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Start-up Eco-nomics

A Qualitative Study on Exploring How Funding Influences Sustainable Innovation in Start-ups

By

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Abstract

Title:	Start-up Eco-nomics - A Qualitative Study on Exploring How Funding Influences Sustainable Innovation in Start-ups.
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Keywords:	Sustainable Innovation, Startups, Capital Funding, Financing, Shareholding, Sustainable Business Model, Market Entry Barriers, Venture Capital.
Purpose:	The primary purpose of this research is to explore if different capital financing strategies impact the ability of startups to develop and implement sustainable innovations differently.
Theoretical perspective:	This study is based on the theory of Sustainable Business Model Innovation, combined with the theory of Resource Dependence.
Methodology:	This study is a qualitative exploration of how capital funding choices impact sustainable innovation in startups, utilising in-depth, semi-structured interviews and thematic analysis to understand and interpret the complex dynamics within these organisations.
Empirical foundation:	The empirical foundation of this study consists of the detailed insights and perspectives gathered from semi-structured interviews with founders in startups, executives from capital allocation enterprises, as well as the authors' interpretations of both the collected data and existing literature on capital funding and sustainable innovation.
Conclusion:	This thesis proposes that funding choices significantly influence startups' capacity to develop sustainable innovations. Strategic partnerships are particularly beneficial for SBMs due to their focus on creating shared value, while venture capital provides substantial working capital but emphasises monetary returns. This paper argues that the timing and nature of funding choices are crucial for maintaining the integrity and long-term sustainability of startups, representing a valuable area for future research.

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Table of Contents

Abbreviations

VC	Venture Capital
BM	Business Model
ROI	Return on Investment
SDG	Sustainable Development Goals
SBM	Sustainable Business Model
SBMI	Sustainable Business Model Innovation
SVO	Shareholder Value Orientation
ECSPR	European Crowdfunding Service Providers Regulation
TCE	Transaction Cost Economics
TC	Transaction Costs
AS	Asset Specificity
BD	Business Development
CSR	Corporate Social Responsibility
CSV	Create Shared Value
CA	Competitive Advantage
DIG	Design-Implementation Gap
RDT	Resource Dependence Theory
PE	Private Equity
R&D	Research and Development

List of Tables

List of Figures

1. Introduction

This thesis investigates the relationship between capital financing and sustainable innovation in startups in Europe. Startups, vital to economic innovation, often face significant challenges in acquiring sufficient capital to advance sustainability objectives within the European financial landscape. This study probes how various financing strategies impact these companies' abilities to develop and implement sustainable innovations. By focusing specifically on the question: "Does the choice of capital funding influence the capacity of startups to develop and implement sustainable innovations?" Our research explores the interplay between financial strategies and sustainability outcomes in the entrepreneurial sector. Through an abductive approach on different capital financing methods, and supported by a qualitative research of entrepreneurs with experience in funding rounds and preparations, and through the lenses of two significant theories on business development and management, the thesis provides insights for entrepreneurs as well as financial investors on how to better support sustainable entrepreneurial ventures within Europe.

1.1 Background

In recent years, the intersection of capital financing and sustainable innovation has emerged as a critical focal point in the landscape of startups. Startups represent important engines of economic growth in all sectors and especially innovation and have, throughout the years been some of the most important innovators, inventors and frontrunners in business and sustainability. Recent studies have further validated that startups significantly contribute to the sustainable development goals (SDGs), demonstrating an important correlation between the emergence of startups and enhancements in economic, social, environmental, and institutional metrics across various national economies (Ressin, 2022). However, their journey toward sustainable innovation is often hindered by challenges in accessing adequate capital and navigating the complex financial landscape that is present in sustainable companies, confining universal sustainable progress (Ressin, 2022).

For the purposes of the thesis, the concepts of sustainability and sustainable development are based on the definition provided in the Brundtland Report “Development which meets the needs of the present without compromising the ability of future generations to meet their own needs" (World Commission on Environment and Development, 1987). Sustainable innovation, defined as the development and implementation of products, services, or processes that address social, environmental, and economic challenges (NBS, 2019), has gained prominence in response to pressing global concerns such as climate change, resource scarcity, and social inequality. In its initial stages, this paper had a purpose to research general barriers to market entry for companies, with an hypothesis suggesting that larger corporations impede on sustainable innovations’ ability to reach market, in efforts to avert competition to their market dominance. Through our preliminary research, the question of “why are there so much fewer successful startups in Europe compared to North America, given that the two geographical areas were relatively similar in economic output as well as working practice” arose, sprung from a Hofstede analysis of cultural differences between regions (Pandikow et al., 2007). Through further exploration and consultancy on the topic of differences in startup market conditions in Europe compared to North America, it became evident to us that the one factor that seemed to get recognized for having the most impact generally was the differences in amount of capital invested. In 2021 and 2022, many startups failed prematurely due to a lack of funding and running out of liquidity, with the impact of the Covid-19 pandemic being less significant (Statista, 2024). Interestingly enough, these years also saw record investments in startups, with massive amounts of money being poured into new ventures (Teare, 2024).

Startups are nothing new, but this shift in the market dynamics between financing and startups necessitates a reevaluation of traditional approaches to capital financing, as companies increasingly recognize the importance of aligning financial strategies with sustainability goals (Bocken et al., 2014; Geissdoerfer et al., 2018). This study draws on Resource Dependency Theory (RDT) and Sustainable Business Model Innovation (SBMI) to analyse the financial dynamics affecting sustainable startups (Hillman et al., 2009; Bocken et al., 2014). These frameworks help explain how external resources and strategic financial decisions impact the capacity of startups to innovate and grow sustainably (Hillman et al., 2009; Bocken et al., 2014).

1.2 Problematization

The importance of SBMs in driving innovation and long-term value creation has been well-documented in the literature (Bocken et al., 2014; Geissdoerfer et al., 2018). However, where capital financing and sustainable innovation meet in interrelationship remains a relatively underexplored area, particularly concerning the challenges faced by inherently sustainable startups. Despite the potential that SBMs have in addressing sustainable and innovative issues, startups often struggle to secure adequate funding, likely due to the misalignment between these SBMs long-term goals and the short-term profit motives of traditional investors (Hillman et al., 2009).

Existing research highlights that traditional funding mechanisms such as venture capital (VC) and angel investors prioritise rapid scalability and high returns, which can be at odds with the iterative, risk-taking and evolving nature of SBMs (Alakent et al., 2020; Wöhler & Haase, 2022). This clash recurrently forces sustainable startups to compromise on either their sustainability goals or the flexibility incorporated in their business models to meet the stringent growth expectations of VC's (Bocken et al., 2014). Furthermore, the high-pressure environment created by VC's can lead to short-termism related to monetary returns, potentially overshadowing the long-term vision that is essential for the success of sustainable innovation (Bocken et al., 2014)

Moreover, the literature reveals a significant gap in understanding how different funding strategies impact the success of SBMs. Research on RDT and SBMI suggests that startups need to balance flexibility and stability to thrive (Hillman et al., 2009; Bocken et al., 2014). However, there is limited empirical evidence on how startups can effectively manage this balance while navigating the constraints imposed by traditional funding mechanisms.

1.3 Purpose Statement and Research Question

In light of this, the primary aim of this research is to explore the relationship between capital financing and the development of sustainable innovations in startups. Specifically, this study

seeks to investigate how different capitalization strategies influence these companies' abilities to drive forward and implement sustainable innovations.

The central research question guiding this inquiry is: *"Does the choice of capital funding influence the capacity of startups to develop and implement sustainable innovations?"*. This question serves as an important cornerstone for examining the relationship between financial strategies, innovation practices, and sustainability outcomes within newer entrepreneurial ventures. By addressing this question, we hope that our research can bring new perspectives to the field concerned, and help shed light on the importance and impact which capital financing can have on the trajectory of sustainable innovation in startups.

Through a comprehensive analysis of these issues, this research seeks to offer perceptive insights and considerations for corporate leaders and investors seeking to foster a conducive environment for sustainable innovation. Furthermore, by enhancing the understanding of capital financing dynamics among startups, this study aims to provide guidance to smaller companies that operate within the European context, who aim to provide innovative solutions through business cases that have sustainability at its core.

1.4 Outline and Delimitations

In the world of capital financing there are many paths that entrepreneurs can take that can lead to a successful venture, however, this depends largely on the "stage" at which a startup is. "Stages" describe moments in the company's life at which it seeks funding, also referred to in different "*series*". Gilion (formerly Ark Kapital), a company conducting in-depth predictive models in growth forecasting for over 2000 startups, defines four different stages at which startups usually raise funding. These four stages are described as follows (Gilion, 2024; Fu & Qian, 2023):

1. *Seed:* The first investment that a startup needs to get conceived. Depending on the institution, seed investment is usually combined with a stage known as *"pre-seed" - an earlier stage of funding that usually requires just proof of concept.* (Pitchdrive, 2023)
2. *Series A:* Utilised for first launch of product or service.

3. *Series B:* Typically finances expansion or product, services, personnel, or infrastructure.
4. *Series C:* Leveraged in case of expanded growth, typically in non-domestic markets.

Within these *Stages* or *Series* there are different funding strategies or mechanisms startups can use in order to finance themselves and in the idea of narrowing the scope of which financing strategies to analyse, the ones chosen as relevant are the most prevalent forms of financing analysed throughout the qualitative data recorded during the testimonies of both experts within financing firms as well as leaders of startups. A categorisation of financing is relevant as the different forms of financing fall under several categories of traditional financing, which are as follows:

I. Equity Financing
II. Debt Financing
III. Grant Funding (Non-Repayable)
IV. Crowdfunding
V. Personal Financing

Choosing what types of funding mechanisms to explore is a challenge that will be posed. The goal of this exploration into financing methods is to look at numerous ways of financing, in order to be able to give a holistic and almost-all encompassing analysis of financing mechanisms while still looking at relevant enough mechanisms that are being utilised in great numbers by existing and future startups. The study will be limited to certain types of capital funding, specifically focusing on those most relevant to startups in the context of sustainable innovations. Geographic limitations are also to be applied in this research. This research will focus on the European continent as a protagonistic region. The research will also exclude certain aspects of startup operations and broader economic factors that are not directly linked to capital funding and sustainable innovations.

2. Literature Review

According to Webster & Watson (2002), a review of prior, relevant literature is essential for any academic project, as it creates a firm foundation for advancing knowledge, facilitates theory development, and uncovers areas where further research is needed. Therefore, the following literature review aims to provide an overview of existing research related to corporate sustainability, the concepts and mechanisms for financial funding for startups ,and the financial and strategic challenges faced by startups. Another aim of this literature review is to provide an overview of relevant theories and theoretical gaps in the funding of sustainable and innovative startups, notably Sustainable Business Model Innovation (SBMI) (Bocken et al., 2014) and Resource Dependence Theory (RDT) (Pfeffer & Salancik, 1978). This review synthesises key concepts and theoretical frameworks, highlighting critical issues and gaps in the current literature to guide future research.

2.1 Corporate Sustainability

2.1.1 Creating Shared Value

Sustainability and sustainable development, defined as "development which meets the needs of the present without compromising the ability of future generations to meet their own needs", has had an increase in alertness and recognition in the past years (World Commission on Environment and Development, 1987; Pinelli & Maiolini, 2017). Sustainable development involves ensuring that future generations retain the capacity to survive and thrive without facing environmental degradation or resource depletion (Steffen et al., 2015). The concept of planetary boundaries has been introduced to assimilate the urgency for environmental protective efforts by identifying crucial Earth system processes critical for maintaining global stability. These boundaries delineate the safe limits within which human activities must operate to avoid catastrophic environmental changes (Steffen et al., 2015). The concept requires balancing social, environmental, and economic factors to achieve true sustainability, in accordance with the so-called triple bottom line approach (Elkington, 1997). Businesses should develop strategies aimed at reducing environmental harm and promoting social equity, ensuring that business activities contribute positively to both ecological preservation and societal well-being (Hogevold

& Svensson, 2012). The extent of sustainability within a society is largely influenced by how sustainably individual firms develop. Consequently, businesses play a crucial role in fostering a more sustainable society by integrating sustainable practices and processes into their operations in order to make shared sustainable progress (Clinton & Whisnant, 2014).

Addressing sustainability for shared benefit requires solutions that not only innovate but also demonstrate the potential for substantial positive outcomes while minimising negative environmental and social impacts (Bocken et al., 2014). In driving this transition, private enterprises emerge as critical stakeholders, possessing considerable resources and capabilities. Porter & Kramer (2011) highlights this through their concept of integrating business success with social progress. According to the authors, there are three key ways to generate shared value: by 1) reconceiving products and markets, 2) redefining productivity in the value-chain and 3) enabling local cluster development. Reconceiving products and markets involves innovating new products or services to address social needs and problems. By doing so, businesses can find new opportunities for growth and differentiation while also contributing to societal well-being (Porter & Kramer, 2006). Redefining productivity in the value chain involves enhanced competitiveness and operational efficiency by addressing social and environmental issues within the value chain by improving resource efficiency and reducing environmental impact (Porter & Kramer, 2011). Enabling local clusters involves a support of development that can translate to investments in infrastructure and benefit the local community and the business (Porter, 1990). Integrating shared value into the core business strategy is emphasised as important, rather than treating it as a philanthropic activity (Porter & Kramer, 2006). Key steps include aligning business objectives with societal goals, incorporating clear goals, metrics, and accountability (Ashley, 2009). Promoting cross-functional collaboration across various company functions to address social issues is also crucial (Bockstette & Stamp, 2011). Engaging with stakeholders such as customers, employees, communities, and governments to understand their needs and foster partnerships can enhance reputation and build trust. Additionally, a commitment to continuous innovation through ongoing learning and adaptation is essential for creating new shared value initiatives (Porter & Kramer, 2011).

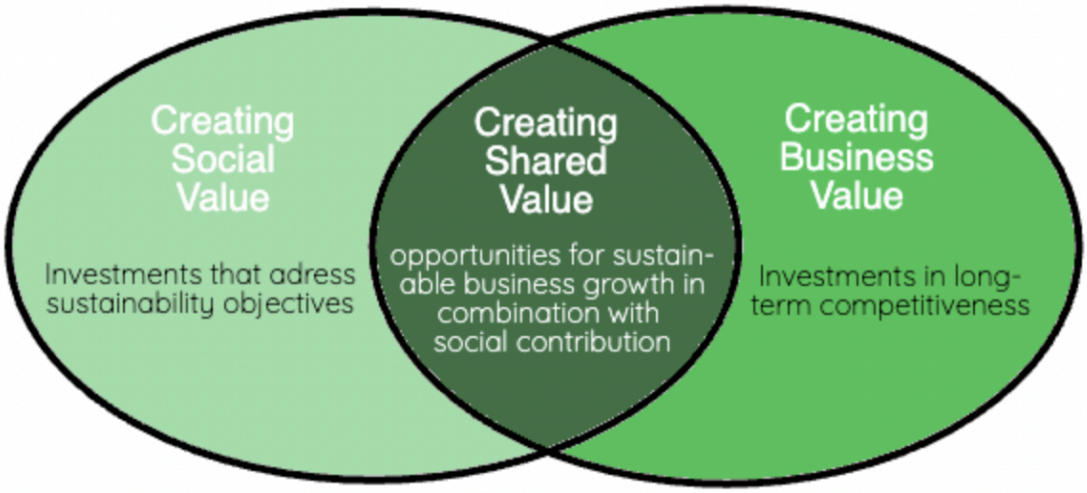

Figure 1: Porter & Kramer (2011) CSV

2.1.2 Sustainable Business Model Innovation

SBMs are laid out as transformations for traditional business practices to align with the principles of sustainability, integrating economic, environmental, and social considerations into their core operations. SBMs not only address the immediate impact of business activities on the environment and society but also create long-term value and competitive advantage (Porter & Kramer, 2011). The concept of SBMs is built on the foundation of the triple bottom line, which emphasises the need for businesses to balance economic growth with environmental stewardship and social equity (Hogevold & Svensson, 2012; Elkington, 1997). Traditional business models, which often prioritise short-term economic gains, are insufficient to address the complex challenges of sustainability. Instead, SBMs require a fundamental shift in how companies create, deliver, and capture value, considering a broad range of stakeholder interests and the long-term health of both society and the planet (Franca et al., 2017). Bocken et al., (2014) developed a comprehensive categorization of SBMs. This categorization identifies eight distinct archetypes that illustrate various innovative approaches businesses can adopt to achieve sustainability. These archetypes serve as a framework to guide companies in embedding sustainability into their business purpose and processes, thereby driving innovation and creating a holistic approach to sustainable development. The archetypes for SBMI, as outlined by Bocken et al., (2014) and

expanded upon by Trapp & Kanbach (2021), provide a roadmap for embedding sustainability into business practices:

Maximise Material and Energy Efficiency focuses on optimising resource use to reduce waste and emissions through practices like lean manufacturing and eco-efficiency. *Create Value from Waste* promotes a circular economy by transforming waste into valuable inputs, exemplified by industrial symbiosis. The *Substitute with Renewables and Natural Processes* archetype advocates using renewable resources and nature-inspired processes, as seen in the Blue Economy and Biomimicry (Bocken et al., 2014; Palmie et al., 2021). *Deliver Functionality Rather Than Ownership* shifts focus from product sales to providing services, reducing material consumption through models like car-sharing. The *Adopt a Stewardship Role* archetype involves proactive engagement with stakeholders for sustainable sourcing and certification, while *Encourage Sufficiency* aims to curb overconsumption by promoting product longevity and mindful use. *Re-purpose the Business for Society/Environment* reorients business models to prioritise social and environmental benefits, exemplified by social enterprises (Bocken et al., 2014; Palmie et al., 2021). Lastly, *Develop Scale-Up Solutions* emphasises scaling sustainable solutions through strategies like franchising and licensing (Bocken et al., 2014; Palmie et al., 2021).

Furthermore, Trapp & Kanbach (2021) propose twelve distinct greentech business model archetypes that combine the principles of SBMs with technological entrepreneurship. These include the Energy Efficinnovator, Efficiency Energizer, Material Efficinnovator, and Recyclenhancer, among others. Each archetype demonstrates a unique approach to integrating green technologies and entrepreneurial strategies to create value while minimising environmental impact. These archetypes, combined with Trapp & Kanbach's greentech models, provide a structured approach for businesses to innovate sustainably, fostering long-term value and reducing implementation risks. They highlight the need for continuous innovation and refinement of sustainable practices to ensure businesses contribute positively to the environment and society (Bocken et al., 2014; Palmie et al., 2021; Trapp & Kanbach, 2021). Palmie et al. (2021) also identified several new business model archetypes specific to the electrical power sector, highlighting the dynamic nature of sustainability transformations in different industries

and the necessity of diverse and innovative business models to drive comprehensive industry transformations towards sustainability.

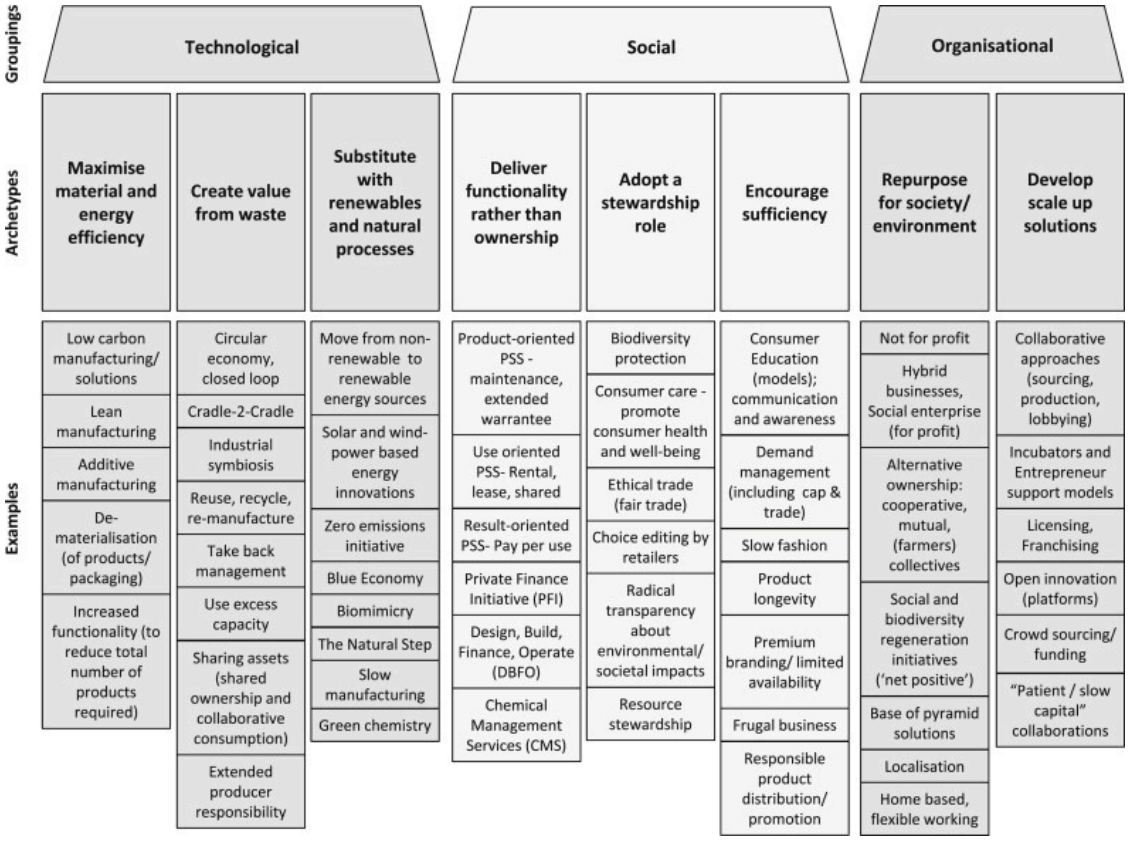

Figure 2. Bocken et al. (2014) Sustainable Business Model Archetypes

Geissdoerfer et al. (2018) expresses Business Model Innovation as key leverage for financial sustainability performance. They highlight the need to explore why many Business Model Innovation attempts fail by delineating four distinctive types through which organisations adopt SBM principles to create SBMI. Firstly, the emergence of *Sustainable start-ups* signifies the deliberate inception of new entities committed to integrating sustainability across their business model. Secondly, organisations embark on *Sustainable Business Model transformations*, entailing comprehensive overhauls of existing frameworks to incorporate sustainability imperatives. Thirdly, *Sustainable Business Model diversification* entails the establishment of supplementary business models focused explicitly on sustainability, alongside existing operational structures. Lastly, *Sustainable Business Model acquisition* involves the identification,

procurement, and assimilation of SBMs into organisational portfolios (Geissdoerfer et al., 2018).

Implemented models frequently encounter market difficulties, especially in the startup, which Geissdoerfer et al. (2018) explained by defining a design-implementation gap. These challenges, they explain, arise from three factors. Firstly, the failure to realise SBMI is attributed to the difficulty in identifying suitable business models for novel technologies or solutions. Secondly, entrenched organisational mindsets, reinforced by existing business models, contribute to resistance to change, exacerbated by the preference for maintaining the status quo, driven by the perception of higher profitability and efficiency associated with incumbent technologies. Consequently, there is a reluctance to deviate from established asset allocation strategies. Lastly, prevailing organisational paradigms and decision-making frameworks often prioritise risk aversion and conventional value creation opportunities, impeding the pursuit of alternative avenues for value creation (Geissdoerfer et al., 2018).

2.2 Startups/Corporate Innovation

Fu & Qian (2023) highlight corporate entrepreneurship as an emerging field to uncover the differences in business innovation systems. Corporate entrepreneurship encompasses the imperative for established companies to embrace entrepreneurial principles and adapt to evolving market conditions (Phan et al., 2009; Kuratko et al., 2015). Startups are one of the main vehicles for corporate entrepreneurship. For startups, access to technological knowledge, particularly from patents and universities, accelerates their innovative capacity-building process. This underscores the symbiotic relationship between startups and universities in fostering entrepreneurship and innovation. Conversely, incumbent firms directly leverage regional knowledge resources, such as patents and universities, to enhance their innovation efforts, primarily focusing on absorptive capacity rather than indigenous innovation sources (Fu & Qian, 2023).

Porter (1985) presents a framework for understanding competitive advantage and the strategies employed by corporations to maintain market dominance. Central to the framework is the *Five Forces* analysis, which identifies five competitive forces shaping industry attractiveness and

profitability: rivalry among existing competitors, threat of new entrants, bargaining power of buyers, bargaining power of suppliers, and threat of substitute products or services. Further, leadership, differentiation, and focus are claimed to be three generic strategies for achieving competitive advantage (Porter, 1985). By adopting one of these strategies or a combination thereof, companies can establish a sustainable competitive position in the market. The importance of industry structure in determining competitive advantage is underscored. Different industries possess distinct dynamics and profit potential, which companies must tailor their strategies accordingly to in order to align (Porter, 1985).

2.2.1 Barriers to startup innovation

Sustainable innovation is a focal point of business to startups, which established companies want to import into their umbrella. However, all too many larger companies fail to embrace the disruptive innovation that startups bring with them (Fu & Qian, 2023). Christensen (1997) illustrates how established companies can falter by failing to embrace disruptive innovations, potentially losing their market dominance to new entrants. Disruptive innovations are identified as those that initially target low-end market segments or niches and may appear inferior to existing solutions (Bower & Christensen, 1995). However, these innovations gradually improve and can surpass existing products, capturing larger market segments. In contrast, sustaining innovations focus on incremental improvements to meet the needs of current customers without fundamentally changing the market dynamics (Christensen, 1997). Established firms often experience the "innovator's dilemma," struggling to invest in emerging technologies that might disrupt their own revenue streams. This often leads to a conservative approach, where the potential of disruptive innovations is underestimated until it becomes a significant threat.

This approach is crucial for startups evaluating their funding choices, as it aligns with the need to balance innovation with sustainable growth. Integrating sustainable practices with disruptive innovation can provide a competitive edge and align with broader environmental and social goals (Markides, 2006). Funding choices of startups not only influence their immediate financial viability but also their long-term innovation capacity and sustainability (Christensen, 1997).

Failure to secure funds tends to mean the end of a startup, but even if startups are successful in the securing of financing, it seems as though the funds might not be enough, or it is not the right time for the fund. Statistics show that the main reasons for startup failures in 2021 was lack of financing/investors and running out of cash (Dyvik, 2024) (see figure below).

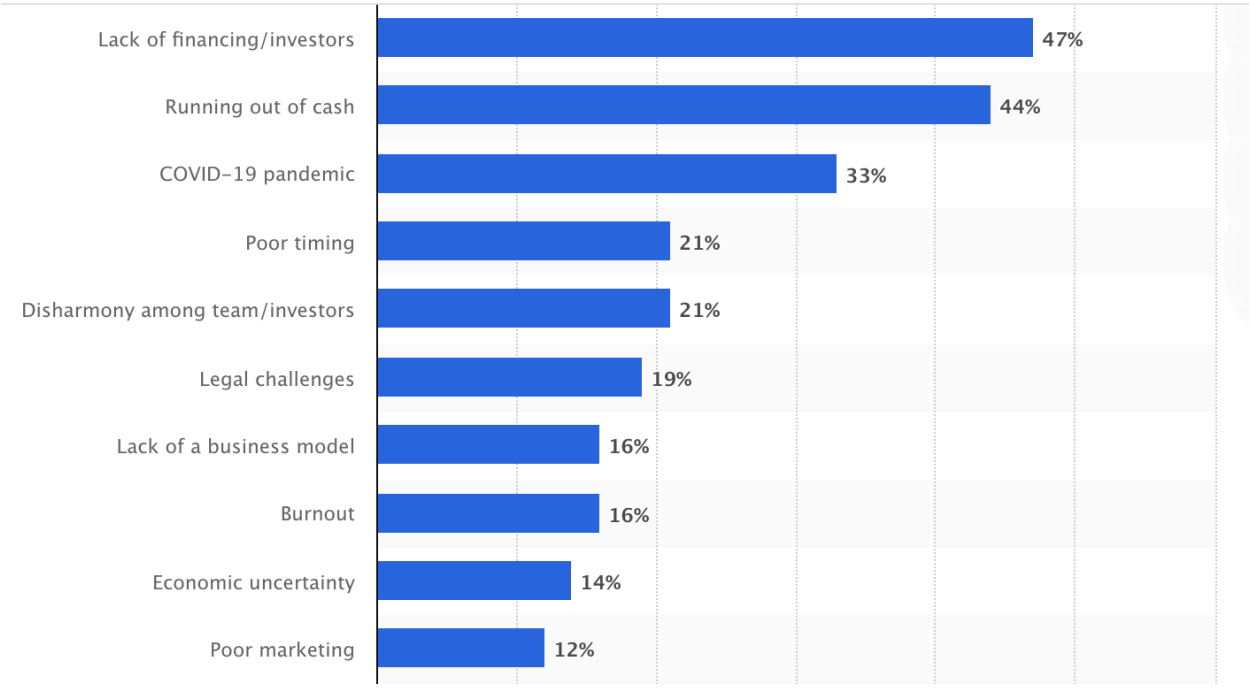

Figure 3: Dyvik (2024) Reasons for startup failures year 2021

Interestingly, the reasons why startups failed in 2020-2022 would point towards there not being enough funding available for startups to utilise, however, the years 2021 & 2022 were the largest funding years for startups since 2018, with $372.9B and $211.2B respectively invested (Gray, 2023).

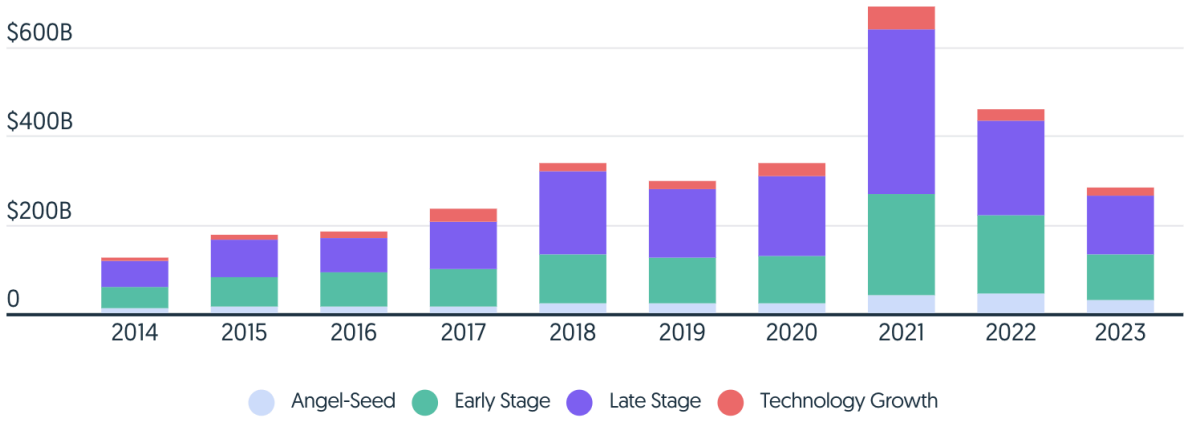

Figure 4: Teare (2024) Amount of capital invested 2014 - 2023

Between 2020 and 2022, US$44 billion was invested in early-stage deals in Silicon Valley as opposed to US$5.8 billion in Berlin (Hruskova & Scheidgen, 2024). Equally, roughly 31% of US but only 19% of European seed-stage startups progress to the next round of fundraising. American startups get around half of all global funding for VC's, while Europe and the UK receive around a quarter. The difference in capital invested is not representative of the economic outputs of the regions (Hruskova & Scheidgen, 2024). Startups have an inherent capital problem, which is magnified by a multitude in Europe. Funding exists for startups in Europe as well, it may be lower but the amount of total companies is lower compared to the United States - more specifically the U.S. has 55,079 startups, while Europe has 39,668 (Gray, 2023).

2.3 Financing sustainable innovation

2.3.1 Funding Strategies

When it comes to funding and investment in companies there are two main types: private investment and public investment (Fu & Qian, 2023). Private investment refers to the allocation of financial resources by individual or corporate entities into business activities with the aim of generating future profits (Fu & Qian, 2023). This type of investment is driven by private interests and typically focuses on sectors such as technology, manufacturing, and services. Private investors make decisions based on potential returns, market conditions, and individual business strategies. In contrast, public investment involves expenditure by government or public

authorities, mostly on projects that are intended to serve the public good. Public investments are not primarily driven by profit but by societal benefits, aiming to enhance living standards, support economic stability, and ensure sustainable development (Blesse et al., 2023). Public investment is a much more indirect type of financing but the public investments in universities and research centres support the private sector indirectly by creating an environment where innovation and invention is facilitated, which helps both larger firms as well as small firms (Fu & Qian, 2023).

Arguably the most common way of financing any venture is VC's which entails selling company shares in return of liquid capital. Investors who purchase these shares are also purchasing ownership in said company (CFI, 2023). Equity financing is also an all encompassing term referring to many different strategies of financing such with the main ones being through VC firms which are firms who have funds specialising in equity deal making, Angel Investors who are wealthy individual investors that take an interest in the startup and invests their own capital in it, or family and friends financing (Hayes, 2023). Another important source of equity financing is family offices, which are private wealth management advisory firms that serve high-net-worth individuals. These offices manage investments and trusts for a single family and can provide substantial capital for startups while often taking a long-term investment perspective (Hayes, 2023). Family offices typically focus on preserving and growing the family's wealth across generations. They not only engage in direct investments but also may participate in private equity, real estate, and other asset classes, thereby diversifying their portfolio and reducing risk (Wetter & Nordqvist, 2024).

One significant advantage of family offices is their flexibility in investment decisions. Unlike VC firms, family offices can make swift and autonomous decisions, allowing them to adapt to changing market conditions and seize new opportunities. This flexibility, combined with a focus on long-term relationships and trust, can be particularly beneficial for startups looking for strategic support and guidance (Wetter & Nordqvist, 2024)

On the opposite side of the private financial spectrum there is debt financing - debt financing is the term for borrowing money from an outside source with the promise to return the principal

plus the agreed-upon percentage of interest. For startups it usually comes in the form of business loans from larger banks (Li Kai et al., 2007; Obuya, (2017). A less common means of financing but still notably different from equity or debt financing are business grants. Business grants are payments provided by either the government or private organisations for a specific purpose, such as training, expansion, or research & development for smaller firms (Mueller, 2023). The notable difference between grants and most other types of capital funding is that the receiver does not have to repay these. There are many types of business grants in Europe, some examples being the EU horizon fund which is a €95B research and innovation fund for startups created by the European Union or national funds (European Commision, 2024).

Crowdfunding is another strategy in order for companies to fundraise. It is a relatively new form of financing that allows startups and small businesses to raise capital from a large number of people, typically via online platforms, and from everyday people that like the project, company or product. This financing method bypasses traditional financial institutions, but still comes with challenges like ensuring sufficient project transparency and managing investor expectations (Camilleri & Bresciani, 2022). Self financing, or “Bootstrapping” is another way for founders to finance a startup. It refers to the techniques that entrepreneurs use to fund their businesses without relying on traditional sources of financing such as bank loans or VC. This includes utilising personal savings, borrowing from friends and family, using personal credit cards, and reinvesting any profits back into the business. It is an important way to finance new ventures that often lack access to traditional funding sources, allowing them to maintain control and ownership of their companies while managing limited resources effectively (Perry et al., 2011).

Fligstein & Goldstein (2022) delve deeper into corporate governance issues linked with capitalisation, particularly the agency problem where management's interests may diverge from those of the shareholders. Their discussion on Shareholder Value Orientation (SVO) introduces mechanisms such as incentive alignment (the "carrot") and the market pressures for corporate control (the "stick"), which are designed to ensure management decisions are in line with shareholder interests. Davila et al. (2003) further talks about VC financing impact on startup growth. Their research reveals that VC investments significantly influence labour market perceptions, enhancing a startup’s capacity to attract and retain talent. This influence is pivotal

both before and after funding events, indicating the critical role of timely capital injections which correlate with subsequent increases in company value, as measured by employee growth (Davila et al., 2003). The study points out important points of contention regarding funding choices and specifically that of VC. It speaks to both the importance previously mentioned, but also of the more negative effects such as a complicated and sometimes inefficient financing process that can delay smaller companies growth (Davila et al., 2003). Moreover the importance that VC's play in the overvaluation of companies is not to be underestimated. In 2017, 50 percent out of 135 US so called unicorns, startups valued at over $1 billion, were above "fair value", the value of the company based on their objective results (Gornall et al., 2017). After adjusting for fair valuation, almost half of the unicorns lose their unicorn status, pointing towards potentially inflationary valuation tactics by VC's (Gornall et al., 2017)

The choice of using equity financing as a source of funding is not inherently negative but the support you get depending on what type of equity financiers a startup chooses does matter. VC's typically provide larger funding amounts and extensive managerial support, whereas angel investors offer more flexible and accessible funding options (Li, 2023). Each financing type comes with inherent advantages and limitations, underscoring the importance for startups to align their financing choices with long-term strategic goals and industry-specific requirements (Jeong et al., 2020). The comparison between angel investors and VC's in terms of financing consequences for startups have a commonality in the tendency for loss of company control by the original shareholders. The drawbacks of using angel investors is that the investors have to be suitable to the company, otherwise it can lead to a misalignment in business decisions and direction. On the other hand a positive aspect of it is the operational freedom and flexibility it comes with as well as the potential for strategic partnerships with the investors other companies (Jeong et al., 2020). However, traditional VC's are typically more concerned with financial returns and may not explicitly prioritise social or environmental impact in their investment criteria. Thus, having an indirect relationship with impact investing (Alakent et al., 2020). For example, the imprinting effect of VC funding on CSR practices demonstrates that while VC's can influence the long-term CSR activities of their portfolio companies, their primary focus remains on achieving high financial returns, often at the expense of long-term sustainability goals (Alakent et al., 2020). While these VC's may invest in sustainable startups, their

motivations might not align perfectly with the impact investing ethos of intentionally seeking measurable social and environmental impact (Wöhler & Haase, 2022). Although traditional VC's invest in SBMs, they do so without explicitly integrating sustainability into their decision-making processes. Instead, their investment justifications often reflect emotional responses rather than a strategic focus on sustainability, indicating a complex relationship between financial motivations and incidental positive impacts on sustainability (Wöhler & Haase, 2022).

It is implied in literature that startups in need of funding need to carefully consider the trade-offs between different financing mechanisms based on their growth stage, financial requirements, and desired level of operation control in the future. This governance debate is framed within the broader discourse initiated by Friedman (1970) who famously argued that the social responsibility of businesses is solely to increase profits. This perspective is increasingly contested by modern CEOs who advocate a holistic approach to addressing societal problems, suggesting a shift towards governance strategies that incorporate both profitability and social responsibility (Porter & Kramer, 2011).

2.3.2 Corporate Governance

Research across various nations reveals the impact of financial choices on corporate structures and control (LaPorta et al., 1999). Countries with strong shareholder protections typically have widely held firms, indicating a supportive environment for equity financing. In contrast, regions with weaker shareholder protections often have family-controlled firms, where ownership and management frequently overlap. About 45% of medium firms globally are family-controlled, with 69% of these families actively involved in management. The underlying financial system also plays a pivotal role in shaping ownership structures. In bank-centred systems, companies often prefer debt financing, allowing controlling shareholders to retain their equity and control. This contrasts with market-centred systems, where equity financing is more common, leading to dilution of control and different dynamics in corporate governance (LaPorta et al., 1999). The discussion around the linkage between funding and governance further supports the idea that the choice between equity and debt financing is not merely a financial one but is deeply entwined with issues of control, governance, and long-term strategic positioning.

2.3.3 Impact Investing

Impact investing is an important and almost essential facet of sustainably-oriented financial systems. In larger terms, it is a building stone to what Walker et al. (2018) describes as a "financial system that is in line with larger sustainable development goals to promote social and environmental well-being for current and future generations." While investments into innovation and sustainability are increasing, one of the main impediments is that the startups and innovators have to find suitable financiers that are willing to carry the risk of new innovation (Walker et al., 2018). Different approaches such as regulations, taxes or subsidies can be leveraged in order to make this transition easier. It is shown that in recent study, established firms out of the US have better financial results than comparable non-sustainable firms, but that the timespan of this result takes on average five to seven years to achieve (Eccles et al., 2011). The willingness to finance early sustainable innovations depends on the geographical boundaries within which the startup is located. For instance, the United States exemplifies a market-oriented approach, where firms are instrumental in creating shareholder wealth. Shareholder protection is paramount, and market mechanisms, such as the stock and bond markets, play a vital role in resource allocation (Clarke, 2016). However, this emphasis on short-term performance can lead to practices that prioritise immediate gains over long-term sustainability. Europe has tried with recent regulations to make access to different crowdfunding platforms regulated with the regulation 2020/1503 (EU, 2020). This regulation has the purpose of helping startups as well as investors to invest more efficiently and securely in innovative projects.

The process of innovation within startups seems to be heavily influenced by the companies ability to finance it. The financing of innovation can with most certainty be more easily obtained if the innovation is conducted in-house at larger companies since many sustainable companies are early stage, innovative businesses that are trying to bring about change in certain industries (Walker et al., 2018). The earlier stage a company finds itself in, the harder it is for this company to find funding. One part of the problem is described as a "general innovation-specific issues" such as lack of track record and collateral, high technological risk and spill over of R&D investments to other firms (Brancati, 2015). The second part of the financing is specific to creating a company based on sustainability: it relates to the endurance of the business model and the potential financial difficulties that come with such an endeavour. These issues combined

create a complex environment where sustainable innovation needs funding to exist but the financiers often need the innovation to exist in order to fund.

2.3.4 Transaction Cost Economics

Transaction Cost Economics (TCE), introduced by Williamson (1975), is a fundamental concept in organisational management. TCE explores why companies shift operations in-house rather than relying on market transactions, emphasising the mutual dependency of transactional parties (David & Han, 2004). It focuses on "transactions": the exchange of goods and services, encompassing both monetary and non-monetary expenditures known as transaction costs. These costs are influenced by factors such as environmental uncertainty, opportunism, asset specificity, and "bounded rationality" – a term describing rational choice within cognitive limitations (Simon, 1990). In simpler terms, it refers to the human decision-making process where we aim to satisfy, rather than optimise.

Environmental uncertainty involves the unpredictability of future events in the business environment, such as market changes, new laws, or competitor actions, complicating planning and contract-making. Bounded rationality acknowledges that individuals and businesses cannot know everything or consider every possible option when making decisions, resulting in decisions that are the best possible within the limits of available knowledge (Williamson, 1975). Opportunism involves parties acting in their own self-interest, sometimes deceptively, to exploit situations. For example, a supplier might hide information about increased production costs to continue charging high prices. Asset specificity describes how specialised an asset is for a particular use. A machine designed to make a specific part for one product has high asset specificity, and if the business relationship for which it was purchased falls through, it cannot easily be repurposed, making it a risky investment (Riordan & Williamson, 1985).

In entrepreneurial finance, particularly for startups, increased environmental uncertainty and asymmetric information between entrepreneurs and investors heighten transactional costs associated with securing funding (Mahto et al., 2018). These costs often lead to redundant entities within entrepreneurial ecosystems, perpetuating inefficiencies (Mahto et al., 2018). Venture capitalists (VC’s) develop specific strategies to navigate significant information

asymmetry and uncertainties in entrepreneurial financing (Mahto & Khanin, 2013). Many equity financiers, VC's, or angel investors specialise in specific industries where they limit information asymmetry. Entrepreneurs aim to reduce transaction costs by securing investments from specialised and prestigious VC firms. However, this can lead investors to focus on rudimentary and specific attributes of the entrepreneur or the venture itself (Mahto & Khanin, 2013).

2.3.5 Resource Dependence Theory

RDT, first introduced by Pfeffer & Salancik (1978), implies that organisations are not self-sufficient: instead, they rely on external resources to operate effectively. This dependence on external resources shapes their behaviour, strategies, and power dynamics. The theory underscores the importance of understanding the external environment and the interdependencies that arise from resource acquisition, and the term *resource acquisition* is highlighted as one of several key principles, alongside *dependence and power* and *strategic actions to manage dependence* (Hillman et al., 2009).

"Resource acquisition" is the idea that organisations must acquire necessary resources from their external environment to survive and grow. "Dependence and Power" explains that dependence on external resources creates power dynamics where entities controlling critical resources can influence organisational behaviour, exemplified by an investor influencing a company's action because they are the holder of the resources (liquidity) that the company needs (Pfeffer & Salancik, 1978). "Strategic Actions to Manage Dependence" is the fact that organisations employ different strategies to manage and try to mitigate their dependence on external resources, such as creating partnerships or alliances. Partnerships and interorganizational relationships, including joint ventures (JVs) and strategic alliances, are vital strategies for managing resource dependencies. These partnerships allow firms to access necessary financial and non-financial resources, share risks, and reduce uncertainties associated with funding and investment (Hillman et al., 2009; Pfeffer & Salancik, 1978). According to RDT, organisations often engage in partnerships and alliances to secure financial resources and mitigate dependence on specific investors or funding sources. These relationships can enhance an organisation's stability and resource base by diversifying its sources of capital and investment (Hillman et al., 2009).

Boards also play a role in securing financial resources. Directors often provide access to financial institutions and investors, thereby reducing financial uncertainty. Empirical evidence suggests that firms with well-connected boards are more likely to attract investment and secure funding (Hillman et al., 2009). The dependence of resources and power exerted are exemplified by the fact that investors and financial institutions wield significant power over organisations due to their control over capital resources. This influence can shape organisational strategies and decisions, as firms seek to align their interests with those of their investors to secure ongoing financial support (Hillman et al., 2009). Empirical studies support RDT's application to financial resources and investor relationships: research has shown that firms with a greater proportion of outside directors, particularly those with financial expertise, are more likely to secure funding and emerge successfully from financial distress (Daily, 1995; Hillman et al., 2009). Moreover, studies have demonstrated that mutual dependence between firms and their investors can lead to more favourable financial outcomes. Firms that successfully manage their dependencies through strategic alliances and board compositions tend to perform better financially and are more resilient in the face of economic challenges (Hillman et al., 2009).

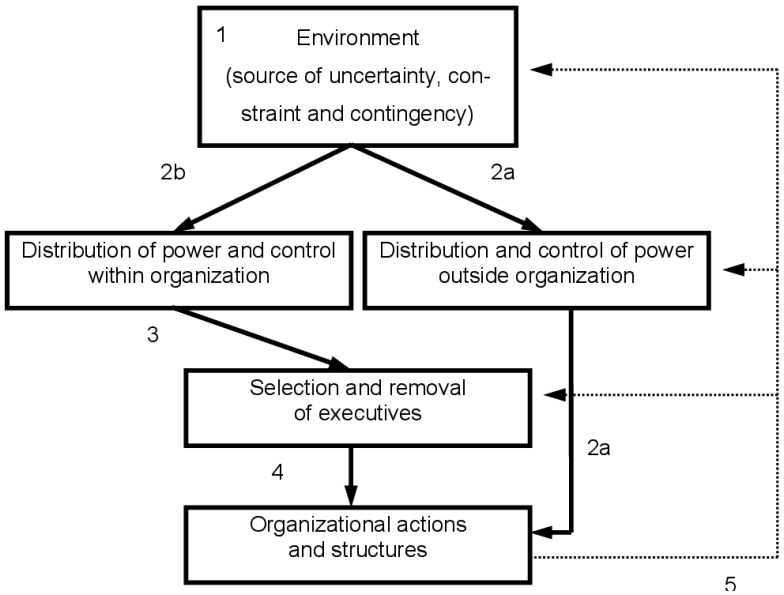

Figure 5: Hillman (2009) Resource Dependence Theory

2.4 Summary and Preliminary Theoretical Framework

The literature review explores key themes in corporate sustainability, startup innovation, and financing strategies for sustainable innovations with respect to the thesis' research question. It identifies the role startups have in driving sustainable development, the barriers they face in securing funding, and the importance of strategic partnerships and corporate governance structures in fostering innovation and structures that prioritise short-term returns over long-term sustainability (Christensen, 1997; Porter & Kramer, 2011). When reviewing the literature, two significant gaps were identified in the form of theoretical contradictions. The first one concerns a catch-22 situation with regard to the theoretical definitions of innovation and funding, while the second gap identifies conflicting rationales in literature between SBMI (Bocken et al., 2014) and RDT (Hillman, 2009), both highlighted in *figure 6* (see figure below).

Gap between Innovation and Funding

The process of innovation within startups is heavily influenced by their ability to secure financing. Sustainable startups, particularly in their early stages, face significant challenges in obtaining funding due to a lack of track record, collateral, and the high technological risks associated with their innovative endeavours (Walker et al., 2018). Moreover, the specific nature of creating a business based on sustainability induces additional financial difficulties. This includes the need for a robust and enduring business model capable of weathering financial uncertainties (Brancati, 2015). This situation creates an environment where sustainable innovation requires funding to exist, but financiers often need evidence of successful innovation to justify their investment - a "what came first, the chicken or the egg"-scenario.

Gap in Theoretical Rationale

The second catch-22 pertains to a perceived gap in the theories reviewed. Literature on SBMI emphasises flexibility and resilience as integral core mechanisms of the business models. They are portrayed as necessary to serve the purpose of a SBMI. In contrast, RDT underscores the importance of managing dependencies on external resources through strategic alliances and distributing control outside the organisation (Bocken et al., 2014; Hillman et al., 2009). If sustainable and innovative startups are to follow SBMI principles, they must balance internal

flexibility and self-governance with the necessity of integrating external capital to scale their innovations. However, this integration can impose external control that limits the very flexibility needed for sustainable innovation.

These two dilemmas are interconnected and highlight the balance that SBMIs must achieve in their operations to successfully scale the business with respect to the research question at hand. These contradictions emerge as relatively unexplored in current literature. The need to secure external funding without compromising internal flexibility and sustainability goals reflects a broader challenge in reconciling SBMI and RDT demands. The red-highlighted conflicts in *figure 6* illustrate how these theoretical frameworks, when applied together, create contradictions. Understanding and addressing these discrepancies will provide a more cohesive strategy for startups to balance the competing demands of innovation, funding, and sustainable growth. The synthesis of these situations forms the basis of our roadmap towards answering our research question. Hence, Bocken et al.,'s (2014) and Hillman's (2009) respective literature will benefit as theoretical frameworks and serve as outlines for our discussion, backed by supporting literature.

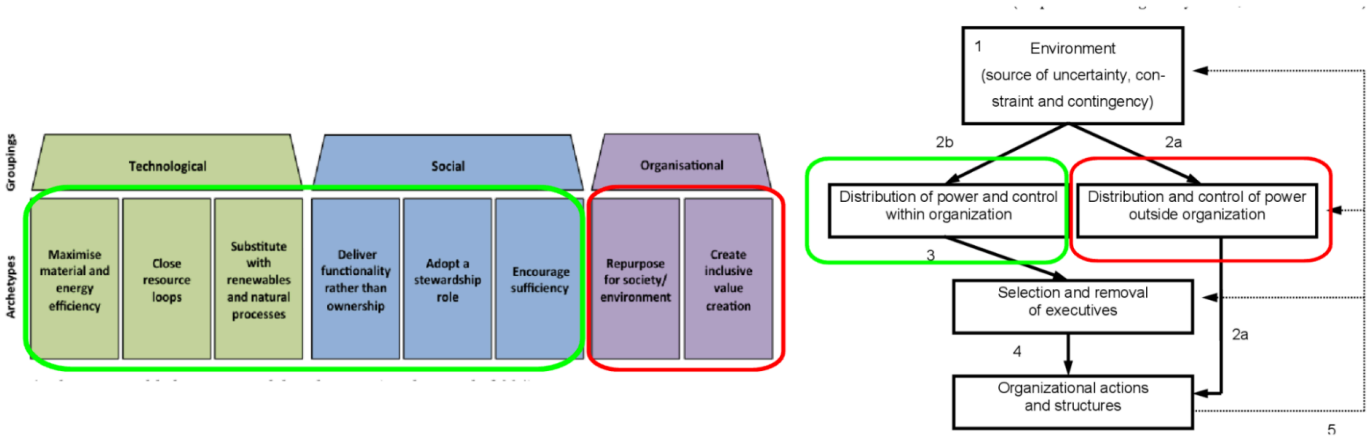

Figure 6: Gap in literature - contradiction between Bocken's (2014) SBMs and Hillman's (2009) RDT

3. Methodology

The following chapter delineates the methodological framework employed to conduct the study. It commences by explaining the methodological approach, elucidating the rationale behind opting for a qualitative research methodology. Furthermore, it delves into the abductive perspective on theory construction, rationalising its relevance to the purpose of our study. The chapter then addresses the research design, outlining the selected subjects of inquiry and detailing the structure of the interviews conducted. The chapter also presents the approach to processing and analysis of the empirical data amassed through interviews in the data collection and data analysis sections respectively. The chapter concludes with a critical assessment of the research method's quality in terms of trustworthiness and authenticity.

3.1 Methodological Approach

3.1.1 Qualitative research method

In pursuance of exploring the intricate dynamics of capital funding choices and their impact on sustainable innovation within startups, this study adopts a qualitative research methodology to understand subjective experiences and insights of leaders from adequate businesses (Bell et al., 2019). The qualitative design is chosen for its ability to capture the rich, contextual nuances of the markets and corporate stakeholder ecosystem, aligning with our objective to gain a deep understanding of the subject matter. By engaging in in-depth interviews with key industry stakeholders, the study seeks to uncover these subjective experiences, motivations, and perspectives that underpin sustainable innovation initiatives. The qualitative approach hence facilitates the gathering of rich and detailed data insights from carefully chosen participants and research objects. Embracing an interpretative stance, this methodology allows us to discover the situational complexities of the startup landscape, shedding light on the contexts of drivers, barriers, and opportunities inherent in their pursuit of sustainability-driven innovation (Bell et al., 2019). This implies that the study involves a dual-stage interpretation process, where we analyse the descriptions provided by the startup leaders, as elaborated upon in subsequent sections.

3.1.2 An Abductive View on Theory

This study is based on the question whether capital funding choices impact the capacity of startups to develop and implement sustainable innovations. Despite the recognized importance of sustainable innovations, there remains a limited understanding of how different funding sources influence this capacity. Our objective is to elucidate how the nature of capital funding affects the strategic and operational decisions of startups in their pursuit of sustainability. The foundation of this study is therefore rooted in abductive reasoning, as it seeks to explore and determine the most plausible and presumable explanations for this unexpected phenomenon (Bell et al., 2019). Due to the exploratory nature of our research, the theoretical background was revised and refined in response to the insights gathered from the data. This iterative approach enables both the validation of existing theories and the development of new ones (Bell et al., 2019). The decision to utilise a qualitative research design is driven by our interest in understanding the perceptions of startups regarding their funding choices and their impact on sustainable innovation. A qualitative study design is appropriate for providing an in-depth exploration of the thought patterns and practices that may influence a startup's ability to make such operational decisions.

3.2 Research Design

3.2.1 Research Objects and Sampling Process

The primary data source for our study is the firsthand accounts of managers in four start-ups, as well as two managers of VC and Private equity funds who function as expert voices in the field of start-up business development. To investigate the influence of capital funding on startups' capacity to develop and implement sustainable innovations, a multiple-case study approach was employed. The research objects all operate within deep-tech, have a maximum of 20 employees and are in an expansionary phase. This comparative design enables the generation of theoretical insights by highlighting the differences and similarities across various cases (Bell et al., 2019). Specifically, the study focuses on startups with distinct funding sources, such as VC, bootstrapping and industrial investors to uncover the strategic and operational barriers they face in pursuing sustainable innovations. By examining startups funded through diverse mechanisms, we aim to reveal the institutional and strategic challenges associated with different funding models. The analysis contrasts the experiences of startups leveraging traditional VC with those

using alternative funding approaches, providing a broad perspective on how funding influences their innovation trajectories. While multiple-case studies can sometimes risk enforcing predefined comparisons, potentially limiting the scope of findings (Bell et al., 2019), this study adopts a more flexible and open-ended data collection method, ensuring that contextual nuances are preserved. By maintaining this flexibility, the study seeks to offer a view of the relationship between funding and sustainable innovation capacity.

Respondent	***Company Represented***	***Industry***	***Number of employees***
I1	A	*Alternative Material Development*	~ 15
I2	B	*Technology Development*	~ 7
I3	C	*Alternative Material Development*	~ 5
I4	D	*Farming*	~ 15
E1	X	*VC Firm*	~ 5
E2	Y	*PE & VC Firm*	~ 8

Table 1: Overview of Research Objects

The selection of startups was based on their efforts in – and their core business model linkages to – sustainable business operations. Industrial differences and diversity in the amount of employees and shareholders was encouraged, facilitating the exploration of patterns and imparities in the qualitative data. The experts were gathered on the basis that they are investors in early stage startups, with a diverse portfolio of companies and no specifically implied sustainable investment ethos. The experts were also chosen on the basis of them having the vast majority of investments in European startups. This strategy facilitated more comprehensive and diverse, hence reliable, cross-case data comparison appropriate to the research objective. Five startups were chosen among three separate countries within the EU. The countries concerned have similar enough legislation and customs surrounding their investment climate to not be a matter of importance beyond the contextualization of different types of initiatives put in by national authorities or state organisations. All of these selected startups self-identified as sustainable businesses and as representable in terms of alignment with theoretical definitions of

SBM's. Selecting only one startup type would have limited the comparability to a narrow scope. The diversity in business cases and regional markets provided a broader perspective on how sustainable innovations and venture funding function across different contexts and markets. This diversity was viewed as an asset, allowing for the assessment of shared experiences among businesses despite their differences. While an alternative focus towards one specific industry, product or service could enhance reliability through a more generally applicable and detailed dataset on that business, the diversity in businesses' efforts to commercialise sustainable innovations was assessed as more representable with respect to our thesis' research question. Each startup was represented by a single interview. Although interviewing multiple employees per firm could have increased the study's reliability, the respondents, primarily founders and executives, were deemed representative of their companies' efforts with respect to the research question and with regard to their roles as operational decision-makers within their respective organisation. All interview participants were assured of their anonymity, with randomised fictional names assigned. All interviews were also recorded and transcribed, with respondent approval, to ensure the accuracy of quoted material.

3.3 Data Collection

3.3.1 Interview structure

To explore the research objective and accommodate the study's abductive approach, semi-structured interviews were chosen as the suitable method of data collection. This method provides the balance necessary to ensure consistency and depth across different cases (Bell et al., 2019). An interview guide was crafted around central themes, ensuring that all significant topics were addressed with each participant. The guide was structured to allow respondents to administer freedom to share their thoughts and experiences (Bell et al., 2019). This included questions such as "*Why was this venture started?", "Talk us through your business model?", "How is your company financed?", "What do you want to achieve with your business short term and long term?"* and *"Who is the right partner or investor to achieve this?",* maintaining openness for independent and personalised answers, while further focus was put on follow-up questions to understand significant details surrounding responses delivered, relevant to the thesis' research question. The semi-structured approach to this guide was hence emphasised to

not impede potential contextualization from aspects and experiences exceptionally relevant to the respondents' particular businesses. Throughout the interviews, the emphasis was on capturing genuine, unfiltered accounts to promote an open and honest exchange. This method also allowed the inclusion of questions tailored to each participant's specific context and business model, which was essential given the diversity among the cases. The guide was carefully constructed to avoid leading questions, thereby enhancing the reliability of the responses. This approach ensured that relevant aspects were covered while providing respondents the flexibility to express their experiences in their own words. By doing so, the study aimed to gather rich, detailed insights while maintaining a level of structure necessary for effective cross-case comparison and analysis.

3.4 Data Analysis

This section outlines the methodology used to analyse the empirical data and the intentions behind the data analysis process. The qualitative data collected underwent thematic analysis, a systematic and iterative process that involves identifying, analysing, and reporting patterns within the dataset. This method allows for the discovery of recurring themes, variations, and connections in interviewee's experiences (Bell et al., 2019). After transcribing the recorded interviews, all transcripted material was gathered in a single document to facilitate comparing patterns. This was followed up by the researchers coding the data. The coding was conducted in English, the same language as used during the data collection. The codes were determined according to material relevant to the research questions and patterns apprehended from the initial interviews. Codes were refined to focus on data relevant to reemerging patterns while maintaining the complexity of the contextualisation of material to not miss out on valuable data (Bell et al., 2019).

A comparison of individual codings was then conducted, discussing differences and overlaps. This was done by transferring the relevant codes into an excel-document to facilitate comparison and segregate gathered coded data. This transition from individual to group coding aimed to minimise bias and identify prominent themes, thus reducing the subjectivity often associated with qualitative data analysis (Bell et al., 2019). The four overarching themes of codes were then

integrated to the empirical result, and outlined in a structured manner to facilitate transparency and allow for a common thread throughout the presentation of quotes. The analytical process was iterative, involving constant back-and-forth between data collection and analysis, allowing for adjustments to subsequent data collection steps based on emerging insights (Bell et al., 2019).

An abductive research approach was applied to combine our attained empirical data with previous literature and enhance flexibility (Bell et al., 2019). The analysis was conducted collaboratively, and the volatile, uncertain, complex, and ambiguous nature of the contemporary business environment was emphasised throughout the process of analysis. This recognition allowed for a comprehensive understanding of problematizations on managerial experiences within the concerned industry. After reviewing the literature on sustainability, business model innovation, resource dependence and financial investment dynamics, the empirical data was reassessed to identify further insights from this theoretical perspective. Quotes used to illustrate these themes were carefully verified to ensure they were not taken out of context, enhancing the trustworthiness of the data analysis (Bell et al., 2019). If any quotes appeared ambiguous, the respective respondent was contacted for clarification to ensure accurate interpretation. This process aimed to increase the validity and depth of the analysis, providing a credible understanding of the influence of capital funding on startups' capacity for sustainable innovation. By integrating theoretical perspectives with empirical findings, the analysis aimed to provide an enhanced understanding of the challenges and opportunities faced by SBMs in securing appropriate funding while maintaining their innovation and sustainability goals. This comprehensive approach not only assisted in highlighting the critical themes but also ensured a valid interpretation of the data collected, contributing insights and revision to relevant literature and existing knowledge on SBMs and their funding dynamics in accordance to an abductive research approach (Bell et al., 2019).

3.5 Issues of Validity and Authenticity

The subsequent section undertakes an evaluation of the study's quality, focusing on trustworthiness and authenticity criteria. Given the qualitative research method employed, the empirical data reflects the subjective experiences of the research objects, inherently influenced

by their perceptions of reality. This subjectivity poses a limitation, as our interpretations may diverge from the managers' intended meanings (Bell et al., 2019). To mitigate this, we incorporated follow-up questions during the interviews to clarify responses and enhance understanding. This does not eliminate subjectivity, however it diminishes the risk that statements intended to mean one thing are interpreted to mean something else.

The interview guide was deliberately crafted without theoretical preconceptions, allowing the empirical material to guide the exploration. This mitigates the risk of biassed questions and hence also any intent of receiving responses aimed at supporting the theoretical framework or a predetermined answer to the thesis' research question (Bell et al., 2019). By prioritising an overarching focus on the chosen research topic, respondents were empowered to shape the study's trajectory. Ensuring credibility involves substantiating conclusions free from researcher bias or theoretical imposition (Bell et al., 2019). Therefore, data analysis was conducted collaboratively by the two researchers to minimise individual interpretation biases.

4. Empirical Results

The following section presents the empirical findings resulting from our interviews with the six respondents. These empirical findings form the basis for addressing the research question of this thesis, which explores how sustainable innovation startups navigate funding challenges and integrate sustainability into their core business practices. The empirical findings are presented in a thematically structured manner, organised under major themes and subthemes that emerged during the data analysis process and can help contextualise a discussion with respect to the research question. The structure also allows for a more detailed and nuanced presentation of the findings, highlighting the diverse perspectives of the interviewees, all relating back to the research questions at hand.

The first theme delves into the importance of having a sustainably viable business model, how companies integrate sustainability into their core values and operations, and the development and adaptation of SBMs. Secondly, the theme presented is the different companies approach to funding and financial strategy in order to examine the different funding mechanisms utilised by the companies, and their respective views on different types of funding mechanisms including family and industrial offices and venture capital, and discusses the strategic approaches to securing funding. The third theme that is outlined are the general challenges that these startups have encountered with regards to specifically funding their operations, and the final theme presents the importance of the type of people and businesses you partner with.

To enhance the validity of the findings, quotes from multiple interviewees are included for each subtheme. Each section concludes with a summary of the key insights derived from the empirical results of that subchapters' theme, setting the stage for the subsequent discussion of the findings.

4.1 The Business Case: Developing a Sustainable Business Model

Throughout the interviews conducted, all of the four entrepreneurs interviewed expressed that their business models and approach to running their startups in the early stages is dependent on a

series of conditions. These can be summed up in three distinct principles; 1) Sustainable business practices, 2) the importance of a viable business model and 3) developing their business model and embracing adaptability. This theme explores how the interviewees perceive the importance of establishing a strong business model and the factors that contribute to its viability.

4.1.1 Sustainable business practices

All interviewees expressed that their products are inherently linked to a crossroads of sustainability and innovation, hence having sustainability as a part of the core of the business case. This leaves sustainability efforts as a prerequisite for core innovation within the startups. I3 highlights that innovation is central to their company, stemming from their research background. They assert that sustainability is equally essential and intertwined with their innovative efforts, making it a core aspect of their business practices and that both innovation and sustainability are fundamental and inseparable elements of their company's identity and operations.

> *"Innovation is very much in the core of our company and also because we come from a research background, I cannot take it out of sustainability because then it 's also very much in the core."* - I3

I1 upholds this idea and explains that their company was pioneering from the start and remains purpose-driven, valuing impact and enjoyment over making a lot of money. They highlight that many companies claim to focus on sustainability but lack genuine commitment, using it merely as a facade.

> *"we were quite pioneering when we started the company, and what I think still is a bit rare is that we are still a purposeful company where I mean, for me it's much more important to actually make a dent and have fun than making a lot of money. I mean, that's not the reason. And still there's a lot of companies that I mean when you scratch on the surface, it's not really credible on what they're doing. They're just using sustainability as an excuse."* - I1

I4 backs up the statement of the importance to regard sustainability as an integral part of the core of the company, and gives their story on how they developed a business case out of a sustainable innovation:

> *"We started from sustainability viewpoints, what effects do (the business) have on the climate and the first thing that we found was it's net negative, check. And the second thing is indications or strong indication that it's very positive also, that was kind of the one core. We started doing more research, but then some customers also came knocking on the door. They obviously looked at the market potential and saw is this a viable market globally? And they saw that, OK, it's a huge market in Asia, both within Asia, but also export from Asia to Europe. OK, do companies in Europe want more traceability? Quality products? Most likely. I think they also saw a business opportunity to really make a difference and of course make money by selling a company."* - I4

Here, I4 highlights that their business is fundamentally built on sustainability, which is integral to their business case. Their sustainable product not only has a positive climate impact but also meets a significant market demand, creating both environmental and business value. E1 further explained that they are working with global brands from different market segments to help them transition from a linear to a circular economy, while also introducing renewable materials.

> *"We start from the perspective of what the market needs. So we work with three global brands that are not competitors with each other, they represent different segments of the market and we're trying to help them to make the shift from the linear to the circular economy and also introducing renewable materials."* - E1

This highlights their commitment to sustainability by promoting more sustainable business practices across diverse industries, enabling startups to develop while not outcompeting one another in order to ensure that innovation meets market.

4.1.2 A viable business model

I3 emphasises the necessity of having a solid business case. While they personally support the idea of focusing solely on changing the world without immediate revenue concerns, they acknowledge the reality that a strong business case is essential, indicating that there can sometimes be a mismatch between the cases of sustainable startups and the critical reality of conducting business.

> *"You need to have a really good business case. So even though personally I am all up for this kind of like ah, you don't need to have revenue, let's just change the world. We're not. We don't live in that world. So we have to play the game in order to change the world."* - I3

This emphasises the importance of not only building an innovation, but building an innovation that can sell. I4 also echoed this idea of needing a pragmatic approach to business. I4 puts importance on having a solid base of existing owners, pointing towards the support being crucial for bridging financial gaps and keeping the company operational until additional funding is secured.

> "*Having a strong current existing owner base is good. If you need to kind of bridge grounds and so on to keep the company alive until you get more funding."* - I4

To find room to innovate, I4 indicates one must still care for a consistent income of capital to sustain such initiatives, putting an importance on the need to have a functioning business in order to not be too dependent on funding rounds. I1 states:

> *"And also I would say that implementing totally new manufacturing technology on the market, you also need to have patience and just to defend ourselves. I mean, I don't think it would be credible to have an exit strategy too early because you also need to mature the whole business and mature the technology."* - I1

…stating that a "whole business" is needed in order to reach funding goals for startups. If the innovative fails in maturing into a good business case, the initiative will never be able to develop

or be successful. E2 continued on this idea when asked about their experience with startups and their presentation of their business models. They explained that founders can have very unrealistic expectations of their business models, and that just because their ideas are good, that does not mean that they have a lucrative business to invest in.

> *"There are those who come with some fantastic ideas, like they come up with something that's going to revolutionise the world and this is something that no one else has. Yes, and this is going to be worth, like, 3 billion in 4 years, so then it's like... It's just that we can't work with such people because there is no... They have to go back and breathe in the bag and just take it easy, I mean go on an interrail, learn about the world and come back because there are no such cases."* - E2

In saying this, E2 indicates that entrepreneurs tend to overestimate the growth they can achieve from their novel ideas. This problem derives from naivety connected to the selling power of innovations. E2 furthers their point by stating that startups need to have a clear, documented business strategy and a strong shareholder agreement in place in order to raise capital.

> *"Like, what do you want to achieve? And that strategy must continuously, like, not get stuck in the mud, but work to update all the time as you learn from the market. But there must be a documented plan because this plan is reality for investing. That's what they follow, and from a more risk perspective. A shareholder agreement is a key document, so you must be in place" - E2*

While emphasising the importance of strategy, E2 thus indicates that such strategy must involve flexibility connected to their business case to stay viable. On this note, I3 suggests starting with small investment amounts to test the waters. They emphasise the need to manage risk and build credibility, noting that their company might take longer to prove its business model compared to sales companies, which can demonstrate their viability more quickly.

> *"And you can pitch in a quite small... I mean, in the beginning, a small ticket size and see what happens. We need to secure that we can manage the risk and be much more*

credible, maybe to compare to sales companies, because they can also prove their business model much faster than we can do." - I3

In the same categorisation, E1 stated that a VC can be needed to decrease the time that new technologies can be commercialised and ensure that they are used for the right purposes.

"To decrease the time to market for new technologies and make sure that they commercialise faster and that they find the right applications." - E1

E1 further puts an importance on having a proven business on the investors end and explains that even before having a finished product to sell, startups can generate revenue by leveraging their knowledge and engaging customers interested in their technology.

"So before you have materials or product or whatever to sell or a machine, or you know whatever you're selling, before you have that you have knowledge and you have customers that are interested in the technology. If you look at them, you know as customers, you can start charging for things very early if you know how to do it. So that's what we do for our startups, we kind of make sure that they get revenues as quickly as possible." - E1

By treating these early adopters as customers, startups can start charging for their expertise and services early on. This strategy ensures that startups begin generating revenue as soon as possible. E2 furthers this point when asked about what the most important factor of a BM is when they are investing, stating that it is about having a profitable business.

"It's actually the margin, really. Growth and margin. Growth is good margin. It's everything you want from a company." - E2

I3 expands on this argument stating that to have the greatest positive environmental impact, the company must also be highly successful in terms of revenue. They state that to persuade major

industry players to join their efforts, the company cannot operate as a charity; it needs to demonstrate financial success and viability.

> *"basically we believe that in order to have the biggest possible positive environmental impact we have to be very successful also in terms of revenue because if we want to convince all of the big players to come on board, we cannot be a charity organisation. It doesn't work like that."* - I3

I3 also follows this idea with observations that current investors are becoming more cautious, with a strong preference for companies that already generate revenue before they invest. This indicates a shift in the investment climate towards risk aversion, making it challenging for new, first-of-a-kind technologies to secure funding due to their inherent risks:

> *"right now all of the investors are a little bit more tight regarding that and the feedback that we're getting right now is that everyone wants more revenues before investing. So it seems like there's a strong change in the investment climate in that and and there's not so much readiness to take so much risk. And when there's a new first of a kind tech there's always risk"* - I3

Shedding light on the business side of things where the sustainability advantages of a company doesn't excuse a lack of revenue, since it all comes down to risk in the eyes of investors.

> *"We've talked with several, like some other sustainable material companies, who have recently closed their rounds and they have had to close the rounds with much lower valuations than what they originally aimed for."* - I3

4.1.3 Business model development and adaptation

The impacts of having different business models and adapting to different circumstances were portrayed by I4, who explains that the founders worked for nearly three years with minimal

financial compensation, essentially contributing sweat equity. They worked for free to support and sustain the company during its early stages.

> *"The founders worked for about two and a half years, almost three years with minimal equity. So it's basically like sweat equity. But they worked pro bono for the company just to keep their shares in that sense and not dilute them and still getting forward to kind of test the viability of the business model."* - I4

…building on the idea that as long as there is no income, there will be no rapid growth. However, the slow start allows for controlled maturing, enabling a genuine business case with respect to the founders. This was not a circumstance unique to I4's business, as I1 shared the same story:

> *"Knowing that before we want to actually sell or promote our technology, we need to know more. We need to have to come for more fall forward in our development since really, I mean, taking it step by step and doing the incremental way first and then see: now we're ready! Now we have proven the technology, now we go for actually taking in shareholders that can help."* - I1

…emphasising the importance of steady and controlled development and to not rush into collaborations that will not serve the interest of the actual business case. I3 supported the idea of needing adaptability for new consumer trends, stating that customers are increasingly demanding sustainable alternatives, creating a challenge for firms.

> *"and then the other thing is that the customers are starting to demand like more sustainable alternatives. So then we do see that firms are really kind of struggling because they are in this situation that the regulations and the consumers are demanding for better packaging."* - I3

These companies struggle to meet the dual pressures of regulatory requirements and consumer expectations for improved, sustainable packaging. This is another reference to the need to stay resilient to markets and to customer preferences.

To sum up, the interviewees highlighted that sustainability and innovation are intrinsically linked, serving as core components of their business strategies. A viable business model is essential not only for attracting investment but also for ensuring long-term operational viability. The necessity of adaptability was emphasised, as startups must evolve in response to market demands and consumer preferences to maintain relevance and drive growth. This chapter emphasises that a genuine commitment to sustainability, coupled with a pragmatic and flexible approach to business development, is vital for the success of sustainable startups.

4.2 The Business Scaling: Approaches to Funding & Financial Strategies

This theme explores how the interviewees approach the funding options available to support sustainable growth and align with their long-term business goals, and to amplify their business initiatives. The empirical data concerning key funding strategies are divided into three different segments: 1) Family and Industrial Offices, 2) VC, and 3) Impact Investing.

4.2.1 Family and Industrial Offices

Startups with SBM's are likely to go to family offices when looking for partnerships, due to the long term horizon they are looking for in shareholders. I4 mentions that they prefer to seek funding from family offices because these investors typically have a longer time horizon, which aligns better with their long-term business goals.

> *"We would choose to go on a route with family offices, usually because they tend to have a longer time horizon."* - I4

I1 further highlights that the choice of investors impacts business operations. Even if startups don't intend to be constrained, having a specific partner or shareholder can sometimes result in

lost business opportunities, especially if the investor's position in the value chain creates conflicts or misalignments.

> *“Whose money we take does have an impact on our business operations and even if they don't have, it doesn't mean, maybe Startups doesn't have an intention to lock in. But I mean, it can also be that you lose business because you have a specific partner, that the one shareholder is in the wrong position in the value chain.”* - I1

I4 emphasises the long term perspective on investments as an alternative to the traditional capital-oriented approach, explaining their strategy for selecting investors in the current funding round. They are onboarding a European investor to support their ambitions in Europe, emphasising the importance of strategic fit. Beyond capital, they value investors who offer additional benefits such as industry networks and customer connections. This strategic alignment helps with introductions and support within their specific industry, whether it be agriculture, energy, or another sector.

> *"In this round we will onboard one European one actually. And that's also because we also have European ambitions. So in terms of strategic fit, it was important for us to have an actor that can help us grow in Europe with networks and so on. And I think capital is always good. But I would say if you can find an actor with more than capital, some kind of strategic fit network with customers, etcetera, within the industry you're in, I think that's really, really good. They can make intros and help you out. That if it's agriculture or energy or something else, you should go for that.".* - I4

The emphasis here is put on strategic networks rather than immediate capital, and I4 portrays industrial players within the same business as better suited in that case than other options for funding. Meanwhile, they include a note that capital is needed and something that is always welcomed. However, I4 indicates that money can come at an expense, hence not being the one important aspect when accommodating startup innovation. I2 agrees:

> *“It's not good to receive too much money because then you start building an organisation or a way of working that is kind of tailored for a big company. There's also, I mean, it's weird, but sometimes it's more effective to focus on the revenue right away.”* - I2

…suggesting that there are drawbacks to external capital being pushed in to assist in business growth, as it impedes the focus on forging independent revenue streams. E1 relates with their view on the perks and flaws of industrial players:

> *“On the topic funding and valuation, I think there's a lot of startups within green tech that has, you know, done quite well when it comes to exponential valuation increases. But I think the mature companies are struggling a little bit. There's a little bit of a backlash from the economical political event. But you also have the industrial companies and the brands that kind of want to greenwash themselves.”* - E1

Here, emphasis is put on the tension between genuine sustainability efforts and the risk of greenwashing, particularly as companies mature. This suggests that while early-stage green tech startups may experience rapid valuation growth, more established companies may face challenges related to economic and political shifts, as well as the pressures of maintaining authentic sustainability practices amidst external scepticism.

4.2.2 Venture Capital

I4 compares the use of VC to putting the company on steroids: suggesting that VC can have extreme effects. It can propel a company to great success ("go to the moon") or lead to its failure ("kill the company"), indicating the high risk and high reward nature of VC investments.

> *"Venture capitalists can be good, but I think that from venture capital, it's like putting your company on steroids. Either you go to the moon, or you kind of kill the company, right?”* - I4

I4 further states that once a company has proven its model and established a good customer base, the focus should be on replicating and expanding that successful model. This approach involves continuing to do what has already been proven to work.

> *"I think you got… you need to have some kind of business model that is "I'd like to do more of the same". It's like OK, now I've proved this model. We have proved that we're a good customer base. We're just going to do more of the same, right?"* - I4

I4 emphasises the difference between maturity of business model in deciding investment approach. According to them, VC is not compatible with flexibility. I1 works along the same line.

> *"...we were not so much actually in the venture capital world. And while we were targeting quite a lot of industrial investors... I mean first of all, if you're going to go for the VC's, you need to be a bit more spot on what you want to do with your company. I mean, there you need to have a clear exit strategy and we haven't really had a clear exit strategy. We want to build the best packaging solutions company in the world and not that it's not important if we do an exit, it's just we need to do what's best for the company and I think for me it's so obvious."* - I1

The reason why VC is questioned as a source of funding from startups is, according to I2, the difference in ability to build relations long-term. Stating challenges of relying on publicly traded and large industrial companies as investors. They point out that the average tenure of a CEO is quite short, leading to periods of inactivity whenever a new CEO takes over. This instability and delay can be detrimental for startups, making it risky to depend heavily on such investors.

> *"Because a lot of things happen in publicly traded and big industrial companies. I mean I think the average CEO now is like three or four or five years which means that every time a new CEO comes in there, there is nothing happening for a year. So and that's not good for starters. So it's very, very difficult, you know you can't be too dependent on those types of investors."* - I2

I2 puts emphasis on the problem with short-term approaches connected to big industrial or publicly traded companies. The fast-flowing nature of governmental changes within these investor bodies impact the possibility to functionally collaborate with them, since what is asked from the investor is uncertain long-term.

> *"For a few years they have a CEO that is expansive and forward leaning, future leaning. You know, that likes to increase the value of the company by doing new things and then in the next, usually that person is preceded by the opposite type of CEO that fires people and returns to core business, and then they make a lot of money in the stock market or they increase the valuation by cutting costs, you know, so I would say it's probably almost every other CEO has those two different profiles. And then if you have that kind of company as investors or large shareholders, then you know you might be in trouble for three years until the next year."* - I2

Such fluctuations can create instability for startups that rely on these companies for investment, as strategic shifts may lead to periods of stagnation and uncertainty. This dynamic underscores the challenges startups face when their funding is tied to the volatile leadership styles of large corporate investors. There are however situations where benefits outcompete the drawbacks from VC investments. I4 emphasises the difference between VC and alternative capital.

> *"So for us, I would say it's maybe not this time, but maybe when we do a serious say OK, now we have a big order book and want to just build out from 100 to 10,000. Then, I think venture capital is quite good because you need to put your company on steroids to grow faster and take market leadership, right? If you don't really have a set business model, I would recommend not to go for venture capital actually."* - I4

They shed light on how VC aligns with a fast expansion phase of a set product, whereas business models under growth and evolution make better use of the benefits that come with alternative capital. I1 further emphasises that large corporations not necessarily compares to a weak and unfruitful relationship, but can rather lead to extraction of shared value.

“I mean their position on the market. I mean they are used to demand and everyone say yes yes, yes. I mean we had been working with them for three years before they made the investments. But also I mean it's also pushing us some in the long run. It's also good, I mean, to have them acting as a really picky customer or pushing us forward. But we also, I mean they wouldn't have invested in us if we wouldn't have a good relationship. I mean, they're really relation builders. So of course, I mean we like them, but sometimes you can be... It's like your parents, you know.” - I1

I1 explains that their investor, accustomed to high demand, invested after three years of building a strong relationship. The investor pushes them to improve, acting like a demanding yet beneficial customer. I4 advises caution with industrial investors because they can limit the company's focus to their industry, such as automotive. This can constrain the company’s potential value creation. However, if alignment is beneficial, pursuing a strategic investor could be advantageous, possibly leading to future acquisition.

"I also think you should be a little bit careful with industrial and investors because they say it also puts your company in a box in that sense, if it's an industrial within the automotive, for example, then you kind of tend to lean towards that and we're close with them. But that's maybe not where you should be, or create the most value, etcetera. It could be and then it’s great. Then you should really go for a strategic investor and maybe be acquired in the future, right?" - I4

According to this statement, aligning too closely with industrial investors could backfire, as it may constrain their strategic flexibility and innovation potential. While such partnerships can be beneficial if they align well, they may also pigeonhole the company into specific sectors, limiting broader opportunities.

4.2.3 Impact Investing

I2 emphasises the value of impact investing to align with CSR legislations as a force in driving innovation. There is currently a significant amount of investment focused on impact, driven by sustainability and legislation. This trend is expected to continue, as these factors are major drivers of innovation.

> *"There is a lot of impact money right now. And that's probably going to continue because what is driving innovation right now is sustainability and legislation."* - I2

I3 believes it would be beneficial to have an impact investor to strengthen their sustainability efforts. However, they acknowledge that even general investors are currently interested in sustainable companies due to the trend.

> *"I mean, this is one of the reasons why I think it would be good to get one of these impact investors on board to kind of strengthen that side. It's not necessary, we can have also just more of a general first investor onboard also because to be honest, every investor right now it's this hype word. It's people want to have a sustainable company in their portfolio. So even even a generalist investor would benefit us being a sustainable company because then they can put that as a patch in their portfolio like hey, we have a sustainable company here. But of course if we would have a an investor who is focused on sustainability, they can then support us in a different way."* - I3

A general investor would still benefit from having a sustainable company in their portfolio, but an impact investor could provide more specialised support. These could account for strategic advantages for bolstering the company's sustainability credentials.

To sum up, Family and Industrial Offices are preferred for their long-term investment horizons and strategic fit, providing capital along with critical industry networks. Venture Capital is characterised as a high-risk, high-reward mechanism, suitable for scaling established business models but potentially destabilising for less mature enterprises. Impact investing aligns closely with sustainability and can enhance both financial and strategic sustainability initiatives. Each

funding strategy presents distinct benefits and drawbacks, necessitating contextual understanding.

4.3 The Business Means: Challenges Encountered with Funding

The findings categorised throughout the interviews concerning this theme can be broadly categorised into the inherent difficulties and time-consuming nature of the fundraising process. This theme explores how the interviewees have faced challenges obtaining financial support and the strategies they have employed in order to address this.

I3 first spurs importance on the time it takes to fundraise as an entrepreneur, stating that it is as time consuming as running the company as CEO :

> *"Raising capital is a full-time job next to your other full-time job, which is running the company."* - I3

I3 went into more detail about the time consuming nature of fundraising as a new entrepreneur, emphasising a strong difficulty perceived in having to learn the intricacies of fundraising while also developing a new technology, finding customers, and negotiating business deals for someone that is not well-versed in the world of business just yet.

> *“I guess it gave me a little bit of time to get like used to the world of the fundraising and seeing how it goes…. Almost like half a year-a year of preparation and preparing to do this and of course we've had a lot of investor discussions the whole year, even before we opened the round. So in that sense there was more time. But it is a new world and I am personally learning more all the time and trying to crack the code of these investors.”* - I3

The quote encapsulates their recognition of the iterative nature of the fundraising process and their commitment to continual learning and adaptation in pursuit of investment opportunities. I3 continues:

“I also cannot put everything else on hold. I am fundraising but also I'm wearing all these other hats and I wish I could just put everything else on hold, but it doesn't work. Like, we are raising the money for this factory now, but we're planning the factory, collecting new customers, negotiating deals so that we could convince these investors to invest in us. So there are about a million things that we're working on” - I3

The challenge of multifaceted responsibilities and demands faced by entrepreneurs during the fundraising process is evident, where fundraising represents just one facet of a broader spectrum of responsibilities and tasks. I4 also echoed this sentiment of the time consuming nature of fundraising stating that there is a balance to be found between the time spent managing the company's everyday business and the time spent fundraising

“I think then it was more a time management issue, but that really that is true also it takes more time than you think and. It comes also to a point where you you need some both support and help and infrastructure to make it work." - I4

14 states that a support network is needed as outside factors have made fundraising take more time. They add:

“...but also the climate has changed, with interest rates and so on for several companies, and I think that's been so for everyone, us included. It's been more time consuming to both find the right ones and also negotiate terms and prices with them.” - I4

I2 also remarked on the idea that it would help them if they had support on their fundraising rounds:

“...I mean we have done all these rounds by ourselves and I would actually be quite curious about learning more about, I mean, having someone helping us with investment rounds because it takes so much time and I mean I have never done this.” - I2

The quote reflects a pragmatic approach to seeking assistance and acquiring knowledge to optimise fundraising efforts and streamline the investment process. Highlighting the significant commitment needed to secure initial investment, I1 describes the intensive effort required during their first funding round, where two main investors were onboarded. They must dedicate full-time focus to the process, despite the company not having many employees.

> *“I mean, the first round when we onboarded (Two main investors), I think we, I mean, it was 70% of each of our times off, we only worked with that round. Focus full time on yourself. And then we were maximum 10 people in the company.”* - I1

A more cynical view was portrayed by I1 stating that the workload needed for fundraising for an innovative company might be more than others, but overcoming this has helped them build credibility.

> *"I mean, it's super stupid to start an innovation company because it's a lot of work, but now we have really come to a point that we have built a lot of credibility."* - I1

I2 explains the balance needed in targeting the right investor market for their technology. They can't be too broad which dilutes it but also cannot be too narrow so they miss opportunities. They need to achieve the right technological fit in order to keep investors' interests in mind but also maintain the company’s viability.

> *“If you don't find the right tech technology market, then you won't succeed. And worse, and you have to revert, maybe to crowdfunding. You could still succeed, but you know you're not going to, you burn out the patience of the investors quite quickly, if you focus on the wrong applications and it could be... there's two things:. Either you do it too wide, that you target too many applications and you spread yourself too thin, or that you're too narrow. Because if you're too narrow and you don't succeed in getting market traction in that category in that segment of the market then you lose one or two or three years.”* - I2

…further stating that if they fail to do this then they might have to revert to alternative funding methods, which takes time leading to delayed progress. I1 also explains that they were not actively seeking funding because they lack experience in the startup ecosystem:

> *"We were not actively looking for funding. I don't have an experience in working with this startup world and to me it was very difficult to actually identify yourself with that world when you're gonna, like, put so much effort on one five minute speech. And then I mean, really build a dream that maybe you yourself see, you realise that this is a dream and maybe is nothing I actually think is realistic."* - I1

They accent how they found it difficult to relate to the startup world, particularly the emphasis on pitching—a process where significant effort is invested into a brief presentation. A sceptical view on the approach suggesting that startup pitches are not always honest, leading to unreal expectations by investors sold by false promises.

To sum up, a recurrent theme throughout the chapter is the necessity for entrepreneurs to navigate a complex landscape of investor relations while simultaneously managing myriad operational responsibilities inherent to running a business. Furthermore, the findings suggest emphasis can be put on leveraging support networks and seeking professional guidance to streamline fundraising efforts and mitigate the inherent complexities associated with securing financial support.

4.4 The Business Impact: Finding the Right Investor Partnerships

Throughout the chapters and themes addressed, a recurring theme emerges, highlighting the significance of aligning with investors who not only provide capital but also offer valuable contributions to the startup's growth trajectory. The findings outlined in this chapter hence delves into the multifaceted nature of these partnerships, exploring how interviewees prioritise collaboration, industry adaptation, and mutual respect in their quest for sustainable success.

I4 stresses that they aim to ensure their investors are not just financial backers but also valuable contributors to the startup. They look for investors who have a useful network and experience of specific knowledge.

> *"So we try to make sure that it's owners that can contribute, that it's investors that either has a network or experience or knowledge to contribute to the startup. And also that they have the stamina for multiple investment rounds."* - I4

Additionally, they seek investors with the stamina to support the company through multiple rounds of funding, indicating a long-term commitment to the startup's success, emphasising a long-term value exchanging relationship. I1 works along the same lines as I4 in the idea of a long-term relationship based on added value. The biggest barrier to this is finding the right people who can push you to think differently and aim higher.

> *"I think that it's super important being credible. But dare to think big and challenge yourselves, and there I think the biggest barrier is finding the right people to that, that could challenge yourself. I mean, the more you can collaborate with others and the more other thinking people you can get in the company or get to support you, I think that is really the key. Because together you can create the miracles."* - I1

I1 also highlights the importance of collaboration and bringing in diverse perspectives to the company or support network. By working together with other innovative and thoughtful individuals, they suggest that remarkable achievements—described as "miracles"—can be realised. I3 further elaborates the need for collaboration and the importance of getting major industry players to adapt and change. They clarify that their goal is not to replace existing systems or companies but to encourage everyone in the industry to evolve together.

> *“In order to do that, we need to collaborate. And also we need the big players to change themselves. So we are not here to try to replace everything existing. We want everyone to change as well. So we do see it as a very positive thing that also the (industry) is like trying to figure out.”* - I3

Here, focus is shifted towards the industry's efforts to figure out these changes as a positive development, suggesting that collective progress and adaptation are essential for success, underscoring the value of cooperative transformation rather than disruptive replacement.
I4 dives deeper into what such a relationship between companies means:

> *"It's the same as having a friend. I mean, there's someone that always want the best from you, that wish you the best. I think that's number one. And then of course I mean shouldn't be naive. I mean everyone wants to make money, but you can do that in a nice way. I think that's number one. You need to have people around you that you want to work with, that you think is fun to work with. Otherwise, it will be so many challenges anyway, so I mean for me at least, the people around you and what they can contribute with is super important"* - I4

I4 highlights the dangers of not having a respectful relationship with your investor. They compare having the right people around you in a business environment to having a good friend—someone who genuinely wants the best for you. They acknowledge that while everyone is ultimately aiming to make money, it's important to do so in a positive and enjoyable manner.

> *"It's also important for investors to feel that way, that it's not only somebody who wants to be a shareholder and kind of hijack the company and use it for other purposes, right? So that was quite clear for us to really make sure that when we onboarded about 6 investors in the round in 2022, some larger and some smaller."* - I4

I4 stresses that working with people you like and find fun to collaborate with is crucial because it helps navigate the inevitable challenges. Emphasis is put on diversity in the portfolio of investors to attain benefits provided from different types of shareholders. Further, I2 explains that the choice of investors depends on the founders' exit strategy.

> *"I think it depends on what the exit strategy is. Also what the founders want with the company. So if you want to grow quickly and cash out quickly, then you know I should*

probably tend to have more VC. But if you just want to develop, the company should probably have, you know, even share of VC public funding, industrials and commercial investors" - I2

According to I2, for quick growth and a fast cash-out, more VC is ideal. For steady development, a balanced mix of VC, public funding, industrial, and commercial investors is better, ensuring diversified support and sustainable growth. They underscore the importance of aligning with investors who bring valuable contributions.

To sum up, the findings of this chapter suggest that securing suitable investor partnerships for startups is critical to achieving sustainable growth through innovation. It is built on previous chapters' findings regarding funding mechanisms benefits and drawbacks on sustainable innovation, along with the challenges associated with fundraising, establishing significance to the need of attaining investors who offer more than just financial subsidy. Industry experience, networks, and long-term commitment to multiple rounds of funding are some aspects that are important to sustain business with respect to this thesis' research question. The overarching message conveyed across the interviews points towards a principal view in that successful investor relationships are characterised by collaboration, mutual respect, and a shared vision for long-term growth, essential to support sustainable innovation as core of the startup venture.

5. Discussion

The following chapter aims to contextualise the empirical findings within the existing literature on SBMs, with a focus on the dynamics of start-up investor funding options and SBMI. The four segments of empirical results - The Business Case, Business Scaling, Business Means and Business Impact - will be discussed as one. First, the empirical findings on necessity for flexibility and resilience in SBMs will be discussed, highlighting how these attributes are essential for dealing with the complexities of sustainability-driven innovation. This section will integrate theoretical perspectives and suggest complements to previous research. Subsequently, funding dynamics will be discussed, with empirical findings on traditional venture capital (VC) models and the unique needs of SBMs, backed up by theory. The impact of alternative funding sources, such as impact investors, grants, and strategic partnerships, will be discussed in relation to their alignment with the long-term vision and goals of SBMs, assessing their relevance in literature to alternative funding. Thirdly, the chapter will address strategic imperatives and market perceptions, discussing challenges' affects the valuation and attractiveness of SBMs to investors. The chapter integrates empirical insights with theoretical frameworks, to complement previous literature on challenges and opportunities for SBMs in securing necessary capital and achieving sustainable innovation growth.

5.1 Flexibility and Resilience in Sustainable Business Models

The first finding suggests that there is an inherent challenge of need for flexibility and resilience within the core of SBM's. For instance, companies that focus on innovation must continually adapt their processes to new scientific findings, technological advancements, and regulatory changes. Flexibility in this context means having the agility to pivot strategies, processes, and even core business activities in response to external pressures and opportunities. SBMs are inherently innovation-driven, requiring a high degree of flexibility and resilience to navigate. Flexibility is vital for SBMs as it enables them to adapt to new opportunities, integrate cutting-edge technologies, and align with shifting consumer preferences towards sustainability. This adaptability is crucial for developing and refining their business cases, which are often built

around innovative products or services that need continuous improvement and alignment with sustainability goals to create shared value (Porter & Kramer, 2011). SBMs, by nature, prioritise sustainability across economic, environmental, and social dimensions. This broad focus necessitates a flexible approach to business model innovation (Bocken et al., 2014). Resilience complements flexibility by ensuring that SBMs can withstand and recover from market disruptions, economic downturns, and resource constraints. Resilience in SBMs involves not only robust operational frameworks but also strategic foresight and planning. Companies adopting SBMs must anticipate potential challenges and build capabilities to address them proactively, all while navigating the challenges found from the empirical data presented such as information asymmetries, an undersized- and capacitated workforce and scarce capital resources. This is particularly critical for innovation-based startups that often face higher risks and uncertainties compared to more established firms with traditional business models (Fu & Qian, 2023).

The innovative core of the SBM startups hence converts into a challenge when faced with the integration of external capital. The theories of business model innovation insufficiently incorporate these unique demands of sustainability. Success of SBMs hinges on their ability to redefine industry standards and practices to create shared value (Porter & Kramer, 2011; Bocken, 2014). The conventional research of business stability and incremental growth, as according to Geissdoerfer et al., (2018), mentions an incorporation of sustainability rather than a continuous core innovation strategy. One explanation for the design-implementation gap (Geissdoerfer et al., 2018) hence becomes evident from the empirical analysis of this research, in the lack of continuous transformation and proactive change management guidance relative to the dynamic of capital funding and its relation to the core of SBMI.

5.2 Venture Capital and Alternative Funding Source Dynamics

The findings point towards the idea that even though funding, and VC in specific, play a very important role in the ecosystem of startups by providing essential capital and very rapid commercial growth, the traditional VC model does not fit with SBMs.

The traditional VC model, which emphasises rapid expansion and high returns, often clashes with the needs for flexibility and resilience that SBM requires (Bocken, 2014). An interviewee's ideas about VC funding are referred to as “setting your idea on steroids” because of the high pressure environment created by VC’s, leading to short-termism. This short term thinking can lead to financial performance overshadowing the long-term goals of the startups, hindering startups from achieving their set out vision, even to the point of technological downgrade to please investors. Even though VC’s may invest in sustainable startups, their motivations frequently conflict with the impact investing principles of intentionally seeking measurable social and environmental impact that comes naturally with SBMs (Wöhler & Haase, 2022). SBMs' need for continuous innovation and adaptation are less compatible with the rigid, growth-driven business models favoured by VC’s. VC’s are not to be deemed a bad option of funding for startups, as one interviewee noted that VC funding can either propel a company to great success or lead to its downfall, it is a very high-risk, high-reward investment mechanism. VC’s emphasis on a clear strategy regarding their ROI (Jeong et al., 2020) and rapid scalability can be misaligned with the iterative and evolving nature of SBMs (Wöhler & Haase, 2022). These startups require flexibility to experiment and refine their models and technological advancements, which tend to be constrained by the stringent growth expectations of VC’s (Bocken, 2014). Another interviewee pointed out the necessity of having a clear exit strategy out of their personal holdings in the startups when engaging with VC’s, a requirement that can sometimes conflict with the broader, long-term sustainability goals of the startup (Alakent et al., 2020). Judging from our empirical findings, early-stage sustainably driven innovation startups prefer to go for alternative funding sources such as impact investors, family offices or strategic partnerships for their early rounds. One interviewee explained that their company has a specific preference for family offices because they provide better alignment with their business case, providing not only capital but also strategic benefits such as industry networks and customer

connections. Moreover, the strategic fit of investors is emphasised by several interviewees as well. These sources of funding relate more closely with the vision of SBMs, while they also fit better in with RDT's dependence on resources (Hillman, 2009, Wetter & Nordqvist, 2024). Capital is always welcomed, but the added value of strategic networks and industry-specific knowledge can significantly enhance the startup's ability to navigate its market and achieve sustainable growth (Bocken, 2014). For sustainability based startups, this strategic alignment can help ensure that their non-financial technological or societal goals are not compromised by the pressures of external capital dependencies (Hillman et al., 2009). Interviewees highlight that the dual focus on innovation and sustainability requires substantial time and effort. This balancing act can be particularly challenging for founders who are more accustomed to scientific and technological innovation, more so than to the intricacies of business development and financial management. The learning curve is made especially difficult when referring to startups with extra frames to operate within, such as sustainability, hence why funding represents such a significant challenge for sustainable startups in particular. These companies often operate with limited resources and therefore encounter advanced investment practices as particularly challenging, managing information asymmetries and investor expectations at the same time (Mahto and Khanin, 2013; Hillman et al., 2009).

Whichever investment mechanism that startups choose to go with, there will always be a degree of control given up by the startup's founders as investors increase their equity. RDTs dependence on resources points towards an imbalance in the decision making process between the founders' business operations and the demands of the investors within firms, particularly when it is directly linked to resources needed, as it is for startups looking for funding (Hillman, 2009). Investors have control over the main resource that the startup needs. In the case of VC's they control the quick and large amounts of liquidity, which means they are likely to use their power and influence over decisions to push the company towards money-making endeavours, since ROI is the main driver for their investments (Wöhler & Haase, 2022). In the case of strategic partnerships, the resource given is not always monetary and mostly consists of the creation of a collective business plan where all parties have something to gain from the other parties

infrastructure - resulting in a situation where the power exerted by strategic partnership investors might push for an increase in technological capacity and innovation from the startups rather than immediate financial returns (Fu & Qian, 2023).

5.3 Strategic Imperatives and Market Perceptions

The market's perception of sustainability as a strategic advantage is mixed, impacting the valuation and attractiveness of SBMs to investors. Empirical findings indicate that sustainability is often viewed as an ancillary benefit rather than a core value proposition. This perception undermines the competitive advantage of SBMs relative startups whose business models do not incorporate sustainability at its core. The arisen challenge hence pinpoints a need to emphasise their sustainable value propositions more effectively to attract the right kind of investment and stakeholder support, something that is proven difficult from the empirical findings given SBMs' coherence to adaptation and flexibility, versus investors interest in viable BM stability and risk-minimisation (Bocken, 2014; Hillman, 2009).

Another prevalent empirical finding that impacts this challenge is the mentality-gap among investors and SBM startups: the anticipation of SBMs as a competitive advantage in funding rounds. Geissdoerfer et al. (2018) makes a point of the long-term value of competitive advantage that SBMs generate, however the empirical findings suggest that there seems to be a mismatch in the parties' expectation regarding the significance of this competitiveness. Investors seem to view the "S" of the SBM merely as "the colour of the sweater"—an additional feature rather than a fundamental differentiator, compared to other BMs. This practical view fails to recognize the integral role sustainability plays in the business case of SBMs. When put together with the finding that SBMs must stay more adaptive relative to conventional BMs, hence attracting less interest from a number of potential investors, this becomes a twofold disadvantage which SBM startups must govern to engage capital necessary for further innovation and development. In accordance with a RDT, this could explain why SBMs often fail before they reach market influence (Wöhler & Haase, 2022). Put into a theoretical lens, this could be explained as inflation

of startups' dependence while impeding their power surrounding control of critical resources, why the empirical research also proves a big emphasis on partnerships to access resources, share risks and reduce uncertainties, enhancing stability (Hillman et al., 2009). Meanwhile, such strategic alliances and stability applied to the firm should counteract the flexibility and resilience desired for successful SBMI (Bocken et al., 2014).

As a result, the timing of investment becomes crucial for SBMs seeking to maintain strategic control and align with their long-term vision, proven by our empirical findings. Founders often hesitate to secure large-scale funding too early to avoid diluting their equity and ceding control to external investors, and instead build informal bridges to partners to abate dependency and keep the stewardship role adopted (Hillman, 2009; Bocken et al., 2014; Palmie et al., 2021). The right amount of equity and strategic autonomy is essential for founders who aim to stabilise the company’s structure, build a resilient business, and potentially plan for a profitable exit in the future, as emphasised by the interviewees. The strategic timing of such investments, however, is critical for ensuring that the SBM remains true to the venture in achieving and developing scale-up solutions (Bocken, 2014).

6. Conclusion

The purpose of this thesis was to investigate the research question *"Does the choice of capital funding influence the capacity of startups to develop and implement sustainable innovations?"*. By examining startups' relation to strategic partnerships and VC within the context of SBMs, the research aimed to uncover the implications of different funding mechanisms on startups' ability to innovate and maintain sustainability. The following section will provide a response to this thesis purpose and research question by formulating a conceptualisation of the research in confederation with previous literature and the research's empirical findings. Thereafter, theoretical and practical implications will be outlined, followed by limitations and proposed future research.

The study shows that funding choices influence startups' capacity to develop sustainable innovation. Our findings show that among the different sources of capital available to SBMs, strategic partnerships are the most beneficial. Unlike VC's, who primarily seek monetary returns, strategic partners invest in infrastructure and accentuate creating shared value. The benefits of traditional funding mechanisms in return for monetary ROI can however not be neglected. Both the practical and theoretical observations suggest that a large influx of working capital, and the support given by VC's can also be a strong prerequisite in a startups ability to create shared value. Hence, the conclusion induces the additional question: What determines when a BM is set and ready for VC's influence and resources? However, the benefits that traditional funding mechanisms provide through capital prosperity cannot be neglected. Hence, the conclusion induces the additional question: What determines when a BM is set and ready for VC?

This question is an effect of the conclusion that resilience and adaptability to innovate is a theoretical constant for an SBM. This approach provides startups with greater opportunities for innovation and sustainability by fostering flexibility and bridging the mentality gap between short-term financial gains and long-term sustainable growth. Strategic partners often value sustainability more highly than VC's and large corporations, since their inherent goal is not solely to create monetary returns, their ROI is achieved in the cost-savings they make by

investing in a de-facto external development department that is SBMI. This positions it as a competitive advantage and contributes to the broader goal of shared value creation, as supported by Bocken's framework. Hence, timing is crucial when seeking VC funding. The study finds that startups should only consider VC funding once their BM are stabilised and secure to ensure that the long-term benefits align with investors' planned ROI. Meanwhile, premature engagement with VC's might disrupt the core values of SBMs due to the pressure for rapid financial returns. Therefore, determining the right moment for VC funding is essential for maintaining the integrity and vision of SBMs. This however entails that, in accordance with SBMI theory, there is never such a timing where stabilising BM for VC integration is relevant, given the innovative nature of the BMs' core, hence necessitating continuous flexibility. In relation to this, the business case for SBMs does not always offer a competitive advantage over non-sustainable startups, making it difficult to secure funding. The short-term capital benefits leveraged by competing startups pose a strategic disadvantage for SBMs, emphasising the need for strategic alignment with investors who share their vision for sustainability.

Theoretical Implications

The theoretical implications of this thesis are twofold. First, it underscores the necessity for a nuanced understanding of funding mechanisms in the context of SBMs. Unlike traditional input-output methods, the impact of funding on sustainable innovation requires an examination of the timing, alignment of values, expected outcome of investments, and long-term strategic goals of the startup. The research supports general literature suggesting that SBMs, especially in the startup phase, need a degree of flexibility, adaptability and self-governed control in the core of the BM in order to implement sustainable innovations as part of their value creation. Second, the thesis challenges the conventional theoretical approach of assessing SBMI as continuous flexible entities. While strategic partnerships offer more than just financial resources; they provide perspectives, networks, and reputational benefits that are crucial for sustainable innovation, the capital resources supplied by VC's facilitate startups developing scale-up solutions to creating shared value (CSV) extensively. This observation suggests a gap in the coalition between theories on SBMI and RDT, where determining an appropriate timing to integrate VC's into business becomes precluded in theory. This empirical conclusion proves a

contradiction in the theoretical frameworks that lacks a routine in known literature. The thesis suggests that there is a moment when the theoretical discrepancies between maintaining control and flexibility in the startup BM and discarding innovation at the core of the BM in exchange for VC accession must meet.

Practical Implications

Apart from the theoretical implications, this thesis offers practical implications for startup founders and investors. In the search of practical implications, and in relation to the theoretical implications presented previously, two questions regarding business case viability arose; How can SBMIs become viable enough in order to compare to other BMs in regards to revenue and profitability?, and how can SMBIs achieve a set and stable BM while keeping their power to innovate? The implications are presented in two truths. First truth is that an SBM is not a good BM just because it has the S. The second truth is that you need to make considerable efforts to provide evidence of how something that is uncertain, flexible and open to change can have long-term viability and be lucrative to invest in. In achieving this, startups can reduce their dependence and increase their power in their relationship with investors. Achieving a better balance in the dynamic of investment and control will lead to a considerably larger freedom of choice of investors for the startup, providing better opportunities for sustainable innovation to develop in the long term and scale up to create CSV extensively. The theory states that strategic partnerships are investor companies which are looking for collaboration and technological advancements and not necessarily out for monetary return based on the startups revenue, but one can influence and change what the meaning of collaborative strategic partners entail. While the current challenge is that the incentives for VC's to act as such are lacking, SBM startups can make efforts to create conditions that attract capital for both transformative changes and continued ongoing development, that way securing necessary funding and having them serve as strategic partners.

Limitations and Future Research

This thesis acknowledges several limitations that provide opportunities for future research. Firstly, the study employed a qualitative research approach to understand the influence of different capital funding sources on startups' capacity for sustainable innovation. While this method allowed for exploration based on a dataset rich in detail, it did not establish metrics on specific correlations or causality. Future research could adopt a quantitative approach to test these relationships, providing more generalizable and statistically significant conclusions. Second, the research primarily focuses on the dichotomy between strategic partnerships and VC as a result of the choice of respondents and theories applied, potentially overlooking other funding mechanisms such as crowdfunding or government grants that might also play significant roles to startup sustainable innovation in alternative cases.

On the same theme, the study's scope was confined to a limited number of case studies, all within specific akin industries, which may not capture the full diversity of experiences and perspectives within the startup ecosystem, potentially restricting the generalizability of the findings. Although these cases were deliberately selected to represent prevalent SBM-startups, the insights gathered may be highly context-specific due to particular characteristics of the startups or industries studied. Future research could explore a broader range of industries and geographical regions to assess the applicability of these findings across different contexts. Also, the study was limited by the number of interviews conducted due to time constraints and the availability of willing participants. Future research could expand the sample size to include a larger and more diverse set of startups, enhancing the robustness and validity of the findings

Additionally, the interview participants were primarily founders and key decision-makers, which might introduce bias as these individuals may have their own specific perspectives on the subject and on the role of their businesses that they care for. Including a wider range of stakeholders such as investors, employees and current shareholders in future studies could offer a more holistic view of the impacts of funding with respect to the research question. Furthermore, longitudinal studies would also be valuable to observe how the impact of funding choices

evolves over time and to identify the long-term outcomes of different funding strategies on SBMs.

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