösung zu finden? Welche Aspekte müssen Sie hierzu berücksichtigen und nach welchen Informationen suchen Sie, um eine Lösung für die Situation zu finden?

- Erarbeiten Sie einen Lösungsansatz aus der Perspektive der Jungunternehmerin aus.
- Begründen, reflektieren und dokumentieren Sie stichpunktartig Ihre Gedanken, Ideen und Strategien bei der Gestaltung des Lösungsansatzes.
- Verfassen Sie ein Reflexionsessay, welches Ihren Lösungsvorgang ausführlich beschreibt und schildert.

Lernziele

Nach Bearbeitung dieser Fallstudie sind Sie in der Lage...

- die aktuellen Schwierigkeiten des Startups zu erörtern.
- die Gründe und Ursachen für diese Schwierigkeiten zu analysieren.
- Handlungsoptionen für das Unternehmen zu gestalten.
- Ihre Handlungsoptionen reflektiert zu begründen und darzustellen.

Executive Summary

Die Gründung eines Unternehmens ist alles andere als einfach. Rund 50 Prozent aller Start-ups scheitern in den ersten zwei Jahren. Nach drei Jahren haben 80 Prozent aufgegeben, und nach mehr als fünf Jahren ist höchstens noch jedes zehnte Start-up auf dem Markt. Die Hürden sind für Gründern mit Migrationshintergrund deutlich höher. In dieser Fallstudie muss das Startup eine ernsthafte Krisensituation bewältigen.

Das Startup

BOUQUET FLEUR

Umweltschonende und nachhaltige Blumen für den oder die Liebste? Das Geschäftsmodell des Startups Bouquet Fleur basiert auf der Idee, mit getrockneten Blumen unser Klima sowie die Umwelt zu schützen. Die aus Pakistan stammende Jungunternehmerin Saira verfolgt die Mission: die schönen Momente im Leben zu feiern ohne die Umwelt zu belasten.

Startup: Lust auf nachhaltige Blumen? Die Geschäftsidee von Bouquet Fleur

Die Deutschen geben jährlich rund drei Milliarden Euro für Blumen aus. Das Geschäft boomt vor allen Dingen am Valentinstag. An diesem Tag rechnet die Branche mit einem Umsatz von über 120 Millionen Euro in der Woche vor dem 14. Februar. Das bedeutet einen Anstieg von bis zu 500 Prozent im Vergleich zu einer normalen Woche. Die Liebe zum Blumenstrauß ist nachvollziehbar, schließlich duften sie gut und verleihen jedem Raum ein neues Ambiente. Die Kehrseite der Medaille zeigt jedoch, dass Blumen häufig vollgepumpt mit Pestiziden sind und unter prekären Bedingungen hergestellt werden. Dies ist vor allem in Ländern wie Kolumbien, Sambia oder Tansania, welche zu den größten Exporteuren von Schnittblumen zählen, besonders kritisch, denn es gibt dort keine geregelten Arbeits- und Pausenzeiten oder Arbeitsschutzvorschriften. Für einen Hungerlohn und ohne Schutzkleidung sind Arbeiterinnen und Arbeiter langen Arbeitstagen und gesundheitsschädlichen Pestiziden ausgesetzt. Laut Studien werden jedes Jahr ungefähr 200 Kilogramm Pestizide pro Hektar Nutzfläche eingesetzt. Außerdem verbrauchen die Gewächshäuser enorm viel Wasser. Der hohe Wasserkonsum für die Zucht von Blumen führt dazu, dass der

Grundwasserspiegel in diesen Ländern rapide sinkt. Zudem kommen weite Transportwege mit Schiffen oder Flugzeugen, welche den CO2-Austoß massiv erhöhen.
Das aus Pakistan stammende Ehepaar Saira und Ankur hofft dieser Umweltproblematik mit ihrem Online-Trockenblumengeschäft entgegenzuwirken. Ihre Geschäftsidee ist es, künstliche Seidenblumen mit getrockneten und konservierten Blumen zu mischen, um bunte Blumensträuße für den Online-Verkauf herzustellen. "Der Grund, warum ich mit diesem Geschäft angefangen habe, ist meine Liebe zu Blumen und ich wollte nachhaltige Blumen kreieren, die umweltschonend sind und getrocknete Blumen können viel länger aufbewahrt werden, was den Abfall in der Floristikbranche drastisch reduziert", sagt Saira, während sie einen Strauß arrangiert. "Alle unsere Lieferanten sind aus Europa. Die Trockenblumen kommen aus verschiedenen Ländern, es sind meist echte Blumen, die getrocknet und anschließend wiederverwendet werden können," erzählt Saira begeistert. Was ihr Geschäft antreibt, ist der Wunsch, die Verschwendung von frischen Blumen zu reduzieren. Diese werden oft schon nach wenigen Stunden, wie zum Beispiel bei einer Großveranstaltung oder Hochzeit, weggeworfen.

Saira zog 2011 nach London, um Internationales Management zu studieren. Das Studium und damit das neue Leben hatten jedoch ihren Preis. Sairas Eltern verkauften sogar ihr Haus, um ihrer Tochter eine bessere Ausbildung und somit ein besseres Leben zu ermöglichen. Saira sollten somit die Kosten für das Studium und die Lebenshaltung gewährleistet werden. „Als ich nach London kam, war es auch ein bisschen beängstigend. Ich konnte nicht wirklich mit den Leuten sprechen, ich verstand nicht, was sie sagten", berichtet Saira. Das änderte sich, als sie ihren späteren Ehemann Ankur in ihrem pakistanischen Lieblingsrestaurant kennenlernte. Das Restaurant wurde von Ankurs Eltern seit über 15 Jahren betrieben.

Nach dem Abschluss ihres Studiums wollte Saira unbedingt in Großbritannien bleiben. Zum einen, weil sie einen gutbezahlten Job finden und so ihre Familie in Pakistan unterstützen wollte und zum anderen, um bei Ankur bleiben zu können. Doch die Jobsuche erwies sich trotz gutem Abschlusszeugnis schwieriger als angenommen. „Es war sehr schwer als internationale Absolventin einen Job in London zu finden. Ich hatte wirklich mit meinem Leben zu kämpfen, ich konnte meine Miete nicht bezahlen", sagt sie. Auch Ankur ging es ähnlich. Er studierte in Plymouth Tourismus und Eventmanagement. Obwohl Ankur in Großbritannien aufgewachsen war und die Sprache perfekt beherrschte, hatte er nach seinem Abschluss Schwierigkeiten einen passenden Job zu finden und arbeitete daher nebenbei im Betrieb der Eltern, um zumindest vorerst über die Runden zu kommen. Während Ankur tagsüber im Restaurant aushalf, war Saira tagein, tagaus mit der Jobsuche beschäftigt. Ablenkung fand sie nur, wenn

sie ihrem Hobby nachging und wiederverwertbare Blumengestecke zusammenstellte, welche sie später Ankur mitgab, um sie als Deko im Restaurant auszulegen.

Die Auswirkungen der Arbeitslosigkeit wurden von Woche zu Woche spürbarer. Das Leben in London ist teuer. Es wurde klar, dass Saira ohne Arbeit nicht in Großbritannien bleiben könne. Nach monatelanger Suche, etlichen Absagen und erfolglosen Bewerbungsgesprächen hatte Saira sich mit dem Gedanken abgefunden, nach Pakistan zurückkehren zu müssen.

Der Wendepunkt kam, als Ankur eines Abends mit breitem Lächeln aus dem Restaurant seiner Eltern kam. Restaurantgäste hatten sich nach der Blumendekoration im Laden erkundigt. Ankur hatte zwei kleine Gestecke für 25 Pfund an die Gäste verkauft. Die Gäste stellten jedoch eine Bedingung: Ankur und Saira würden für eine große Geburtstagsfeier 40 Tischgestecke sowie die komplette Gartendekoration mit ihren getrockneten Blumen schmücken. Preis: 650 Pfund. Saira hatte dadurch Zeit gewonnen.

Nachdem Saira die Geburtstagsfeier mit ihrer Dekoration mitbegleitet hatte und einen beachtlichen Gewinn verzeichnen konnte, begann sie über ein eigenes Unternehmen nachzudenken. Nach kurzer Überlegung entschloss sie sich, mit ihrer Geschäftsidee auszugründen und holte Ankur bei ihrem Vorhaben ins Boot.

Entstehung der kritischen Situation

Die Gründung ihres eigenen Unternehmens im Jahr 2019 war ein Wendepunkt für Saira. Mit der Gründung hatte sie sich beruflich verwirklicht und hatte zudem eine Möglichkeit in Großbritannien zu bleiben. Das Unternehmen namens Bouquet Fleur florierte. Das Hauptgeschäft wurde online betrieben. Saira betreute hauptsächlich Kundinnen und Kunden für besondere Anlässe wie Hochzeiten, Geburtsfeiern oder Abschlussfeiern. Das gut laufende Geschäft ermöglichte es ihr, ihren ersten stationären Laden in London zu eröffnen.

Doch innerhalb weniger Wochen traf sie die erste Welle von COVID-19, und sie war gezwungen, umzudenken. Events und Veranstaltungen wurden nacheinander abgesagt. Ebenso wurde eine Bestellung nach der anderen storniert. "Ich hatte mein Geschäft auf die Lieferung von Blumen für Veranstaltungen ausgerichtet, und dann kam der erste Lockdown und alle Veranstaltungen wurden abgesagt. So war es auch in diesem Jahr, als die Stadt lange mit der Abriegelung zu kämpfen hatte und viele Hochzeiten und Veranstaltungen ausfielen“, erzählt Saira. Sie versuchte an einen Kredit zu kommen, um ihr Geschäft weiterhin am Leben zu erhalten.

Nach mehreren erfolgslosen Versuchen bei der Bank einen Kredit zu erhalten, erhielt sie von einer Bank einen Kredit in gewünschter Höhe, jedoch zu unmenschlichen Bedingungen. Frustriert legte sie das Kreditangebot Ankur vor, der sich jedoch wenig überrascht zeigte. Er kannte diese Situation bereits aus der Gründungszeit seiner Eltern und erzählte Saira, dass Unternehmer mit Migrationshintergrund seltener alle Formen der finanziellen Unterstützung erhalten würden als gebürtige Briten. Kürzlich hatte Ankur erst eine neue Statistik gelesen: Gründerinnen und Gründer mit Migrationshintergrund würden 72-83,5 % häufiger abgelehnt, wenn sie erweiterte Kreditlinien, Crowdfunding, neue Investoren, Unterstützung durch Online-Kreditgeber oder Veteranenkredite beantragten. Unternehmerinnen und Unternehmer mit Migrationshintergrund beantragen mit größerer Wahrscheinlichkeit als Unternehmerinnen und Unternehmer ohne Migrationshintergrund alle Formen staatlicher Unterstützung und erhalten deutlich seltener den vollen beantragten Betrag. So fühlen sich Ankurs Eltern und nun auch Saira von ihren Bundes-, Landes- oder Kommunalbehörden nicht unterstützt. Saira muss nun entscheiden, ob sie sich stark verschulden möchte oder ihr hart erarbeitetes Unternehmen aufgeben muss.

Impulsfragen und Aufgabenstellung

Saira und Ankur befinden sich in einer komplexen Situation. Versetzen Sie sich in die Situation der Gründerin und des Gründers. Wie gehen Sie an das aktuelle Problem heran, um eine optimale Lösung zu finden? Welche Aspekte müssen Sie hierzu berücksichtigen und nach welchen Informationen suchen Sie, um eine Lösung für die Situation zu finden?

- Erarbeiten Sie einen Lösungsansatz aus der Perspektive der Jungunternehmerin aus.
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- Verfassen Sie ein Reflexionsessay, welches Ihren Lösungsvorgang ausführlich beschreibt und schildert.

Appendix E
Interview Guideline

The interviews were conducted in German. Therefore, the guidelines are presented in German, as well. The methodological approach for focused interviews is based on Merton & Kendall (1945).

1. Inhaltsanalyse des Stimulus

Sie haben eine Fallstudie von mir erhalten und diese bearbeitet. Erzählen Sie mir zuerst von Ihrer Fallstudie. Worum geht es in Ihrer Fallstudie? Um was für ein Startup handelt es sich? Welche Personen kommen in Ihrer Fallstudie vor?

Persönlicher Bezug: Was war Ihr persönlicher Eindruck von dieser Fallstudie bzw. von dem Startup? Hatten Sie Fragen zu der Fallstudie? War Ihnen etwas unklar in dieser Fallstudie?

2. Problemstellung des Stimulus

In der Fallstudie stand das Startup vor kritischen Herausforderungen. Können Sie mir diese Herausforderungen genauer beschreiben? (Primäre Probleme vs. sekundäre Probleme)

3. Gründe für Herausforderungen

Sie haben die aktuellen Schwierigkeiten des Startups beschrieben. Was sind die potenziellen Gründe für diese Schwierigkeiten?

Persönlicher Bezug: Was vermuten Sie, sind die aktuellen Schwierigkeiten selbstverschuldet oder sind diese im Gründungsprozess nicht planbar gewesen? Hätten die Gründer etwas tun können, um diese Schwierigkeiten zu verhindern?

4. Individueller Lösungsansatz

Reflexion des Lösungsvorgangs: Sie hatten in Ihrer Ausarbeitung einen Lösungsansatz vorgestellt. Wie sind Sie bei Ihrem persönlichen Lösungsansatz vorgegangen? Wonach haben Sie gesucht?

Persönlicher Bezug: Wie gehen Sie grundsätzlich an offene Aufgabenstellungen heran? Wie lösen Sie generell Probleme?

Persönlicher Bezug: Würden Sie sich eher als analytische Person oder intuitive Person beschreiben? Wie zeigt sich das in Ihrer Vorgehensweise bei der Bearbeitung der Fallstudie? Können Sie das an einem konkreten Beispiel festmachen?

Eruierung der Handlungsoptionen: Welche Handlungsoptionen hatten die Gründer/innen, um die aktuellen Schwierigkeiten zu lösen? Wie haben Sie Ihren Lösungsansatz gestaltet?

Persönlicher Bezug: Wie bewerten Sie selbst Ihren Lösungsansatz? Hätten Sie rückblickend einen anderen Vorgang oder Lösungsansatz gewählt?

5. Kollektiver Lösungsansatz

Wie sind Sie bei der Gruppenarbeit vorgegangen? Wie ist Ihre Gruppe zu dem gemeinsamen Lösungskonzept gekommen?

Persönlicher Bezug: Sie haben sich als analytische/intuitive Person beschrieben. Wie schätzen Sie das bei Ihren Gruppenmitgliedern ein? Gab es Situationen, in denen die unterschiedlichen Persönlichkeiten zu einer Diskussion geführt haben?

Persönlicher Bezug: Mussten Sie sich persönlich zurücknehmen oder konnten Sie Ihre Lösungsansätze durchsetzen? Welche Ihrer Lösungsansätze konnten Sie in Ihrer Gruppe konkret durchsetzen?

Persönlicher Bezug: Wie bewerten Sie grundsätzlich die Gruppenarbeit? Finden Sie den gemeinsamen Lösungsansatz geeigneter als Ihren persönlichen Ansatz, um das Problem zu lösen? Was hätten Sie rückblickend gern geändert?