

## **Angel investors: Do cognitive biases in the decision basis cause less sustainable investments?**

A qualitative study of the investment process to map the occurrence of cognitive biases in angel investors' decision basis, as well as their consideration of environmental variables.

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## Preface

The master's thesis is written as a final part of the master's program Shift Entrepreneurship under the School of Business and Law at the University of Agder. We are incredibly proud to be among the first graduating students from this master's program, where students with different academic backgrounds are put together to learn about entrepreneurship in practice. The master's thesis is the result of a good collaboration between Maria Waagsnes with specialization in *Finance*, and Arne Kristian Drangsholt with specialization in *Innovation*. The purpose of this master's thesis is to create an understanding of how cognitive biases affect angel investors' decision basis and whether this leads to less sustainable investments.

The idea for the topic of the master's thesis came as a result of the experiences and skills we acquired during the master's program. Through topics within concept development, business operations, and project management, we have learned the importance of assessing a concept's economic, environmental, and social sustainability. By establishing our own company together during the study, we have also learned to implement these values in practice. However, in meetings with various investors, we experience that the emphasis on social and environmental sustainability is somewhat inconsistent. This made us curious about the psychological and behavioral factors that influence early-stage investors' decision basis, and especially how they consider environmental sustainability in an investment case.

Writing a master's thesis has been demanding and, at times, frustrating, but the process has still been incredibly interesting and educational. We have undoubtedly acquired expertise and experience that we will benefit from further in our careers and are very proud to have contributed with new research in the field of innovation and entrepreneurship. The support from partners, family, and friends has been invaluable during this period. We would like to thank all the angel investors who contributed with experience, competence, and transparent opinions on the topic. Finally, we would like to thank our supervisor Sougand Golesorkhi for support and good, professional guidance throughout the semester.

Place: Kristiansand

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## Abstract

Angel investors are an essential part of a startup's financing cycle, contributing venture capital and experience in a phase characterized by a high risk of failure. As they invest with private funds and ultimately make an independent decision to invest, we consider how rational their decision basis is by testing for cognitive biases. There is increasing pressure on investors to make sustainable investments, but numerous different guidelines make it challenging to determine their strategies. We have examined angel investors' assessment of environmental variables and their experience with sustainable investment strategies. The research aims to answer the problem statement; Do cognitive biases in angel investors' decision basis cause less sustainable investments?

The study is based on a qualitative research method. After selecting a sample size based on non-probability selection, we conducted semi-structured interviews with ten angel investors for qualitative depth. A content analysis was performed to map patterns in the data material and then presented findings that answered our research questions. We found that angel investors' decision basis is not fully rational, as various cognitive biases occur during the assessment of an investment case. Findings indicate an evident occurrence of the three cognitive biases herd mentality, confirmation bias, and framing cognitive bias. Furthermore, we found that most angel investors did not emphasize environmental variables in their decision basis. They had limited knowledge of ESG investing, but their investment process had similarities to different ESG strategies. This suggested that they did not have a conscious relationship with their own sustainability strategy. Angel investors expressed challenges in implementing sustainable investment strategies, which indicate that they largely assess based on their own perception of sustainability. Lack of sustainability expertise proves to be a fundamental problem for why angel investors do not consider environmental variables. The research findings indicate that the angel investors' decision basis is a complex area that requires further research, particularly on additional cognitive biases and other psychological factors. Our research can help to increase angel investors' awareness of their own assessment process and provide an incentive to raise sustainability competence in the ecosystem.

**Keywords:** Angel investors, cognitive biases, decision basis, environmental variables, ESG investing

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# 1. Introduction

A startup is a company in the initial stages of operations, characterized as dependent on external financing to survive the company's development process (Grant, 2021). This development process is often divided into several financing stages. The seed phase is the second phase in a startup's financing run and is known to be a critical phase where the founders have a high risk of failing. Raising capital is both time-consuming and resource excessive, and there are several ways startups can obtain funding. Research shows that global funding in the seed phase increased by 104% in 2021 (Sheth, 2022, sec. 3). Angel investors are regarded as one of the typical sources of financing in the seed phase and carry out more than three-quarters of their investments in this phase (DeGennaro & Dwyer, 2014; Forrester, 2014, p. 5). This made us curious to investigate angel investors further.

An angel investor (or business angel) is "often experienced high net-worth individuals, who invest in new or growing businesses individually or as part of a syndicate" (European Commission, 2022a). Angel investors are often the entrepreneurs' first meeting with risk capital after grants, family, and friends. In other words, an important contributor to the funding journey, stressing the importance of further research within this field. Their primary motivation for investing is often related to helping companies in the development phase, as many have developed companies in the past and have extensive experience in the field. Angel investors are usually not as preoccupied with profits as other investors and are known to have a higher risk appetite. Like any other investor, angel investors conduct assessment processes to identify the various risks associated with each investment case. Previous research finds that angel investors' decisions are influenced by rational and irrational factors such as cognitive biases and social influences (Barberis & Thaler, 2003; Fama, 1998; Forrester, 2014; Shefrin, 2002; Shleifer, 2000; Taler, 1970). Therefore, we became curious to examine which irrational factors influence angel investors' decision basis.

Traditional finance assumes that investors make rational decisions based on full access to information and a complete overview of potential outcomes (Neumann & Morgenstern, 2007). This assumption has been met with criticism from several researchers (e.g., Kahneman & Tversky, 1979), who believe that investors' decisions are not entirely rational as psychological and



behavioral factors characterize them. Based on this, behavioral finance emerged, exploring how investors' decisions are influenced by psychological, behavioral, and cognitive aspects (Forrester, 2014, p. 15). Previous research (e.g., Baker & Nofsinger, 2010; Barberis & Thaler, 2003; Kahneman & Tversky, 1979; Miller, 1986) finds that angel investors' decision-making process seems to violate the principles of traditional finance. Angel investors often make high-risk investments characterized by information asymmetry and a small degree of due diligence, which makes them more exposed to psychological factors such as cognitive biases (Forrester, 2014, p. 42). Previous research shows that cognitive biases affect investors' decision basis, which often leads to judgment errors when making investment decisions (e.g., Barberis et al., 1998; Chaudhary, 2013; Daniel et al., 1998; Fama, 1998). However, we observe that there is limited research on how cognitive biases affect angel investors' decision basis. Our study investigates whether the decision basis of angel investors is characterized by cognitive biases, which cognitive biases occur, and what influences their occurrence. Through a qualitative method where we use semi-structured interviews, we investigate whether herd mentality, confirmation bias, and framing cognitive bias influence the decision basis of angel investors. This leads us to our first research question:

**RQ1:** *How rational is the decision basis of angel investors?*

For decades, economists have had disagreements about how economics and sustainability should be connected (e.g., Carroll, 1991; Elkington, 2018; Friedman, 1970; Henderson, 2015). Despite prior disagreements, research by Cook et al. (2013) and others present evidence that the current climate change is artificial. In combination with several social justice issues, these climate changes have increased pressure on the business community to take a sustainable responsibility. In response to this, frameworks and guidelines such as *OECD Guidelines for Multinational Enterprises* and *the EU taxonomy for sustainable activities* have been developed for reporting on sustainability (European Commission, 2022b; OECD, 2020, Chapter 4.4.2). The financial market takes responsibility by making greater use of sustainable investment strategies, a way of investing where the investor assesses environmental, social, and governmental factors (ESG) "before contributing money and resources to a company or venture" (Stobierski, 2021, sec. 4). ESG investing is a widely used sustainable investment strategy that addresses risks and opportunities related to an

investment's environmental, social, and governance aspects of an investment (Borlaug & Aarsten, 2018, p. 14).

Although these guidelines and strategies were developed to create a sustainable change, it turns out that they may have created more confusion for investors. Investors struggle to maneuver between these, and as a result, it has become difficult for them to define their sustainability strategy. Another problem is that these guidelines are mainly created for larger companies, making it more challenging for smaller companies and early-stage investors to adapt. Previous research (e.g., OECD, 2020) indicate that investors have several challenges adapting their sustainability strategy. For example, Botsari and Lang (2020) find that about half of the angel investors in their study state that they do not believe ESG criteria are essential for investment performance and therefore choose not to use such an investment strategy. The research further finds that approximately 60% of angel investors assess ESG criteria, but only 10% view this as one of their most important investment criteria (Botsari & Lang, 2020, p. 23, 46). These findings raise the question of angel investors' relationship with their own sustainability strategy and whether they have any routines for assessing environmental variables. However, conducting a literature review on the topic resulted in few findings. Therefore, our research aims to examine angel investors' relationship to sustainable investment strategies by exploring how they take environmental variables into account in their decision-making basis. Through a qualitative method using semi-structured interviews, we will examine whether angel investors emphasize environmental variables in their decision basis and their relationship to the sustainability strategy of ESG investing. This leads us to our second research question:

**RQ2:** *How do angel investors emphasize environmental variables in their decision basis?*

By answering the two research questions presented above, we aim to be able to answer the problem of the master's thesis; do cognitive biases in angel investors' decision basis lead to less sustainable investments? There is no previous research that addresses this issue, and it will be interesting to investigate how psychological factors can affect the sustainability of an investment. Potentially, this research can provide valuable insight into the work of adapting sustainability strategies to smaller companies and investors.

## 1.1 Scope of the Study

As a starting point for the master's thesis, we chose to limit research to the seed phase. As the seed round is associated with high risk, we found it interesting to investigate how angel investors assess such an investment case. We see it as natural to limit our research to angel investors as they are a central source of funding in the seed phase. We chose to conduct the research with a selection of Norwegian angel investors, and there are various reasons for this. In 2021, the number of investments in early-stage companies increased significantly, but we especially saw an increase in Norway (J. B. Jacobsen, 2022). In 2020, there were 10,000 more new establishments in Norway compared with the number of new establishments ten years earlier (Statistisk sentralbyrå, 2021). The increase in startups is mainly due to the active role that the Norwegian authorities take in facilitating for more innovation (Fybish, 2022), leading to tremendous growth in the supply of public subsidies, especially for companies focusing on sustainability.

We are also seeing an increasing trend in ESG investing in the country. Norway has had a large oil and gas industry for several decades, but trends show that public and private investors aim to avoid ESG risk (Greiner, 2020). We limit the research to examining how angel investors assess environmental variables as we find this most interesting to evaluate their relationship to ESG investment. Finally, we limit the research to angel investors' screening process, where entrepreneurs present their investment cases to angel investors. An investment case is the entrepreneurs' presentation of their business concept to persuade investors to fund the project. In the screening phase, angel investors reject most companies, and only a few capture their interest. Therefore, it is interesting to examine what criteria the startup must meet to capture the interest of angel investors during the screening. The screening phase is usually part of due diligence, which is a process where the company's fundamentals are investigated by the investor (Chen, 2021a).

## **1.2 Structural Outline of the Master's Thesis**

Chapter one provides the background and context of the study and introduces the research problem, followed by the research aims, objectives, and questions. The scope of the study is also discussed.

Chapter two provides an overview of theoretical frameworks and previous research related to the research problem. We start with an introduction to startup financing and elaborate further on angel investors before linking this to behavioral finance and cognitive biases. Finally, we consider the connection between economics and sustainability, where we take a closer look at sustainable investment strategies, better known as ESG investing.

In chapter three, the methodological framework will be presented. The research design addresses research philosophy, research type, and research strategy, followed by the time horizon of the study, sampling strategy, data collection method, and data analysis method. Finally, we consider the methodological limitations.

Chapter four presents findings related to the two research questions based on research data from the analysis. The findings provide a basis for further discussion in the next chapter. Descriptive statistics are presented at the beginning of the chapter.

In chapter five, we consider the findings and engage in a discussion related to the two research questions. First, we address cognitive biases in angel investors' decision basis and discuss whether these can lead to less sustainable investments. Furthermore, we discuss angel investors' considerations of environmental variables and their relationship to sustainable investments.

Chapter six constitutes the conclusion of the master's thesis, where we summarize the study's most important findings and answer the research questions. Furthermore, we consider the implementation of the study followed by recommendations for future research.

## 2. Theoretical Framework

This chapter presents an overview of the relevant literature and theoretical framework that contributes to answering the research questions. The starting point for the thesis is to investigate whether angel investors' decision basis is affected by cognitive biases and whether this leads to less sustainable investments. We have divided the theory chapter into three parts: *Startup funding and angel investing*, *behavioral finance*, and *sustainable investing*. The first part deals with early-phase financing, where we introduce the startup financing cycle and define the seed capital phase. Furthermore, it explains what an angel investor is and reviews their risk profile, the different types of angel investors, and their investment process. This theory will help us further when considering behavioral finance and its relation to angel investors.

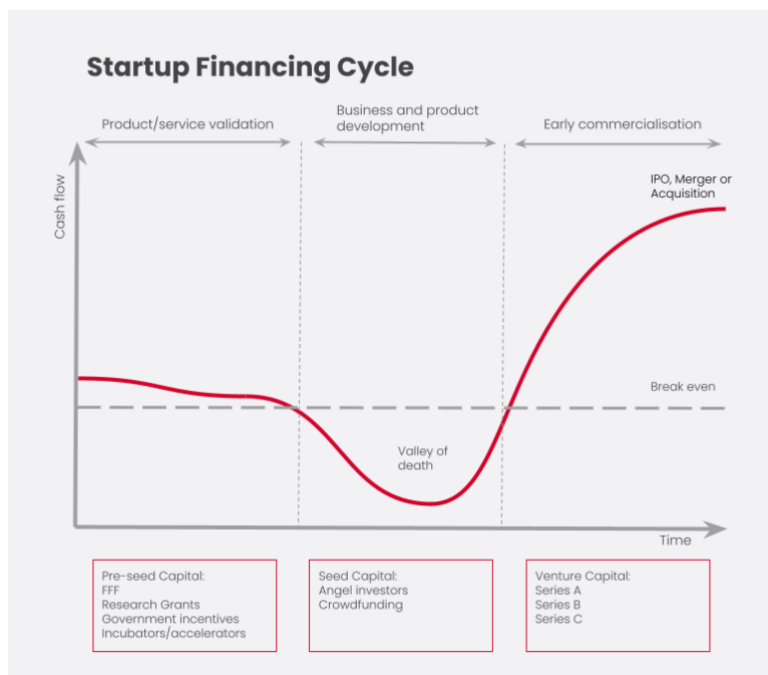
In the section on behavioral finance, we explain the underlying criticisms of traditional finance that have led to the development of behavioral finance theory. Furthermore, we consider prospect theory, a fundamental theory in behavioral finance explaining that angel investors' decision basis is also influenced by psychological factors. This leads us further into the theory of cognitive biases, which is central to our research. Here we define and exemplify the three cognitive biases herd mentality, confirmation bias, and framing cognitive bias.

In the last part, we consider sustainable investments and start by presenting theories that address sustainability and economic growth. Furthermore, we go into sustainable investments, defining the most common risks investors experience and evaluating why climate risk has also become a factor that investors want to avoid. Next, we present the most common strategies for sustainable investment before we go into more detail about ESG, which is also a central part of our research. Here we elaborate on environmental variables and the development of ESG integration. Finally, we introduce different ESG strategies and the challenges with ESG as a strategy.

## 2.1 Startup Financing

A company in the startup phase is dependent on financing to survive in a period characterized by high risk and uncertainty. A startup is defined as a company in the initial stages of operations, founded by one or more entrepreneurs (Grant, 2021). A startup usually needs to raise funding several times during the development process. The development process is divided into different financing steps, where different financing sources categorize each phase. We take a closer look at the characteristics of these financing steps and introduce the various sources of financing. This provides an increased understanding of the financing process before we look at the seed phase and angel investors. The startup financing model visualizes a typical economic lifecycle of a startup, requiring different types of financing for the various stages (Wilson & Silva, 2013, p. 10). The curve in the model (Figure 1) illustrates the startup's average supply of capital in the various phases (Waagsnes & Haugereid, 2021, p. 13). A startup needs an overview of the types of financing that fall under the different development phases, as the startup typically obtains funding several times during its life cycle (Oranburg, 2015, p. 2).

Figure 1. Startup Financing Cycle



(Adapted from «Crossing the valley of death: For tech startups in Norway», 2021, by Waagsnes & Haugereid, p. 14)

The various financing steps are categorized as *pre-seed*, *seed*, and *venture capital*. Pre-seed capital is capital raised in connection with the concept-development phase, which relates to the validation process of the product or service (Oranburg, 2015, p. 2). Typical financing in this phase is from friends, family, and “fools” (FFF) who mainly invest because they *want* the entrepreneur to succeed (Nielsen, 2017, p. 72). It is also common to obtain financing from public support and grants, where capital is granted to startups that potentially can generate value for society in the long run (Nielsen, 2017, p. 74). Seed capital is related to the phase where the startup needs funding to develop its business, product, or service, further (Oranburg, 2015, p. 2; Waagsnes & Haugereid, 2021, p. 15). A common source of capital in the seed phase is angel investors. Angel investors are private, often individual investors who usually are willing to take a higher risk than the traditional investor. Another type of funding is crowdfunding campaigns, where a larger number of investors enter with smaller sums to spread the individual risk (Nielsen, 2017, p. 33). The last phase of the startup financing cycle consists of venture capital and is related to commercialization and further scaling. Venture capital is a form of financing where venture capitalists invest in high-risk startups, aiming for a high reward in the long run (Nielsen, 2017, p. 34).

### **2.1.1 Seed Capital**

Our research is limited to the seed phase, where a startup typically has poor liquidity and the risk of failure is high (Fernando, 2021). Startups in the seed phase conventionally have a validated product or service and need seed capital (or other types of funding) to develop the business further. In the seed phase, a startup typically requires capital and operates with limited to no sales income (Oranburg, 2015, p. 2). The startup is therefore especially dependent on initial invested capital. Combining the costly development of a startup with the challenge of obtaining the first and crucial investments has led to this phase often being named "the valley of death" (Oranburg, 2015, p. 2).

Accordingly, seed investors are often willing to take high risks in their investments. Research indicates that the risk is higher in the seed phase and declines in the subsequent phases (Ruhnka & Young, 1987, p. 182). The seed phase is usually where a startup acquires its first *proper* investor. Seed capital investors are crucial for startups, as neither the public sector nor other investors want to invest during the valley of death, given the high risk of failure (Andriotto Financial Services,

2020). Botsari and Lang (2020) find that the seed stage is the most critical investment step from an angel investor's perspective (p. 15). Therefore, our research will be primarily limited to angel investors, as they are the key investors within the seed capital phase of startups.

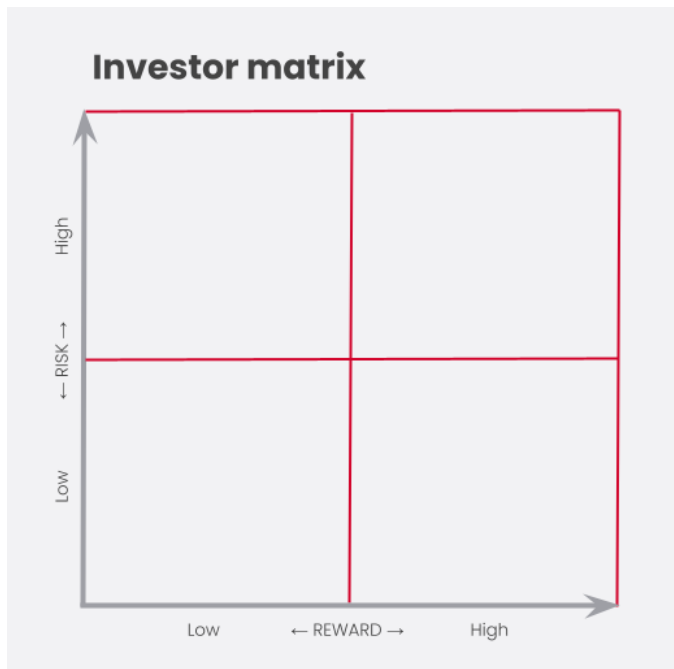
## **2.2 Angel Investors**

An angel investor (or business angel) is defined as an individual who invests with private funds in a startup company (Forrester, 2014, p. 1). Angel investors are usually among the primary funding sources for startups, followed by venture capitalists and non-listed securities such as private equity when entering early-stage (Wiltbank et al., 2009, p. 116). Investment in startups characterized by high risk is common for this type of investor (Acs & Tarpley, 1998 and Benjamin & Margulis, 2001, as cited in Forrester 2014, p. 5). Research shows that more than three-quarters of investments made by angel investors take place in the seed phase (DeGennaro & Dwyer, 2014; Forrester, 2014, p. 5).

Angel investors are described by many as an essential driver behind a startup's business development and are often characterized as informal venture capital (Berger & Udell, 1998; Diamond, 1984; Shane, 2012). Nielsen (2017) expresses that angel investors do not expect large income streams, but typically require that the company has taken the first steps in validating the product or service, and preferably developed a prototype when they enter the seed phase (p. 106). Angel investors can expect a high-risk startup to be closer to launch if the investor has little expertise in the area themselves (Nielsen, 2017, p. 106). The investor matrix was developed by Nielsen (2017) and illustrates how investor cases with different risk profiles lead to different returns for investors (p. 20). The matrix effectively categorizes investors based on how much risk they are willing to take.



Figure 2. Investor Matrix



(Adapted from «The startup funding book», 2017, by Nielsen, p. 20)

Although angel investors are known for making high-risk, high-reward investments, the degree of risk an individual investor is willing to take will vary from case to case. Nielsen (2017) suggests that an angel investor may choose to make an investment where they believe the risk is much higher than the potential reward, as factors aside from the financial reward make the case attractive (p. 20). Therefore, angel investors can be placed within all four categories of the matrix, as the preferences vary from one individual investor to another. What makes angel investors different from other investors is that the various investments often are characterized differently (Forrester, 2014). For example, investments vary on investment amount, industry, commitment, exit strategies, et cetera. (Forrester, 2014; Osnabrugge & Robinson, 2000).

Angel investors are known to be more risk-taking as they invest in the seed phase. But why do angel investors *want* to invest? Nielsen (2017) believes there are three reasons for angel investors' desire to invest (p. 107). The first, and perhaps most logical, relates to investing for the investor's own benefit. An investor may have a desire to make money, take part in something that interests them, work with entrepreneurship, or simply invest for enjoyment. The second reason is related to

the startup's benefit. The angel investor may have been involved in entrepreneurship in the past and want to contribute with their experiences or give something back. Nielsen's (2017) third and final reason relates to the world and society's benefits from the investment. These benefits are about angel investors wanting to create a difference locally or globally, whether about health, education, climate, et cetera. Mitteness et al.'s (2012) study claims that being familiar with angel investors' different characteristics can be beneficial, not only for other investors, but also for the entrepreneurs looking for funding. "Entrepreneurs should consider how individual characteristics of investors may impact their ability to get funding." (Mitteness et al., 2012, p. 604).

### **2.2.1 Angel Investor Types**

Why do angel investors make investment decisions so differently from one another? Nielsen (2017) explains that angel investors are not a homogeneous group but consist of individuals with varied preferences. He further indicates that the *desire* to invest may be the only thing angel investors have in common. Therefore, it is paramount for an entrepreneur to be aware of the different types of angel investors. Nielsen (2017) presents the following three types of angel investors:

The first type is called *business angel networks*. Investing with a network of other investors give angel investors access to more investment opportunities than they would get through their immediate network. In addition, the individual angel investor can spread their investments more efficiently across several startups through a network, as an angel investor often has limited funds (Nielsen, 2017). Another advantage of business angel networks is that several investors consider the same case. This way, it is easier to carry out a good analysis. In our research, it will be interesting to examine such networks to be able to say something about how one angel investor affects another in the investment process.

Nielsen's second type of angel investor is called *super angels*. While also being referred to as business angels, a super angel is typically someone with a high net worth who has run successful ventures and now wants to invest in new startups (Block et al., 2019; Carpentier & Suret, 2015; Nielsen, 2017). This type of angel investor often works with full-time investments or combines it with leadership roles in new startups. Due to their accumulated portfolio and reputation, super angels receive investment cases more frequently and are less dependent on investment networks.

They can often fund entire investments independently and have become an important source of funding in recent years (Block et al., 2019).

The third type of angel investor, Nielsen (2017) refers to as *new angels*. Nielsen describes new angels as individuals who do not consider themselves angel investors but are interested in entrepreneurship and investing in startups (p. 116). Typically, they have only invested in a few companies and often go in with less funding. New angels are equally important as there exist more in this investor category than the other angel investor types. This type of angel investor is most often found by an entrepreneur through their own personal network.

### **2.2.2 The Investment Process**

Nielsen (2017) explains that a business angel network's typical investment process begins with a startup delivering a presentation (pitch) of the company and business idea (p. 112). Further, the investor conducts pre-screening to eliminate the cases that do not meet the given requirements before the qualified cases are forwarded for screening in the network. While the screening is often done on a multitude of different businesses, only a few are considered further (Block et al., 2019). In the next step, they present the most promising cases for their network before continuing with further investigations in a due diligence process. If the network decides to invest, one of the investors will also be selected to lead the negotiations with the company (Nielsen, 2017, p. 112).

The individual investment process has many similarities with the investment process of business angel networks; however, we find some differences. An individual angel investor often has a slightly more informal approach. The process begins with the familiarization stage, where the investor becomes familiar with the case for the first time and gets an impression of the contractors (Paul et al., 2007, p. 115). This familiarization stage typically starts with the angel investor receiving a pitch deck and then assessing whether it is interesting to take further action. The next step is the screening process, where the angel investor meets the contractors to take a new assessment of the team and conduct a new review of the business opportunity (Paul et al., 2007, p. 116). The angel investor often inquires with their investor network for a background check of the team.

Further, in the bargaining stage, due diligence is carried out, and negotiations are initiated before a potential investment ensues (Paul et al., 2007, p. 117). Research finds that angel investors spend less time on due diligence in the earlier phase of a startup because the company has insufficient financial data (Forrester, 2014, p. 77). After the investment is completed, we enter the managing stage (Paul et al., 2007, p. 117). Several angel investors are taking an active post-investment role in the company, and research shows that such involvement has led to fewer negative exits (Wiltbank et al., 2009, p. 118). Such involvement may be that the angel investor is given a board seat or an active role in the company. Finally, in the harvesting stage, the angel investor realizes the investment and normally leaves the company. Angel investors often have different timelines for their investments, and research shows that there is often no clear exit strategy (Paul et al., 2007). Our research addresses the screening process as this stage of the investment process is standard for both business angel networks and individual investors. A screening process mainly deals with assessing the entrepreneur(s), and the business opportunity presented (Paul et al., 2007, p. 116).

## **2.3 Behavioral Finance**

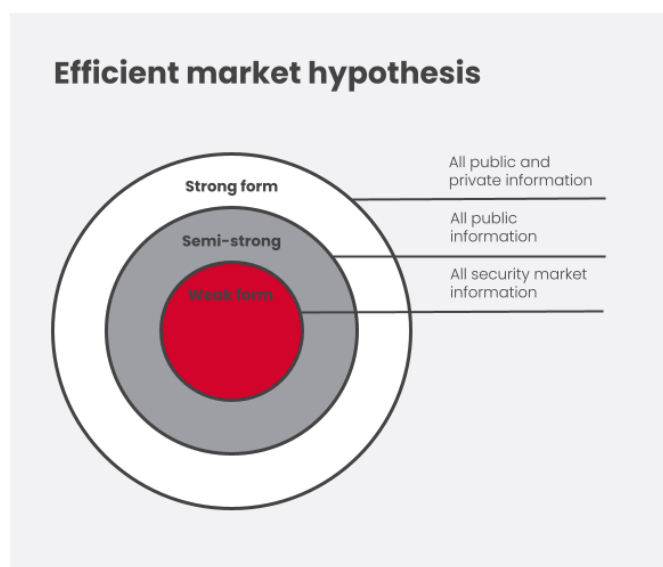
### **2.3.1 Development of Behavioral Finance**

Behavioral finance addresses how psychological aspects affect an investor's financial decision-making process (Costa et al., 2018, p. 4). However, research on the decision-making process of individual investors over several decades proves to violate several of the principles of traditional finance (Baker & Nofsinger, 2010; Barberis & Thaler, 2003; Fama, 1998; Miller, 1986; Neumann & Morgenstern, 2007; Shefrin, 2002; Shiller & Jain, 2003; Statman, 1995, 1999). Therefore, we start by conducting a brief review of traditional finance to better understand behavioral finance and why this theory was introduced. Traditional finance is based on the premise that investors always behave rationally in decision-making, as they make unbiased decisions based on full access to information and complete mapping of potential outcomes (Neumann & Morgenstern, 2007).

*Modern portfolio theory* (MPT) is an emphasized theory in traditional finance, which describes optimal portfolio formation by explaining how risk and return are related (Markowitz, 1952). MPT is an investment theory that addresses how an investor maximizes their return to different levels of risk (Forrester, 2014, p. 8). The theory gives us insight into which measurements drive the choice

to invest, in other words what drives the investor's motivation to make choices for his portfolio (Elton et al., 2014). However, several academics have criticized this theory in the behavioral finance segment. For example, Sullivan (1991) argues that return on investment is not the primary motivation for one-third of angel investors. Instead, this fraction is motivated by the joy of investing in something they find interesting, where they take an active role in the process. Others argue that angel investors' motivation is related to helping create jobs for society, to be part of a local investor group, and being part of an investment network (Freear et al., 1995, pp. 85–94; MIT Entrepreneurship Center, 2000, p. 71). It is also argued that angel investors are heavily motivated by the joy of contributing to the startup process in the companies they invest in (Leonard & Swap, 2000, pp. 71–82). We can link this to Nielsen's (2017) theory of why an investor chooses to invest.

Figure 3. *Efficient Market Hypothesis*



(Adapted from «The Efficient Market Hypothesis: A Critical Review of the Literature», 2016, Naseer & Tariq, p. 2)

The *efficient market hypothesis* (EMH) (figure above), a classic theory in traditional finance, argues that markets are efficient because the stock market price is correctly priced and reflects all available information (Malkiel, 1989). In other words, the theory argues that the investor makes rational decisions based on fully accessible information and that they can set an unbiased estimate of the share's market price (Forrester, 2014, p. 9). We distinguish between three different forms of EMH.

The weak form argues that the price reflects all publicly available market information, i.e., it is based on historical data, which makes it impossible to beat the market (Naseer & Tariq, 2016, p. 3). The semi-strong form argues that prices vary continuously based on public information so that analysis will not be able to predict how the price will change. This hypothesis makes it difficult for an investor to achieve excess returns (Nisar & Hanif, 2011, p. 415). Finally, the strong form argues that the price is based on public and private market information, making it challenging to earn excessive returns when all investors have access to the same, complete data (Naseer & Tariq, 2016, p. 3). EMH is challenged by academics in behavioral theory who argue that markets are not rational but heavily driven by psychological factors (Lo, 2004; Malkiel & Fama, 1970; Samuelson, 1973).

*Expected utility theory* (EUT) is an important theory in traditional finance that deals with decision-making under risk (Forrester, 2014, p. 9). The theory argues that an individual considers the possible outcomes and arrives at an expected benefit based on the preference of outcomes (Davis et al., 1998). EUT argues that people are rational and follow the given principles. Still, Kahneman and Tversky (1979) argue that an investor's individual decision-making often conflicts with this theory. Allais (1953) introduced the *Allais paradox* and argued against the EUT. His research points out that individuals do not always make decisions that meet their desires and needs. The paradox argues that the individual often chooses safety over risk, although the riskier alternative potentially can provide the desired outcome. An analysis of the Allais paradox carried out by Kahneman and Tversky (1979) shows that the individual generally does not like risk and chooses the alternative where losses are least likely to occur. This tendency is called loss aversion. In the same article, Kahneman and Tversky introduce the *prospect theory* to critique the EUT. We return to the prospect theory in 2.3.2 *Behavioral Finance Theory*.

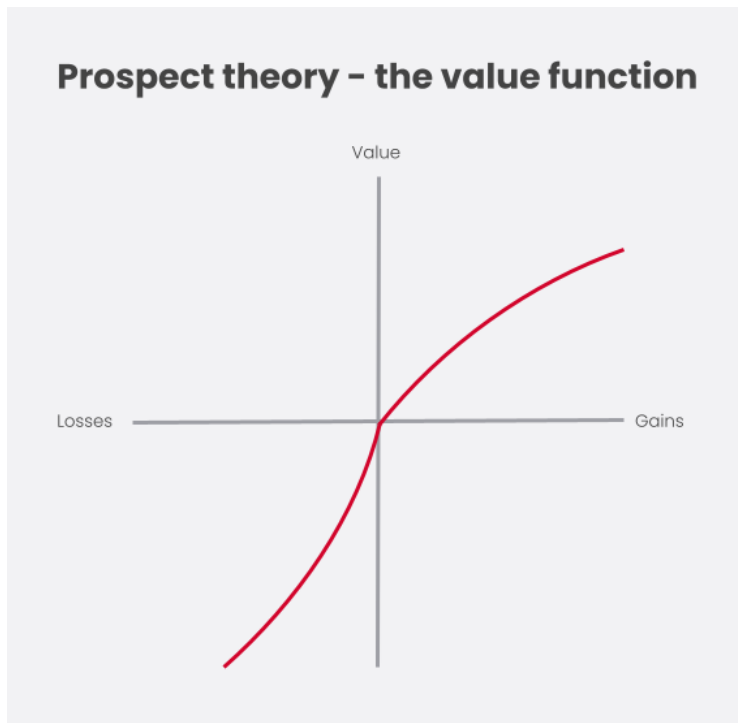
The work of Kahneman and Tversky is seen as the starting point for the development of behavioral theory. According to Thaler (2016), the perspective of the rational homo economicus (economic man) was replaced by von Neumann and Morgenstern's (1947) view on homo sapiens with limited rationality. With an academic finance background, Richard Thaler linked economics and finance theory to prospect theory (Barberis & Thaler, 2003; Taler, 1970). Amos Tversky, Daniel Kahneman, and Richard Thaler are recognized as the founding fathers of behavioral finance as we know it today (Hammond, 2015, p. 8).

### 2.3.2 Behavioral Finance Theory

Behavioral finance examines how psychological, behavioral, and cognitive aspects affect investors' decision-making processes (Forrester, 2014, p. 15). Behavioral finance theories have emerged from criticism of traditional finance, which argues that the investor is rational in his decision-making. A criticism of behavioral finance is related to what Ritter (2003) refers to as "model dredging". This critique states that it is difficult to judge which psychological biases are relevant in each investment situation, which means that one has the freedom to argue with different psychological biases (Barberis & Thaler, 2003; Hirshleifer, 2001). This freedom means that behavioral finance can seem more convincing than more rational theories, as it better explains the connections in different contexts and generates a lot of implications (Hirshleifer, 2001, p. 1564). Behavioral finance is useful when examining the decision-making process of angel investors, especially in the context of financial inconsistencies in the investment process (Forrester, 2014, p. 15). Behavioral finance attempts to understand investors' decision-making process by combining economics and finance theory with behavioral and cognitive psychological theory (Ackert & Deaves, 2009; Ritter, 2003; Shiller & Jain, 2003). We will consider two important pillars in behavioral finance: prospect theory and *cognitive biases*.

Prospect theory presents a descriptive model of risk-taking and decision-making, arguing that the potential value of loss or gain has the most significant impact on the individual's decision, rather than the utility (Hammond, 2015, p. 1554). The theory is designed to explain the inconsistency and irrationality associated with risk-taking decision-making, responding to the expected utility theory (Forrester, 2014, p. 15). The prospect theory addresses two main functions: value and weighting. "The value of each outcome is multiplied by a decision weight" (Kahneman & Tversky, 1979, p. 280). The weighting function argues that probability is not necessarily perceived objectively by the investor, which means they are not acting by the objective probabilities presented. For example, if the investor is presented with a case that has a low probability of gain, the investor tends to assess the probability of gain at 0%, and vice versa (Kahneman & Tversky, 1979, pp. 282–284). The decision weight depends on the perceived probability of an investment case, which can be considerably influenced by previous experiences, including heuristics and biases (Forrester, 2014, p. 11; Kahneman & Tversky, 1979).

Figure 4. Prospect Theory - The Value Function



(Adapted from «Prospect Theory: An Analysis of Decision under Risk», 1979, Kahneman & Tversky, p. 279)

The value function presented above argues that investors value losses and gains differently (Kahneman & Tversky, 1979, pp. 277–278). The value function presents losses and gains at each end of the horizontal axis, while the vertical axis presents perceived value. The convex function indicates that investors dislike losses more than they appreciate gains (Kahneman & Tversky, 1979, p. 279). This is also known as the *loss aversion*, a psychological consideration that influences investors' decision-making in the financial market (Benartzi & Thaler, 1995, p. 73). The concave function indicates that investors prefer outcomes with less uncertainty than outcomes with higher uncertainty (Kahneman & Tversky, 1979, pp. 277–279). We know this better as the *risk aversion* where investors tend to emphasize the outcomes that appear to be infallible over the outcomes that only appear to be probable (also called the certainty effect) (Allais, 1953, pp. 503–505). The point where the two axes intersect refers to an important aspect of the value function, addressing other factors affecting the degree of risk or loss aversion. Tversky and Kahneman (1979) emphasize that the investor's experience significantly affects the expected outcome of the investment. This refers



to Tversky and Kahneman's (1979) argument that an investor's decision-making will be greatly influenced by behavioral, psychological, and cognitive aspects (p. 286).

Prospect theory addresses abnormalities in human behavior that lead the investor to deviate from rational behavior in the decision process. These abnormalities are called cognitive biases, which violate the core principles of the expected utility theory (Costa et al., 2018; Forrester, 2014; Kahneman & Tversky, 1979; Nobel Prize Committee, 2002; Tversky & Kahneman, 1974). Tversky (1974) published the book *Judgment Under Uncertainty: Heuristics and Biases*, where he presents cognitive biases and heuristics that affect an investor's judgment in a decision process filled with uncertainty. This area gets a lot of attention from researchers in behavioral finance.

Even if angel investors have equal access to information in the investment process, it will be perceived differently from one investor to another based on biases and heuristics (Forrester, 2014, p. 17). Biases address investors' ability to make decisions in an investment process based on cognitive factors, leading to judgment errors (Barberis et al., 1998; Daniel et al., 1998; Fama, 1998). Typical biases that can influence investor decisions are risk perception, framing, and overconfidence (Dimov et al., 2007; Mitteness et al., 2012; Peters et al., 2004). Heuristics refer to previous experiences and how to use these experiences to solve problems and learn (Forrester, 2014, p. 17). An example is "the rule of thumb", which bases a decision on experience rather than theory (Shefrin, 2002; Tversky & Kahneman, 1974). In the case of an angel investor, previous experience and accumulated expertise will help them to be focused on the most important areas (Forrester, 2014, p. 17). Dimov et al. (2007) believe that this allows them to be more efficient in their decision-making process.

### **2.3.3 Cognitive Biases**

Researchers argue that the decision-making process of individual investors, to a great extent, is influenced by psychological, behavioral, and cognitive biases (Barberis & Thaler, 2003; Fama, 1998; Shefrin, 2002; Shleifer, 2000; Taler, 1970). Furthermore, research shows that angel investors' decision-making process seems to violate the principles of traditional finance (Forrester, 2014). Firstly, it is argued that angel investors make high-risk investments that are often characterized by high information asymmetry and a low degree of due diligence. Secondly, angel

investors make both individual investments and network investments within an industry or segment in which they are particularly interested. This means that investors' emotions, experiences, and trust in other investors play a more prominent role in decision-making.

In the financial market, psychological factors like cognitive biases affect individuals' decision-making (Chaudhary, 2013). These cognitive biases may hinder rational thinking and make decisions flawed by personal beliefs. The cognitive biases can be divided into different subcategories. First, we will dive deeper into three of the most common ones; *herd mentality*, *confirmation bias*, and *framing cognitive bias*. Our research will further investigate the occurrence of the three cognitive biases in angel investors' decision bias.

### **2.3.3.1 Herd Mentality**

Herd behavior is arguably the most common psychological factor in altering peoples' decision-making process. The same factor plays a large role in market movements in the financial terrain. In 1987, Robert James Shiller from Yale University conducted a survey involving nearly 900 active investors during the Wall Street Crash of 1929, also known as *the Great Crash* (Liu et al., 2019). The results from the survey showed that two-thirds of the investors thought the psychological factors were the cause of the crash – not the economic factors.

*Herd* was at first a term used to describe behavior of animals, more specifically, the behavior of sheep that instinctively follow the rest of the flock due to their poor eyesight and lack of judgment (Liu et al., 2019, p. 559). However, it has since been discovered similar phenomena occurring among humans (Chaudhary, 2013). Chaudhary (2013) argues that herd mentality results from two main factors. Firstly, a social pressure to comply with social conformities exist, and most people want to fit in. Secondly, a common misconception claims a large group is unlikely to be wrong. After numerous research and practices, the herd effect was eventually applied to the field of behavioral science (Liu et al., 2019).

The consequences of the herd mentality are people not pursuing their own opinions and attitudes. Instead, they adapt to the behavior and actions of the majority or a larger group. In the field of finance and investment behavior, the herd effect occurs due to an individual's incomplete and

insufficient information (Liu et al., 2019). The investor will then observe the surrounding stakeholders and make decisions based on these stakeholders' beliefs and inputs. Maxwell et al. (2011) argue that when an investor backs out of an investment, other investors will follow as there exists an assumption that there is underlying information causing the retreat. Similarly, the first investor offering to invest will make other investors more likely to do the same. This type of herd behavior will often have both favorable and unfavorable consequences. The unfortunate natural consequence is an investor making a subpar investment exclusively based on other peoples' opinions. Investors need the ability to think independently, calmly, and comprehensively to seize the real opportunities and achieve investment success (Liu et al., 2019). Herd behavior is an essential explanation when demonstrating how cognitive errors and emotions influence investors' decision-making (Chaudhary, 2013).

### **2.3.3.2 Confirmation Bias**

“Confirmation bias is perhaps the best known and most widely accepted notion of inferential error to come out of the literature on human reasoning.” (Evans, 1989, p. 41). The American psychologist and author Raymond S. Nickerson (1997) names confirmation bias as one of the top candidates when choosing a single problematic aspect of human reasoning. He even names this cognitive bias as the bias that deserves attention above all others. An important observation among philosophers and psychologists is that people find it easier to believe in a theory they would like to be true than a theory they would prefer false (Nickerson, 1997). This discovery shows that people are more likely to be susceptible to pleasant memories and thoughts compared to unpleasant ones (Nickerson, 1997). An example of confirmation bias that can occur in an investment process is an investor favoring information that adheres to their own experiences and beliefs, potentially missing out on critical details.

While confirmation biases can contribute to delusions, the development of superstitions, paranoia, and depression (Nickerson, 1997), the likelihood of exploitation might be even worse. Anyone with a slight interest in conveying unsupported claims and propaganda can spread this with claims of fortune, happiness, and a better life. In more recent research, Park et al. (2010) discovered that investors consistently gather the information that confirms their prior beliefs. This confirmation bias strengthens the investors' preexisting ideas and makes them overconfident (Park et al., 2010).

Additionally, this research discovered that confirmation bias made the investors have higher expectations about their investments when in reality, their performance decreased. A dissertation conducted by Forrester (2014) attempts to provide insight into angel investors and their characteristics. Forrester (2014) finds that rational and behavioral factors greatly influence the angel investor. His findings also indicate that experienced angel investors, unlike older angel investors, spend more time on due diligence and invest larger sums, potentially due to overconfidence.

### **2.3.3.3 Framing Cognitive Bias**

Framing cognitive bias is the belief that the way a concept is presented matters and will impact the decision being made (Ritter, 2003). In the decision-making process, Kahneman and Tversky (1979) argue that individuals use positive or negative frames and choose a positively framed event over a gamble even though the two have the same value. Mental accounting is an evaluation method individuals use when valuing an event based on the expected consequences (R. Thaler, 1985; R. H. Thaler & Johnson, 1990). In investment processes, the framing cognitive bias plays an important role. It is reasonable to imagine the impact a professional and polished presentation has on an investor's first impression, and may overshadow other, essential information.

The incapability of making the expected calculations under traditional finance theory and instead relying on the heuristic and cognitive strategies found in mental accounting are typical for people faced with evaluating substantial amounts of data and decisions (Yazdipour & Howard, 2010). In other words, if someone is presented with something in two different ways, they are likely to come to different conclusions. In finance, this is significantly important when looking at investors. Most investors are frequently exposed to new and different projects and ideas. “[...] angels do not invest based on return on investment but rather on *expected* returns on investments” (DeGennaro & Dryer, 2013, as cited in Forrester, 2014). DeGennaro and Dwyer's study (2014) suggests that the framing of angel investors' returns is surrounded by a cognitive illusion.

## 2.4 Sustainability

### 2.4.1 Sustainability in Economics

Sustainability is about meeting today's consumption needs without compromising the chances that future generations will have theirs covered (World Commission on Environment and Development, 1987). To develop a sustainable society there is a need for economic growth where social and environmental considerations are also considered (World Commission on Environment and Development, 1987). In economics, several theories have been presented since the 1970's that deal with how economics and sustainability are connected. Milton Friedman (1970) is critical of the business community taking sustainability into account and argues that the company's primary responsibility is to maximize shareholders' returns. This is better known as shareholder theory. Friedman further argues that a company does not have sufficient competence or information to take such ethical considerations into account.

*Figure 5. The Pyramid of Corporate Social Responsibility*



(Adjusted from «The Pyramid of Corporate Social Responsibility: Toward the Moral Management of Organizational Stakeholders» 1991 Archie B. Carroll, p.42)

On the other hand, Carroll (1979) argues that financial responsibility (creating profit) lays the foundation for further pursuing sustainable considerations. She visualizes this responsibility with *the pyramid of corporate social responsibility*, where the financial responsibility is the basis for the legal, ethical, and philanthropic responsibility (Carroll, 1979, p. 42). Philanthropic responsibility is linked to contributing something positive to society. The model is part of what we refer to as corporate social responsibility (CSR), a management concept where the company addresses social responsibility at various levels. Activities related to CSR can benefit society while at the same time boosting the company's brand and internal work morale. Furthermore, Elkington (1997) presents a slightly different view of how economics and sustainability are connected. He illustrates this through *the triple bottom line*, which argues that social and environmental considerations must be emphasized equally as profit. Conducting a triple bottom line investment means to invest in a company that reports on their performance related to people, planet, and profit, more commonly known as the three P's (Slaper & Hall, 2011, p. 1). It is argued that the theory eventually has become a tool for reporting and marketing, and less a tool for changing the system (Elkington, 2018; Sandberg & Flatland, 2021, p. 23).

Edward Freeman (2001) introduces another way of connecting sustainability and economics that criticizes Milton Friedman's shareholder theory for being of little use when the company is developing new strategies for markets that will constantly be characterized by environmental changes (p. 3). Freeman, therefore, developed the stakeholder theory in response to the shareholder theory. "The principal idea of stakeholder theory is that businesses should create value for all their stakeholders - those who can affect or be affected by the realization of an organization's purpose [...]" (Dmytriyeu et al., 2021, p. 1444). A stakeholder is every individual or party who has any interest in a company's activities. Prior research shows that a CEO with a stakeholder focus, instead of an economic one, leads to increased effort and work ethic from employees and followers, as well as an overall increase in firm performance (Luque et al., 2008; Parmar et al., 2010). The stakeholder theory is supported by Porter and Kramer (2011), who argue that companies with a well-established social responsibility will achieve both social and economic profit. They believe it is related to the fact that products and services that meet social needs will increase in demand (Borlaug & Aarsten, 2018, p. 13).

Crane et al. (2014) criticize Porter and Kramer's (2011) approach to sustainability and argue that it is challenging for companies to drive value creation in terms of sustainability, society, and economic profit. Similar to Elkington (1997), Crane et al. (2014) argue that the three parts must be balanced if one is to be able to integrate sustainability into the business sector in the long run. Henderson (2015) supports the importance of integrating sustainability into business but argues that this is difficult to achieve in the short term as it is challenging to predict what will be viable in the future. If sustainability is to be integrated in the short term, the business community will also have to sacrifice profits. On the other hand, Henderson (2015) emphasizes that sustainability will drive profit if presented as a long-term business strategy.

#### **2.4.2 Sustainable Investing**

Sustainable investing is a way of investing in which an investor assesses environmental, social, and governmental factors "before contributing money and resources to a company or venture" (Stobierski, 2021, sec. 4). Investments in companies in the early growth phase are often associated with various risk factors. In such an investment phase, the risk is defined as the uncertainty associated with the investment and the assumed probability of a negative outcome (Aven, 2011). Before considering sustainability investing, we consider the most common risks assessed by venture capitalists: *information asymmetry*, *human capital*, *market risk*, and *technological risk*.

The decision-making process can be characterized by information asymmetry, meaning that there may be an imbalance in the access to information between the angel investor and the startup (Forrester, 2014, p. 16). Research shows that information asymmetry between investors and entrepreneurs is often higher in startups (Davila et al., 2003; Gregorio & Shane, 2003). It can potentially be harmful to angel investors if the startup sits on more information and takes advantage of this (Akerlof, 1970, pp. 488–500). Information asymmetry is often affected by the team's competence and characteristics (Kaplan & Strömberg, 2004). Hsu (2013) found that strategic readiness and the founder's passion are emphasized to reduce the case of information asymmetry in an otherwise informal investment process (p. 1). Gregorio and Shane (2003) argue that information asymmetry can lead to opportunistic behavior, also referred to as moral hazard. This can occur if the team exaggerates the potential in the investor case to secure financing (Sandberg & Flatland, 2021, p. 11).

Human capital is defined as the knowledge and skills that an entire group or an individual can refer to (Becker, 1994). We distinguish between general and specific human capital. General human capital relates to education and work experience, while specific human capital relates to experience in industry and entrepreneurship (Sandberg & Flatland, 2021, p. 12). Human capital is emphasized by many as the risk with the greatest significance for investment decision-making, as this is the main difference between successful and unsuccessful companies (Tyebjee & Bruno, 1984). Studies conducted by Hall and Hofer (1993), and Zacharakis and Meyer (1998) indicate that human capital is more critical in early phase companies compared to later phases. Hsu (2013) finds that angel investors place greater emphasis on strategic readiness for funding, affective passion, and specific human capital for entrepreneurs. He further explains that entrepreneurs with more experience in working with young companies will have more realistic ambitions so that the investor considers the information they receive to be more credible. Similar to findings from Hsu (2013), Carpentier and Suret (2015) find that entrepreneurs with more experience often appear more credible and therefore present a more convincing marketing strategy. Kaplan and Strömberg (2004) find that about 60% of the investments studied were made due to the human capital in the team. This is supported by Nielsen (2017), who argues that investors' analysis of risk in a company typically has three areas in common, where the team is often considered the most significant risk factor by the investor (p. 46).

Technological risk is a central risk where the investor assesses whether it is realistic and feasible to develop the product and whether the development costs are low enough to compete with existing players in the market (Nielsen, 2017, p. 48). Kaplan and Strömberg (2004) find that technological risk is crucial for the investment decision in as much as 40% of the selected investments in research (p. 2190). Ventures that address environmental technology to solve different climate challenges have increased steadily in number, everything from small projects to large-scale initiatives on technology working to create a long-term positive impact (Wensley, 2021). The technology risk associated with these companies is higher, as many develop partially or completely new technology (Sandberg & Flatland, 2021, p. 11). Kut et al.'s (2007) research points out that technology risk is often higher in venture stocks than in acquisition funds, where teams and the market are given greater priority. Botsari and Lang (2020) find that angel investors' three most important selection



criteria for investing are related to the team, product, and the company's sustainability (2020, p. 41).

We further look at the market risk that relates to unforeseen changes in the market that can lead to reduced competitiveness and further affect market position and demand (Parhankangas & Hellström, 2007). Nielsen (2017) finds that market risk is one of the three most important risks an investor considers. Typically, the investor looks at demand, willingness to pay, market structure, et cetera. Kaplan and Strömberg (2004) found that key assessments related to market risk relate to competition, market size, barriers to entry, and reception in the market. Global research conducted by Block et al. (2019) found that angel investors are not as concerned about profitability as other investors, but that market acceptance is an important criterion for them (p. 329). What makes the research somewhat weak is that the analysis is done with the purpose of testing for predefined investment criteria from a database. Carpentier and Suret (2015) find that angel investors who are part of a business angel network place the most emphasis on market and execution risk. At business angel networks, a lot of emphasis is placed on product and market strategy, while weaknesses in the team are not necessarily as crucial. Osnabrugge and Robinson (2000) further argue that investors focus most on market risk if the company operates with specialized technology. Market risk also appears to be related to climate risk, which addresses risks related to the environment and sustainability (Sandberg & Flatland, 2021, p. 15).

Climate risk is defined as "the ambiguity about the consequences associated with climate change, climate policy and climate-related technology development" (Skarcke et al., 2018). The financial market has increasingly embraced sustainable finance since the Paris agreement in 2015 (Eurosif, 2021, p. 5). To manage climate risk, investors often choose to change their investment strategy to achieve more sustainable investments. In response to the climate risk, the financial market has to a greater extent taken sustainability into account through responsible investment (Borlaug & Aarsten, 2018, p. 15). ESG is a widely used investment strategy that addresses risks and opportunities related to the environmental, social, and governance aspects of an investment. A Wall Street firm found that 75% of the studied investors sought to include ESG considerations in their investments (Hill, 2020, p. 1). ESG strategy is helpful because it considers non-financial factors that would not otherwise be captured by traditional analyses (Amel-Zadeh & Serafeim, 2017; Norsif, 2017).

Along with ESG, other similar investment strategies exist and are increasing in popularity. Both *socially responsible investing* (SRI) and *impact investing* are investment strategies integrating ethical guidelines and considerations. Both strategies are often used interchangeably with ESG, but they do share some differences (Zhou, 2022). SRI involves actively selecting or eliminating investments based on specific ethical guidelines, with underlying motives ranging from personal values to conforming to the norms set by society. The goal with SRI is to generate returns without violating one's social conscience (Zhou, 2022). In impact investing, it is of utmost importance, as the name might suggest, that the investment has a positive impact on society and the environment. Investors look to help businesses that contribute to something positive that also benefits society (Zhou, 2022). In this research, we consider ESG investing, as this is an investment strategy used by an increasing number of investors. Investors have a key role in transitioning the economy towards climate neutrality (Eurosif, 2021, p. 5).

### **2.4.3 ESG Investing**

Multiple investment strategies that exist target sustainability and aim to make a positive impact on society. ESG refers to the *environmental* (E), *social* (S), and *governance* (G) aspects of an investment. The integration of ESG depends on which factors each investor considers significant (Borlaug & Aarsten, 2018). Focus on the environment indicates that companies are working to reduce their environmental footprint (Henderson, 2015). With a consistent focus on the environment in the company's value chain, the investor looks at various factors such as energy consumption, pollution, use of resources, waste production, and more. Researchers argue that it is crucial for companies to take the environment into account to slow down climate change (Rockström et al., 2009; Sachs, 2015). A study by Cook et al. (2013) shows that 97% of the researchers surveyed agreed that climate change is man-made (p. 6). A report by the IPCC (2021) finds that climate change will increase further when global warming reaches 1.5° C within 2024 (p. 35). Over time, this will have severe consequences for both humanity and the ecosystem, and some of these consequences are too late to avoid (IPCC, 2021). In addition to these consequences, companies will also come across several challenges if they do not consider the environment. These companies will lose competitiveness and thus profitability in a world where societies are putting increasing pressure on companies to take environmental considerations into account (Henderson, 2015; Stern, 2008). To prevent further climate change, it is also important that investors consider

the environment as a risk in their management and set requirements for the companies by integrating ESG in their management (Borlaug & Aarsten, 2018, p. 15). Norrestad (2021) finds that most investors worldwide believe that climate risk is the most relevant ESG factor. Therefore, our research aims to examine the angel investors' consideration of environmental variables of ESG.

The social aspect (S) is about the company's consideration of human rights, health, the environment, and relationships with all stakeholders around the company (Norsif, 2017). These are typically workers, shareholders, communities, and more. Research argues that socially responsible activities can increase a company's productivity and profits (Baron, 2008; Besley & Ghatak, 2007). Governance (G) addresses the company's governance and accountability (Borlaug & Aarsten, 2018, p. 16). This involves an assessment of management, the company's transparency, the board's independence, management compensation, conflicts of interest, and shareholder rights (Zhou, 2022). There is usually more publicly available information on governance compared to the other ESG factors (Borlaug & Aarsten, 2018, p. 17).

ESG integration includes a vast range of factors that can impact an investor's decision, but in the end, the main objective of an ESG valuation remains financial performance (Zhou, 2022). Investors use an ESG investment approach to assess non-financial information, make investments that lead to long-term value, and adapt their portfolios to societal values (OECD, 2020, Chapter 1.1). Hartzmark and Sussman (2019) find that investors who integrate the ESG strategy do better in long-term equity. ESG investments are most used among *institutional* investors, where investors mainly use the ESG factors in their decision-making process (OECD, 2020, Chapter 4.1). Institutional investors are a "company or organization that invests money on behalf of other people" (Chen, 2021b, sec. 1). Research finds that ESG integration enables investors to better predict the company's profitability (Hartzmark & Sussman, 2019). Research by USSIF (2014) further shows that 80% integrate ESG strategy based on customer and market demand (p. 15). Brown and Deegan (1998) also point out that society and media put pressure on investors to integrate ESG to a greater extent.

In recent years, the inclusion of ESG investments has increased drastically. In 2018, ESG was the fastest-growing investment strategy in Europe, and this year alone, ESG integration had grown by

27% (Eurosif, 2018). In particular, there was a change in 2021 when witnessing man-made climate change as well as a number of social justice issues (Kerber & Jessop, 2021). In a short time, considering ESG factors in investments has become something investors “can no longer afford to ignore” (Financial Times, 2021). According to Kishan (2022), “money held in sustainable mutual funds and ESG-focused exchange-traded funds rose globally by 53%” in 2021 (sec. 3). As a result, several investors now want to invest in companies with a high value on ESG factors at the same time as they receive a decent return on investment, referred to as “doing well while doing good” (Hill, 2020, p. 5).

Venture capital plays a crucial role in shaping the companies of the future. Sandberg and Flatland (2021) find that private investors relate differently to ethical investments, but most have noticed increased pressure around sustainable investments in recent years. During 2021, global funding in the seed phase increased by 104% (Sheth, 2022, sec. 3). As angel investors are usually among the primary sources of funding for a startup that often takes active ownership in the company, this suggests that these also significantly impact the future development of leading companies and cutting-edge technology. Nevertheless, several reports show that venture companies are lagging in incorporating ESG into the investment process (Sheth, 2022). It is believed that the reasons for this are that venture companies’ exclusive focus is on scaling companies to create rapid growth and returns, as well as little pressure on them from society. Wiltbank et al. (2009) state that early-stage capital is not only significant as a financial resource in startup companies but also in shaping “the ventures’ managerial and strategic destiny” (p. 1). In the future, it will therefore be crucial that early-stage investors incorporate ESG considerations in their investment strategy. Based on these findings, we are curious to examine angel investors’ knowledge of ESG and the use of ESG in their decision-making process. We further use ESG investment as a base to investigate whether environmental variables influence the decision basis of angel investors.

### 2.4.3.1 ESG Strategies

Various strategies are used to integrate ESG into investments. The first step is often exclusion or divestment, where the investor sells out of or omits to consider investments in industries that are not considered ESG investments. Furthermore, the investor typically conducts a screening of new investment opportunities where ESG factors are assessed using an internally or externally prepared scale. Negative screening is an ESG strategy in which the investor, based on a specific ESG criterion, excludes certain companies, sectors, or practices from their portfolio (Amel-Zadeh & Serafeim, 2018, p. 94). This strategy is seen as the least beneficial ESG strategy, as it has historically had the least positive impact on returns (Amel-Zadeh & Serafeim, 2018, p. 88). Maxwell et al. (2011) find that angel investors do not follow a specific decision model but rather a shortcut decision-making heuristic known as *elimination-by-aspects*, first discussed by Tversky (1972). Tversky explains this as a method of making decisions where alternatives are eliminated if it does not meet the emphasized criteria. This is to simplify the screening/selection process to reduce the cases to a more manageable size. From this, we can draw similarities to the negative screening strategy. Furthermore, positive screening is an ESG strategy where the investor selects the companies that also make a positive contribution to the environment and society based on defined ESG criteria and analysis (Sandberg & Flatland, 2021, p. 24). Botsari and Lang (2020) find that 62% of angel investors in their research use positive screening to assess ESG (p. 23).

Several investors use a *best-in-class* approach to invest in the companies that score best on selected criteria (for example, carbon footprint) (OECD, 2020, Chapter 4.3.1). This strategy is often combined with positive screening (Sandberg & Flatland, 2021, p. 24). Active ownership, as well as thematic ESG focus, is also widely used among institutional investors. Thematic investing is an ESG strategy where the investor invests according to a theme defined by various ESG factors (Amel-Zadeh & Serafeim, 2017, p. 94). Active ownership means that the investor is actively involved in the company through its shareholder position to influence company behavior to comply with ESG values (Amel-Zadeh & Serafeim, 2017, p. 94). Forrester (2014) finds that angel investors are largely involved in post-investment activity by taking active ownership, especially more experienced angels.

### 2.4.3.2 Challenges of ESG

Several different international standards are being used as a starting point for reviewing ESG investments. These include *the OECD Guidelines for Multinational Enterprises*, *the International Labor Organization*, *the United Nations Global Compact*, *the International Organization for Standardization*, *the United Nations Principles for Responsible Investment*, *the Sustainability Accounting Standard Board*, and many more (OECD, 2020, Chapter 4.4.2). The European Union has recently developed a sustainable finance taxonomy to help companies map sustainable business activities to lead to more sustainable investments (European Commission, 2022b). In addition to this, there are countless other guidelines and standards an investor can use to make ESG investments and take ESG factors into account in their decision-making process. Today, no global standard for measuring ethical and sustainability factors exists. There are significant challenges associated with this, as there are so many different guidelines and proposed standards that both investors and companies have trouble navigating among them:

A significant number of frameworks and voluntary standards already exist for ESG reporting, even running into the hundreds. But in fact, this is part of the problem. There are so many that it can be hard for some preparers to know which one to follow. (KPMG, 2022, section 3)

OECD (2020) finds that investors express concern about “the lack of transparency and global standards for data disclosure and analysis” (p. 110). Investors also believe that the ESG data presented by the companies is inconsistent and incomplete. As institutional investors manage other people’s money, it is essential for them to have access to coherent and comparable information (OECD, 2020). It is not just the lack of transparency from the company that is problematic. Companies often experience difficulties defining their own ESG goals, carrying out measurements on these, and reporting on the company’s ESG performance (Hill, 2020, p. 4). It has also become increasingly important for financial institutions to consider ESG factors (KPMG, 2022). However, all these different frameworks are usually not directly comparable. As a result, this multiplicity makes it challenging for businesses to take an objective view. Greenwashing is also a challenge related to ESG reporting. As ESG reporting is not standardized or regulated in large parts of the world, the varying reporting quality will increase the risk of greenwashing (Lokuwaduge & Silva,

2022, p. 152). Siddique and Sciulli (2018) find that 52% of the investors examined in their research failed to choose a dominant pro-environmental or pro-financial strategy (p. 1). This is related to the fact that such a decision is complex and needs assessment in several areas. Siddique and Sciulli (2018) express that their findings support that investors prefer small companies with limited resources focusing on following existing regulations rather than taking on pro-sustainability initiatives (p. 1258).

A research and market analysis prepared by Botsari and Lang (2020) for the European Investment Fund examines ESG assessments within investment decisions of venture capitalists and angel investors. Botsari and Lang (2020) find that approximately 60% of angel investors assess ESG in their investment decision (p. 23). On the other hand, only 10% of angel investors state ESG considerations among their three most important selection criteria (Botsari & Lang, 2020, p. 46). Furthermore, approximately 48% of angel investors state that they do not believe ESG criteria are essential for investment performance (Botsari & Lang, 2020, p. 19). This is the main reason they choose not to use ESG criteria in their decision-making process.

## **2.5 Theory Summary**

This chapter has addressed the importance of angel investors in the early phases of a company's life. Angel investors are essential to many young companies' success and growth, bringing knowledge, capital, and resources to the table. Known for their risk-taking, these investors are crucial to the ecosystem of startups. Not only do they provide new opportunities for existing ventures, but they also help lower the threshold for establishing new ideas and businesses. In addition, angel investors are known for contributing to high-risk cases, entering when a company is most vulnerable. Many theories exist explaining why angel investors take on this risk, ranging from contributing something positive to the world and society, to more egocentric benefits.

The traditional finance theory argues that investors always act rationally when deciding to invest. While the investors may not know it themselves, traditional finance explains that they are subconsciously implementing different strategies and investment theories to help maximize their returns and performance. Over time, behavioral finance has shed some new light on what influences angel investors' decisions, examining the psychological, behavioral, and cognitive aspects of their

decision-making process. Behavioral finance emerged as a criticism of traditional finance and argued that an investor's decision-making is flawed and influenced by irrationality and cognitive biases. Several researchers support that cognitive biases are susceptible to hinder rational thinking and affect investors in their decision-making.

Having never been as relevant as now, sustainability is a crucial factor impacting every aspect of society. The connection between economics and sustainability has been debated for decades. Despite the disagreements, researchers find that it has become increasingly important to look at economics in the context of sustainability. Research shows increased pressure from the market, media, and society as a result of man-made climate change. This has led investors to change their investment strategies toward achieving more sustainable investments. Research indicates that angel investors will play a key role in shaping the companies of the future. In recent years, we have seen a significant increase in seed investments globally, but venture capitalists are lagging on ESG considerations. Although there are increasing demands for sustainability reporting, companies and investors find it challenging to assess this non-financial information. ESG is the most integrated framework for assessing non-financial information, which enables investors to better predict the company's profitability, according to research. Compared to traditional risk analysis, ESG risk has become increasingly crucial to the company's long-term survival.



### **3. Methodology**

In this research, we study the investment process of angel investors to investigate if cognitive biases affect the decision basis and whether this leads to less sustainable investments. The research aims to examine the decision basis related to seed investments made by angel investors and whether cognitive biases influence it. In addition, we aim to investigate whether environmental variables are considered a fundamental part of the decision basis of angel investors.

This chapter describes which methods have been used to answer the research questions and why they are suitable for the research. The chapter starts with describing research design, where we go through research philosophy, research type, and research strategy before elaborating on the time horizon, sampling strategy, data collection method, and data analysis method. We also reflect on the methodological weaknesses of the research. Finally, we summarize the methodology chapter in a concluding summary.

#### **3.1 Research Design**

##### **3.1.1 Research Philosophy**

Ontology is a philosophical study about how reality is perceived (Bryman, 2012, p. 32). Our research is based on subjectivism, also called constructionism. This is an ontological position that “claims that social phenomena and their meanings are continuously achieved by social actors” (Bryman, 2012, p. 34). To put it another way, subjectivism claims that it is the social actors who create social phenomena through their perceptions and actions. Epistemology is about what is perceived as knowledge and how we understand this knowledge (Bryman, 2012, p. 27). Our research is based on the notion that knowledge is acquired by interpreting reality to discover the underlying meaning.

Based on assessments related to ontology and epistemology, we have found that interpretivism dominates our research. Interpretivism is a research philosophy claiming that reality and knowledge are interpreted by human beings (Bryman, 2012, p. 28). This indicates that the social world must be interpreted from the perspective of the informants being studied (Bryman, 2012, p.

399). Bryman further explains that this is best done through face-to-face interaction with the informants, studying their thoughts and perceptions to obtain the social knowledge you are looking for. Through analysis, the meaning of the findings is revealed at the same time as it shows how they are linked together to generate observable outcomes (Bryman, 2012, p. 30). Interpretivism thus focuses on a specific selection where the researcher aims to understand thoughts and actions to explain a social phenomenon. The researcher has an interactive relationship with his subjects, often through interviews. Meanings usually emerge towards the end of the research when taking an interpretive approach (Dudovskiy, n.d.).

### **3.1.2 Research Type**

We often distinguish whether the research is based on a predetermined theory (deductive method), or whether the theory is an outcome of the research that is conducted (inductive method). This says something about how the theory is presented in relation to the research. In this master's thesis, the relationship between theory and research has an inductive approach. An inductive method presents the theory as a result of the observations made in the research process (Bryman, 2012, p. 26). In other words, the theory presented is based on observed patterns from the collected data.

A research method reflects what kind of research strategies should be used when it comes to data collection and analysis techniques. We distinguish between quantitative, qualitative, and mixed research methods (Bryman, 2012, pp. 35–37). Alasuutari et al. (2008) explain that the choice of research strategy depends on the availability of related research-based knowledge. In this master's thesis, a qualitative research method was used as it was considered the best fit to answer our research questions. A qualitative research method differs from a quantitative research method in that it emphasizes words and perceptions, rather than measurable numbers and statistics (Bryman, 2012, p. 36). A qualitative research method is appropriate to use when researching more complex phenomena that provide precise solutions (Beech, 2015, p. 33). Our research on angel investors aimed to find connections that could explain cognitive biases in the investment process, as well as their perception of sustainable investments in new ventures. Using a qualitative method, we were able to map a repetitive pattern that could provide answers to our research questions by studying the informant's thoughts, perceptions, ideas, and assumptions.

### **3.1.3 Research Strategy**

In this thesis, we have gathered data from carefully and purposely chosen subjects and analyzed this data and measured the correlation between the answers and our predefined research questions. Building on the principles of interpretivism, we have used the hermeneutic-phenomenological tradition when analyzing our data (Bryman, 2012, p. 31). According to Jacobsen (2015), this method fits well with our approach in collecting and analyzing data. The intention of the hermeneutic-phenomenological approach is to extract the real, individual perspectives on reality, in lieu of concluding with an overall and general interpretation (D. I. Jacobsen, 2015, pp. 27–28). The term *hermeneutic* stems from a Greek verb and means “to interpret” (Guillen, 2019, p. 220). Guillen (2019) explains the term as follows: “[...] the hermeneutics is in the search to understand the other, not only through conversation, but also in what is behind of what is not said.” (p. 220). In other words, hermeneutics is an approach that aims to discover the underlying meaning and to read between the lines. When gathering our data, it is crucial that we can comprehend the *true* meaning of what our subjects are bringing to the table.

Phenomenology, on the other hand, stems from the word phenomenon, and this philosophical method focuses on finding the subjective opinions and understandings that occur during the subject’s own experiences (Guillen, 2019, p. 219). Bryman (2012) describes phenomenology as «a philosophy that is concerned with the question of how individuals make sense of the world around them and how in particular the philosopher should bracket out preconceptions in his or her grasp of that world.” (p. 30).

### **3.1.4 Time Horizon**

Our study will be conducted with a cross-sectional method, ergo the data will be collected over a short period of time. This ensures the data from our subjects are easily controllable, as data collected within a larger timeframe might not be as representative. An example of this is the ongoing Covid-19 pandemic; if some data were gathered before the pandemic and some after, it is natural to assume a significant difference in the results. To inspect how sustainability and the *green shift* has influenced the investments from angel investors, it is reasonable to imagine a tremendous change just in the last decade. Taking our subject’s own memories and experiences into

consideration will be a big part of this analysis. However, to analyze how this change has impacted the investment industry, prior literature on the matter is necessary to make an adequate assumption and conclusion.

### **3.1.5 Sampling Strategy**

Our subjects are carefully chosen to fit our criteria and are chosen through non-probability sampling. More specifically, we are gathering data from angel investors, so naturally, the sampling is also non-randomized. We have chosen to limit our sample unit to Norwegian angel investors, as Norwegian authorities are facilitating and stimulating for new startups and innovation, especially for ventures focusing on sustainability (Fybish, 2022). In 2021, Norway also experienced a significant growth in early-stage investments (J. B. Jacobsen, 2022). The subjects are gathered through Shifter's (2022) investor database, a comprehensive list of Norwegian investors. This database includes the phases the investors are investing in, the amount they are usually investing as well as contact information and relevant links to their social platforms and websites. Using this database, we contacted various early-phase investors, while being aware of contacting people from different parts of Norway, as well as different genders. While our target group is narrow, we wanted to mix our informants to the degree we deemed possible to eliminate similar biases that could occur. Our sample consisted of angel investors either categorized as super angels or as part of business angel networks (explained in chapter 2.2.1 *Angel Investor Types*). We did not include new angels as part of the selection, as they themselves are not aware that they are angel investors and would be difficult to find.

### **3.1.6 Data Collection Method**

A qualitative study does not measure reality as something absolute or objective and needs to be interpreted and analyzed to extract the underlying meaning and context. Our own thoughts and experiences will also impact how the data is extracted, as acting in a completely objective manner could be challenging. Therefore, it is necessary that we conduct a thorough and concise data analysis with a combinatory approach, using our own experiences together with existing literature.

Primary data were collected through semi-structured interviews with ten different angel investors with relevant experience. Prior to the start of the project, we applied to the *Norwegian Center for Research Data* (NSD) due to the storage of email correspondence, audio recordings from interviews, and transcripts during the project. The project was approved, and we started to carry out the research. After taking a sample from the investor database, we contacted each angel investor via email, where we introduced them to the topic of the master's thesis and what it would mean for them to participate in the interview. Those who agreed to be interviewed were sent a link where they could choose a time that suited them. The interviewees had a great variation in their number of investments, how long they have been investing, and their preferred business cases. Each interview lasted approximately 30 minutes. Audio recordings were made during the interviews, allowing us to be fully present before conducting the transcriptions afterwards. Before each interview began, the interviewee needed to consent before the audio recording was initiated.

The purpose of these interviews is to answer our research questions and compare the gathered data with prior studies and literature. Prior to the interview, a comprehensive interview guide was made (see *8.1 Interview Guide*), which was later used during every interview. Most of the questions were open questions with the intention of getting the interviewees to elaborate on their answers and speak freely. The interview started with a short introduction before we started the interview based on the interview guide. Follow-up questions were asked if relevant, to ensure understanding of what was being said. If there was a further need to ensure that we understood what was being said, we chose to summarize our perception of what they had answered to get a confirmation that we had understood them correctly. Finally, we asked if there was anything they wanted to comment on or add.

All the interviews were conducted anonymously, and the interviewees were reminded of this fact before the interviews started. By conducting the interviews anonymously, the intention was to get the most transparent and honest answers on the topic. Many of our subjects are also recognized in the investment community, so anonymous interviews would make it easier for them to reflect on their own weaknesses without concern for their reputation.

### 3.1.7 Data Analysis Method

After the data has been obtained through a semi-structured interview, the next step in the research process is to analyze the data. In a qualitative research method, it is crucial to choose the right analysis method to arrive at findings that are important for answering the research questions. In this master's thesis, we chose to analyze collected data using *content analysis*. Content analysis is widely used in qualitative methods and aims to analyze recorded human artifacts (Crosley, 2021). Such an analysis uses various techniques to distinguish findings by "objectively, and systematically identifying specified properties of messages" (Bryman, 2012, p. 289). In other words, content analysis is a tool for mapping the occurrence of words and themes in a given qualitative dataset.

When conducting a content analysis, we distinguish between *explicit* and *implicit data*. Explicit data consists of what the informant has said, while implicit data goes deeper into the interpretation of what has been said. We performed a proximity analysis as this method was best suited to answer the research questions. This is a form of content analysis where patterns in a data set are mapped through themes and codes so that one can further find meaning and extract these findings (Crosley, 2021). This method of analysis was particularly suitable for this type of research, as it helped us map which patterns were repeated for each individual angel investor.

The interview guide was developed based on relevant theory and professional literature. Therefore, the interview had a somewhat structured starting point. The transcripts contained large amounts of information, which made it necessary to reduce the data material and map patterns through proximity analysis. The data analysis was performed manually, as the assessed data set was too small and unsuitable for measuring with analysis programs. After the ten interviews were completed and transcribed, we read through all the data material to make comparisons and get an overall impression. To limit the amount of data, we performed a joint review of the answers to each question from the interview guide, where we highlighted what was common to the interviewees, as well as insightful quotes that addressed the issue. We collected this in a separate document to create a common overview of what the informants had answered on the same topics and questions.

Next, we defined codes to group quotes and similarities that addressed different issues. When coding was completed, these were further divided into themes that were based on our research

questions. We chose not to prepare a data matrix, as the amount of information from the ten interviews was still relatively extensive. After the amount of data had been reduced through coding and themes, the important work of looking for trends and mapping patterns began. This was reviewed jointly so that we could discuss and share perceptions and perspectives with each other. The patterns that were discovered are presented as findings in the results chapter below.

*Table 1. Codes and Themes of the Data Material*

<b>Theme 1</b>	<b>Investment process</b>
Code 1.1	Background information
Code 1.2	Investment process
Code 1.3	Most important investment criteria
<b>Theme 2</b>	<b>Cognitive biases</b>
Code 2.1	Herd Mentality
Code 2.2	Confirmation bias
Code 2.3	Framing cognitive bias
<b>Theme 3</b>	<b>Sustainable investments</b>
Code 3.1	Sustainable investing
Code 3.2	Social responsibility
Code 3.3	Environmental considerations
Code 3.4	ESG

### **3.2 Methodological Limitations**

No methodologies are perfectly constructed; therefore, it is significant to show transparency and reflect on the possible limitations of the research design (Crossley, 2021). A limitation of the research is related to access to information. As students, we have limited experience in conducting research, potentially causing difficulties in gathering relevant and sufficient information. We have carried out a thorough analysis of available information based on what we deem natural to assess and believe will impact the research. Another limitation relates to time. The research constitutes a master's thesis prepared during a spring semester. It is therefore conceivable that this time limit may affect the research results. The researchers have adapted the research design and defined delimitations; hence it should be possible to prepare good research during this period.

Another limitation that is important to consider is sample size and representativeness. In the research process, it has not been problematic to make a sample. On the other hand, it must be considered whether the sample was a good representation of angel investors or not. Through access to investor databases and background checks of each individual angel investor, the researchers have, to the best of their ability, tried to take a sample that represents an average angel investor. Furthermore, we must consider methodological limitations. The use of a qualitative method gives a small sample size and can potentially give unusable results. Therefore, it must be considered whether a larger sample size could be conducted through quantitative analysis, resulting in a more comprehensive dataset. Nevertheless, a qualitative method provided the opportunity to explore deeper and provided a different understanding of the phenomenon than a quantitative method. Therefore, the qualitative approach was best suited to answer the research questions.

Finally, an assessment must be made of the limitations of the researchers. These already have limited experience with research, and it must be considered whether a lack of skills may have led to limitations in the data obtained. On the other hand, through their master's program and the establishment of their own company, the researchers have acquired a lot of expertise in the financing process for startups or different types of investors. Thus, they have a lot of knowledge about the topic being studied. Researcher biases must also be considered, as they can affect how the researcher analyzes the data obtained. To avoid limitations related to experience, the researchers have used a good supervisor and consulted with the university's research environment.



When it comes to research biases, the researchers have studied literature on this topic to have a conscious relationship with how this can affect research.

### **3.2.1 Validity**

Validity in research is about relevance. In qualitative research, validity is mainly about verifiability, credibility, and transfer value (Larsen, 2017, p. 93). An important assessment of verifiability is whether we have collected data that was relevant to the problem so that the findings we have arrived at are valid (Larsen, 2017, p. 93). This means whether we ask relevant questions that contribute to answering the research questions. Larsen (2017) further explains that a qualitative study aims to both describe and interpret the data and that credibility is linked to whether the interpretations are credible and represent reality. Transferability is about whether the research findings can be transferred to other groups.

The three concepts of verifiability, credibility, and transferability are further linked to internal and external validity (Grønmo, 2016, p. 254). Larsen (2017) explains that internal validity addresses the research findings and whether these have a connection with the theoretical framework and methods used (p. 94). The preparation of the interview guide was based on the theoretical framework. The internal validity of this research is therefore considered high, as it led to relevant empirical data that provided answers to the research questions. External validity is about whether the findings have a transfer value. In other words, it is about whether the findings can be used to explain other social contexts (Krumsvik, 2013, p. 254). The external validity of the research is considered limited as the data obtained is based on a small sample. The scope of the research also limits the preconditions for drawing generalizing conclusions from the findings.

### **3.2.2 Reliability**

Reliability refers to the reliability of the interviews that are conducted and the accuracy that underlies the process (Larsen, 2017, p. 94). In qualitative research, it is not as easy to ensure reliability as the findings are largely based on the researcher's perceptions and interpretations. To ensure that the research is credible, the researcher must ensure that the data collection is systematic and in accordance with the assumptions (Grønmo, 2016, p. 249). Transparency is important to

ensure reliability. Silverman (2011, p. 360) explains that transparency is about sufficiently describing collection methods, methods of analysis, and theoretical work so that the reader gets an insight into the process. To strengthen the reliability of the research, the researchers consciously choose to conduct the interviews together and ensure accurate processing of the collected data.

Reliability is also related to whether data from informants represent reality. It is conceivable that the informants want to present themselves in a good light and answer the questions with this in mind. To strengthen the reliability, the researchers have defined clear interview questions that are simple and understandable. It was also important for the quality of the research that the questions were not leading, meaning that the informants did not understand the purpose behind the questions that were asked. The researchers had no perception that the informants understood the real purpose behind the questions and considered the collected data very insightful and genuine. The answers were perceived as honest, and the informants did not seem concerned with presenting themselves differently.

### **3.3 Summary Methodology**

In summary, this chapter presents and reviews the methods used to answer the research questions. The research was based on the research philosophy interpretivism, which claims that human interpretations constitute reality. Furthermore, the research was based on an inductive approach that assumes the theory is an outcome of the research. Based on these assessments, the qualitative method was considered the best fit for our research. We used the hermeneutic-phenomenological tradition when analyzing our data and chose a cross-sectional time horizon due to the limited time and purpose of the research.

We also took the non-probability selection as our starting point as our sampling strategy, as this was considered appropriate to answer the research questions. To gain more depth in data collection, we chose to conduct semi-structured interviews. Furthermore, we performed content analysis to map patterns that could provide answers to our research questions. Finally, we reflected on the limitations of the methodology, as well as the validity and reliability of the research.

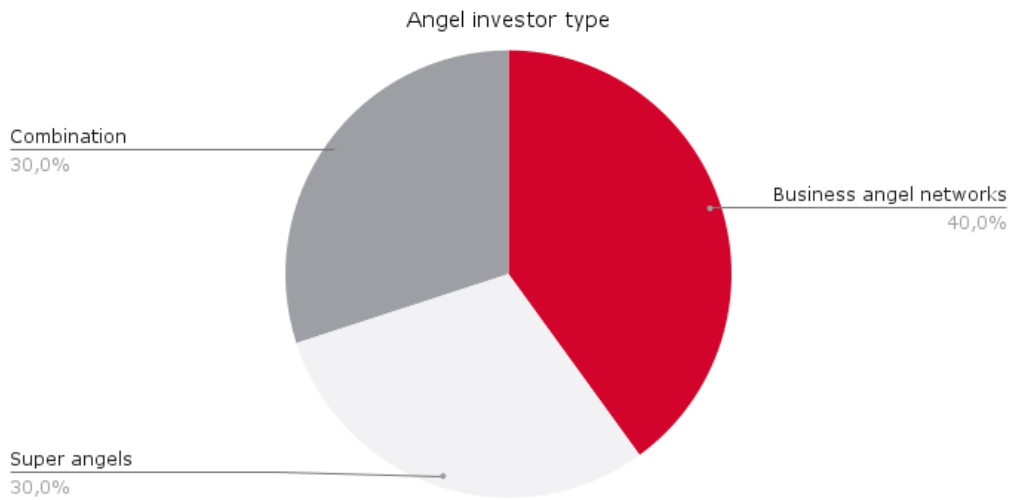
## 4. Results

In the results chapter, we present findings related to the various topics from the data analysis. The data from the semi-structured interviews help us answer our research questions. These findings will help us answer whether the angel investor's decision is affected by cognitive biases and whether this further leads to less sustainable investments. In addition, the findings will answer whether the decision basis is characterized by herd mentality, confirmation bias, and framing cognitive bias, as well as angel investors' assessment of environmental variables and ESG risk. The chapter provides descriptive statistics on the samples that participated in the interview to give an impression of the individuals we interviewed. Furthermore, we present findings and data that support these. Finally, we present a summary of the main findings from the results chapter, which lays the foundation for the discussion chapter.

### 4.1 Descriptive Statistics

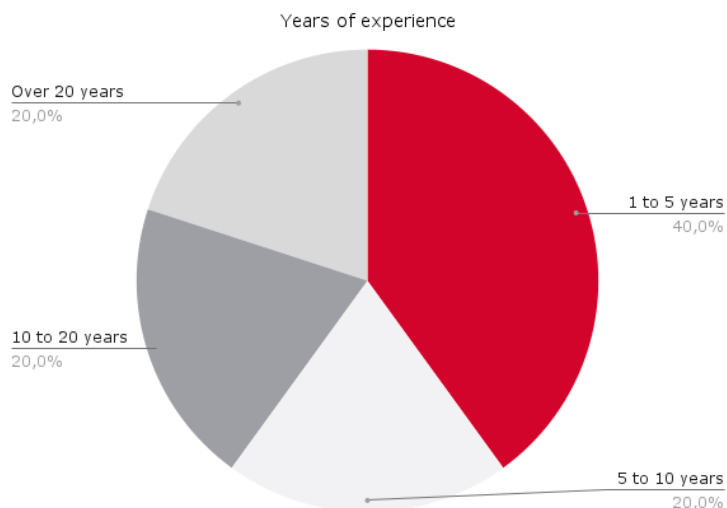
**Angel investor type.** As mentioned in the method chapter, the sample consisted of Norwegian angel investors who operate in business angel networks or as super angels. Among the interviewees, 40% were within the angel investor type called business angel networks, and 30% were within the angel investor type called super angels. The remaining 30% combined these two types (investing both alone and in networks).

Figure 6. Angel Investor Type



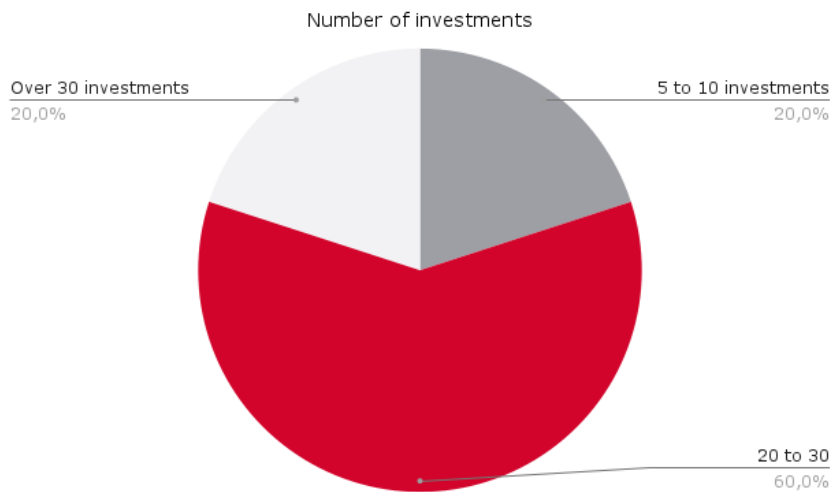
**Years of experience.** The angel investors we have interviewed have different amounts of experience. The figure below shows that 40% of the interviewees have 1 to 5 years of experience. The remainder is divided into 20% with 5 to 10 years of experience, 20% with 10 to 20 years of experience, and 20% with 20 or more years of experience. We see from this that the interviewees had varied experiences as angel investors.

Figure 7. Years of Experience



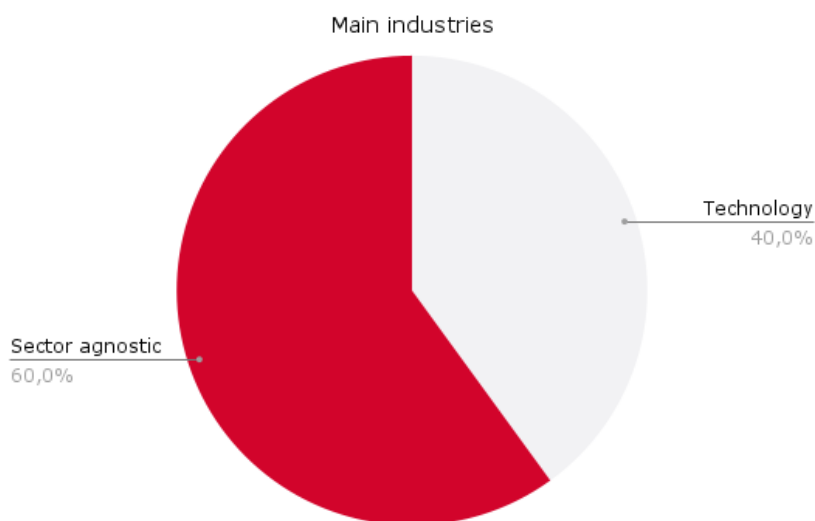
**Number of investments.** Most of the interviewees (60%) have made between 20 and 30 investments as angel investors. Furthermore, 20% of the angel investors have made between 5 and 10 investments, and the remaining 20% have made over 30. Overall, the sample represents a wide variety of experiences with angel investments.

*Figure 8. Number of Investments*



**Main industry.** Furthermore, we found that the informants mainly invested as sector agnostic (60%). The remaining 40% had technology as their primary industry. The term sector agnostic is used when investors do not specialize in specific industries. When we analyzed the data material from the interviews, we also discovered that technology was a significant industry for several of the interviewees. Several interviewees mentioned that they previously invested in oil and gas but now stay away from this industry and try to make more sustainable investments.

Figure 9. Main Industries



**Location of the sample.** The majority of interviewees were based in Oslo. We have interviewed angel investors based in the five largest cities in Norway. This distribution reflects where most angel investors are located in Norway by comparison with the investor database (Shifter, 2022)).

## 4.2 Findings

### 4.2.1 RQ1: How rational is the decision basis of angel investors?

To answer whether cognitive biases characterized the decision basis for angel investors, we asked general questions about the investment process that could provide on the occurrence of herd mentality, confirmation bias, and framing cognitive bias. From the analysis, we found that the decision basis of angel investors is not entirely rational, as it is characterized by various cognitive biases. On the other hand, the three biases tested varied in result depending on the interviewee's experience, network, and impression of the investor case.

#### 4.2.1.1 Herd Mentality

We found that herd mentality appeared in the angel investors' decision basis. All the informants admitted to having invested in a case because another investor they looked up to had done so before.

*“Yes, I have made an investment because of another investor, as it was a person who has a judgment I trust very much”*. This indicates that confidence in other investors influences angel investors’ decision basis and further argues for the presence of herd mentality. In addition, the analysis found that angel investors’ experience affected the occurrence of herd mentality. Angel investors with more experience had greater confidence in their assessment abilities, while inexperienced angel investors tended to follow the assessment methods of more experienced investors. This suggested a greater prevalence of herd mentality in inexperienced angel investors.

The informants stated that networks had always been a helpful resource in the investment process and that business angel networks had increased in popularity in recent years. We found that networks play a vital role for both angel investors who are part of business angel networks and super angels. Angel investors who were part of a business angel network involved their network as soon as they found an interesting case. Both screening and due diligence were done in advance before they invested. Contrary to business angel networks, where the network was involved throughout the investment process, super angels only involved their network when additional experience and expertise were needed to make a proper assessment of the investor case. Their networks were built up over time and consisted of friends, family, former colleagues, and other acquaintances. Common for business angel networks and super angels, networks were involved to minimize risk. The angel investors were open about being influenced by their network but emphasized that they ultimately decided to invest themselves. The informants also expressed strong confidence in their network. This strongly suggests the presence of a herd mentality in the angel investor’s decision basis.

*“Yes, it has happened that I have invested because someone else did it before me, but that does not mean that I have done it blindly without looking at it myself. I have probably taken an assessment round, but perhaps I have let it be emphasized that someone I trust has approved of it.”*

The informants described the investment process relatively similarly. We found that angel investors first did a screening of the investment case they had received. Most cases were excluded in this step as they did not meet the angel investor’s investment criteria. Then a first meeting with the

entrepreneurs took place, where a light due diligence was carried out afterwards. We also found that it was common for angel investors to take active ownership after investment. Another action most informants mentioned they had taken in recent years was to remove investments in oil and gas from their portfolio.

#### **4.2.1.2 Confirmation Bias**

We found that confirmation bias occurred in the decision basis of the angel investors. When presented with an investor case, our subjects tended to trust what was presented and usually based their investment decision on this information. Our analysis revealed that the angel investors asked questions to help confirm and substantiate the case rather than asking questions to disclose or falsify it. "*[...] I am more in favor of having a completely open dialogue with the company. I do not want to test people, but I ask them directly if I have any questions, and then I take that answer as a starting point in further assessment*". These findings strongly suggest confirmation bias in the angel investor's decision basis.

Our analysis further exposed that the occurrence of confirmation bias depends on the angel investor's experience. More inexperienced angel investors looked to various investors for guidance on assessing an investor case. On the other hand, experienced angel investors expressed reasonable control over the assessment process and knew what criteria they were looking for. The analysis suggested that more experienced angel investors tended to be overconfident in assessing an investor case. Therefore, confirmation bias was more significant with more experienced angel investors.

Another interesting finding was that most angel investors had conducted one or more investments where the deciding factor was not the potential for financial winnings. Instead, the crucial factor was that the investment case adhered to their personal beliefs and interests, often combined with a heartfelt personal connection. In addition, several admit to having received information after the investment that would have changed their decision to invest if they had known these facts initially. This suggests a substantial occurrence of confirmation bias in the decision basis of angel investors, as the analysis refers to several investment decisions motivated by information confirming investors' beliefs.



*“If the startup presents a technology that engages me, then I might be a little colored by the case. I like to emphasize that part a little more than other parts. It’s a bit scary, because you should not really let yourself be colored. But when I see such a case, I also get the feeling that there is something I can contribute with to lift the company.”*

#### **4.2.1.3 Framing Cognitive Bias**

The data analysis found that framing cognitive bias occurred in the angel investors’ decision basis. Our interviewees shared many similar views when it came to presenting an investor case. It was preferred that the entrepreneurs initiated the first contact and proposed a meeting. The angel investors expected the entrepreneurs to present a well-thought-out and engaging story of how the idea came to life and why this team was the best fit to carry out the business idea. The informants expressed that storytelling is especially critical, as this tells them something about the team’s ability to sell its business idea. This speaks for the predominant presence of framing cognitive bias in the decision basis, as the angel investors were influenced by how the investor case was communicated.

Furthermore, we found that the visual presentation of an investor case was significant for angel investors. *"You can subconsciously be affected by the fact that the presentation looks very messy and not visually attractive"*. This was especially important during the Covid-19 pandemic, as the digital meetings put even more focus on the presentations. We also found that grammatical errors, visual anomalies, and inconsistencies gave a dissatisfactory impression and could have the same impact as getting presented with a bad idea. *"Being sloppy with the details in a presentation may indicate being sloppy in other areas as well"*. Another angel investor expressed: *"There is something about being a perfectionist, which is an important part of being an entrepreneur"*. It was clear that the angel investors were influenced by how the investor case was presented, which speaks in favor of the presence of framing cognitive bias in the decision basis.

The gut feeling turned out to be a decisive factor for the angel investor’s decision basis and was described as an overall impression of the investor case. *“The gut feeling is crucial in absolutely every investment I make, presenting an overall assessment of an investment case. Therefore, the decision must be based on a good evaluation of the investment case before the gut feeling is involved.”*. Informants argued that it was challenging to make entirely rational decisions in an early

phase of a company. Therefore, the gut feeling was especially crucial when assessing teams and other non-financial factors.

*"I think the gut feeling matters. Angel investing is not a monotonous game where you can just fill out a form to decide whether to invest or not. Other parameters also come into play; for example, human knowledge, which is also important."*

The angel investors thought that the gut feeling was more reliable as they gained more experience and pointed out that the gut feeling was ultimately the deciding factor. The angel investors expressed that they often developed a strong trust in the team if they experienced good chemistry. We, therefore, found that relationships with the team or entrepreneurs can affect investors' impression of the investment case and increase the incidence of framing cognitive bias. Experienced angel investors tended to make quick decisions based on the information they were presented, which suggests that they were influenced by how the information was presented. The analysis speaks for a strong occurrence of framing cognitive bias in the decision basis, as the angel investors largely emphasized the impression of the investor case and how information was presented.

#### **4.2.2 RQ2: How do angel investors emphasize environmental variables in their decision basis?**

When investigating how environmental variables were assessed as part of the angel investor's decision basis, we asked general questions about the investment process and direct questions about how environmental variables were measured. We found that one out of ten informants carried out specific assessments of environmental variables. The analysis showed limited competence in sustainability and a tendency to assess an investment case based on their *own* perception of what was sustainable.

We found that most angel investors did not consider environmental variables as one of the most important assessment criteria. Although the informants expressed a desire to invest more sustainably, no active actions were taken to achieve this. When we asked which investment criteria were the most important in an assessment process, the informants answered team, market, and

technology. The team was emphasized the most by all the angel investors. *"Having made many investments, the team is what interests me most and is most crucial. The same team could pivot along the way even if the idea were not completely optimal in the beginning [and still be successful]."* The fact that most informants did not mention anything about sustainability suggests that environmental variables are not a central part of the assessment process.

Further, we found that angel investors did not consider concrete environmental variables in the assessment process. Besides the financial potential, we asked our subjects what other factors they looked at when assessing an investor case. It was not until this question was asked that the informants emphasized the environmental variable. When the informants were asked directly about how they assessed environmental variables, only one in ten informants could name specific assessment points. Several informants argued that the companies established today did not have an anti-sustainability profile and did not place as much emphasis on environmental variables. *"I believe that very few companies created today have an anti-sustainability focus. We have never gone so deep into it anyway, as it is difficult to map sustainability at such an early stage."* We, therefore, found it probable that angel investors made investments without having assessed environmental variables.

Several informants also mentioned that the focus on sustainability had grown significantly in the investment environment, especially in recent years. The term "sustainable investment" was defined by the angel investors as an investment that contributed something positive to the world, society, and environment. *"With my investments, I want to make the world a better place, and at least not make it a worse one."* It was also stated that it would be worthwhile to assess the investor cases with a long-term perspective, as the requirements for sustainability would increase in the years to come. *"Sustainability today is not necessarily the same as sustainability in ten years. We need to look forward"*. One of the informants also used to ask the startups presenting their case: *"What is your contribution to society in ten years?"*.

We found that every informant wanted their investment to be a sustainable investment but that there were several challenges associated with assessing the various risks related to sustainability. As there is no standard guidance for reporting on sustainability, angel investors found it challenging

to make satisfactory measurements. It was also argued that sustainability has a diffuse meaning, with difficulties knowing what is right and wrong at any given time. Angel investors also mentioned greenwashing as a challenge. Every informant had experienced cases where the material was embellished and presented to appear greener and better than reality. Even though the angel investors disclosed greenwashing in some cases, they often chose to rely on the material presented due to time pressure and limited resources. Despite the challenges related to making satisfactory measurements and withholding the competence to do so, we find that the informants expressed an interest and willingness to learn more about sustainable investments.

The informants expressed limited knowledge of ESG and that they had not integrated a similar sustainable investment strategy before. Several argued that ESG investing was better suited for investors at a later stage in the process. The analysis showed that investors with more capital and resources had an easier time assessing and measuring ESG factors. The angel investors found that the ESG investment was unclear and difficult to implement, and the vast majority did not have a conscious relationship with their own sustainability strategy. Based on the analysis, we found that the ecosystem the angel investors operated in, to a large extent, helps to establish guidelines for what a sustainability strategy should contain. Angel investors viewed their role as crucial to the ecosystem, contributing venture capital in a challenging phase of a company's life. Their goal was usually to help the companies survive the valley of death and motivate young businesses to succeed in the next round of financing. *“Without angel investors, there would exist fewer projects and fewer founders. That is why we are such an important part of the ecosystem”*.

### **4.3 Summary of Findings**

After analyzing data from the semi-structured interviews using content analysis, this chapter presented various findings that helped answer the research questions. The first research question assesses whether cognitive biases characterized the decision basis for angel investors by testing for herd mentality, confirmation bias, and framing cognitive bias. We found that the decision basis of angel investors is not completely rational, as it is characterized by various cognitive biases. The occurrence of herd mentality was largely influenced by experience and network. Confirmation bias also occurred in the decision basis and was affected by experience, personal beliefs, and interests. Finally, we found that the occurrence of framing cognitive bias in the decision basis was heavily

influenced by the angel investor's gut feeling, which was affected by the entrepreneur's presentation of the investment case and their relation to the team.

The second research question addressed how angel investors emphasized environmental variables in their decision basis. We found that most angel investors did not consider environmental variables as one of the most important assessment criteria. Nor did they carry out any specific assessment of environmental variables. Angel investors acknowledged that the focus on sustainability had grown significantly in the investment environment in recent years. We found that every informant wanted their investment to be a sustainable investment but that there were several challenges associated with assessing the various risks related to sustainability. The angel investors expressed limited knowledge of ESG and had not integrated any sustainable investment strategy. They argued that ESG was unclear and difficult to integrate, suggesting that the vast majority did not have a conscious relationship with their own sustainability strategy. The angel investors also argued that most startups today had a sustainable profile and relied on the information presented by entrepreneurs.

## **5. Discussion**

This thesis examines angel investors' decision basis for seed investments aiming to answer the master's research questions. Through content analysis of the data material from the semi-structured interviews, we answered the first research question, which examines how rational the decision basis of angel investors is by testing for the cognitive biases of herd mentality, confirmation bias, and framing cognitive bias. Then, using the same method, we examined how angel investors emphasize environmental variables in their decision basis, which is our second research question.

Based on our perception of the research results, this chapter will discuss the prominent findings presented in the results chapter above. The research questions are addressed and discussed in separate chapters. Findings from the research are discussed against previous literature and theory presented earlier in the thesis. Analyzing, interpreting, and exploring the significance of the various discoveries are emphasized in the discussion.

### **5.1 RQ1: How rational is the decision basis of angel investors?**

Without asking leading questions, we tested for the cognitive biases of herd mentality, confirmation bias, and framing cognitive bias to answer how rational the decision basis of an angel investor is. As angel investors make both individual and network-based investment decisions, it is interesting to investigate the occurrence of these various cognitive biases in their decision basis. We found that both super angels and business angel networks were affected by cognitive biases. Furthermore, the occurrence of the different biases was influenced by various factors. Our findings are supported by several researchers in behavioral finance, who found that angel investors' decisions are influenced by rational and irrational factors such as cognitive biases and social influences (Barberis & Thaler, 2003; Fama, 1998; Forrester, 2014; Shefrin, 2002; Shleifer, 2000; Taler, 1970).

Traditional finance proposes several principles that contradict our findings related to angel investors. The efficient market hypothesis argues that markets are efficient because the stock market price is correctly priced and reflects all available information (Malkiel, 1989). This theory is not supported in the case of angel investors, as a startup is characterized by incomplete and insufficient information, where most of it is based on a desired future for the company. Expected

utility theory argues that an individual considers the possible outcomes and arrives at an expected benefit based on the preference of these (Davis et al., 1998). This strongly contradicts findings from the analysis that suggest that angel investors have difficulty weighing possible outcomes and that the outcome of the investment is usually not as expected. This is supported by Allais (1953), who argued against the expected utility theory and pointed out that individuals do not always make decisions that meet their desires and needs.

We found that the angel investor's experience largely contributes to influencing the occurrence of the three cognitive biases. This is supported by Kahneman and Tversky (1979), who argue that an investor's decision basis will be greatly influenced by behavioral, psychological, and cognitive aspects (p. 286). We recognize this from Kahneman and Tversky's (1979) prospect theory, where it is argued that the decision weight depends on the perceived probability. Probability is greatly affected by previous experiences, heuristics, and biases. Hammond (2015) finds that prospect theory is mainly a model of risk-taking and decision-making, arguing that the potential value of loss or gain has the most significant impact on the individual's decision rather than the utility (p. 1554). As angel investors, to a greater extent, invest with motivation to drive innovation and help companies they see potential in, we can argue that prospect theory does not appeal to them to the same extent. This is supported by Leonard and Swap (2000), who argue that angel investors are heavily motivated by the joy of contributing to the startup process in the companies they invest in (pp. 71–82).

We argue that angel investors do not always look objectively at the investment case as they often take higher risks than other investors. This is supported by the weighting function of the prospect theory, which argues that investors do not always act by the objective probabilities presented. In addition, the value function argues that investors dislike losses more than they appreciate gains (Kahneman & Tversky, 1979, p. 279). This does not appeal to the same extent as angel investors seem to have a higher tolerance for losses. Furthermore, the value function suggests that investors prefer outcomes with less uncertainty than outcomes with higher uncertainty (Kahneman & Tversky, 1979, pp. 277–279). In the case of an angel investor, this will not always be the case, as we find that trust in teams and personal interests and values have influenced them to invest, even if the outcome is characterized by high uncertainty.

### **5.1.1 Herd Mentality**

Herd mentality is about investors tending to follow other investors' investment decisions. We find that herd mentality occurs in the decision basis of angel investors. Angel investors' network was one of the factors that influenced the prevalence of herd mentality. Informants expressed that it had become increasingly common for angel investors to participate in an investor network. We recognize this from Forrester (2014), who argues that angel investors both make individual and network investments. Angel investors invest in companies that are characterized by limited access to information. We can draw similarities to Liu et al. (2019), who found that herd mentality occurred due to an individual's incomplete and insufficient information. As a result, angel investors often look to other investors in their network. Angel investors risks making investment decisions based on others' beliefs and inputs instead of relying on their independent analysis. This is a classic example of the herd mentality that we recognize from Chaudhary (2013), where cognitive errors and emotions influence investors' decision basis.

Investor networks were actively used by both super angels and business angel networks. Unlike business angel networks that involve their network throughout the investment process, super angels involved their network when additional experience and expertise were needed to make a proper assessment of the investor case. This contradicts Nielsen (2017), who believes that super angels rarely need investment networks. The difference may be due to the increased use of investor networks in recent years, which our interviews have confirmed. Although the angel investors involve their investor network in different ways, we suggest that these will impact the angel investor's decision basis. Chaudhary (2013) explains the influence of networks and finds that herd mentality occurs based on social pressure to comply with social conformities, and a common misconception claims that a large group is unlikely to be wrong. It is thus conceivable that the networks, to a large extent, put pressure on angel investors to follow them. The majority admitted to having invested because another investor in their network influenced them to do so. The informants expressed solid confidence in their investor networks, and several admitted they were likely to be influenced by them. Forrester (2014) also argues that trust in other investors can affect the decision basis. This suggests a strong presence of herd mentality in the decision basis of the angel investors.



Furthermore, we found that angel investors' experiences can also affect the occurrence of herd mentality. An angel investor with less experience also has a smaller basis for making an investment decision. This often leads to uncertainty among angel investors, who therefore choose to look at the decision basis of more experienced investors. In such a case, the risk is associated with the angel investor assuming that a large group is unlikely to be wrong, so the independent analysis is not prioritized. We recognize this from Chaudhary's (2013) argument for why the herd mentality arises. There is also a risk that angel investors feel the pressure to make investment decisions that are socially acceptable by the network. This can result in poor investment decisions. Liu et al. (2019) emphasize the importance of the angel investor developing the ability to make individual assessments to seize real opportunities and achieve investment success. This is supported by Dimov et al. (2007), who believe that this allows angel investors to be more efficient in their decision-making process. On the other hand, we get the impression that experienced angel investors, to a greater extent, rely on their own judgment of an investment case. This is supported by Forrester (2014), who finds that previous experience and accumulated expertise will help angel investors be more focused on the essential areas of the investment case. This suggests that herd mentality occurs to a greater extent in more inexperienced investors.

The occurrence of herd mentality can positively and negatively impact environmental variables. Although cognitive biases, in theory, are presented as something negative, we see that they can also have a positive effect on investment decisions. An investor with sufficient expertise on environmental- and other sustainability-related variables potentially could create strong positive ripple effects if other investors choose to follow their investments. On the other hand, herd mentality could negatively affect a strongly trusted investor lacking expertise in sustainability, deciding to invest in companies presenting an excessive and inaccurate sustainability profile. This increases the risk of greenwashed companies receiving financing. Therefore, it is conceivable that herd mentality may influence angel investors to make less sustainable investments.

### **5.1.2 Confirmation Bias**

Confirmation bias is about people tending to focus on the information confirming their beliefs while ignoring information contradicting it. From the analysis, we find that confirmation bias occurs in the decision basis of angel investors, but to varying degrees, as different factors affect

them individually. The angel investors stated that they usually searched for information that could confirm their impression of the investment case rather than searching for information that could weaken the case. Therefore, we argue that an affirmative focus could draw angel investors towards the information that can substantiate their own perception. We find that confirmation bias occurs more frequently with more experienced angel investors. This may be because angel investors rely more on their own decision-making ability and therefore seek to confirm the information that interests them most. We recognize this in research that suggests that confirmation bias comes from investor overconfidence (Dimov et al., 2007; Mitteness et al., 2012; Peters et al., 2004). Park et al. (2010) also find that confirmation bias strengthens investors' preexisting ideas and tend to make them overconfident. We see the same suggestion in the research of Forrester (2014), who finds that more experienced angel investors invest more significant sums, potentially due to overconfidence.

In the event of such overconfidence in an assessment process, there is also a risk that the entrepreneurs will take advantage of the situation by emphasizing the information that the angel investor aims to verify (Nickerson, 1997). The result may be that angel investors are persuaded to invest on the wrong terms. Again, we can draw similarities to Nickerson (1997), who finds that angel investors find it easier to believe in a theory they would like to be true than a theory they would prefer false. The consequence of this may be that angel investors have too optimistic expectations for investment performance. We find this again in the research of Park et al. (2010), who discovered that confirmation bias made the investors have higher expectations about their investments when in reality, their performance decreased. On the other hand, Forrester (2014) argues that experienced angel investors are usually better at identifying ventures that are likely to do well.

Another aspect related to our findings addresses angel investors' subjective interests and values. From the analysis, we find that the angel investors admit to having made an investment based on a heartfelt connection to the investment case. In these cases, personal interests and values have been emphasized greater than the potential for financial growth. As Nickerson (1997) finds, it is easier for angel investors to believe in a theory they would like to be true than a theory they would prefer false. The risk of making such investments is that angel investors reject investment cases that initially had much potential because they do not meet their individual preferences. The investors

also admitted that in the aftermath of these investments, new information came to light that would have changed their decision to invest if they could have made the decision again. We recognize this in Tversky and Kahneman (1974), who find that cognitive biases affect an investor's judgment in a decision process filled with uncertainty. The angel investors themselves admitted that they allowed themselves to be colored by some investment cases. This suggests that the decision basis for angel investors is largely characterized by confirmation bias.

But what would have happened if angel investors never allowed themselves to be colored by the investor case? It is conceivable that personal interests and values are precisely what drive angel investors. As Forrester (2014) finds, angel investors will base their decision-making on behavioral factors more than other investors. From the analysis, we find that the motivation for angel investors is not only linked to profitability but is also driven by an interest in entrepreneurship and a desire to help early-stage companies, as well as to contribute positively to society. Furthermore, angel investors express that they get a feeling of mastery by being able to help companies. Therefore, we argue that confirmation bias can have a positive impact in that angel investors help companies with a lot of potential to survive in the seed phase.

When it comes to environmental considerations, confirmation bias could both have a negative and a positive effect. For example, suppose an angel investor focuses on sustainability and considers this one of their most important assessment criteria. In that case, it will be one of the first things that the angel investor emphasizes. On the other hand, a negative consequence may be that the company does not survive because angel investors did not prioritize looking at the financial potential. In addition, the outcome will be unfavorable if the angel investor's perception of sustainability is outdated or deficient. The angel investors risk accepting a sustainability profile that, in reality, does not meet the requirements for environmental variables. From the findings, we suggest that experience is crucial for whether an angel investor can distinguish between what is sustainable and what is greenwashing. Therefore, it is conceivable that confirmation bias may influence the angel investor to make less sustainable investments.

### **5.1.3 Framing Cognitive Bias**

Framing cognitive bias occurs when the angel investor's decision is based on the way the information is presented instead of looking at the facts. From the analysis, we find that framing cognitive bias occurs in the decision basis of angel investors, but to varying degrees. Research shows that this is a typical bias that arises in an investor's decision basis (Dimov et al., 2007; Mitteness et al., 2012; Peters et al., 2004). The angel investors express that the decision basis is largely based on how the information is presented. In a time-limited assessment process characterized by limited resources, angel investors likely make relatively quick decisions based on the information they have been presented with. This suggests that the angel investor's impression broadly lays the foundation for the decision based on how the investment case is presented. This reason is supported by Ritter (2003), who finds that how a concept is presented will impact the decision being made. Therefore, the angel investor will probably choose a positive premise case over a negative one. We recognize this from Tversky and Kahneman (1974), who argue that angel investors will select the alternative that is presented positively over the option that is presented negatively.

The way the information in an investor case is presented is further influenced by the entrepreneur's storytelling ability. We find that the entrepreneur's ability to tell a compelling and clear story during the presentation is important to angel investors. According to the informants, this trait said something about the team's ability to sell its business idea. If the presentation did not present a coherent and engaging story, many angel investors lost interest. Angel investors will probably develop stronger trust in a team that can convince them through storytelling qualities. This increased confidence may further strengthen the incidence of framing cognitive bias. DeGennaro and Dwyer (2014) suggest that the occurrence of framing cognitive bias in angel investors creates a cognitive illusion that the investment will perform better than reality. Information presented by entrepreneurs is usually incomplete and unpredictable. For that reason, it is understandable why angel investors base their decision on the way information is presented, as this usually gives an impression of the team and their ability to implement at an early stage, as the information presented is characterized by inconsistency. We found that visuals gave an impression of the entrepreneurs, and they believed that a messy or sloppy presentation could suggest that the team was disorganized

in other areas as well. This suggests that the decision basis of investors is largely influenced by framing cognitive bias.

Angel investors describe the gut feeling as the overall impression they are left with after receiving all the information about an investment case. Most angel investors chose to rely on their gut feeling when the decision to invest was finally to be made. They argue that gut feeling is crucial for considering non-financial factors such as human capital. As angel investors view this as the essential investment criterion, it is likely that the decision to invest largely relies on the team's impression, suggesting a strong incidence of framing cognitive bias. Therefore, it is important to look at the positive aspects of the occurrence of framing cognitive bias in angel investors' decision basis. Informants argue that it is important to make mistakes when investing, to learn and build experience. This indicates that bad investments will help strengthen the angel investor's ability to make better decisions in that they gradually develop a more critical sense of the information they are presented with and the way it is presented.

The occurrence of framing cognitive bias can have both positive and negative effects on environmental considerations. For example, suppose angel investors emphasize environmental variables and other factors related to sustainability in their assessment. In that case, it is conceivable that the company's sustainability profile will be decisive in the decision to invest. On the other hand, this can have a negative effect if the angel investors do not have the competence required to assess the validity of the information provided. What may be interesting is whether angel investors risk investing in a case portrayed as more environmentally friendly than it is. In such a case, a desire to make more sustainable investments will not be sufficient to make a real difference. Therefore, it is likely that the occurrence of framing cognitive bias may lead to less sustainable investments.

## **5.2 RQ2: How do angel investors emphasize environmental variables in their decision basis?**

### **5.2.1 Importance of Environmental Variables in the Early Phase**

The angel investors were asked what their most important investment criteria were, and no one mentioned environmental variables or similar sustainability criteria. Team, market, and technology were the most important criteria to our informants. Like Tyebjee and Bruno (1984) found, it is emphasized that team is the most important criterion. Some informants emphasize teams over the business idea itself and argue that an idea can pivot, while a team is crucial for implementation. This is supported by Hall and Hofer (1993) and Zacharakis and Meyer (1998), who find that human capital is emphasized more in early phase companies than in later phases. Emphasis is placed on the team's composition, experience, and characteristics. This suggests that angel investors have more confidence in teams meeting these criteria.

Hsu et al. (2013) find that angel investors consider the information they receive to be more credible when entrepreneurs have experience working with young companies, as they usually have more realistic ambitions. As the risk of information asymmetry tends to be higher in startups, it is reasonable to believe that the assessment of teams is related to the purpose of reducing information asymmetry (Davila et al., 2003; Gregorio & Shane, 2003). This is supported by Kaplan and Strömberg (2004), who found that information asymmetry is affected by the team's competence and characteristics. According to Forrester (2014), it is easier to avoid information asymmetry by sufficient implementation of due diligence. This indicates that angel investors place more emphasis on teams as a lack of time and resources prevent them from carrying out sufficient due diligence on the startup.

Similar to Kaplan and Strömberg (2004), angel investors define technology as an important investment criterion. Sandberg and Flatland (2021) find that the risk associated with technology is higher for startups, as they often develop new technology (p. 11). Assessment of technology can, in some cases, be linked to the assessment of environmental variables, as we see a trend in environmental technology that will solve different climate challenges (Wensley, 2021). There may be a possibility that investors still consider environmental variables when examining whether the

technology meets a need and is in demand in the market. Parhankangas and Hellström (2007) find that market risk is linked to unforeseen changes in the market. The trend now shows that the market demands more sustainable products. This suggests that the changes currently taking place in the market will lead angel investors to assess environmental variables and other risks associated with sustainability. This perspective is shared by Sandberg and Flatland (2021), who find that market risk is largely related to climate risk (p. 15).

When the angel investors were asked about the assessed specific points related to environmental variables, the majority answered that they did not make any specific assessments. We had to ask the angel investors about this directly, as the majority did not introduce the topic themselves. It seems that environmental variables are not important for angel investors after we find that this is not salient when asked about their key evaluation criteria. As the assessment process is intended to assess risk, we suggest that angel investors are not consciously concerned with minimizing the risk associated with environmental variables.

Carroll (1991) argues that financial responsibility lays the foundation for further pursuing sustainable considerations. Angel investors mainly invest in the early phase (seed), where the companies operate with limited to no sales income. One possible reason why angel investors do not find it equally important to assess environmental variables may be that they primarily want to help the company create profit to lay the financial foundation. This may justify the informants' statement that the environmental focus will come in a later investment process once the financial basis has been laid. This perspective speaks against Elkington's (1997) triple bottom line, which argues that social and environmental considerations must be emphasized equally as profit. Based on angel investors' statements, it is conceivable that this perspective is more appropriate for established companies that have already laid a financial foundation.

Furthermore, angel investors are concerned with the company's stakeholders but with a slightly different purpose than those emphasized in stakeholder theory. Angel investors look at how these can assist the company in creating a financial foundation rather than focusing on what value the company can create for its stakeholders, as presented by Freeman and McVea (2001). Porter and Kramer (2011) believe that companies with a well-established social responsibility will achieve

social and economic profit. According to Brown and Deegan (1998), both society and the media put increasing pressure on companies to run a more sustainable value chain. Therefore, as Porter and Kramer (2011) argue, it is conceivable that products and services that meet social needs over time will increase in demand. This suggests that angel investors will eventually have to change their investment strategy and take a position on environmental variables as part of their assessment process.

### **5.2.2 Lack of Competence Lead to Challenges in Implementing ESG Strategy**

To assess non-financial information, investors often choose to change their investment strategy to achieve more sustainable investments. When we asked about the angel investors' knowledge of ESG, the majority answered that they had little knowledge of this investment strategy. The informants also did not use similar strategies for sustainable investments. Nevertheless, the angel investors explain that they are experiencing an increase in integrating investment strategies that take sustainability into account among investors, especially in recent years. This may be related to Brown and Deegan's (1998) observation that society and the media pressure investors to integrate ESG to a greater extent. Although the financial market has taken sustainability into account through responsible investments, angel investors express several challenges related to implementing ESG in their investment strategy (Borlaug & Aarsten, 2018, p. 15).

Angel investors believe that ESG investing is mainly suitable for more prominent investors. This is in line with OECD (2020), which finds that ESG investments are most used among institutional investors. Although the statistics show that most of those who use ESG investing are larger and more organized investment companies, inevitably, future regulations will probably place more demands on smaller companies and angel investors. Furthermore, angel investors express that it is challenging to decide on a sustainable investment strategy because countless guidelines and frameworks exist. As a result, they experience difficulties defining and implementing ESG in their investment strategy. KPMG (2022) stands by this and states that all these frameworks and voluntary standards constitute the problem, making the process of deciding on sustainability very complex. We see the same trend in the research of Siddique and Sciulli (2018), who found that 52% of the investors surveyed failed to choose a dominant pro-environmental strategy (p. 1). As angel investors themselves find it challenging to implement a sustainability strategy, they are



usually also aware of how demanding it will be for startups and small companies. Like Siddique and Sciulli (2018), this suggests that angel investors prefer small companies with limited resources to focus on following existing regulations rather than taking on pro-sustainability initiatives (p. 1258).

As there is no global standard for sustainability reporting, one consequence is that companies' sustainability reporting will have varying quality (Lokuwaduge & Silva, 2022, p. 152). Investors are therefore concerned about the companies' transparency in terms of sustainability (OECD, 2020, p. 110). For angel investors, we can draw some similarities. The informants stated that they have repeatedly revealed greenwashing in startups. Although angel investors believe that they disclose these companies, this suggests that more startups succeed with greenwashing when angel investors do not have a defined sustainability strategy. Therefore, from the analysis, we believe that angel investors are likely to invest in less sustainable companies, as this is due to a lack of sufficient expertise in the ESG assessment. When angel investors do not have a conscious relationship with their sustainability strategy, we get the impression that the assessment is mainly based on their own perception of sustainability, which will be individual and vary in quality with each individual investor. Like our assumptions, Sandberg and Flatland (2021) find that private investors relate differently to ethical investments.

### **5.2.3 Similarities Between the Investment Process and ESG Strategies**

The angel investors had little knowledge of ESG investment and had not previously used any similar investment strategies for sustainability. It was argued that ESG investment was unclear and difficult to implement and that it was initially better suited for larger investment companies. Friedman (1970) argued that a company does not have sufficient competence or information to consider such ethical considerations. Therefore, we suggest that a time-stressed assessment process with limited access to resources means that angel investors must prioritize which risks are most important to assess. We further suggest that angel investors do not have a conscious relationship with their sustainability strategy, as they express difficulties in seeing the connection between finances and sustainability.

Despite this, we see several similarities between angel investors' descriptions of the investment process and different ESG strategies. These are similarities found through analysis, which the angel investors themselves do not seem aware of. This can be explained by the fact that angel investors usually do not follow a specific decision model (Maxwell et al., 2011). Angel investors present, for example, that they avoid investing in oil and gas and have removed these investments from their portfolios. We can draw similarities to the ESG strategy exclusion and divestment, where the investor sells out of or omits to consider investments in industries that are not considered ESG investments. Furthermore, angel investors typically excluded investment cases during screening where the company did not meet their predetermined criteria. Here we can draw similarities to negative screening, an ESG strategy where the investor excludes certain companies, sectors, or practices from the portfolio. Finally, angel investors often choose a shortcut decision-making heuristic known as elimination-by-aspects (Maxwell et al., 2011).

Another significant similarity is related to active ownership, an ESG strategy in which the investor is actively involved in the company through its shareholder position to influence company behavior to comply with ESG values. Active ownership is a widespread strategy for angel investors, who usually involve the companies after investment. Modern portfolio theory argues that return on investment is the primary motivation for an investor. Several researchers disagree and argue that investors' main motivations are interests, a desire to help companies, and create jobs for society, et cetera (Freear et al., 1995; Leonard & Swap, 2000; MIT Entrepreneurship Center, 2000; Sullivan, 1991). Nielsen (2017) states that an investor's main motivation for investing is contributing something to the company, themselves, and society. The informants communicated that they wanted to help startups by sharing their experience, network, and capital. The results indicate that angel investors' main motivation to get actively involved in other companies is also linked to these three factors and that these may be somewhat related to ESG. It may seem that the ecosystem in which the angel investors operate has largely contributed to influencing this unconscious sustainability strategy. This suggests that the investment process, in principle, lays a good foundation for ESG investing but that the lack of expertise on the part of angel investors hinders the implementation of ESG.

#### **5.2.4 A Reactive Approach to Sustainability**

The angel investors we interviewed believed that they had an important responsibility to society. Their main duty was to contribute venture capital in a challenging phase of a company's life and motivate young businesses to succeed in the next round of financing. In 2021, global funding in the seed phase increased by 104% (Sheth, 2022, sec. 3). As angel investors are usually among the primary sources of funding for a startup, we suggest that angel investors will play a crucial role in shaping the leading companies of the future. This responsibility indicates that it is important that angel investors integrate ESG considerations into their decision-making process early. Nevertheless, we find a lack of expertise related to ESG investing and other sustainability strategies. Seth (2022) finds that venture companies are lagging in incorporating ESG into the investment process.

Although the angel investors express that they desire to consider ESG in their investments, no active actions are taken to accomplish this. Here we can draw links to Botsari and Lang (2020), which find that approximately 60% of angel investors assess ESG in their investment decision. Still, only 10% of angel investors state ESG considerations among their three most important selection criteria. Furthermore, angel investors argue that most companies founded today have a sustainable profile. This attitude, combined with strong confidence in the team, suggests that angel investors have a high probability of making less sustainable investments. As Henderson (2015) and Stern (2008) argue, this can lead to startups losing competitiveness and profitability in a world where society is putting increasing pressure on companies to take environmental considerations into account. Despite this, Botsari and Lang (2020) find that approximately 48% of angel investors do not believe ESG criteria are essential for investment performance. Therefore, they do not integrate ESG into their investment strategy. We find several similarities between the angel investors' attitudes and our research findings. Compared to previous research and theoretical frameworks, our results suggest that angel investors have a reactive approach to sustainability. By reactive approach to sustainability, we mean that the way angel investors exercise assessment of an investment case has a counteracting effect concerning their ambition to invest sustainably.

### **5.2.5 Aspiring Toward a Proactive Approach**

Despite a reactive approach to sustainability, angel investors have ambitions to implement ESG in their investment strategy. Several of the informants stated that when assessing an investment case, they tried to look at the potential of the investment in the long term. We recognize this from Henderson (2015), who supports the importance of integrating sustainability into business but emphasizes the difficulty of introducing this in the short term, as it requires a sacrifice of profits for the company. Although it is difficult to predict what will be viable in the future, Henderson (2015) emphasizes that sustainability will drive profit if presented as a long-term business strategy. This perspective is also supported by Hartzmark and Sussman (2019), who find that investors who integrate ESG strategy do better in long-term equity. Nevertheless, the informants emphasize that it is challenging to have a long-term perspective when they usually invest in a relatively early phase.

In contrast to the otherwise reactive approach, this shows that angel investors desire a proactive approach to sustainability. With a proactive approach, we believe that angel investors take a position on future ambitions to integrate sustainability as part of the investment strategy and take participatory actions to achieve this. The informants expressed that they want to improve their investment strategy. Still, we find that a lack of competence in sustainability makes it difficult for them to define goals for ESG, as well as to integrate ESG into their strategy. This may also be related to the numerous frameworks and standards, making it difficult to maneuver. We must recognize that fewer companies would have survived the valley of death without angel investors. Many large companies would not exist today if angel investors had not contributed their capital and experience in a phase where additional financing was necessary, and few other investors were not risk-averse enough to invest in the company. We see it as crucial that the angel investors see the opportunities that lie in implementing ESG in their investment strategy, as this will have a substantial impact on the company's development in the future.

### 5.3 Summary Discussion

The discussion mainly deals with the research findings, where we compare these against theory and previous research. Our analysis found the occurrence of cognitive biases in angel investors' decision basis. This is largely supported by theoretical frameworks and research related to behavioral finance. Herd mentality is mainly affected by trust in the investor network and the angel investors' experience. This applies to both super angels and business angel networks. Confirmation bias is a common bias that typically arises in an investor's decision basis. Here the occurrence is also affected by the angel investor's experience. Supported by previous research, this can be explained by the fact that angel investors with a lot of experience risk becoming too overconfident in their decisions (Dimov et al., 2007; Forrester, 2014; Mitteness et al., 2012; Park et al., 2010; Peters et al., 2004). Angel investors will also be colored by a case that fits their subjective interests and values, which speaks for the further occurrence of confirmation bias. Framing cognitive bias occurs in angel investors' decision basis. Based on how the information is presented, angel investor forms a gut feeling that represents the overall impression of the case. Most angel investors chose to rely on their gut feeling when the decision to invest was finally to be made. Based on the analysis, we find it probable that cognitive biases in the decision basis can lead to less sustainable investments. Nevertheless, it must be mentioned that the common denominator for such an outcome is due to a lack of competence in environmental and other sustainability-related variables.

Environmental variables were not mentioned as one of the most important investment criteria in angel investors' decision basis. We also found that no concrete assessment was made of the environmental variables. Instead, the team became by far the most important investment criterion. This is supported by the fact that investment in startups is characterized by high information asymmetry. Therefore, an angel investor places the most emphasis on teams to minimize the risk associated with this. The results suggest that angel investors emphasize teams, as lack of time and resources prevents them from carrying out sufficient due diligence on the startup. Furthermore, angel investors' prioritization of environmental factors is supported by the pyramid of corporate social responsibility. This theory addresses how economics and sustainability should be connected and argue that a financial basis must be the basis before focusing on social and sustainable responsibility. This may justify why angel investors primarily want to help startups financially and believe that environmental considerations come at a later stage.

Although angel investors have limited relation to ESG investing and their sustainability strategy, we can draw several similarities between the described investment process and different ESG strategies. This suggests that angel investors have an investment strategy that makes it possible to make sustainable investments. However, from the analysis, we find that the lack of sufficient sustainability competence limits the angel investor's ability to carry out sustainable investments in practice. Although angel investors emphasize the importance of sustainable investments, no active actions are taken to achieve them. The angel investors also believe that they can expose companies that greenwash their sustainability profile based on their own perception of sustainability. This suggests that angel investors have a reactive approach to sustainability. Nevertheless, they express a desire for a more proactive approach. The increasing pressure from society and the media can possibly, over time, affect angel investors to assess environmental variables and other risks associated with sustainability.

## **6. Conclusion**

In this chapter, we summarize the primary research outcomes and answer how this addresses our research aims from a broader perspective. We further consider the implications of our research and suggestions for further research. This master's thesis aims to create an understanding of how cognitive biases affect angel investors' decisions and whether this leads to less sustainable investments. Using a qualitative method, we conducted semi-structured interviews with ten different angel investors, where we asked non-leading questions about the investment process. After conducting a content analysis of the collected data material, we were able to answer the following two research questions:

### **6.1 RQ1: How rational is the decision basis of angel investors?**

We found that various cognitive biases occurred during the assessment of an investment case, which means that the decision basis for angel investors is not entirely rational. Findings indicate an evident occurrence of the three cognitive biases herd mentality, confirmation bias, and framing cognitive bias. These findings are supported by researchers in the field of behavioral finance, arguing that investors' decision basis violates several of the principles of traditional finance as it is influenced by psychological, behavioral, and cognitive biases (Baker & Nofsinger, 2010; Barberis & Thaler, 2003; Fama, 1998; Miller, 1986; Shefrin, 2002; Shiller & Jain, 2003; Statman, 1995, 1999). Both super angels and business angel networks used networks in the assessment process to arrive at a decision basis, where the purpose was related to minimizing risk. We found that angel investors had strong confidence in their networks and admitted they had been influenced by them on several occasions. These findings suggest a substantial prevalence of herd mentality. This is supported by Liu et al. (2019) and Chaudhary (2013), who argue that angel investors look to other investors to minimize risk when the information they hold is incomplete and insufficient.

Another finding that speaks for the occurrence of confirmation bias is that angel investors usually seek to confirm the information that stands for their personal interests and values rather than looking for weaknesses in the investment case. We can draw similarities to Nickerson (1997), who argues that investors find it easier to believe in a theory they would like to be true than a theory they would prefer false. The analysis also indicated that confirmation bias occurred to a greater

extent among experienced angel investors who could appear to be overconfident in their decision basis as they knew exactly what criteria they were looking for. We recognize this from various research (Dimov et al., 2007; Forrester, 2014; Mitteness et al., 2012; Park et al., 2010; Peters et al., 2004). Angel investors' decision basis was largely influenced by how the entrepreneurs presented the investment case and the presentation's visual expression. These findings suggest a substantial incidence of framing cognitive bias. We can draw similarities to Ritter (2003), and Tversky and Kahneman (1974), who find that the investor decision basis will be influenced by how the concept is presented. DeGennaro and Dwyer (2014) argue that an angel investor can create a cognitive illusion that the investment will perform better than it does. The gut feeling was also a strong indicator of the decision basis, as this represented an overall impression of the investment case.

Although we found an evident occurrence of cognitive biases in the angel investor's decision basis, we ask ourselves how much this affects the decision basis. From previous research and theory (e.g., Forrester, 2014; Tversky & Kahneman, 1974), we get the impression that cognitive biases are discussed from a negative perspective. In an early phase, the startup is characterized by unpredictability, and the information is largely based on a predicted future. The assessment of the investment case will probably not be satisfactory at this point, and few investors are willing to invest as this phase is characterized by high risk. Our findings, therefore, suggest that it may be necessary for angel investors to overlook the cognitive biases that may occur in the decision basis and emphasize their ability to see the long-term potential of what the company can become.

## **6.2 RQ2: How do angel investors emphasize environmental variables in their decision basis?**

We found that the majority of angel investors did not take environmental variables into account in their decision basis. Only one in ten informants could name specific assessment points for environmental variables. Henderson (2015) and Stern (2008) argue that angel investors, as a result of this, risk losing competitiveness and profitability in a world where ESG considerations are increasing. This suggests that angel investors have a limited relationship with sustainable investments. The angel investors found it challenging to define the concept and expressed that it was demanding to implement such a strategy. This is supported by various research (e.g., KPMG,



2022; OECD, 2020; Siddique & Sciulli, 2018), who find that angel investors have difficulties defining and implementing ESG in their investment strategy, as the various frameworks create confusion and are mainly adapted to institutional investors. Nevertheless, we find that the investment process described by angel investors has several similarities to different ESG strategies. The angel investors themselves are not aware of these similarities, suggesting that they do not have a conscious relationship with their own sustainability strategy. We recognize this from Maxwell et al. (2011), who argue that angel investors usually do not follow a specific decision model and therefore are not necessarily aware of their own investment strategy. Although the investment process itself is an excellent basis for integrating ESG investing, we found that lack of expertise is the biggest obstacle in implementing such a strategy. From the analysis, it is clear that angel investors' possible assessment of environmental variables will be based on their own perception of sustainability.

Although angel investors emphasize the importance of sustainable investments, few take active actions to achieve them. We can draw similarities to research done by Botsari and Lang (2020), who find that most angel investors assess ESG, but few consider it among the most important assessment criteria and believe that it will not affect investment performance. Several angel investors expect established companies to have a sustainable profile but have not secured enough expertise to ensure this quality. This makes them more vulnerable to greenwashing and making less sustainable investments. This is supported by Lokuwaduge and Silva (2022), who find that the varying quality of ESG reporting and assessment can lead to an increased risk of greenwashing. Our analysis, therefore, suggests that angel investors have a reactive approach to sustainability. On the other hand, angel investors express a desire to carry out sustainable investments and assess investment cases from a long-term perspective. We recognize this from Henderson (2015), who argues that sustainability will drive profit if presented as a long-term business strategy. This suggests that angel investors aspire toward a more proactive approach to sustainability. Sussman (2019) also argues that investors who integrate ESG strategy do better in long-term equity. Still, the informants emphasize that it is challenging to have a long-term perspective when they usually invest in a relatively early phase.

From our theoretical framework, we find that angel investors' relationship to sustainability is similar to Carroll's (1991) Pyramid of Corporate Social Responsibility. The framework argues that the financial basis must be in place before social and environmental sustainability can be considered. Unfortunately, the financial basis in the early phase is usually not in place as startups have limited to no sales revenue. Therefore, the analysis suggests that angel investors' primary responsibility is to help startups build a financial foundation. Several informants expressed that the focus on environmental and social sustainability comes at a later stage. In summary, we find that angel investors do not emphasize environmental variables in their decision basis and seem to be unaware of their own sustainability strategy.

### **6.3 Do cognitive biases in the decision basis cause less sustainable investments?**

Based on our research, we found that cognitive biases in the decision basis can lead to less sustainable investments. From the analysis, we found that cognitive biases could positively and negatively impact the sustainability of investments. However, what was interesting was that the outcome was influenced by a common factor, the angel investors' competence in sustainability. These findings suggest that it is not the cognitive biases themselves that lead to less sustainable investments but rather the angel investors' individual competence and personal preferences, as well as the ecosystem of which they are part of.

### **6.4 Implications of the Research**

Our research makes a theoretical contribution to the field of innovation and entrepreneurship on how cognitive biases affect the angel investors' decision basis. There is different research about which variables affect angel investors' decision-making process. However, few address how these affect the decision basis. Our research provides new insight into what triggers the occurrence of various cognitive biases and how they can affect the decision basis. Furthermore, the research will contribute new knowledge related to angel investors' consideration of environmental variables, as well as angel investors' relationship to sustainable investments. There is already limited research related to angel investors' sustainability strategy. Our findings on similarities between ESG strategies and the investment process of angel investors can potentially lead to further research on

how strategies for sustainable investments can be adapted to smaller companies and investors for more straightforward implementation.

When it comes to practical implications, our research will give both startups and investor communities an increased understanding of how cognitive biases affect the decision basis. This will make angel investors more aware of their own assessment process and give startups an understanding of how they can present their investment case to a potential investor. Potentially, this can be useful for angel investors who aim to adjust their assessment process. Furthermore, our findings of angel investors' limited awareness of their own sustainability strategy could create awareness among them and potentially create an incentive to acquire more competence related to sustainability. Finally, the finding of the investment process' similarities to ESG strategies may lower the threshold for using ESG strategies and influence a more proactive approach to sustainability.

## **6.5 Limitations and Recommendations for Further Research**

It is essential to be aware of the possible limitations of the master's thesis. The limitations of using a qualitative method are that the methodology can be too subjective and the sample size too small. Nevertheless, we defend the choice of using a qualitative method as this gave us more depth in the answers so that we could gain a more comprehensive understanding of the research topic than we would have gained through a quantitative study. For further research, it may be interesting to build on our research and conduct a quantitative study with a larger sample size in an attempt to be able to generalize results to a broader population.

Another limitation is that our research has a relatively narrow focus, as we only examine the occurrence of three cognitive biases and do not consider other biases or factors that affect the decision basis. However, this narrow focus was necessary to ensure the quality of the findings made. Therefore, a proposal for further research is to investigate other possible cognitive biases or factors affecting the angel investor's decision basis. Through research, we have learned that an investment process is complex and will be affected by various cognitive biases, but that this does not necessarily have to be exclusively negative. Therefore, we suggest looking further into the potential positive aspects of cognitive biases in angel investors' decision basis for further research.

Our findings indicate that angel investors lack competence in sustainability. A limitation of our master's thesis may be that experiences from previous meetings with investors have influenced us as researchers. For further research, we suggest examining the impact of implementing a sustainability strategy for early-stage investors. As we find that the investor networks affect the angel investor's decision basis, it may also be interesting to explore the importance of these networks and their influence.

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## 8. Appendix

### 8.1 Interview Guide

#### Introduction:

Welcome, and thank you for taking the time to participate in this interview. We greatly appreciate that you want to contribute your insight into the topic.

We are master's students at the University of Agder, and the interview will be part of the data basis for our master's thesis in SHIFT entrepreneurship. The theme of the thesis is to examine the investment process of angel investors and which factors are the most crucial to making an investment.

The interview will be recorded electronically and then transcribed anonymously. After transcription, the audio files will be deleted. The written document will be kept in accordance with current regulations and then deleted upon completion of the master's at the end of June 2022.

We expect the interview to take about 30 minutes. There is no time for a break. Do you have any questions before we start?

#### Interview questions:

The investment process

- How many investments have you taken part in, and how long have you been an angel investor?
- Which industries are you most interested in when investing?
- What characterizes a seed round for you?
- What steps does your investment process consist of?
- What does a screening process look like for you?

- What are the three most important criteria you are looking for in a potential investment?
- What other things are you looking for?
- Are there aspects of the decision-making process that are downgraded?

### Herd mentality

- Do you involve others in the decision-making process?
  - If so, when in the process?
  - If so, how in the process?
  - If not, why not?
- Do you mostly invest individually or with a network?
  - If you invest with a network; does your network influence you before you invest?
    - How are you affected by your network?
    - Do you see it as positive or negative that you are affected, and why?
  - If you invest individually, Why invest alone and not with others?
- Have you ever chosen to make an investment on the basis that another investor or investors have made the same investment before you?
  - If so, what was it that influenced you to make the investment?

### Confirmation Bias

- You are considering an investment case you have just been presented with; Are there any differences in how you look for information in the different phases of the investment process?
- What is most important if you had to choose? Looking for more underlying information that is not presented in the case (to test for weaknesses, or looking for information that confirms the case (the information) you have been presented with?
- Do you use other methods of information retrieval to confirm/deny the case?
- Do you ever make investments with an emphasis on the information you are presented with matching your personal interests and values?

- Has there been any information following these investments which would have changed your decision if you were to reconsider?

### Framing Cognitive Bias

- How do you prefer to have an investor case presented?
- How important is it to you that the presentation is visually pretty?
- A pitch deck often has a combination of text and numbers; in what way do you prefer to read the information?
- How long does it take before you get hooked or lose interest in the investor case?
- What does it take for you to have a new meeting with the founders?
- How often is the gut feeling a deciding factor in whether you choose to make an investment?
  - In what situations can the gut feeling play a bigger role?

### Stakeholders and sustainable investments

- Besides the financial potential of an investor case, what other factors do you look for when considering investing?
- Which of the startup's stakeholders do you take into account when considering an investment case?
- Do you think about how your investments affect society?
- In your opinion, what is the angel investor's most important responsibility to society?

### Environmental variables

- Have you chosen not to invest in companies because you thought they were not sustainable enough?
  - If so, why not?
  - What do you put in "not sustainable enough"?
- What does the term sustainable investment mean to you?

- Have you experienced any change in the focus on sustainable investments since you started as an investor?
- Do you experience challenges related to using sustainability as an assessment criterion?
- What environmental aspects do you consider when assessing an investor case?

#### Angel investors' relation to ESG

- Do you use any kind of framework or strategy in your assessment process?
  - If so, what frameworks/strategies do you use?
- Do you miss any frameworks or strategies that could have been very useful in the assessment process?
  - If so, which areas do you miss frameworks/strategies in?
- Do you have any knowledge of ESG investing?
- Have you implemented ESG investing into your investment strategy?
  - If so, why?
  - If not, why not?

#### In conclusion:

Then we have no more questions. Is there anything else you want to say, something we should know, or you want to ask before we finish?

Is it okay if we send you an email afterward with a follow-up question if necessary?

Thank you for showing up for the interview and sharing your experiences. It means a lot to us and will be a good contribution to the task. Have a nice day!