Sustainability in venture capital

EXPLORATORY RESEARCH ON HOW SUSTAINABLE VENTURE CAPITAL INFLUENCES THE SUCCESS OF SUSTAINABLE VENTURES.

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“Unless you try to do something beyond what you have already mastered, you will never grow”

Dedicated to my parents, my Mother for always being my best friend and my Father for being my greatest teacher.

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Executive summary

Sustainability has, for a long time, been the ultimate target for social movements around the world. It has been deemed as a “wicked problem”, a problem which does not have a singular solution. To address this issue, the acceleration of sustainable start-ups is key. Sustainable start-ups or impact ventures are recognized as the fastest way to achieve the sustainable development goals in each country. Although the term, sustainable start-ups has gained recognition over the past years, the inherent need for corporates to gather profits by scaling up and accumulating market share, has hindered the growth of such ventures. Venture capital has always influenced the success of start-ups, from investing in new ventures to providing resources needed to enable a profitable venture. Sustainable venture capital on the other hand, is a more complex solution. Being a less researched area in the field of venture building, sustainable venture capital is new and highly innovative. But there is a lot more research that is required as to how this type of capital can influence the success of sustainable start-ups. This research aims at answering the question: *How do sustainable venture capitalists influence the success of sustainable start-ups?*

This thesis answers the research question using an exploratory research approach. This approach allows the researcher to start with a general idea of the topic being investigated and hence identify the critical elements of the research. There is a need to understand the complexities behind scaling up impact first ventures and dive deep into the factors that enable or hinder their success. Sustainable venture capital is known to be different than what traditional venture capital can provide in terms of resources, expertise, and strategy to sustainable start-ups. To understand the relationship of sustainable venture capital and sustainable start-ups, we need to look at what motivates these venture capitalists to invest in these ventures. A comprehensive literature review on sustainable venture capital and its relationship with the success of sustainable start-ups was conducted to identify key factors that influence the success as well as motivators and demotivators of sustainable venture capitalists to invest in these ventures. This was done to deeply understand the role that sustainable venture capital plays and the impact it has on the success.

Using the data gathered from the literature review, a conceptual model was then created to act as a lens for the findings during the next phase of the research. After the literature review, the factors were taken and used to form questionnaires to be used in semi-structured interviews. These interviews were conducted to validate the theoretical factors and find out first-hand the practical implications and real-life use case scenarios that were implemented by venture capitalists. The participation sample included sustainable venture capitalist, venture builders from accelerators/incubators and sustainable entrepreneurs. This sample was used to provide a dual perspective on the relationship and form a comprehensive list of factors that are valid in real life scenarios as well.

The research resulted in multiple lists of factors that were deemed necessary for the evaluation of the topic and to answer the main research question. All the factors were categorized into similar themes for ease of understanding and compilation. The first set of themes were used to identify the role that sustainable venture capitalists play in driving the success of sustainable start-ups. The themes were: *Strategy, impact creation, team development, network and finance.* The factors complied for the motivators and demotivators for sustainable venture capitalists to invest in sustainable start-ups were categorized into the following themes: *Financial performance, intended impact, team and portfolio fit.* These factors helped in understanding the venture capital perspective in both an academic as well as practical viewpoint. These factors enabled the researcher to answer the first sub-question of the research: *What are the motivations behind the investments made by sustainable venture capitalists?* Answering this sub-question presented some challenges due to the knowledge gap present in literature regarding the relationship between sustainable venture capital and the success elements of sustainable start-ups.

Following this, a similar set of data was gathered for the influential factors, namely enablers and barriers for the success of sustainable start-ups alike. This list of factors was created to provide a more elaborate list of factors which satisfied all elements of the conceptual model presented in the research. It also allowed the researcher to answer the second sub-question: *What are the critical factors that influence the success of sustainable ventures?* This facilitated the creation of a newer, revised conceptual model which integrated all the different elements. The list of themes that were procured were similar for both enablers and barriers apart from one exception being *business model.* The rest of the themes were: *Financial, value creation, industry, team and environment.*

A secondary objective of the research was to explore whether circular venture capital was implementable in practice. The term circular venture capital and research done on it is negligible. The complexities behind financing circular business models, creating stable and predictable supply and value chains and analysing the impact assessment properly summarise the implementation barriers that were found in the available literature. These barriers were then discussed with the expert interviewees to interpret a workaround and create a viable implementation model for circular venture capital. This primary model was first adapted from various websites and sources while the proposed model used it as a base to integrate some of the solutions to the implementation barriers found. The main issue that the experts mentioned in financing circular businesses was the lack of predictable financial returns with the creation of social impact. The concept of *social impact bonds* was utilised to negate the fear of making no money with the impact created. Even though the concept of circular venture capital is barely nascent, concept and workarounds like social impact bonds make it at least viable on paper. This viability can be accentuated with the right approach from financiers and the support of academia.

This thesis showcases its relevance in multiple academic as well as practical areas like sustainable venture capital, circular venture capital, sustainable development, and transition to a circular economy. The more knowledge that is accumulated on these topics, the more accurate as well as relevant the information will be while implementing these terms in a practical setting. Therefore, this study hopes to contribute to these research areas in a meaningful way by encapsulating all these topics in a concise but comprehensive way.

Keywords: sustainable venture capital, sustainable start-up, impact investment, circular venture capital, circular economy, semi-structured interviews.

Contents

List of tables

List of figures

List of abbreviations

1. CV - Corporate venturing
2. VC / VCs - Venture capital / Venture capitalists
3. NGOs - Non-governmental organizations
4. SVC / SVCs - Sustainable venture capital / Sustainable venture capitalists
5. SME - Small and medium enterprises
6. BM - Business model
7. BMI - Business model innovation
8. SEO - Sustainable entrepreneurial orientation
9. IS - Industrial symbiosis

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1 | Introduction

1.1 | CORPORATE VENTURING

Corporate venturing (CV) is an approach within entrepreneurship which is believed to be one of the most efficient ways of gaining competitive advantage (Covin & Miles, 2007). The term is used when firms invest in start-ups, strategizing and implementing business models so that the start-up achieves exponentially scalable growth (Monaghan, 2020). Apart from increasing competitive advantage for one's own firm, CV is also considered to be potentially one of the most important contributors to sustainable enterprises (Hegeman & Sørheim, 2021). Sustainable ventures are businesses that focus on creating environmentally beneficial values while maintaining steady profits over time (Bocken, 2015). This thesis focuses on the shift from traditional corporate venture capital (VC) to sustainable venture capital and the role it plays in enabling the success of sustainable start-ups.

1.2 | SUSTAINABILITY IN INDUSTRIES

Developing a sustainable society requires the impact to be on a global scale. This employs the need to create a global agenda for the preservation of the environment and its resources enough to satisfy the needs of the current generation without hampering the same for future generations (Bocken, 2015). For the past couple of years, the strive towards sustainability has been fuelled by the fundamental challenges that plague the environment. Sustainability is defined as "maintaining well-being over a long, perhaps even an indefinite period" (Kuhlman & Farrington, 2010, p. 3441). The traditional, linear approach of 'take-make-dispose' is leading to scarcity in resources, volatility in effects of unsustainable supply chains and pricing levels that are unaffordable and lead to sustainability issues for the economy and environment (Macarthur, 2020). This is true even though businesses are, due to their own recognizance or due to macro-environment factors (governmental policies etc.), less unsustainable than before. A text fragment taken from Beier et al. (2020), a paper which talks about the inclusion of sustainability within the introduction of Industry 4.0, showcases the lack of research done and the increasing subjectivity of the topic in modern research:

"*The transformation of industrial production is one of the biggest challenges for a sustainable development. However, it is not clear to what extent Industry 4.0 will contribute to this development..... Hardly any of the text fragments that postulate effects of key features on sustainability aspects provide any kind of evidence or a reference to such evidence. In total only 17 out of 684 text fragments describing the concept Industry 4.0 provide such evidence which underlines the often more conceptual or subjective nature of the descriptions.".* (Beier et al., 2020, p. 11)

The above fragment showcases that 2.49 % of all papers researched include sustainability aspects within their study. This highlights an important knowledge gap which this research aims to close where the come of the age developments in industries do not include sustainability. This is true even though the current incremental solutions being deployed

are less sustainable in practice, but the magnitude of challenges faced by the environment and society is exponentially increasing (Bocken, 2015). This warrants the necessity of advancing and accelerating the growth of start-ups and new ventures which are sustainable in their business models while also incorporating stakeholder values and an interest in maintaining profits.

Looking back at a previous statement, the research emphasizes the desideratum of the impact of sustainable innovations and developments to be on a global scale. This impact is difficult to achieve when the notable actions being undertaken are the integration of sustainability on a shallow level within industries. Whereas there needs to be an inherent purpose behind developments that are sustainable from the beginning of such ventures and not an afterthought. "A sustainable industrialization as envisioned by the sustainable development goals will need a more transformative approach of integrating sustainability." (Beier et al., 2020, p. 12)

1.3 | SUSTAINABLE VENTURE CAPITAL

A sustainable start-up takes a relatively longer time to produce visible profits when compared to traditional start-ups. For example, cleantech start-ups are capital intensive and have longer development times, factors that are not appealing to traditional corporate venture capitalists (Hegeman & Sørheim, 2021). This is backed by a relatively recent research done by Muñoz et al. (2018), who discuss about purpose driven organizations. They theorize that 'purpose' in an organization is assumed to never change while the opposite is true. This causes a lack of reliability in dynamic values of a purpose driven organization like cleantech or sustainable start-ups through the eyes of traditional VCs. When the objective of most of the VCs is to enable a start-up to be successful and make profits out of selling their stakes in those start-ups, the triple bottom line approach is reduced to just a balancing act or an accounting tool (Elkington, 2018). A sustainable venture capital firm instead focuses on all three aspects (social, environmental, and financial) of the approach and embraces its original goal of changing the system it is employed by. This, in addition to the *investment thesis* of these firms, allows the VCs to make strategic decisions based on what start-up to invest in within the context of the impact that they are trying to create without financial obligations at the forefront of the values being acted upon.

1.4 | CIRCULARITY IN BUSINESS

The term circularity stems from the popular concept of circular economy. The most famous definition for circular economy was established by the Ellen MacArthur foundation as "An industrial economy that is restorative or regenerative by design" (Ellen MacArthur Foundation, 2013). Circularity was initially focused on industrial economics while the contemporary focus for the concept is installed within various economic systems along with industrial processes. In theory, any process or system which utilizes a closed loop model where its design is long lasting, repairable, reusable and maintained to increase the efficacy of the system is called circular. While it is evident from the research that the main difference

between sustainability and circularity is that while circular processes tend to be sustainable, the opposite is not always true.

Geissdoerfer et al. (2017) researched the similarities and differences between the concepts of sustainability and circularity. Table 1 shows the differences that were found during the research:

	Sustainability	**Circular economy**
Origins of the term	Environmental movements, NGOs, non-profit intergovernmental agencies etc.	Different schools of thought like cradle-to-cradle, regulatory implementation by governments, inclusion in political agendas.
Goals	Open-ended, multitude of goals depending on the considering agent and her interests.	Closed loop, ideally eliminating all resources input into and leakage out of the system.
Main motivation	Diffused and diverse reflexivity and adaptive.	Better use of resources, waste, leakage (linear to circular).
What system is prioritized?	Triple bottom line.	Economic system.
To whose benefit?	The environment, the economy and society at large.	Economic actors are at the core, benefitting the economy and the environment. Society benefits from environmental improvements and certain add-ons and assumptions like more manual labour and fairer taxations.
How did they institutionalize?	Providing vague framing that can be adapted to different contexts and aspirations.	Emphasizing economic and environmental benefits.
Agency influence	Diffused (priorities should be defined by all stakeholders).	Governments, companies, and NGOs.

Timeframe of changes	Open-ended, sustain current status "indefinitely".	Theoretical limits to optimization and practical ones to implementation could set input and leakage thresholds for the successful conclusion of the implementation of a circular economy.
Perceptions of responsibilities	Responsibilities are shared.	Private business and regulators/policymakers.
Goals and interests	Interest alignment between stakeholders, ex. Less waste is good for the environment, organizational profits, and consumer prices.	Economic/financial advantages for companies, and less resource consumption and pollution for the environment.

Table 1 - Differences between circularity and sustainability by (Geissdoerfer et al., 2017)

An open-ended system unlike the closed systems related to circularity make it difficult to exact roles of actors within the system and hinder operationalization due to its flexibility and adaptability (Geissdoerfer et al., 2017) A key point of failure of sustainable start-ups mentioned by Bocken was the inability to produce any sort of initial capital, triggers a lack in the number of VCs willing to invest in sustainable start-ups (Bocken, 2015). In a circular system, the ability to turn waste and leakages into usable resources can slow the drain in capital input from the VCs and make an investment into a circular start-up, more inviting. This showcases certain drawbacks that hinder the involvement of VCs in sustainable start-ups. To achieve sustainability, many authors have mentioned the inclusion of circular practices in business models to complement the holistic approach that purely sustainable systems have (Geissdoerfer et al., 2017).

1.2 | MOTIVATION AND RELEVANCE

Within the background section of this research, evidence was produced as to display the lack of inclusion of sustainability within the context of venture capital and its modern research. With the topic being aimed at investigating the influencing factors of sustainable venture capital on the success of sustainable start-ups, the next section explains the motivations and relevance of the topic within scientific, social, and academic relevance.

1.2.1 | Scientific relevance

The subject of sustainability, circularity and their economies have been researched but only to an extent where the inclusion of these topics, in different industries and other academic approaches, is difficult. This with the addition of the lack of research on sustainable venturing provides a suitable basis for the realization of scientific relevance of the topic. Another point of relevance with reference to this research and its contribution to scientific literature is to define a probable new form of venturing, circular venturing, explore its potential and then differentiate between it and sustainable venturing. This differentiation will help us explore untouched topics, define concepts, and understand their relevance and impact on driving sustainability.

1.2.2 | Social relevance

Social relevance is important to identify within this research. A deep dive into how sustainable start-ups can be successful with the help of VCs which have similar value goals, environmental impact of decision making by companies and policy makers and having a better understanding of the influence of sustainable VCs and factors influencing success of sustainable start-ups can enable a more circular and sustainable landscape in industries. The debate between scalability versus social impact initiates a conversation which does not happen often and helps implicate mistakes in existing systems. Bocken (2015) mentioned in her paper about how "business as usual" is not a solution to reach a sustainable future and that is exactly what is socially relevant about this paper as well.

1.2.3 | Academic relevance

With regards to academic relevance the criteria for a suitable thesis under the scope of Management of Technology at TU Delft were considered. There are three main criteria which help enable a guideline for working on a research of this scale within the course:

1) *"The work reports on a scientific study in a technological context."*

   Later in the research, it is shown that an extensive literature study was conducted to identify key factors, definitions, contextual texts and explanations for novel concepts such as transformative impact and circular venturing. This literature study is also used as a guideline to use the right methodologies and structures for the research. Research papers found are also used to not only understand the working of circular business models but also the motivations and relevance of various factors which might be geographically or empirically difficult to accumulate.

2) *"The work shows an understanding of technology as a corporate resource or is done from a corporate perspective."*

   This research works on multiple corporate perspectives as it aims to identify the motivations of entrepreneurs and venture capitalists alike when talking about a

circular way of working and implementing solutions. In an advanced industrial age, technology plays a major factor in implementing said solutions and realigning values in incumbent firms.

3) *"Students use scientific methods and techniques to analyse a problem as put forward in the MoT curriculum."*

   Some courses from the MoT curriculum have inspired this thesis while others will be used for their information and methods. Courses like TPM406A – Corporate entrepreneurship and Start-ups and SPM9730 – Sustainable innovations and transitions acted as the main sources of inspiration as well as the critical theory providers around which the thesis is built. Other courses like TPM401A – Technology entrepreneurship and innovation, MOT9591 – Technology battles, MOT2421 – Emerging and breakthrough technologies have act as secondary sources of theory and models during the building of the thesis.

   The central idea of the thesis involves all the three criteria as mentioned above.

1.3 | KNOWLEDGE GAP

Bocken (2015) mentioned in her paper, the lack of research done on sustainable venture capital as the topic was quite new at the time. While exploring for topics to research on, an idea was found existing within a knowledge gap where the inclusion of sustainability in come of the age innovation research was missing. Another gap which is acted upon within this research is the unavailability of the topic of circular venture capital within academia. These ideas, combined with the unavailability of prominent research on sustainable venturing including the impact it might have on the success of similar valued start-ups, provided a suitable research base which could be built upon. This research, hence, aims to combine the two horizons of sustainable venturing and success influencing factors in sustainable start-ups. Following are the chapters where the summary of the objective is provided before introducing the research questions. Sustainable VC research for the most part has been very condensed, especially when timeline of papers published on this topic is considered. Figure 1 shows the distribution of research done on SVC around the world since 1945 according to (Antarciuc et al., 2018a). This figure locates contributions to the research of SVC and maps these contributions from lowest to highest. The lowest to highest frequency of contributions are displayed using colours from light grey to dark blue. As seen from the figure, most of the research contributions in SVC are from USA, China, and England while the rest of the map consists of minor contributions to the field. This displays a wide knowledge gap where the idea of SVC has not been evaluated enough theoretically and therefore any practical relevance is bound to be lower in numbers.

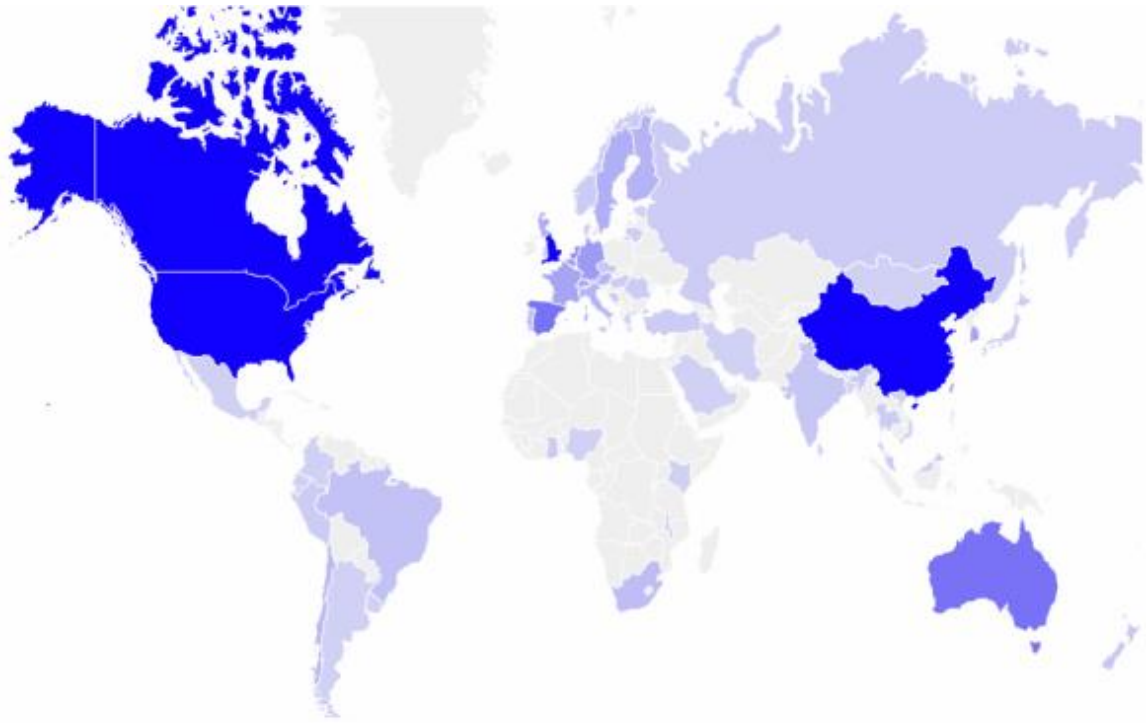

Figure 1 - SVC research heatmap by (Antarciuc et al., 2018b)

1.4 | OBJECTIVE AND RESEARCH QUESTIONS

As mentioned before, this research aims at investigating the challenges faced by sustainable start-ups while striving towards success, exploring factors which influence these challenges and analysing the role that sustainable VCs play in influencing the success of sustainable start-ups. These objectives reflect on existing literature to find gaps and aims at providing solutions to situations which lead to these factors.

Therefore, the main objective of the thesis is: *To determine the role, influencing factors and impact that sustainable venture capital has on the success of sustainable start-ups*. This can be done by understanding the problems that new ventures face while designing sustainable business models and values, by analysing the motivations behind sustainable venture capital and by providing recommendations. A secondary objective for the research is: *To explore whether circular venture capital can exist in practice*. This is done by analysing literature around circular financing and creating a practical model for the implementation of circular venture capital. Below, we discuss and define the research question related to this research.

The research question is an essential part of the thesis as it helps regulate the scope of the research while providing a well-defined structure and flow to the thesis. This section also

utilizes some sub research questions to help materialize the objective of the research. Now, the research question and sub-research questions are discussed.

The main research question is: *How do sustainable venture capitalists influence the success of sustainable start-ups?*

To answer the main research question, it is divided into 3 sub-questions. These questions are:

1. *What are the motivations behind the investments made by sustainable venture capitalists?*
2. *What are the critical factors that influence the success of sustainable ventures?*
3. *What is circular venture capital and how can it be implemented?*

1.4.1 | Sustainable venture capital motivations

The first sub-question is: *What are the motivations behind the investments made by sustainable venture capitalists?* This sub-question is aimed to understand the motivations of SVCs to invest in high-risk sustainable start-ups. Factors collected from the review of the academic literature are then verified by asking experts about these motivations. This provides an interesting perspective that can utilised by entrepreneurs into understanding what it is that they are doing wrong.

1.4.2 | Factors enabling the success of sustainable start-ups

The second sub question is: *What are the critical factors that influence the success of sustainable?* While the first sub question focuses on the motivations of SVCs, this question is aimed at looking at the factors that influence the success of sustainable start-ups. This will enable the research to comprehend the entirety of the topic from all actors involved. Bocken (2015) analysed factors for the success and failures for sustainable start-ups and how the sustainable ventures capitalists can enable them. A similar model is used to answer this question while focusing on "success" as a multi-dimensional construct. Thus, enabling us to find cross-sectional patterns between existing research and this one while finalizing the list of critical factors.

1.4.3 | Circular venture capital literature

The final sub question of this research is: *What is circular venture capital and how can it be implemented?* The bulk of this research is done to understand the concept of how sustainability and venture capital combine and what it entails. A part of the literature study will be conducted to review some of the literature that can be connected, combined, and used to identify a workable definition for circular venture capital. The scope of this literature study will be wider and will cover various academic sectors to do so. Once a working definition is found, the findings from the previous sub questions through the VC's perspective will be used to figure out the availability of practicality of this theory and whether it is thought about in the practical industry and business workings. This is a critical question whose answer is imperative to answer secondary objective of the research.

1.5 | RESEARCH APPROACH

A descriptive research with an approach which is exploratory in nature is used within this thesis. An exploratory research question is usually developed either when the topic is not well researched, unclear results within research with limitations, having a very complex topic of research or there is unavailability of precise theory to back scientific claims and theoretical frameworks (Sekeran & Bougie, 2016). As established before, the topic of sustainability in venture capital is not well known or researched. This enlists some of the reasons that are mentioned above. With the involvement of several actors and stakeholders, the building of a theoretical framework gets exponentially more complex. The advantages of this method of research showcases flexibility and adaptability, to generate information which is hard to get when there is a lack of quantitative data available. Validation of qualitative data is difficult due to the subjective nature of the data, hence the use of interviews with experts and certain case studies are used to counter this disadvantage.

1.6 | READER GUIDE

The structure of the thesis is as follows: Chapter 2 introduces the literature surveyed on SVC, success of sustainable start-ups and circularity in businesses. This chapter is used to answer parts of all the sub-questions while introducing concepts, explaining the relevance, and gathering the most influential factors when it comes to the construct of success of these sustainable start-ups. In chapter 3, the research methods employed within the thesis are introduced and discussed. This chapter will focus on the structure of the semi-structured interviews, participant selection, coding schemes, data collection and analysis methods. Following this, Chapter 4 reveals the results of the literature survey and interviews conducted. These results are then analysed, hence, answering the remaining parts of the sub-questions while laying the foundation to answer the main research question in the subsequent chapters. Chapter 5 then comprises of the discussion aspect of the thesis. Here, the results from chapter 4 are discussed, evaluating their impact on the research and what they mean. The final chapter, Chapter 6, then is the conclusion chapter. Here, the main research question is answered, the limitations of the research discussed, recommendations provided, and future prospects of the research discussed. Figure 3 showcases an overview of the research.

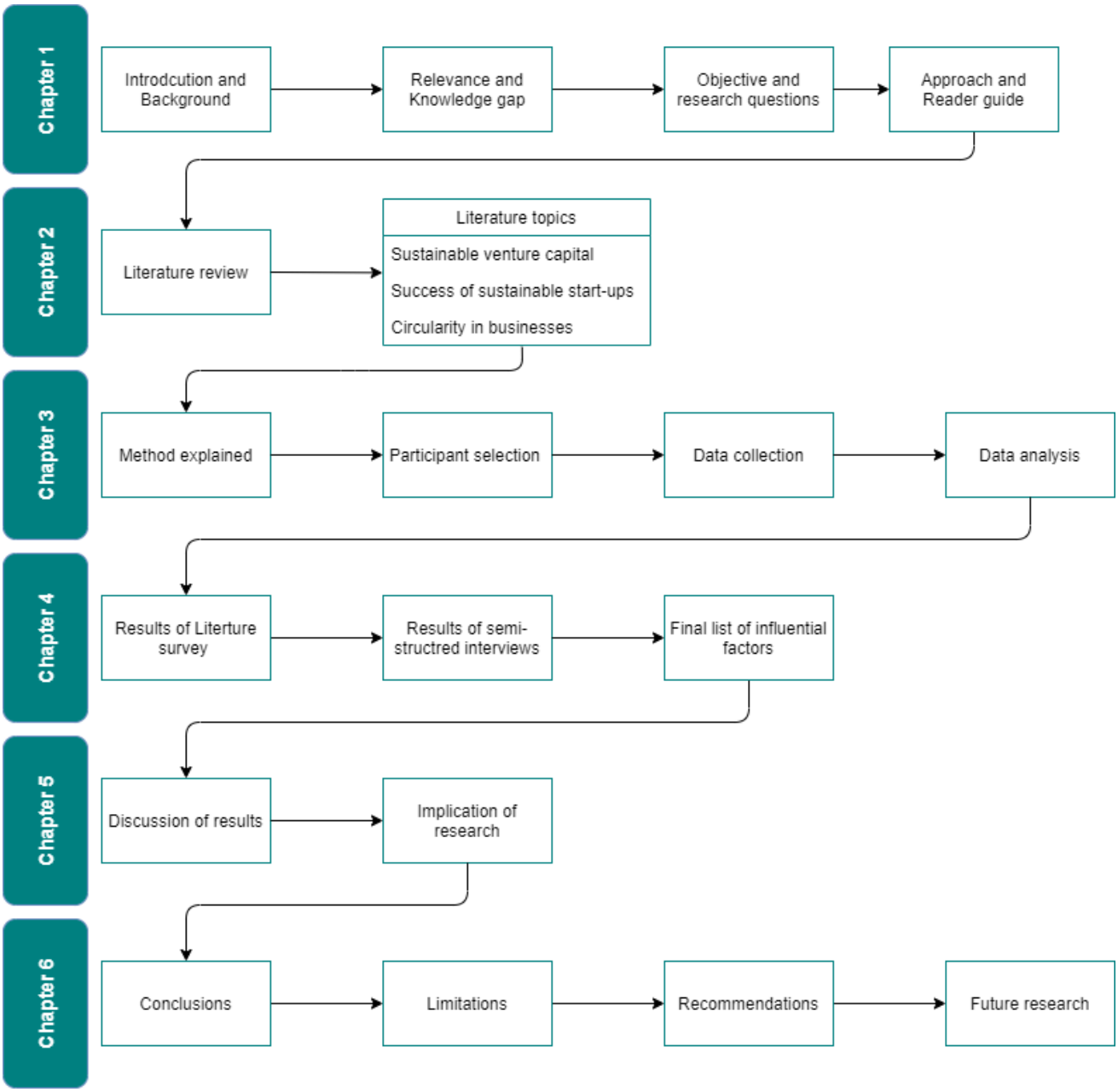

Figure 2 - Overview of the thesis

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2 | Literature review

This chapter utilizes the existing literature to define the concepts dedicated towards this research. This gives the reader a chance to understand every small facet of the research. This research is conducted within a scope which aims at discovering how does sustainable VCs impact the success of sustainable start-ups. Another aim of this research is to identify, and address knowledge gaps present in the pre-existing literature on venturing within the context of, sustainability in venture capital, and defining circular venture capital and its relevance. Most of the papers in this review were selected based on their relevance to the topic while all the factors (present in subsequent sub-chapters) were recorded despite the year of publication to remove time bias from the selection.

This is done through the collection of academic sources through an extensive literature review. This method helps us generate theoretical basis which is used to try and answer the research questions introduced in earlier sections. A literature review also helps us form a conceptual framework which can be utilized while conducting expert interviews in the method of primary data collection. The objective of the literature review will be to gather influencing factors related to the motivations, hinderances and success rate of sustainable start-ups and VCs. These factors will then be assessed and validated through expert interviews. These factors that are collected will be the base for the makeup of questions for the expert interviews discussed later in the thesis.

2.1 | SUSTAINABLE VENTURE CAPITAL

This chapter introduces details found relevant to the research for the information on venture capital, sustainable and traditional alike. An objective for this chapter was to identify motivations for the investments into sustainable ventures from the perspective of the VCs along with associating factors related to these motivations. The following is a summary on corporate venture capital literature discussing the typology and impact of these investments on new ventures.

2.1.1 | Corporate venture capital

According to previous literature (Bento et al. 2019; Bocken 2015), venture capital is considered as one of the most important contributors to sustainable enterprises. But what is venture capital? A definition by Dushnitsky & Lenox (2006, p.2) describes corporate venture capital as “Equity investments by established corporations in entrepreneurial ventures”. Traditional venture capital provides financial investments in young companies which showcase a promise of scalability and future profit. But apart from just financial commitments, there is a need to share valuable resources like expertise and other intangible assets such as network connections, strategy etc.

Corporate venturing has been identified as an imperative within the context of long-term survival for large, incumbent firms (Wüstenhagen et al., 2008). Miles & Covin (2002) mentioned that instead of being innovative within the firm itself, there is a tendency in

incumbent firms to acquire other firms to achieve a similar goal. Hence, an "internal conflict" exists when it comes to sustainable start-ups as there is a required difference in value that plays a part in the context of environment and social issues (Wüstenhagen et al., 2008, p.16). Major strategic changes could be seen as an unwelcome effort ultimately acting as an important barrier for a sustainable start-up's success. Table 2, adapted from Miles & Covin (2002), features the typology related to corporate venturing including the definitions for the different types.

Focus on entrepreneurship	**Direct investment in the venture through the firm's operating and strategic budgets**	**Indirect investment in the venture using financial intermediaries**
Internal to the firm	*Direct-Internal venturing* : Development of ventures without the help of financial institutions. Done using existing budgets of the firm.	*Indirect-Internal venturing* : Investments into a venture capital fund designed to encourage development of internal ventures. Originated and operated from within the firm.
External to the firm	*Direct-External venturing* : Acquiring the entire venture or an equity position within a new venture. Done without a dedicated fund.	*Indirect-External venturing* : Investments into external ventures with the use of a dedicated fund for this purpose. The fund can originate and operated from either inside or outside the firm.

Table 2 - Typology of corporate venturing (Miles & Covin, 2002)

Some examples regarding the typology of corporate venturing are mentioned below:

1. Direct-Internal venturing is regarded as the simplest form of venturing. One example is the studio model venture development by Metabolic, an Amsterdam based, sustainability consulting group. Recognizing sources of environmental problems and constructing ventures to tackle these problems utilizing internal resources is the model they choose to adopt. Other examples include 3M, JLabs from Johnson and Johnson etc.
2. Direct-External venturing conveys what traditional external corporate venturing is for incumbent firms. Acquiring an equity stake or the entirety of new ventures for competitive advantage in an industry without a dedicated fund is exactly the

definition for this type of venturing. Some examples of corporations that employ this method of venturing are the Johnson & Johnson development corporation (JJDC) and ARCO etc.

3. Indirect-Internal venturing, as a term, is used when corporations dedicate a separate fund towards continuous innovation and venture building with incentives to employees who come with ideas for execution. The difference between direct and indirect internal venturing is the existence of an independent fund for the venturing practices (Miles & Covin, 2002). Many of the major incumbents in industries employ this method of venturing when they have separate dedicated teams to build, comprehend and implement in ventures. Some recognizable examples are Proctor and Gamble's venture support system and the Alpha and -Genesis grants from 3M.

4. Indirect-External venturing is similar to the internal venturing mentioned above. The only difference comes from the fact that instead of using a dedicated fund and teams to build ventures within the corporation, they invest in external ventures with potential and similar values to gain competitive advantage and access to previously inaccessible markets. This model is seen in venture capital firms around the globe. Prominent examples include Shell, Adobe, and Google.

Jeong et al. (2020) conducted a study on the impact of the absorptive capacity of start-ups and their success which revealed that investment by VC firms impact the growth of start-ups when entered in the earlier growth stages. This highlights another problem facing the concept of traditional VCs where they tend to invest in the latter stages of the growth of start-ups with established legitimacy and visible profits. A start-up which is sustainable in its business practices lends to this problem as profits are never visible immediately and takes a much longer time than non-sustainable business models. Hence, being at a disadvantage of seeming uninviting to traditional VCs, sustainable start-ups look towards sustainable venture capital itself.

Next, we look at a summary of sustainable venture capital literature and the relevance it has on this research as well as holistically while trying to identify knowledge gaps present in a limited range of this literature.

2.1.2 | Green and sustainable venture capital

Green venture capital, a term first explored by Randjelovic et al. (2003, p. 2) is defined as "A high risk financial capital provision for eco-innovative ventures, which offers the potential for financial returns, as well as contributing to sustainable development". Another term for green VC being researched recently is called *sustainable venture capital*. For this research, the same definition from Randjelovic is being used to define Sustainable VC (hereafter SVC). Instead of having a direction neutral approach to investing in young businesses, SVC takes a more precise and controlled directional decisions within their investments. These decisions are not only strategic decisions to gain insights into new technologies, practices and to develop complementary products but also generating shareholder value while

creating positive social impact. For the most part, the biggest differences between traditional VC and SVC are investment size, number of investors, duration of investments and investor orientation.

As mentioned before, traditional VC, usually is a direction neutral investment. This points towards it being independent of the business model and values of the venture invested in with a short-term goal and perspective. Hence, the intricate focus on different timings of investments. SVC, on the other hand, is concerned with the triple bottom line approach by integrating a long-term perspective focused on venture practices, environmental and social performances along with the financial performance. A difference in investment duration from 2-3 years for traditional VCs to 3-5 years for SVCs is critical. This is due to the complexity in the technology required for sustainable products and the time it takes to materialize in the market. With a focus on software and digitalization, the time and capital required for the implementation of hi-tech products can be possibly lower than that of sustainable products (Cumming et al., 2013). From what has remained entirely true, throughout the years in literature about SVC, is the focused approach towards creating positive impact, environmentally and socially, while considering potential for financial gain and returns. Another common feature in the literature about traditional VC and SVC has been the differences between the areas of investment for both the VCs. Where SVCs have been shown to solely focus on the renewable energy and clean-tech industries, traditional VCs have been shown to invest in software, IT etc. Table 3 summarizes some of these differences.

VC in Europe and USA	Mainstream	Green VC
Investment size	€154 billion	€100 million
Number of VCs	~ 1600	~ 45
Average investment size	€120 million	€1.1 million
Duration of investment	2-3 years	3-5 years
Environmental prerogatives	Environmental risks and liabilities	Environmental screening
Sources of financing	Pension funds and banks	High-net worth individuals
Investor orientation	Typical return on investment (ROI)	ROI plus ecological orientation
General targets for investments	Communications, software, IT	Renewable energy, water and clean-tech equipment

Table 3 - Differences between traditional and sustainable VCs by (Randjelovic et al., 2003)

Although the numbers of VCs have increased over time as the importance of sustainability and its development has taken shape, the differences still seem influential and referential. For evidence of this statement, recent research shows that sustainable and new ventures still find it difficult to secure capital for their projects when compared to other high-tech ventures (Mrkajic et al., 2019a). Another study done by Cumming et al. (2013) concluded that out of the overall VC deals made, the percentage of SVC deals conducted had increased

from the year 1996 (1%) to 2010 (10%). While the increase in investments in sustainable ventures is encouraging, a deep dive is still required into the enablers and barriers of investments into green ventures and how to increase and decrease their effectiveness on the success of sustainable start-ups, respectively. Looking back at section 2.1.1, the difficulties of sustainable start-ups attracting investments from venture capitalists is highlighted. This was seen as highly unusual until recently as Hegeman & Sørheim (2021) said that investments in sustainable start-ups can transform the economic system into a more comprehensive and sustainable one. Investor orientation, as shown in table 3, is a key difference as to why sustainable start-ups still find it difficult to attain capital. This then becomes a key factor, although indirect, as a barrier to the success of these sustainable start-ups.

The next section focuses on these factors and what success means for a sustainable start-up in the literature. A compilation of data on the different elements of success, introduced in chapter 1, are discussed in detail. Their relevance to the topic, verification of the choices and their influence on the research question are prioritized. The next chapter also introduces the influential factors towards these different elements, mentioned in the literature, which are imperative to answering the research questions.

2.2 | SUCCESS OF SUSTAINABLE START-UPS: A MULTIDIMENSIONAL VIEW

Although researchers have contributed to the literature on how sustainable start-ups can be successful and how traditional venture capital can play a role in its success, there has been little research done utilizing SVC as the influencing actor towards this success. The most common elements within the context of evaluating the success of a sustainable start-up that are found in the literature are: *Financial performance, Business model innovation and Societal impact*. These elements were selected due to the high frequency with which they were mentioned in literature regarding the assessment made on how to measure the success of the sustainable start-ups. The following chapters focus on each dimension individually while analysing the literature to discover critical points of interest, relatability, and importance to the construct of success within the context of sustainable start-ups. This chapter also discusses the critical factors that influence this success of these ventures.

Mrkajic et al. (2019) provide key differences between sustainable start-ups and non-green high-tech start-ups where the accessibility to capital and the desire of VCs to invest is investigated. This research understands the influence VCs have on the success of start-ups while providing statistics for sustainable start-ups in the context of entering markets, accessing capital, meeting stakeholder expectations and promising acceptable returns. Table 5 provides a concise list of differences between the two types of start-ups and a list of factors that influence decision making from the viewpoint of VCs.

Factor	Sustainable high-tech start-up	Non-Green high-tech start-up
Competences and resources	• Large managerial slack due to the nascent stage of sector. • Highly capital intensive.	• Well-developed managerial best practices. • Not necessarily capital intensive.
Technological complexity	• Extremely high technological complexity.	• Fairly high technological complexity.
VC investment outlook	• Lower exit opportunities. • Lack of proven framework for evaluation of start-up potential. • Longer investment duration.	• Higher exist opportunities. • Established framework.
Regulatory environment.	• Strictly regulated market with high regulatory uncertainty.	• Mixed regulated markets.
Market potential	• Legitimized, emerging sectors. • Better access to green, niche markets. • Possibility to offer differentiated products. • Uncertain market environment.	• Entrance in new submarkets dominated by incumbents. • Products are variants of existing products.

Table 4 - Key differences between sustainable and non-green ventures (Mrkajic et al., 2019)

2.2.1 | Financial performance

Financial performance has always been considered as one of the most important metrics when it comes to measuring the success of a business. The ability to capture capital, maintain important network ties with financial institutions and generate visible profit enables financial risk management and helps in "maintaining high-profit business operations with various financial resources" (Kim et al., 2018, p.7). Bocken (2015) mentioned

that a lack of business rigor was a key factor for the failure of sustainable start-ups. Having a firm with values that guarantee societal benefits cannot be the only differentiator when the success of these start-ups is considered. Having sound business values and models with accurate managerial structures showcases a growth intention and mentality that is valued by financial institutions like VCs. The likeliness that entrepreneurs will exploit entrepreneurial opportunities is increased due to their ability to generate capital, profits and have strong ties with resource providers (Tomy & Pardede, 2018).

A lack of business development was mentioned in research as a contributor to decreased financial performance for a start-up (Cantamessa et al., 2018). It means that a start-up (especially ones that have highly technical teams like sustainable start-ups), tend to lack a commercial perspective towards their business. This lack in ability hinders progress when measured in commercialization of a product, sales and increased customer interaction leading to deteriorated financial performance. Tomy & Pardede (2018) mentioned another reason for the failure of start-ups is their ability to stay afloat in the market before sufficient revenue comes in. 'Valley of death' is a concept which is used to define the time between the conceptualization of an idea to the commercialization of it, see figure 3 (Rencher, 2012). Looking back at the lack of development point made earlier in the chapter, many start-ups fail when navigating the valley of death due to the same influence. This is especially difficult for sustainable start-ups due to the time it takes them to show profits and gather sustained revenue. This is where SVC plays an important role. As discussed, traditional VCs refrain from investing in start-ups that are yet to cross the valley of death. This is due to the uncertainty behind the survival of the start-up. With the duration of investments from SVCs being almost double that of traditional VCs and the point of entry being earlier as well, the involvement of SVC within the business procedures of sustainable start-ups is seen as a survival strategy for such young firms.

To conclude, financial performance might be the most important component when measuring the success of any start-up. Not only does good financial performance present possibilities of future investments into the venture, but it also allows the venture to invest within itself to increase customer interaction, generate credibility for easier market access while actualizing and maintaining new network connections. All these points shine a light towards the capability of a new venture to attain sustained success and growth while effectively creating (social) impact, especially in the case of sustainable start-ups.

The next section focuses on business model innovation and how important it is deemed to be within the literature for the main objective of this thesis, the success of the discussed start-ups.

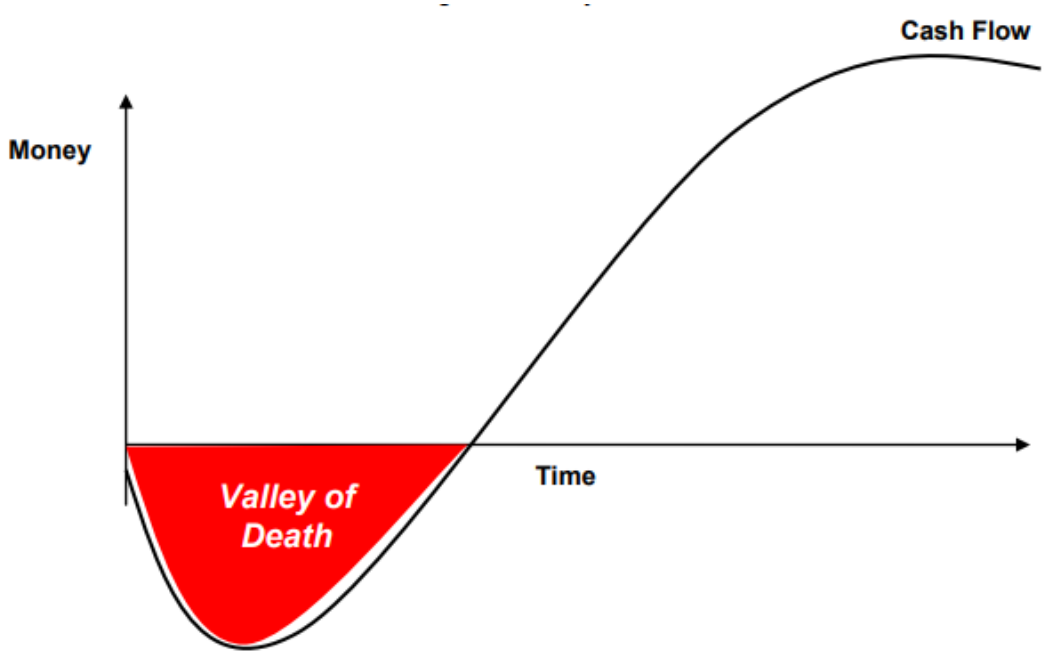

Figure 3 -Valley of death adopted from (Rencher, 2012)

2.2.2 | Business model innovation

Business model innovation (hereafter BMI) is identified as a "distinct source for competitive advantage and therefore a valuable tool in competitive business environments" (Comberg et al., 2014, p. 2). Ries (2011) mentioned that BMI for start-ups is called a *pivot*. It is considered as an essential contributor to the success of start-ups due to its role as a differentiator in a competitive market, its ability to increase the financial performance, strategic position, and the power to attract customers (Comberg et al., 2014). A business model, as defined by, Doganova & Eyquem-Renault (2009), is a narrative and calculative device that allows entrepreneurs to explore a market and plays a performative role by contributing to the construction of the techno-economic network of an innovation. Sustainability in business models and BMI can have implications which differentiate it from traditional BMs. Therefore, a sustainable business model can be identified as "Sustainable business models seek to go beyond delivering economic value and include a consideration of other forms of value for a broader range of stakeholders" (Bocken et al., 2013, p. 3). The key differences between the two definitions are the inclusion of stakeholder value and benefits beyond economic value within the business models.

There are various tools that help map a business model for a firm with the most famous being, the business model canvas introduced by Osterwalder in 2004. The business model canvas is used as a tool to form management strategies and develop new business models which includes elements such as the value proposition, customers, finances, and infrastructure of businesses. It is integral for any new business to develop a business model

using innovative ideas or by combining existing business models to help differentiate themselves from other competitors and gain competitive advantage by doing so.

At the heart of any business model, is the value proposition that a firm offers. By definition, a value proposition is an combination of benefits that a company offers its customers (Osterwalder & Pigneur, 2011). When it comes to the differences between a sustainable value proposition and a traditional one, the definition for a sustainable value proposition comes to light: “Promise on the economic, environmental and social benefits that a firm's offering delivers to customers and society at large, considering both short-term profits and long-term sustainability” (Patala et al., 2016, p. 147).

Patala et al. (2016) also mention an interesting theory in their research which presents an opposing view to the traditional opinions about sustainable start-ups and their financial performances. Their theory revolved around how companies who implement sustainable business models in their structure are more likely to have better financial performance while striving towards sustainable development. This is due to the application of several types of value creation beyond financial gain. This verifies the connection between financial performance and BMI and their combined influence on the success of sustainable start-ups. An extensive list on the different patterns of sustainable business model innovation by Lüdeke-Freund et al. (2018) is presented in Appendix II. This list provides different types of sustainable business models in use presently, the values that they create and the orientation towards the other values in the triple bottom line approach.

Geissdoerfer et al. (2018) mentioned several challenges faced by firms in the implementation of sustainable business model innovation within their company. Some of the key challenges mentioned by them were: *Triple bottom line approach, Resources and External relations (Networks).* Looking back at the advantages that the involvement of SVC can provide, fulfilling the triple bottom line approach, providing strong network ties to young firms and the accessibility to resources are the main reasons why sustainable start-ups look at SVC as an enabler.

In conclusion, business models and its innovation are regarded as equally important especially when sustainable start-ups are concerned. As discussed, proper planning and implementation of the business model can act as a more profitable resources to increase financial performance. With sustainable business models, the focus is equally distributed towards ecological and social benefits as well. The next section discusses one of the most important elements for the success of sustainable start-ups, societal impact.

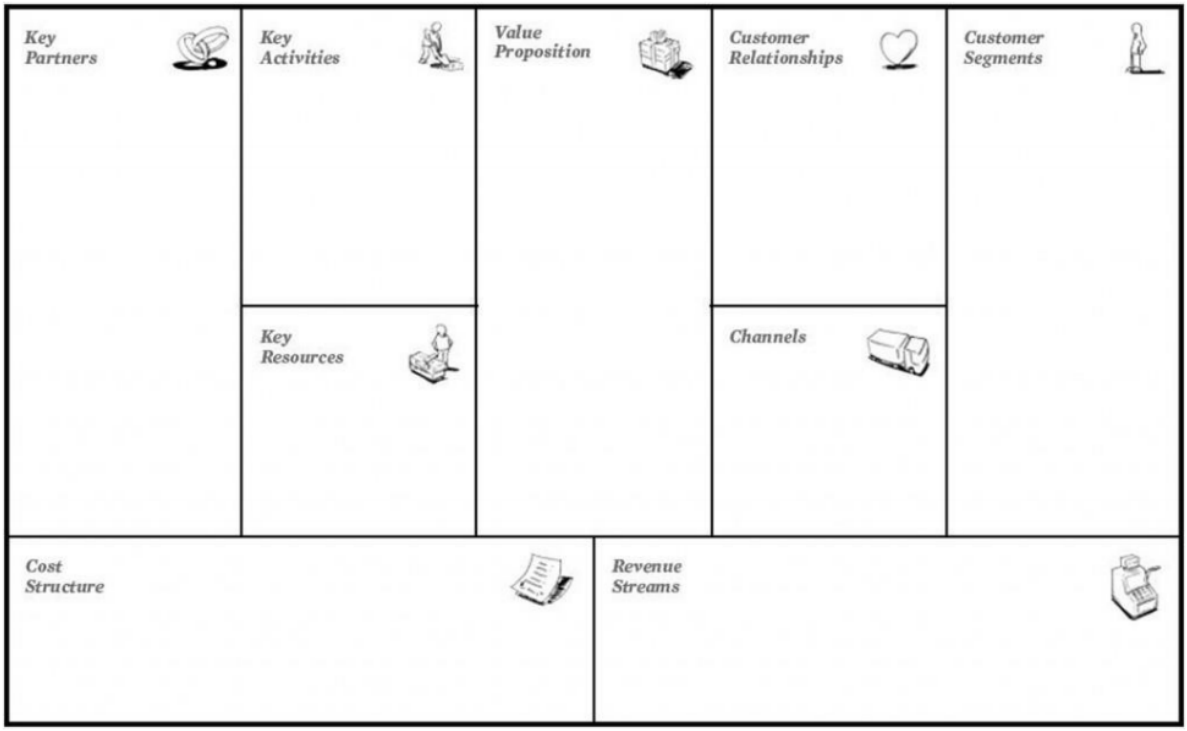

Figure 4 - Business model canvas by (Osterwalder & Pigneur, 2011)

2.2.3 | Societal impact

Societal impact is a term that is regularly used while describing what sustainable start-ups aspire to achieve. Societal impact or social outcomes can be defined as, "beneficial outcomes resulting from prosocial behaviour that are enjoyed by the intended targets of that behaviour and/or by the broader community of individuals, organizations, and/or environments" (Rawhouser et al., 2019, p. 2). As can be seen from the definition, social impact does not only include environmental benefits through entrepreneurial activities, but it also indicates involvement of communities while promoting a democracy in innovative activities (Faludi, 2020). The creation of social value within businesses can be credited to macro-environmental factors such as government policies, stakeholder values etc. With academic research being focused on the orientation of entrepreneurs and how that enables creation of societal impact, a new term was brought forward called, social entrepreneurial orientation (hereafter SEO). This concept aims to emphasize value creation for beneficiary and contributory actors along with social and ecological sustainability (Halberstadt et al., 2021). Conventional hi-tech start-ups without an orientation towards social wellbeing have simpler business models when compared to sustainable start-ups that have SEO. Higher innovativeness, risk taking and proactiveness is required in a model which is intended to generate social impact (Halberstadt et al., 2021).

A study by Trautwein (2021) highlights a critical point of explaining the importance of start-ups in developing market solutions that take on the environmental and social issues. This is done by pioneering clean technology, sustainable business models and influencing the society and market to conduct business and innovate more responsibly. This impact is much higher when the market is in its niche phase as the impact of incumbents is higher in mature and growth phases of the industry. Another interesting part of the study by Trautwein (2021) shows that 85% of the sustainable start-ups studied engage in the social aspect of sustainability while 43% of the total start-ups closely link social sustainability with economical sustainability. Moreover, only 8% of the sample closely link economical sustainability with its environmental counterpart. This is important as the increase in cost, short-term, is inevitable for sustainable ventures. This highlights a point made in section 2.2.1 where the financial performance in the short-term for environmentally focused start-ups is a barrier for the success of these ventures. A common fault, and a reason for failure, within sustainable start-ups is the inability to create economic success with their innovations. Considering this, Halberstadt et al. (2021) mention in their research, the importance of economic success to attain sustainability in the social entrepreneurial approach. They consider that, both societal impact as well as the ability to attain stable finances play a key role in driving sustainable start-ups to success.

Sustainable start-ups are assumed to tap into markets that are emergent and untouched (Faludi, 2020). This provides an interesting analysis for the competitiveness of such start-ups against incumbent firms. A study by Petra Dickel provides an interesting flow to how sustainable start-ups can achieve competitive advantage by having an environmental orientation. They talk about how such an orientation can reduce operating costs, stimulate innovation, and attract customers while ultimately leading to having competitive advantage (Dickel et al., 2018). Unfortunately for sustainable start-ups, they fail to reach mass markets due to lack of resources, focus on a singular issue and a lack of sustainability management system. When compared to incumbent firms with abundant resources, ability to tackle multiple social issues and stronger process innovation, it is difficult for the start-ups to compete despite being first movers in a niche market (Hockerts & Wüstenhagen, 2010). The involvement of SVCs within this context is beneficial to the sustainable start-ups as well. With the help of SVCs, sustainable start-ups have resources at their disposal, an innovative business model, strategic business development and a network of similar value firms. With successful sustainable entrepreneurship, ideally, the market moves towards the same set of values while integrating societal impact in the course (Schaltegger & Wagner, 2011). This is depicted in figure 5, where increased market share for sustainable start-ups (Davids) along with the reorientation of incumbents (Goliaths) towards sustainable development leads to an industry wide shift towards the same goals and processes.

In conclusion, societal impact acts as a dark horse within the construct of success as depicted in earlier chapters. Having an indispensable role in attaining sustainability, while maintaining a close link to both economical sustainability (Financial performance) and

environmental sustainability makes it an imperative aspect of the research. Next, we look at the factors that play an influencing role for the success of a sustainable start-up.

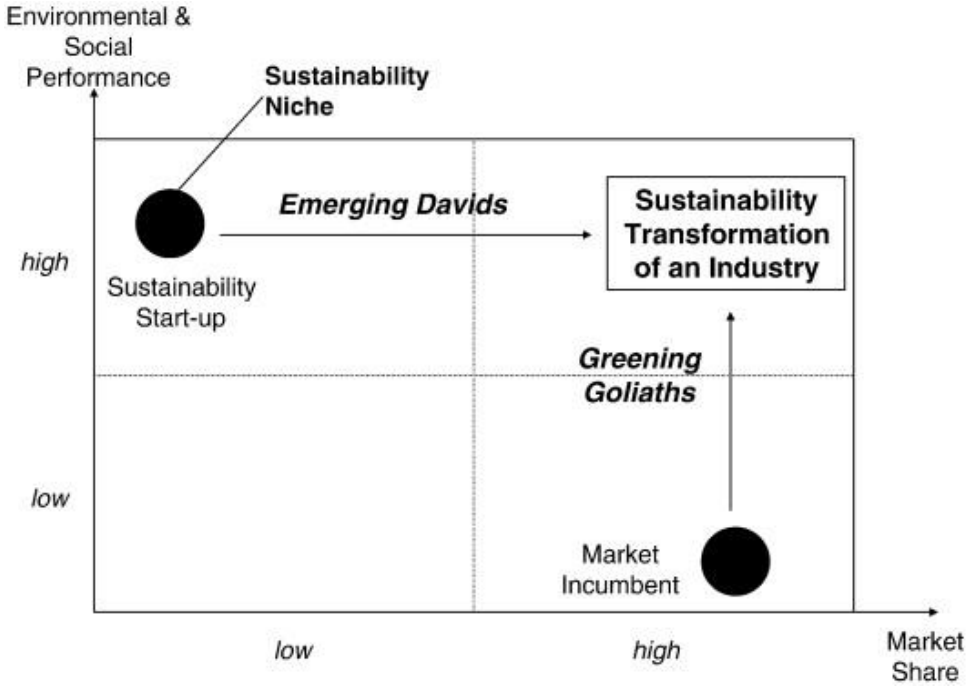

Figure 5 - Impact of sustainable start-ups on industry by (Hockerts & Wüstenhagen, 2010)

2.2.4 | Influential factors for the success of sustainable start-ups

This section provides insights into the results found in the literature review as a whole regarding the factors that play an influential role towards the success of sustainable start-ups. This is an important section as it helps in building a considerable knowledge base and data that will enable us to conduct the expert interviews with rigor. This section is divided into 4 sub-sections covering the factors affiliated to the following topics: *Start-up success, Start-up failure, VC motivators and demotivators*. Looking back at the literature and the data collected through them, a concise list of factors can be accumulated and discussed for each of the mentioned topics.

2.2.4.1 | Factors for the success of sustainable start-ups

The success of any business can be generalized by considering their financial performance and products sold. A start-up however, encounter problems related to capital, business acumen, market penetration and recognition etc. to name a few. When the conversation of a sustainable start-up is brought up, the list problems encountered, increases and hence the importance of having factors that enable the venture to circumvent issues like these is critical. Below we list the factors and details about those factors responsible for the success

of sustainable start-ups found in the literature (Bocken, 2015; Hill & Rothaermel, 2003; Trautwein, 2021; Elkington, 1994; Wüstenhagen et al., 2008; Hockerts & Wüstenhagen, 2010):

1. *Sound business rigor*
2. *Economic success of innovation*
3. *Environmentally beneficial process and values*
4. *Adept entrepreneurial mentality*
5. *Positive societal impact creation*
6. *Triple bottom line aligned goals*
7. *Business model*
8. *Reorientation of incumbents*

The most important factor for the success of sustainable start-ups, mentioned in the literature, was the business rigor in entrepreneurs. Just having a business model which enables a positive social impact is not the only thing that can guarantee sustained growth for a venture. Being able to actualize the business idea along with a considerable effort to appeal to the society for the scalability of the venture is a necessary factor. A related factor mentioned in the literature was having an entrepreneurial mentality. This includes the accumulation of resources, engaging in networks and having the foresight to commercialize the product, all of which, catapults the chances for a sustainable business to be successful.

The sustainability triangle mentioned earlier in the research relates to the next set of important factors. Having goals that align with the triple bottom line approach increase the venture's ability to attract investors. This, along with the creation of positive societal impact can drive the innovation of the venture to be economically successful, another important factor mentioned that can have a positive result in the strive for success. These factors, in particular allow the venture to be credible in the market which can lead to the reorientation of the incumbents. The incumbents play a very important role in the access to markets that the new ventures have. A realigned incumbent in a market that the venture aims to grow within, significantly increases the chances of the venture to cross the valley of death mentioned earlier in the research.

The last set of factors mentioned are business models and having environmentally beneficial processes and goals. As previously mentioned, having an innovative business model presents an opportunity to attain competitive advantage over other first movers or unaligned incumbents in the market (see section 2.2.1). Another important source of competitive advantage is the value proposition that the venture provides, especially with their goals and business processes being environmentally beneficial. This not only appeases the demographic that they are trying to target, but it also encourages investors such as SVCs to invest within their venture, especially if there is an alignment of values, goals, and the checklist for the investment thesis of these financial enterprises.

2.2.4.2 | Factors for the failure of sustainable start-ups

As discussed in the previous section, start-ups, especially sustainable ones, encounter multitudes of problems whole trying to gain traction for their innovations. This section thus presents factors identified that are related to the reason for the failure of these start-ups found in the literature (Bocken, 2015; Elkington, 1994; Wüstenhagen et al., 2008; Schaltegger et al., 2016; Aggarwal & Elembilassery, 2018; Khelil, 2016):

1. *Capital intensive*
2. *Long development times*
3. *Lack of credibility and reliability*
4. *Lack of business rigor*
5. *Lack of a commercialization perspective*
6. *Valley of death*
7. *Focus on a singular goal*
8. *Less market shares*
9. *Lack of network ties in the market*
10. *Inability to produce initial capital*
11. *Investor orientation*

The first set of factors being discussed are affiliated with the financial aspects of start-ups. The inability to produce initial capital is a significant barrier for any start-up. This not only hinders their ability to make strides in production and commercialization of the product but also displays a lack of reliability in the venture through the eyes of the investors. Without showcasing an ability to grow, venture capitalists shy away from investing in these ventures. Another financially oriented factor is the capital-intensive nature of such start-ups. As discussed, start-ups look for various funding channels due to their newness in the market. Sustainable ventures, being capital-intensive in nature, make it difficult for some investors like traditional venture capitalists, banks, and some other mainstream financial institutions to put up with the risk of these ventures possibly not being able to cross the valley of death. This factor also makes it difficult for the team in itself to sustain the business without initial capital being raised while traditionally having much longer development times of their products. Although being capital intensive, having long development times and the lack of reliability are indirect effects which arise as barriers due to them being demotivators for VCs, they remain imperative factors that lead to the failure of these start-ups.

Investor orientation is closely related to the ability of the ventures in the scalability aspects of business. Very close to the entrepreneurial mindset discussed in the previous section, a lack of it, along with the lack of business rigor, commercial perspective, wide focus on goals and external networks, the investor orientation never aligns with the start-up orientation and hence acts as a barrier to its success. These factors are imperative when looking at escaping the valley of death in the nascent stages of the venture. It's simple math really, with these factors in play, it becomes increasingly difficult for the ventures to attain

sustained positive financial performance. This leads to another factor that has been described in the literature as a common factor of failure, less market share in target market.

A commonly known statistic for the failure of start-ups is that around 90% of the start-ups fail. Not only that, 10% fail within the first year of their existence. This is largely due to them being stuck within the valley of death due to low initial capital, a problem, which is seen to be fixed with the help of VCs around the world. But as discussed, this is only possible if the values of VCs align with that of the start-ups and the teams of these ventures showcase strong business acumen. Without these factors being circumvented, the failure of start-ups, especially sustainable ones, seems inevitable.

2.2.4.3 | Motivation for VCs to invest in sustainable start-ups

This section answers the second sub-question of the research: *What are the motivations behind the investments made by sustainable venture capitalists?*

Antarciuc et al. (2018b) focused their research on the enablers for investments by SVCs. They categorized these enablers into two different types – internal and external. These factors are useful as they not only provide motivations of SVCs but also differentiate between the external and internal motivators. Table 5 displays the relevant factors mentioned by them within their research.

Internal enablers	External enablers
Willingness to provide resources.	Existing collaborations and networks for the start-ups.
Understanding of business model.	Government policies and regulations regarding sustainable investments.
Top management support.	Government use of international standards in sustainable investments.
Values dedicated to sustainability.	
Innovation in business model.	
Reduction of financial risk through investment.	
Creation of new demand through investment.	

Table 5 - Enablers for investments by SVCs provided by (Antarciuc et al., 2018b)

With the motivators (enablers) mentioned, there we some motivators that were not covered in table 5. The additional, but just as important enablers that were found in the literature are listed below:

1. *Good fit with the investment thesis*
2. *Opportunity to explore new markets*
3. *Triple bottom line approach*

Some of the enablers mentioned by Antarciuc et al. (2018) like willingness to provide resources, understanding of business model and values dedicated to sustainability align with the investment thesis motivator mentioned in other literature. For SVCs, finding a good fit within their own investment thesis, translates to being the most important motivator for them to consider investing. Within the screening phase of investment management, SVCs consider their investment thesis to be a threshold before moving on to the analysis stage of start-ups. Exploration, within business terms, is considered an important step to gain competitive advantage. Since the first time these terms were used by James March in 1991, there are various ways to explain the term that are available in literature. For this research, the explanation used is, learning and innovating through the pursuit and acquisition of new, previously unknown knowledge (Gupta et al., 2006). This introduces us to another motivator mentioned in the literature, exploration of new markets. Incumbent firms tend to invest in smaller, newer companies that have access to a market that these firms would like to enter. In section 2.1.1, This type of venturing was termed as indirect-external venturing. Similarly, SVCs utilize this idea to expand their investment thesis by investing in new markets that could add to their portfolio and provide knowledge about these markets, gaining significant competitive advantage and creating additional revenue streams.

Most SVCs prioritize the positive social and environmental impact they can help create through their investments. This does not mean that the financial return is put on the back seat. The final goal of any venture capital is to get a valued return on investment which can be used to further their portfolio. Keeping these in mind, it is safe to say, that having a triple bottom line approach within a venture, shows that the focus on goals is not singular and that there is a potential to scale up and impact a larger market. These factors, indirectly, provide concrete motivations for the SVCs to invest in sustainable start-ups.

Bocken (2015), in her research, mentioned some unorthodox motivators for sustainable venture capitalists like, *Practical idealism, emotion and search for transparency*. Practical idealism means, "a belief that business can be used as a force for good and sustainability is good business" (Bocken, 2015, p. 7). Emotion is another factor that lines up with practical idealism and can be considered a strong motivator to induce change in systems that do not prioritize sustainability and environmental benefits. Sustainability is often spoken of when transparency is businesses is mentioned. Having a transparent system drastically reduces the chances of greenwashing, increases societal impact due to inclusion of a variety of

stakeholders and can ultimately increase credibility, increasing the chances of an investment to be successful.

2.2.4.4 | Demotivators for venture capital

To answer the second sub-question thoroughly, the demotivators for SVCs to invest in sustainable start-ups was also considered. Similar to the trend where the motivators for VCs to invest in sustainable ventures ideally align with the factors found to enable the success of these ventures, the demotivating factors too align with the reasons for the failure of these ventures. Listed below are the demotivating factors found in the literature (Bocken, 2015; Antarciuc et al., 2018b; Dickel et al., 2018; Petkova et al., 2014; Mrkajic et al., 2019):

1. *Capital intensive*
2. *Lack of reliability*
3. *Investor orientation*
4. *Managerial slack*
5. *Lower exit opportunities*
6. *Lack of a proven framework for the evaluation of start-up potential*
7. *Uncertain market environment*

When an investment analyst or manager within an SVC firm looks at potential ventures to invest in, as discussed, they look at how well the venture can fit into their portfolio and investment thesis. If the values and goals of the start-up do not match with the orientation of the SVCs, no matter the innovativeness of the product or the initial capital that the venture was able to generate, the investment managers do not proceed further with their analysis of these ventures. Another factor that plays are role in this initial analysis of ventures is the lack of a proven framework for the evaluation of start-up potential mentioned by (Mrkajic et al., 2019). Due to the low success rate of green ventures, there appears to be no systemic way to ensure its success.

Petkova et al. (2014) talks about the ambiguity that arises due to the nascent nature of the technology in green ventures and lack of framework available to predict the potential. This ambiguity may or may not affect the thinking of SVCs. Long development times, intensive capital requirement although prominent demotivating factors for investors, do not usually catch the SVCs off guard. Longer investment durations and earlier entry points for investments convert these factors from being necessary evils to potential long-term solutions for sustainable development. Lack of reliability is a prominent factor, that can make or break venture growth and potential investments into it. Usually, the lack of reliability comes from the lack of networks that sustainable entrepreneurs have in the market. This can be changed with the help of external investors who bring in intangible assets such as network connections and human resources. But to circumvent this demotivator, sustainable entrepreneurs need to show diverse long-term focus, practical business models and business rigor to SVCs for potential investments.

Uncertain market environments add to these difficulties in decision making for SVCs as it makes it incalculable to ascertain the potential for growth and scalability of these ventures. While exit opportunities are higher in traditional hi-tech start-ups (see table 4), these exit opportunities from a VC outlook are much lower in the case of green ventures. This is due to the uncertainty in the markets, potential for growth and the difference in values of larger companies and green start-ups. The difference in values makes it difficult for larger companies to acquire these start-ups, hence lowering exit opportunities for the VCs in their investments (Mrkajic et al., 2019).

In conclusion, demotivating factors for SVCs are the first, and essentially the most important, hurdle that sustainable entrepreneurs need to cross after laying down the foundations for their ventures. Next, we look at a summary of the literature found on circularity within venture capital.

2.3 | CIRCULARITY IN START-UPS AND VENTURE CAPITAL

Although the term circular venture capital has not been researched in academia, there are certain points made that indicate the possibility of its existence. The notion of circularity is generally associated with the reuse of raw materials in production. Further, the term was first coined in relation to the economy of industries and only later was it included in the production systems, industrial processes, and the economy alike. More recently, it is seen as, "A solution for businesses looking to balance economic growth with the need to sustain biological and social systems for future generations" (Närvänen et al., 2021, p. 1). Before we try and dive deep into what that term could implicate for the future of venture capital and sustainable development as a whole, we look at what circularity means for start-ups.

A circular approach to business is more radical. With this in mind, incumbents find it difficult to adapt to these approaches due to previously implemented supply chains, business models and investments (Hill & Rothaermel, 2003). In contrast, it is much easier for start-ups to adapt to radical changes in the markets and be flexible with their approach (Henry et al., 2020). Figure 6 portrays the different types of start-ups and the type of value they aim to create. From this, a circular start-up can be seen as covering all the main value orientations like social, environmental, and economic, similar to sustainable start-ups but with a higher overlap with the environmental value creation. What this entails is that even though there is an overlap and critical similarities between sustainable start-ups and circular start-ups, there is a higher emphasis on the environmental impact while creating economic benefits using specific, targeted circular business models in a circular set-up. The way in which circular start-ups create value, similar to sustainable ventures is in association with all three elements of the triple bottom line approach.

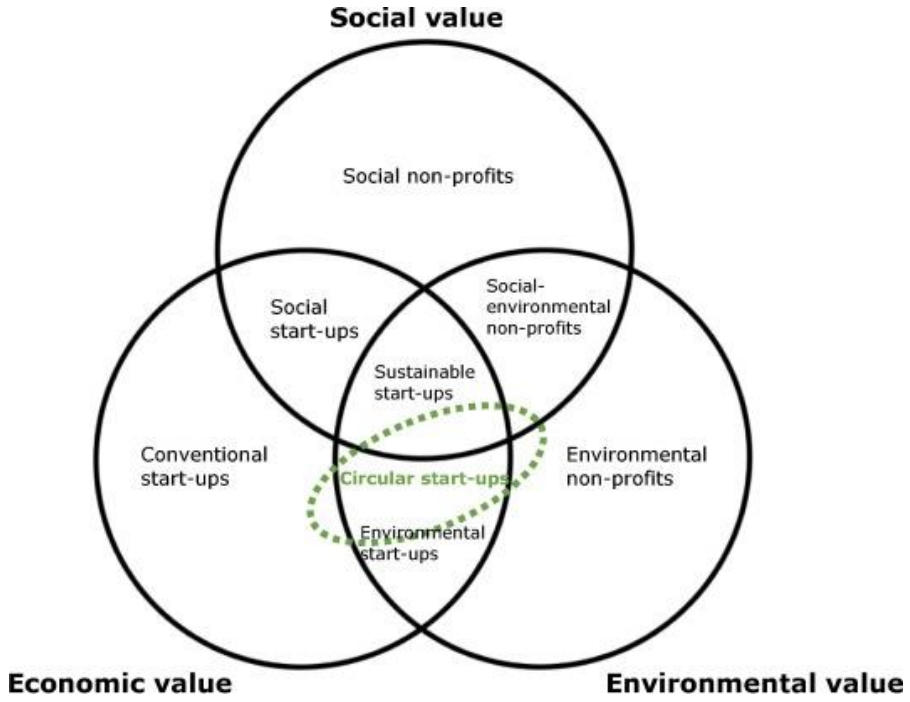

Figure 6 - Different types of start-ups and their value orientation (Henry et al., 2020)

Some problems that circular start-ups encounter are similar to the ones that sustainable start-ups encounter. Lack of initial capital, market networks and credibility can lead to reluctancy from investors to invest within these ventures. Another set of more specific problems that these start-ups face is having any type of circular business model usually requires very intensive and different cost and cashflow structures that are difficult to implement (Bauwens et al., 2020). Circular products or services usually cost higher than conventional products due to the complexity in supply chain management and resource collection. This, along with, cultural barriers such as preference to own new products rather than reusing old products, hinder the growth of circular start-ups as well. Bauwens et al. (2020) also mention in their research how governmental policies can act as barriers towards the scalability of these start-ups. This is because of high taxation and categorization of waste and the depreciating value of re-used products.

As much as the concept of circularity in businesses and start-ups is understood, there is so much more that remains ambiguous. This ambiguity is furthered due to the complex financing structures required for the enabling of this goal of circularity. Dewick et al. (2020, p.7) concluded their study in circular financing by stating, “circular economy finance is less a clear winner and more of a risky proposition”. Multiple reasons were used to identify barriers through the research like:

1. Lack of scholarly participation in industry discussions about financing circular economy.
2. Standards and investments developed not being robust and scientific.
3. Lack of social sustainability involvement within tools and procedures for circular economy.
4. Homogeneity in standards and practices of organizations being invested in.
5. Inaccurate information for financiers.

Lack of a scholarly participation in decisions made within the circular economy financing aligns itself with the lack of social sustainability involvement within the tools and procedures for circular economy. Both of these factors, identify problems with inclusion on a social level. One factor talks about academic inclusion within industrial decision-making while the other talks about the lack of social inclusion within industry procedural implementations. These eventually lead to unreliable information about circular technology, implementation effects, stakeholder involvement etc. for the financiers.

Implementation of a successful circular business model deeply depends on the partnerships garnered by a circular venture. Having symbiotic partnerships, where the circular nature of processes for one firm align with other circular firms, in an industry can significantly increase the chances of success of such a business model. Millette et al. (2020), in their research on the use of business incubators in driving circular economy, mentioned how predictability and stability can be enablers for the success of circular business models. They mention such partnerships between firms leads to sharing information in feedback loops that can potentially decrease the probability of unforeseen costs, making the supply chain more reliable, ultimately lowering cost. These arguments shine a light on the concept of industrial symbiosis. Baldassarre et al. (2019, p.1) define industrial symbiosis (IS) as, "collective approach to competitive advantage in which separate industries exchange materials, energy, water and/or by-products, plays an important role in the transition towards sustainable development". Following the idea of cross industry sharing of resources and materials, if the sharing would be done within one industrial ecosystem, under one umbrella, the positive impact created environmentally as well economically would be faster and would help in creating impact that is transformative in its nature, per industry.

Industrial symbiosis is generally seen in industrial hubs and in literature, is mentioned when academics talk about industrial ecology and the circular economy (Baldassarre et al., 2019). A knowledge gap found within research is the lack of involvement of financial research within the concept of IS. This gap is surprising as, circular economy is used to primarily create positive economic impact while establishing legitimate business models and processes that enable the creation of positive environmental impact as well. Start-up enablers like business incubators and venture capitalists can provide a similar structure to that of an industrial hub with the incubated and invested-in firms in their portfolio respectively. This could help create industrial symbiosis within their portfolio without the

uncertainties within numerous stakeholder expectations, supply chain implementation and value management.

The results found in the literature and the results of the following expert interviews are summarized in chapter 4 of the thesis which is then followed by the discussion of the results, construction of the concept of circular venture capital, introduction of a new conceptual framework and answering the sub-questions. The next chapter actualises the conceptual framework that will be used to design the next part of the research.

2.4 | CONCEPTUAL FRAMEWORK

This chapter aims at looking back at the review conducted on the literature and design a conceptual framework that can be used as a lens to interpret the findings in the second part of the research. A generalised framework is thus presented (see figure 7) and used to create questionnaires for interviews to collect practical information in-line with that of the literature. This helps in creating a concise list of factors by identifying those factors that have both practical and theoretical implications.

The conceptual framework, by definition, "sets the stage for presentation of the specific research question that drives the investigation being reported" (Mcgaghie et al., 2001). This research is conducted to find the answer for the research question: *How do sustainable venture capitalists influence the success of sustainable start-ups?* Keeping this in mind, the construction of the conceptual framework, was executed with the two main variables:

1. *Sustainable venture capital (Independent variable).*
2. *Success of sustainable start-ups (Dependent variable).*

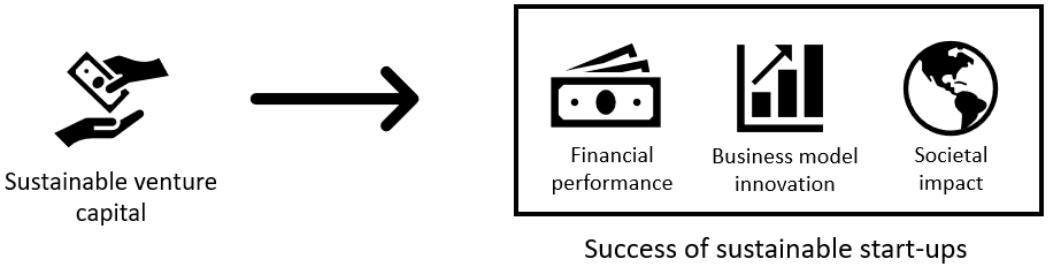

Figure 7 - Conceptual framework visualizing the multi-dimensional construct of success

To answer the research question, the influence that SVCs have on the success of sustainable start-ups is analysed from multiple perspectives. From the perspectives of sustainable start-ups and entrepreneurs, the enablers, and barriers towards the success of these ventures were considered. On the flipside, from the SVC perspective, motivators and demotivators for investments are considered. The factors found were then categorized into multiple dimensions of analysing success: *Financial performance, business model innovation and societal impact*.

The conceptual framework provided, helps in actualising interview questions while providing a solid base to evolve the given model with the findings in subsequent chapters. The next chapter introduces the methodologies used for this research along with an in-depth explanation of said methodologies.

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3 | Research methodology

Having a sound research design helps the researcher in forming an iterative process of gathering and analysing data, validating the assumptions made through theoretical concepts and understanding various perspectives of all the stakeholders involved. The research design is constructed by adapting the ground theory methodology by Glaser & Strauss (1967). As described by Linda Liska & Kapriskie (2019, p. 1), "Grounded theory methodology is a powerful approach to inductively generate theory using qualitative data". The closest paradigm of grounded theory methodology followed in this research is the constructivist paradigm. Being an explicitly interpretive approach combined with the qualitative nature of this study, constructivist paradigm allows the researcher to analyse data and construct theory around it. Semi-structured interviews are used as the primary data collection method and hence described.

3.1 | RESEARCH APPROACH

A descriptive research with an approach which is exploratory in nature is used within this thesis. An exploratory research question is usually developed either when the topic is not well researched, unclear results within research with limitations, having a very complex topic of research or there is unavailability of precise theory to back scientific claims and theoretical frameworks (Sekeran & Bougie, 2016). As established before, the topic of sustainability in venture capital is not well known or researched. This enlists some of the reasons that are mentioned above. With the involvement of several actors and stakeholders, the building of a theoretical framework gets exponentially more complex. The advantages of this method of research showcases flexibility and adaptability, to generate information which is hard to acquire when there is a lack of quantitative data available. Validation of qualitative data is difficult due to the subjective nature of the data, hence the use of interviews with experts are used to counter this disadvantage. The subjects approached and interviewed are discussed in subsequent sections of the chapter.

3.1.1 | Semi-structured interviews

The planned research method for this thesis is by conducting semi-structured interviews. "A semi-structured interview is a verbal interchange where one person, the interviewer, attempts to elicit information from another person by asking questions. Although the interviewer prepares a list of predetermined questions, semi-structured interviews unfold in a conversational manner offering participants the chance to explore issues they feel are important" (Longhurst, 2009, p. 1). Borg & Gall (1983, p.442) mentioned the importance of semi-structured interviews, "The semi-structured interview, therefore, has the advantage of being reasonably objective while still permitting a more thorough understanding of the respondent's opinions and the reason behind them than would be possible using the mailed questionnaire." Table 6 contains the typology of semi-structured interviews that are utilized in general research. Out of the 4 types of semi-structured interviews mentioned, this thesis fits under the "Descriptive/Corrective" typology. A corrective semi-structured interview is

generally conducted with the purpose of understanding theoretical, conversational data by comparing it with a participants actual experience (McIntosh & Morse, 2015, p.3).

Interview type	Purpose	Epistemological privilege	Role of participant	Outcome
Descriptive/confirmative	Assessment	Known	Respondent	Confirmation of fit
Descriptive/corrective	Evaluation	Knower and the known	Collaborator	Refutation, elaboration, correction
Descriptive/Interpretative	Discovery	Knower	Informant	Understanding
Descriptive/divergent	Contrast	Groups of knowers	Informants	Discernment

Table 6 - Heuristic typology of semi-structured interviews (McIntosh & Morse, 2015)

This data collection method was selected due to the practical implication it showcases. Participants were selected in accordance with their expertise in the field and practical experience. The advantage of collecting data through semi-structured interviews is the access to the thoughts and experiences of participants. These factors are critical in this research as they can be used to justify the theoretical data gathered through a literature survey. The data collected through these interviews will provide a critical insight towards the practical implications of the study and help in identifying the key differentiators between the factors collected through the literature and the factors collected through these interviews. Next, we look at design of the research is an overview manner.

3.2 | RESEARCH DESIGN

The design of the research was constructed in multiple steps. Figure 8 displays a concise overview flowchart of how the research is designed:

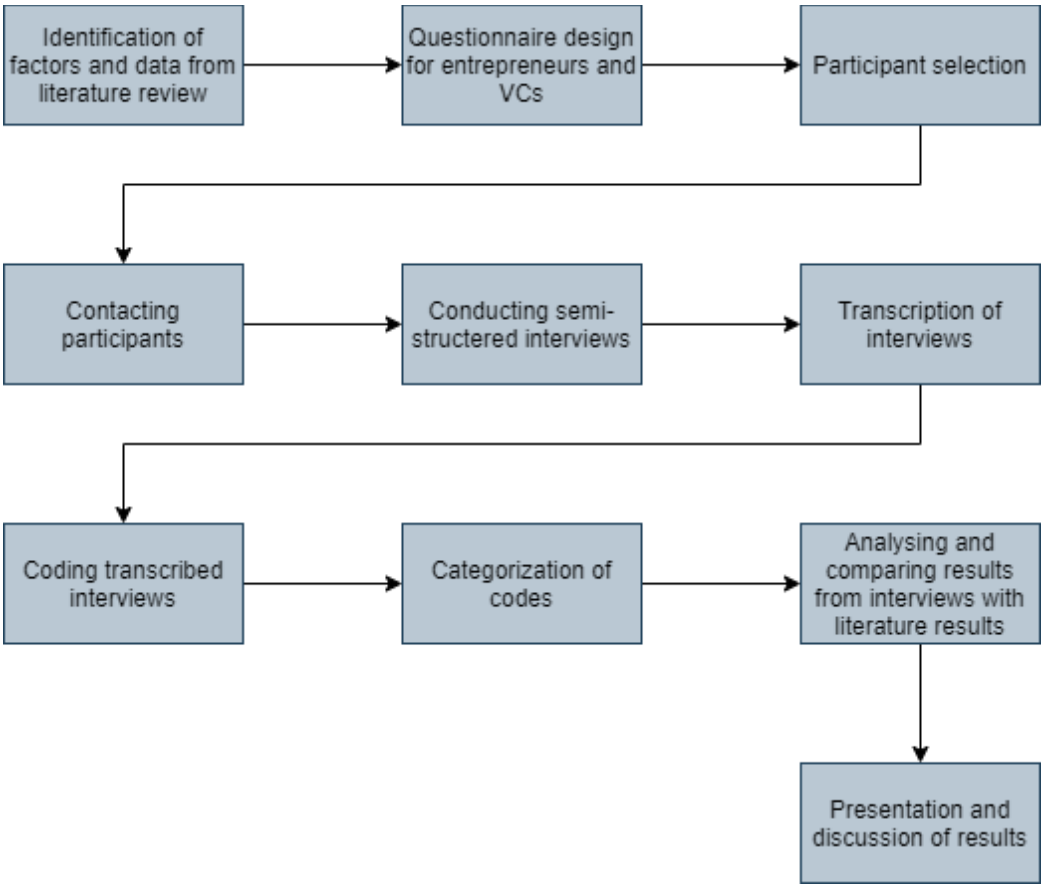

Figure 8 - Research design overview

After reviewing the academic literature and collecting the list of influencing factors regarding the success of sustainable start-ups, the process of designing the questionnaire was started. The questionnaire was designed to include the main themes of the factors that the researcher was looking to evaluate. These themes are discussed later in the chapter. Once the questionnaires for both sustainable entrepreneurs and VCs was established, identification of participants for the semi-structured interviews was done. The sample selection for the interviews was done by a simple criterion. The participants involved were selected due their current work. Within the sample, sustainable venture capitalists, venture builders and entrepreneurs in sustainable start-ups were selected. The participants were all approached via email after a thorough research done on their profile and the company's

value proposition. In case the emails of participants was missing, the company and the customer contact email was acquired to make contact. In other cases, private messaging options on LinkedIn were used to create contact. Table 7 provides a list of all the approached and interviewed participants and Table 8 provides a concise description of all the participants.

Appendix 1 consists of a complied table with all the key questions and themes used in both the questionnaires. The way the questionnaires were created were through the help of previous literature published on relevant topics. Basic themes of the questions were adopted from Bocken (2015) while the questions themselves were curated based on the needs of this research and its research question in particular. The questionnaires were used a basic pathway for the researcher to use while having open-ended conversations with the participants. Any bias was removed through thorough revision of the questions. Once all the interviews were completed, each interview was transcribed, reviewed, and corrected for human error while transcribing. The coding of the transcriptions is discussed in the next chapter.

Participant	Approached	Agreed and completed	Response rate	Geography
Sustainable Venture capitalists	25	4	16%	Netherlands
Sustainable Entrepreneurs	15	2	~13%	Netherlands, India

Table 7 - Number of participants in the research

	Category of participant	Gender	Position in company	Code given
1	Sustainable venture capitalist	Male	Investment associate	VC-1
2	Sustainable venture capitalist	Male	Investment advisory board member	VC-2

3	Sustainable venture capitalist	Male	Investment associate	VC-3
4	Sustainable venture capitalist	Male	Co-director in venture team	VC-4
5	Sustainable entrepreneur	Male	CEO	SE-1
6	Sustainable entrepreneur and venture builder	Female	Program lead in venture team	SE-2

Table 8 - Description of participants

3.3 | DATA CODING

In this part of the methodology, the data is collected and compiled for the ease of analysis. The transcription of the interviews was done using a combination of manual effort and a software, Descript. Once the interviews were correctly transcribed, the coding of interviews began. AtlasTi was used to code the interviews. In the first phase of coding, the researcher went through entire transcripts, highlighting crucial paragraphs and sorting them using the themes mentioned earlier. The major themes being investigated were:

1. *Enablers of success of sustainable start-ups*
2. *Barriers of success of sustainable start-ups*
3. *Role of SVCs in the success of sustainable start-ups*
4. *Motivators for SVCs to invest in sustainable start-ups*
5. *De-motivators for SVCs to invest in sustainable start-ups*
6. *Circular venture capital*

These themes were then used to create codes in the second phase of coding. Codes were designed to be specific to the sub-research questions. This would help in answering the sub-research questions with confidence. Some example codes were - *Influential factors: Enablers: Value creation, Motivations to invest: Financial performance etc.* Through these codes, quotes were extracted which helped in identifying factors from the interviews. These factors were then in-turn used to validate the factors found in the literature. A compiled list of codes and quotes is presented in Appendix 3. The next section presents the results of the literature review and the interviews including all the factors collected through the data analysis and discusses them in detail.

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4 | Results

In this chapter, the results from the semi-structured interviews are presented. Section 4.1 explores the differences between traditional venture capital and SVC along with the role played by SVC in enabling the success of sustainable start-ups and the motivations of these SVCs to invest in them. Section 4.2 identifies and complies influential factors mentioned during the interviews. Section 4.3 discusses the results regarding circular venture capital and its implementation. As mentioned earlier in the research, the conceptual framework was designed to be used as lens to interpret the findings.

4.1 | SUSTAINABLE VENTURE CAPITAL: ROLE AND MOTIVATIONS

4.1.1 | Difference between traditional and sustainable venture capital

Sustainable venture capital, in literature, has been identified as being vastly different from traditional venture capital and how the differences lie in motivations, orientations and target industries along with the difference in capital input. As a consensus from the subjects in the interviews, in today's world, the difference between the terms traditional venture capital and sustainable venture capital is not as prominent. According to VC-3, "*Traditional VCs are not necessarily looking at impact as something that's outside of their scope*". This highlights an important point within the difference in literature and practice. That said, when asked about intricate details in the differences that are still identifiable, there were three themes mentioned: *Subject expertise, importance of impact and network.*

The understanding and know-how of growing businesses, regardless of the industry, has been a common denominator among TVC and SVC. But considering great impact as an equally important metric or target by SVCs was seen as a key differentiator between the two groups. Another issue found with TVCs trying to execute a sustainability portfolio to diversify their existing portfolio is the lack of "*operational expertise*" as mentioned by VC-2. The main objective for SVCs is to create long-term impact, while still making business sense, beyond sales. This is where the subject expertise of the VCs plays a major role from the perspective of the sustainable entrepreneurs as well. From previous chapters and discussions from interviews, it was agreed that the focus of sustainable companies is generally more towards creating larger impact than scaling up their own company. This is seen as a barrier as well towards the success of sustainable start-ups, discussed in future chapters. Financial scalability through sales and a customer centric approach while increasing production, system efficiency and lowering costs is the most crucial metric for traditional VCs (see table 3) (Masucci et al., 2021; Bocken, 2015). This makes it difficult for typical investors to invest in sustainable start-ups as they have an impact centric approach towards business. This is where an SVC would play a defining role in the growth of a sustainable start-up due to the use of a business model and strategy towards enabling a dual-purpose scalability approach. This is done by including the financial scalability as an equally important metric along with impact scalability and using that paradigm as an enabler for the success of sustainable start-ups.

An interesting point mentioned during the interviews was the relationship between the decrease in innovation of start-ups due to the overemphasis of "*user-based growth rates"* and "*agreed deal terms being about money"* by the typical VCs. Due to the inclusion of organizational hierarchy and constant deadlines for financial returns, the focus of an innovative start-up often gets removed from the innovation itself. This decreases the impact that can be created through innovation. Due to the longer investment horizons offered by the SVCs as compared to traditional VCs, and the investor expectations set accordingly, SVCs provide a far more diverse and flexible way of working while growing as a venture.

The last differentiating theme mentioned by the subjects was networks. It is a well-known point that the type of networks offered by SVCs is going to be different than that of the traditional VCs. Having access to impact markets, connections with public sectors like governments and municipalities, having operational expertise around impact innovation along with a direct customer connect as well can only be found within professionals with specific knowledge about the impact space. A very specific motivation for VCs to invest in any start-up is finding the perfect fit for the portfolio that the VC firm is working on. This entails the use of networks into ensuring the success of the portfolio company. As nascent as sustainability is in today's world, it requires extra attention to detail and a longer time frame to evolve the venture and its innovations into something truly successful, both financially and impact-wise (see table 4). Table 9 lists the themes as the factors found in the results for the differences between SVC and TVC.

Main themes	Factors found
Subject expertise	• Lack of operational expertise in TVC as compared to SVC. • Sustainability knowledge higher.
Importance of impact	• Flexibility in innovation approach • Dual metric target approach
Network	• Access to impact specific networks • Access to public sectors

Table 9 - Difference between TVC and SVC

4.1.2 | Enabling role and investment motivations of SVCs

As discussed thoroughly in the research, SVCs play an imperative role in the development, and growth of sustainable start-ups. To understand this role, a comprehensive list of codes was developed through the interviews and 5 themes were identified: *Strategy, impact creation, team development, network, and finance*. These 5 elements were deemed critical in the overall progression of the sustainable start-ups. Throughout the years, the elongated timeframe, definite focus, and lack of exit opportunities in sustainable start-ups were seen as disqualifying reasons from the perspective of traditional VCs and other non-governmental financial institutions. At the start of the century, the term green venture capital was brought forward. Since then, the term sustainable venture capital has risen in numbers on the industry as well as academic perspective. Having already analysed the academic perspective on this topic, a more practical setting was required to verify those findings. Looking back at the 5 impact themes mentioned above, strategy has the most mentions along with network and the importance of impact creation. These are followed closely in mentions by finance and team development.

A very interesting comment made VC-4 was about how important it is to strategically maintain a balance within the different scalability models, financial and impact, within a venture. He said, "*We care about multiple impacts, we care about financial returns as well, but that's secondary because it is used as a means to keep the business going. Ideally, we'd like to restructure the system, but that's a little harder to grasp*". This provides a keen insight into the minds of SVCs. Even though the main aim is to create exponential, positive impact on the environment, society and industry, the imperative in financing a venture is as important. It requires acute strategic know-how from experienced professionals in venture building as well as in sustainability. The simple idea of scaling up a venture to reach demographics, that are harder to reach for smaller ventures, enables the interaction between larger customer segments, newer industries and more open innovation eventually leading to scaling up the impact created as well. Having an investor, who is willing to be *"more patient" and "wait a little longer"* adds a value that is generally only added by SVCs. As mentioned before, sustainable entrepreneurs usually lack the business development skill required to build a business to its full capabilities. Another interesting quote on this lack of business acumen in sustainable entrepreneurs mentioned by VC-3 was, *"They know the product better than us, but we can help. We can help with strategic thinking. How will we go to plan ahead? What's your goal for this year? For three years? And longer. How are we going to operationalize them? That's how we help."*

Creating the right type of networks is as important as having the capital to build on the innovation in any business. SVCs provide a more specific and target network for the venture within their portfolio. Multiple mentions of *direct customer connect* were identified as key elements of the networks being offered along with the proper connections within the scaling up and future venture partners. Difficult to access markets with strong incumbent forces, another barrier mentioned, is easier to circumvent with the use of the right people to connect with and getting set up with targeted customer segments to create impact and

growth. These networks not only provide the venture with fertile ground to grow in, but also, they enable stronger footholds in the business with a focus on future business areas to target for the SVCs as well. One of the most important roles that SVCs play in the development of sustainable start-ups is helping with the impact KPIs. A KPI, key performance indicator, is essentially a quantifiable measurement tool for performance over time for a specific objective (QlikTech Internaltional, n.d.). Articulating and implementing an impact KPI like ESG monitoring with the expertise of the SVCs is of crucial help to the sustainable start-ups. They play the role of a mirror for the ventures in the continuous development of the business model and keeping the focus on the impact KPIs as paramount. This statement aligns itself with what a subject said when asked about the role of SVCs. VC-4 said, "*A lot of it is trying to get them to really navigate the system and really not lose sight of that impact that they're trying to deliver*". The financial input of all the major financiers including typical as well as sustainable VCs remain the same. But the difference lies in purposeful investments tied to proper team selection with the right expertise and impact metrics. Strategic balancing, focus on impact, sustainable expertise and purposeful investments tying themselves to impactful outcomes is the major role that SVCs play in the growing of sustainable ventures to be successful.

There is a similarity in the motivation themes and the role related themes found in the interview data. Financial performance, intended impact, the team, portfolio fit and the potential to scale the venture form the key themes regarding the motivations to invest in sustainable ventures from the perspective of SVCs. Most of these motivations are similar to what traditional VCs and other financial institutions seek within any investment. The difference lies within the impact metric discussed earlier along with the entrepreneurial orientation of the team being invested in. Due to the earlier entrance of SVCs within the development cycle of sustainable ventures, the team plays a much more important role in the decision than previously believed. Diversity in skillsets and backgrounds is something that SVCs look for. It is believed that singular focus companies like hi-tech, more traditional start-ups is a disqualifying factor for the SVCs. A team with a broader focus and more diverse backgrounds even in the initial phase is important.

Impact creation as a theme varies for the different types of portfolios that the SVC is integrated in. Some look for CO_2 reduction, some look for social impact like provincial development, some look for reduction of absolute harm and energy management. A whole spectrum of impact under a singular umbrella of sustainability is something that the SVCs, more than any other financial source for ventures, look for. Industrial alignment is an important spectrum which is related to the investment portfolio of these VCs. As the most common and crucial solutions in achieving sustainable development lie in energy transition, many VCs have found the energy industry, rich to invest in. Other VCs in the interviews, who are building ventures instead of investing in them, look for a more holistic way to attain sustainable development. They focus on systems thinking and tackling specific problems within them to create ripple effects throughout the system. This way of thinking is discussed in the future chapters regarding the application of circular venture capital.

Table 10 and 11 list the important themes and factors found as roles of SVCs and their motivations respectively.

Main themes	Factors
Strategy	• Offering impact metrics along with financial metrics • Open innovation • Larger customer segments due to impact creation • Mitigation of incumbent structures
Impact creation	• Impact KPIs • Flexible development times • Adaptable innovation
Team development	• Business development knowledge • Understanding impact market structures
Network	• Specific sustainable market network • Compatible portfolio • Access to markets
Finance	• Investments tied to purpose and impact metrics

Table 10 - Role of SVCs in development of sustainable start-ups

Main themes	Factors
Financial performance	• Current revenue structures to validate business model • Purposeful incomes • Potential to scale
Intended impact	• Impact KPIs • Impact value creation
Team	• Diverse teams • Multiple focus on impact and scalability
Portfolio fit	• Compatibility with portfolio • Similar impact creation requirements • Industrial alignment

Table 11 - Motivations for SVC to invest

By interpreting the above results based on the roles and motivations of SVCs, the first adjustment can be made to the conceptual model introduced in chapter 2. The aim of this part of the research is to design a more focused and detailed conceptual model which sums up the main research question. Below, the motivation and role factor themes are added to the conceptual model by indicating their position and how each theme affects the progression of the relationship between the SVCs and the start-ups.

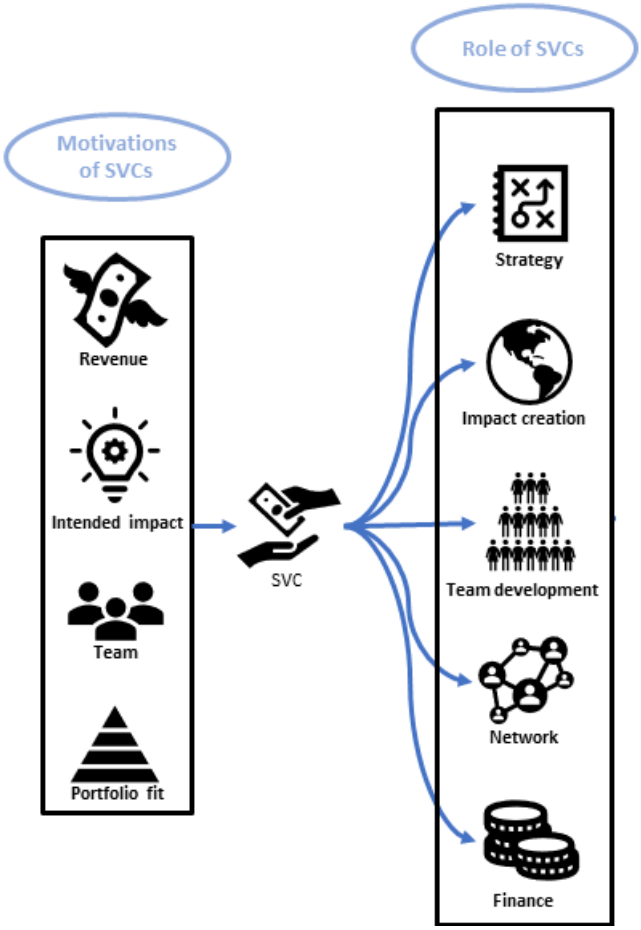

Figure 9 - Motivations and role of SVCs visualised

The next section introduces the results regarding the enablers and barriers found during the semi-structured interviews. This provides us with insights on how legitimized the factors found in the literature are as compared to a practical approach.

4.2 | SUCCESS OF SUSTAINABLE START-UPS: INFLUENTIAL FACTORS

The main objective of the thesis is to assess the role and impact of sustainable venture capital on the success of sustainable start-ups along with the influential factors that play an important role in that success. Having discussed the role and the impact, this next chapter focuses on the influential factors in that success. One interesting point was presented during the interviews which implied that the influential factors are not always impact related, more on this is discussed in the chapter. Both the enablers and barriers are discussed independently while verifying the respective factors mentioned the literature and understanding the link between the theoretical and practical perspectives on these factors.

4.2.1 | Barriers to the success of sustainable start-ups

When talking about the factors that hinder the growth and eventual success of a sustainable start-up, 5 major categories were found during the interviews: *Financial, value creation, industry, team, and environment.* These categories were then analysed individually to try and create a list of factors under each category.

The most influential barrier that was spoken about was the lack of financial acumen within the teams of sustainable start-ups. As mentioned before, not all the factors are impact oriented as the experts mentioned, start-ups rarely fail solely due to the bad impact assessment while it remains crucial to the overall development of the venture. Financial barriers prove expansive when looking at the different growth stages within which the effect takes place. As discussed before, most start-ups fail during their incubation period due to the *lack of initial capital*. Looking back at section 2.2.1, it is explained that many start-ups fail during the valley of death due to the lack of initial capital and failure to show revenue. Some of the motivations mentioned in previous chapters, revolved around the fact that most of the investments made are post-revenue investments. This increases the likelihood of the failure to capture capital in this crucial stage of development. As the financial barrier is spread throughout a venture's journey, two factors are prominent during the mid to late stages of growth for the start-up. These factors are, namely, *access to line finance* and *bad cash management*. Due to the lack of a business building mindset, sustainable entrepreneurs find it difficult to manage the capital without the help of SVCs. This can also sometimes demotivate the financiers into removing their access to line finance. The most influential financing factor, however, does not have to do with money. Rather, this factor is involved within exit opportunities for VCs in the venture investment. The main goal of any VC is to accumulate profit, be it a sustainable or a traditional one. The end game for SVCs is to create impact, along with profit so that it can be reinvested in their portfolio and increase their credibility in the market. With sustainability being in its nascent stages regarding mass-market commercialisation, the exit opportunities within these sustainable and impact first start-ups are sparse. This affects the possibilities of scaling up these ventures in the immediate future and hence act as barriers for both, success, and investments within their venture.

The industrial landscape forms the oldest and most common barrier for the success of any start-up. Inclination of incumbents towards not being disrupted hinders the entrance to those markets from the perspective of entrepreneurs. As mentioned previously as well by an expert, *"We want to ideally restructure the system, but that's a little harder to grasp"*. Sustainable, disruptive start-ups face difficulties with their ability to compete in the market due these incumbent forces as well. Another market related factor talks about the product-market fit. When there is no need for the product in the market, when the product does not grab the attention of customers and businesses, no matter what the impact it creates, the product will not sell. Hence, making it harder for ventures to enter the market, disrupt it and create lasting impact.

Although a good team of experts with diverse backgrounds and similar goals can enable the success of the venture, the opposite hold true too. Leaders lacking fundamental business skills, singular focus on impact alone, team blowouts and very interestingly, naivety of the team in themselves hinder the growth of a sustainable start-up. An interesting point was put forward by an expert during the interview on how scaling up the business limits the ability of a company to change and innovate with time. It was said that as a company grows larger in term of numbers within the team, strings are introduced. Strings here refer to hierarchy within the company itself. It was mentioned that the notion of organic firm structures don't generally exist because of the inevitable need for organization within teams. The higher the number of people in firms, more strings are introduced. Governance structures, shareholder values and requirements, network building and the hierarchy, all increase the number of strings, hence reducing the ability of a firm to operate on a flexible level. This, in the mind of the interviewee, was one of the reasons many start-ups eventually fail. Taking the point of naivety of the team and its leadership, the assessment was that many ventures, after evaluating the common factors miss out on some hurdles like the media attention and politics involved within the growth and marketing stages of the venture. These points are also made within the context of environmental barriers hindering the success of these impact ventures.

Some of the environmental factors mentioned were incumbent forces which depends on the industry, societal requirements, government and policy makers and the media. The need for governments and policy makers to make decisions which support new ventures and SMEs has been considered one of the most important factors that can either lead to successful economies being built on the backs of these companies or can lead to the failure of companies without much commercial traction. The job of the governments is to make space for newer, more sustainable start-ups in industries by introducing policies that support open innovation, force the incumbents to either integrate impact and sustainability values in their business models or make way for these ventures to set up in a new segment within the market. Failure to do so, hinders the growth of these sustainable start-ups. Government support is the foremost factor that can help a venture succeed. Media and political attention can lead to a limelight being thrown on young and ambitious ventures. Going back to the point of naivety of entrepreneurs, it was mentioned that these

entrepreneurs get tempted by this attention. The media and politicians tend to attach themselves to these sustainable ventures and there is societal expectations set on the ventures to create a massive difference. As these companies are new, any progress not meeting expectation of the customers is not seen as enough and these firms tend to fade away and disappear from the radar. "*A bird should never leave it's nest too early*" was the analogy used by the expert while explaining the problems of attracting media attention.

At the beginning of the chapter, it was mentioned that the improper impact assessment and proposition are never the sole reasons for the failure of start-ups but play a very important role in the larger scheme of things. This is because of the age-old question of scalability vs social impact. Business models with larger potential to be scalable have not traditionally been associated with sustainability or impact driven value propositions. The transition of existing scalable business models to accommodate these elements is really challenging. As VC-4 mentioned during the interview, "*Re-identifying sustainable, scalable business models while, delivering on your impact goals. I see that as a fundamental tensions, that is really challenging to solve".* But sustainability in business models is not the only barrier for sustainable ventures. Properly assessing impact and the impact proposition is critical as well. Large corporations, in today's world, are extremely anxious about greenwashing and the false assessment of the impact being delivered. With the media being as threatening as it is valuable, if the impact assessment from sustainable ventures is not airtight, they lose the opportunity to be bought out by larger corporations due to the same reason. Table 12 lists down the factors found through interviews that act as barriers for the success of sustainable start-ups.

Main themes	Factors
Financial	• Failure to show revenue • Lack of initial capital • Access to line finance • Bad cash management • Lack of exit opportunities
Value creation	• Single value focus • Improper impact assessment • Weak impact KPIs • Greenwashing
Industry	• Orientation of incumbent • Access to markets • Product-market fit • Incumbent forces
Team	• Lack of team diversity • Lack of business rigor • Team blowouts

	• Strings within organization • Team naivety
Environment	• Societal requirements • Governments and policy makers • Extensive media attraction

Table 12 - Barriers for the success of sustainable start-ups

4.2.2 | Enablers for the success of sustainable start-ups

Continuing the chapter of influencing factors, some of the enabler categories found from the interviews were exactly the same as the barriers mentioned above with one exception. The categories discussed below are: *Value creation, teams, environment, financial, industry and business model.*

The most mentioned category was teams when the subjects were asked about factors that all but ensure that a sustainable start-up is going to be successful. The founders of sustainable ventures, their mindset, focus, networks and being problem solving orientated were deemed critical for the success. This is especially true when the venture is in the early stages of its growth. This is because of the relevancy of these factors in crossing the valley of death. Having an entrepreneurial mindset, being able to solve problems from a venture building point of view and their networks enable the possibility of traction in the market while increasing the investor attention on their venture. As mentioned before, the focus of a founder and their team needs to be diverse and not singular. SE-1 mentioned luck as being a barrier towards the success, but this point was deemed non-critical by VC-2 when they mentioned how having a proper well-knit team with proper focus can enable the organization of luck. They said, *"The perfect team can add a very significant part of the probability of success, but going forward, you can organize luck and that is in the hands of the same team. So, the team can go and discover things in networks and events because the answer to a successful venture is out there".* An organization can be built around attracting high quality talent with focus needed to organize luck, this increases the probability of success substantially.

Macro environment factors such as governments and academia play an important role in enabling growth of newer, impact first ventures. Most of the interviewees spoken to belong to The Netherlands. A pan-national European Union can facilitate the setting-up of marketplace reorientation that enable purpose-based innovation to come to fore. That job falls to the policy makers within the union who can create a system, as SE-2 mentions, for a more *"hands-on, ecosystem curation role for bodies such as the EU and regional municipalities".* Another important actor within the category of environmental factors was academia and research institutions. The importance of technology transfer and intellectual property spin out by employing universities and research institutes to understand impact

research and innovation on the grassroot level and then commercializing it were deemed critical in shifting the landscape of an industry completely.

Some of the enablers which were more common among traditional and sustainable start-ups that were mentioned were financial and industry requirements. Having an adaptable financial plan that allows the venture to scale up was unsurprisingly mentioned while an important point was made by VC-1 saying, *"If you're not financially interesting, If you're not financially viable, then you won't make a big impact. We want to have big impact. You also want the financial returns, to be great. But what we mostly do is that when you make the decisions, you don't always go for maximum profit creation decisions but more decisions on how we can increase sustainability of the product, how can we increase environment impact instead of making more profits. And then it's just more the bottom line, I guess than the top line growth because yeah, revenue growth and having a viable company is just a requisite for being successful as a company".* This provides an interesting perspective on the scalability vs impact question. Because creating big impact is not always possible without being financially viable and without constant financial growth within the venture as well. Hence a more comprehensive package is required which sustainable ventures generally lack as mentioned before due to an impact first mindset. Having SVCs who understand the importance of creating impact but are experts in building businesses provides a good path for the sustainable ventures to follow. Industrial factors where the ability of a start-up to mitigate the industry structure that might constrain, entry into the market or mass-market deployment of sustainable innovations has been identified as a common factor between different types of start-ups.

The last two categories mentioned as enablers of the success of sustainable start-ups were the business model and the value creation through these ventures. Any financial body looks at the business model and plan of a potential investment for their portfolio. If the business model is not viable and has not shown any profits or scalability potential, the venture is disqualified from an investment. But within the business model, the value proposition plays a major role. What is it that is being offered to the consumers that traditional start-ups and incumbents have not offered yet? This is where the SVCs play an important role. They help in defining the impact KPIs and analysing the impact proposition within the sustainable venture's business model while focusing on building products that will add to the customer value as well. Table 13 comprises of the list of factors that enable the success of sustainable start-ups. The next chapter focuses on the discussion had with the experts over the practicality of the existence of circular venture capital and its implementation barriers.

Main themes	Factors
Financial	• Adaptable financial plan • Regular investment returns • Ability to achieve financial metrics • Access to capital
Value creation	• Impact assessment • Comprehensive impact KPIs • Product-market fit • Customer value creation
Industry	• Mitigating incumbent forces • Networks to achieve market access • Mass-market potential
Team	• Founder mindset • Focus on diverse value creation • Problem solving orientation • High quality talent recruitment
Environment	• Government support • Universities and research institutes • Marketplace reorientation by policy makers
Business model	• Scalable business model • Validated business model to attract investors

Table 13 - Enablers for the success of sustainable start-ups

While recording the interviews, it was made clear that most of the influential factors found in the literature tend to be too generalized in this day and age. A more practically focused approach was required to determine legitimate factors which have real world bearings. This resulted in a more detailed list of factors that affect the success of sustainable start-ups depending on how long the start-up has survived in the market. Figure 10 uses the findings of the semi-structured interviews to add another layer of detail to the initial conceptual model. As all but one of the themes have remained common between both barriers and enablers for ease of understanding, for better integration of the factors in the model, coloured arrows are used to indicate their characteristics.

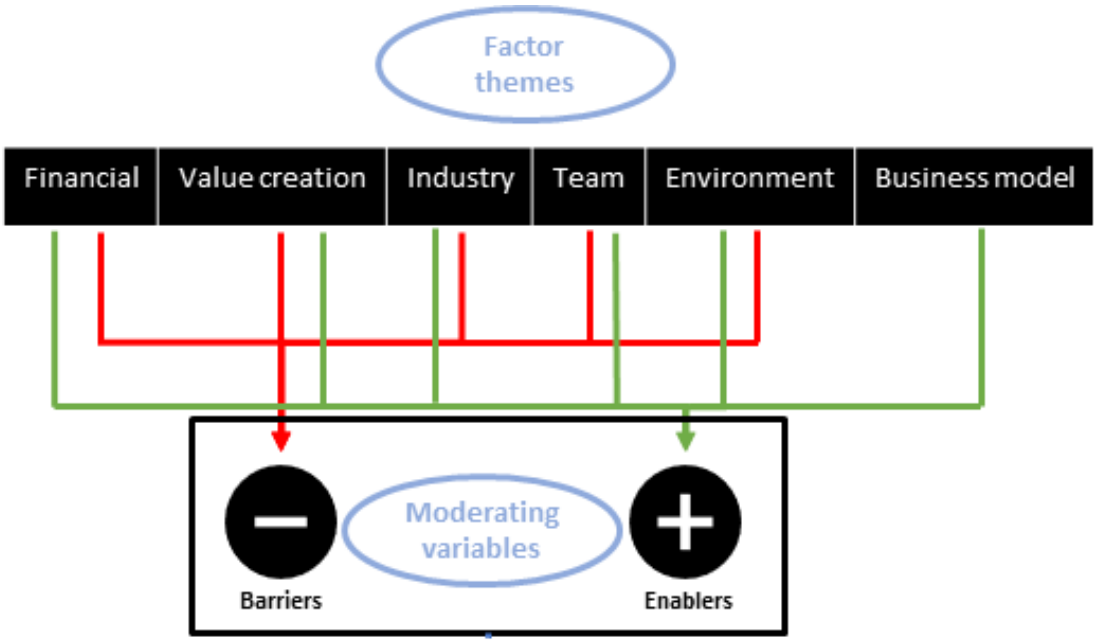

Figure 10 - Influential factors as moderating variables

4.3 | CIRCULAR VENTURE CAPITAL

The idea of circularity specific venture capital does not necessarily exist, in literature nor in practice. This is because of how difficult investors find it to differentiate between sustainability and circularity. From the results of the literature review, circular financing was understood to be difficult to implement due to the uncertainty in cost and revenue structures, complexity in supply chain and resource management, lack of social impact and lack of an academic involvement in industrial decision-making. Most of the factors were validated by the interviewees. Some of the quotes, related to the topic, from the interviews are presented below:

1. VC-3: "*The circular business models are the ones that have most difficulty in getting funding*"
2. VC-1: "*For a sustainable venture capital firm because the companies are so high risk, you want to diversify your portfolio. If you're focused too much on one area or one industry, the risk profile gets too high*"
3. VC-4: "*It's very hard to invest in new business models associated with circular businesses. Investors have a particular problem with that because it's way less clear how to project the financial results of a circular business*"
4. VC-2: "*Sustainable attracts more venture capital than circular*"

These quotes confirm the reluctancy investors face in financing circular business models due to similar reasons found in the literature. The results of the interviews in the context of

circularity in businesses also brought forward some extra perspectives and factors as to why investors don't necessarily invest in circular business models.

The most common demotivator for investors to invest in circularity-based start-ups was the lack of evolvement of the business models. It is a very difficult value proposition to define and implement due to the complex nature of supply and value chain management. The difficulty in the quantification of the value proposition also plays a crucial role in the reluctancy of investors. With the exigent demands of policy makers to attain sustainable development, the focus of impact investors as well as traditional investors is towards highly sustainable technological solutions like electric mobility, energy solutions. In this way circularity is lagging behind other sustainable solutions due to much more comprehensive business models and the higher predictability rate of financial returns. Within the topic of financial returns in circularity, the topic of economies of scale was brought up. As we know, economies of scale refer to the relationship between the decrease in cost due to an increase in the output of production. In circularity, the notion of reusing materials and products by extending their lifetime, implies a reverse effect regarding the economies of scale. This directly related to a quote by VC-2 where they said, "*Circular businesses are generally on the low earning side*". Extracting mass returns from circular business model is difficult due to the regenerative inclination of those models. These were some of the financial barriers discussed during the interviews. In conclusion, risker value propositions, unpredictable financial returns, inverse of economies of scale, complex supply chain and logistics and social barriers like fundamentally changing the way people use day to day products are the major barriers to circular businesses and reasons for the lack of interest in circular business models by impact investors as well.

In a world where, sustainable development has gained massive traction, impact start-ups have gained more recognition and sustainable innovation has all but occupied the entire space for venture capital to invest in, circular business are lagging behind due to the lack of a comprehensive portfolio building model. This secondary objective of this research was to explore the possibilities of the implementation of circular venture capital. Chapter 5 consists of discussions relating to the results found during this research, an adapted theoretical framework, and a possible venture model for the implementation of circular venture capital in industries. The limitations and relevance of this research are also included in the next chapter.

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5 | Discussion

This chapter discusses the results from the interviews and compares them with the results from the literature review regarding the factors. This is done to validate the factors and understand the theoretical as well as practical implications of the results. This is followed by a reimagined conceptual framework based on the results of the qualitative study done during the research along with a venture model for the implementation of circular venture capital is discussed. Subsections are also dedicated to the limitations as well as relevance of the research. A complete list of quotes used for the results is present in Appendix III.

5.2 | DISCUSSION OF RESULTS

Over the years, literature on sustainable venture capital has discussed its origin, its limitations, its advantages, and models for its implementation. The literature on the relationship between sustainable venture capital and sustainable start-ups however is sparse, especially when the impact of SVCs on the success of these impact ventures is considered. This thesis broke down the evaluation of the success of sustainable start-ups into 3 elements: Financial performance, business model innovation and societal impact. This helped the researcher in visualising the impact of SVCs on each specific element and in doing so understand the importance of each element. Table 14 and 15 list critical influencing factors found in both the literature and through semi-structed expert interviews. This helps in identifying the inconsistencies found between the two lists. The motivators and demotivators found in the literature and interviews are very similar and are listed in table 16.

Certain discrepancies were found in the two lists of influencing factors. Some of the factors mentioned in the interviews were in line with the factors found in the literature while some of the more practical and relevant factors were not. The academic perspective of these factors seems to be more holistic while experts who build and grow ventures argue that other factors have a more direct and crucial impact on the success of sustainable start-ups. Enabling factors like team diversity, universities and research institutes were not mentioned in the literature as critical. More personal factors such as ability of the venture teams to mitigate industrial structures does not fit within the more holistic approach. While positive impact creation was mentioned, the importance of impact assessment and the lack of greenwashing were not.

A similar story was painted when considering the hindering barriers towards the success of sustainable start-ups. While many factors like long development times, capital issues, lack of a business rigor were similar to the ones mentioned during the interviews, more personal and direct factors were not considered. Capital issues at different stages of the start-ups like removing the access to line finance due to failure in reaching investment metrics, bad cash management, exit opportunities were not segmented and were seen as a whole. The product market fit, from the perspective of a sustainable entrepreneur is a key barrier to success even when the impact creation is highly positive.

Similarly, problems within the teams like naivety and team blowouts were given high priority during the interviews. Lastly, political and media attention were seen as elements that would distract young and ambitious entrepreneurs which would considerably lower the probability of the start-ups to achieve lasting success. This was, as mentioned before, due to the shift in focus and the burden of delivering on promises made by the media and politicians on behalf of the entrepreneurs. Improper impact assessment is considered a more critical barrier than not creating sufficient impact. This research hence clarifies certain discrepancies and creates a more structured and all-encompassing list of influencing factors found in the literature when the success of sustainable start-ups is considered.

Due to expansive effect that the industry, governments and innovation in the business model have on the success of sustainable start-ups, they are added as mediating variables aside from being part of the influential factors to the proposed conceptual model. As mediating variables are used to define the relationship between the independent and dependent variables in a model, these macro-environmental factors play a big role in accentuating the effect of SVCs on green ventures and vice versa. Figure 11 displays the last layer of addition to the initial conceptual framework by adding the mediating variables of Industry, government and business model innovation to it.

As the alignment of factors in the literature and through interviews showcases a discrepancy between the previous findings and current findings, tables 14 and 15 are used to display these complied and comprehensive lists of factors.

Factors found in literature	
Enablers for the success of sustainable start-ups	1. *Sound business rigor* 2. *Economic success of innovation* 3. *Environmentally beneficial process and values* 4. *Adept entrepreneurial mentality* 5. *Positive societal impact creation* 6. *Triple bottom line aligned goals* 7. *Business model innovation* 8. *Reorientation of incumbents*
Barriers for the success of sustainable start-ups	1. *Capital intensive* 2. *Long development times* 3. *Lack of credibility and reliability* 4. *Lack of business rigor* 5. *Lack of a commercialization perspective* 6. *Valley of death and investor orientation.* 7. *Focus on a singular goal* 8. *Less market shares* 9. *Lack of network ties in the market* 10. *Inability to produce initial capital*

Table 14 - List of influencing factors found in literature

Factors found through interviews	
Enablers for the success of sustainable start-ups	1. *Founder networks* 2. *Founder business sense* 3. *Team diversity* 4. *High team expertise and quality* 5. *Marketplace reorientation by policy makers and governments* 6. *Universities and research institutes* 7. *Adaptive financial plan* 8. *Ability of venture to mitigate industrial structure* 9. *Airtight value and impact proposition*
Barriers for the success of sustainable start-ups	1. *Lack of financial and business acumen* 2. *Lack on initial capital* 3. *Access of line finance* 4. *Bad cash management* 5. *Lack of exit opportunities for large corporations* 6. *Incumbent orientation* 7. *Product-market fit* 8. *Singular focus on impact* 9. *Team naivety and team blowouts* 10. *Too many strings due to governance and shareholder structures* 11. *Media and political attention* 12. *Improper impact assessment*

Table 15 - List of influencing factors found through interviews

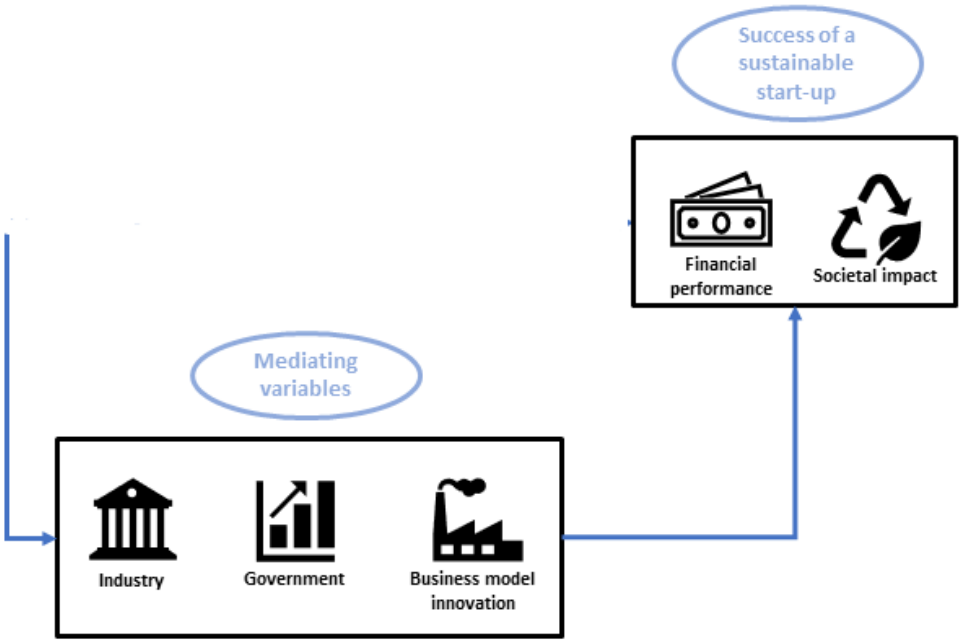

Figure 11 – Mediating variables

Motivators and demotivators for VCs to invest in sustainable start-ups	
Motivation for VCs to invest in sustainable start-ups	1. *Willingness to provide resources* 2. *Understanding of business model* 3. *Top management support* 4. *Values dedicated to sustainability* 5. *Innovation in business model* 6. *Reduction of financial risk through investment* 7. *Creation of new demand through investment* 8. *Existing collaborations and networks for the start-ups* 9. *Government policies and regulations on sustainable investments* 10. *Government use of international standards in sustainable investments* 11. *Good fit with the investment thesis* 12. *Opportunity to explore new markets* 13. *Triple bottom line approach* 14. *Purposeful incomes* 15. *Potential to scale* 16. *Impact KPIs* 17. *Diverse teams* 18. *Multiple focus on impact and scalability* 19. *Similar impact creation requirements* 20. *Industrial alignment*
Demotivators for VCs to invest in sustainable start-ups	1. *Capital intensive* 2. *Lack of reliability* 3. *Investor orientation* 4. *Managerial slack* 5. *Lower exit opportunities* 6. *Lack of a proven framework for the evaluation of start-up potential* 7. *Uncertain market environment*

Table 16 - Motivators and demotivators for VCs to invest in sustainable start-ups

5.2 | CONCEPTUAL FRAMEWORK

During the course of the research, the researcher found some limitations in the previous conceptual model (figure 7) introduced in chapter 2.4. After thoroughly going through the relevant literature and understanding the practical relevance of the research done, a revised conceptual framework was made (see figure 12). From the results of the semi-structured interviews, significant points were identified which were used in the redesign of the framework.

Being vastly different in nature, the revised framework was designed to be more detailed and informative while being aligned with the findings of the research. A big difference between the two frameworks is the removal of business model innovation as an indicator of

success of the sustainable start-ups. When asked about the critical elements of evaluating the success of a sustainable start-up, many experts mentioned that while financial performance and impact creation are used to evaluate the success of the venture, business model innovation is seen as a means to achieve the target. This aligns itself with a dilemma faced by the researcher when some academic papers mentioned business model innovation as a factor that can lead to success rather than an element that can help evaluating the success of the venture. But due to the importance of reimagining business models to enable scalability and properly assess impact and value propositions from the perspectives of SVCs, business model innovation was eventually seen as a part of the mediating variables rather than an outcome variable in the framework. Other mediating variables added to the conceptual framework were the industry and government. Looking back at the results, even though the industry and governments are looked at as influencing factors, enablers and barriers alike, the institutions have a major role in mediating the relationship between the SVCs and the success of sustainable start-ups. These variables influence that relationship while being a means to attain success.

Another important addition to the framework were the moderating variables, enablers and barriers. Looking back at the results from the research, the major influencing factor themes recognized were: *Finance, Value creation, Industry, Team, Environment and Business model.* These variables have a crucial impact on the relationship between the SVCs and the success outcome variable. As discussed earlier, enablers increase the chances of the success of the start-ups while barriers hinders those chances. The inclusion of the motivations and role of SVCs was crucial to illustrate the findings of the research and reduce the generalized sense of the initial conceptual framework. This proposed framework showcases a more elaborate and holistic view on the relationship between the SVCs and the success of sustainable start-ups, something that was lacking in previous literature.

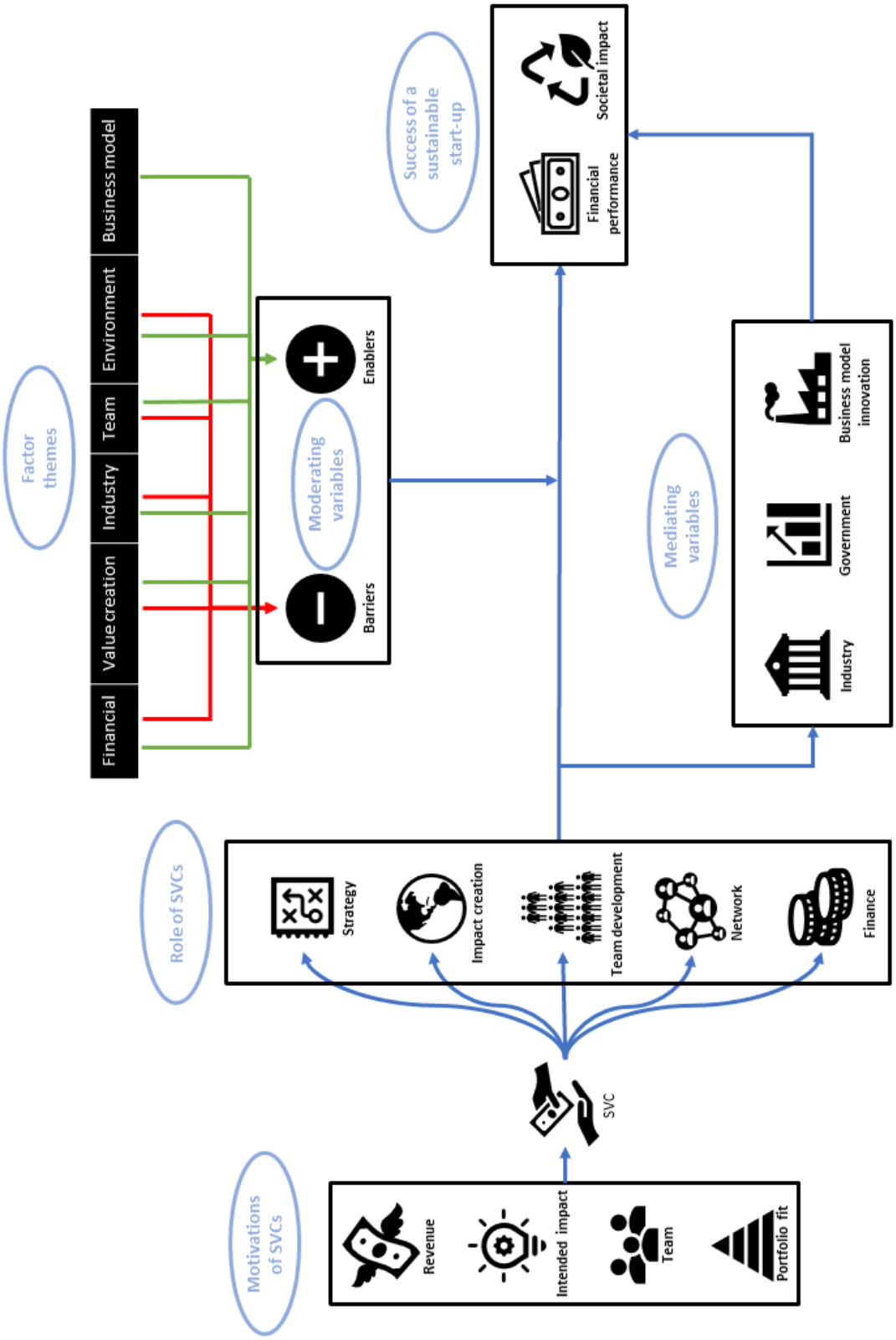

Figure 12 - Revised conceptual framework

5.3 | CIRCULAR VENTURE CAPITAL

This section conceptualises an implementation model for circular venture capital and discusses the process in detail. Figure 9 displays the general venture capital model. This model was inspired by various web sources and previous literature. Figure 10 showcases a newer model for the implementation of circular venture capital and the interaction between elements.

Many barriers in the implementation of circular venture capital were identified in the research:

1. Difficulty in projecting financial results in circular business models.
2. Higher risk with impact propositions.
3. Complex supply chain and logistics management.
4. Longer development and profit durations than sustainable business models.
5. Unclear definition and differentiation from sustainability.
6. Lack of robust and scientific standards developed.
7. Lack of scholarly participation in industry discussions about circular financing.
8. Inaccurate information for financiers.
9. High taxation and categorization of waste.
10. Depreciating value of re-used products.

Before we understand how to implement circular venture capital by circumventing the barriers mentioned above, we first need to understand how exactly a venture capital model works. From figure 9, we understand that there are two distinct types of partners in any investment made by a VC firm: General and Limited partners. General partners are part of the VC firm and are investment managers who are responsible for dealing with and the management of the ventures being invested in. They agree upon deal terms, metrics, and goals for the investment. The main responsibility of limited partners is to fund the investment. Limited partners are organizations or funds (pension, public venture, hedge etc.) which put up most of the money in the investments in the promise of a 5 to 10 times larger return over time. General partners are responsible for raising funds for an investment by convincing any limited partner the feasibility and viability of the venture being invested in. Once the funds are raised for the investment, general partners start negotiations and discussions over metrics and deal terms. After an agreement is reached between the start-up and the VC firm, the work of building the venture and scaling it up starts. If the commercialisation of the product is successful, the profits are split between the general (~20%) and the limited (~80%) partners. Finally, the decision is made to continue the investment or spin-off the start-up. Based on the decision, the start-up is incorporated or sold to another organization.

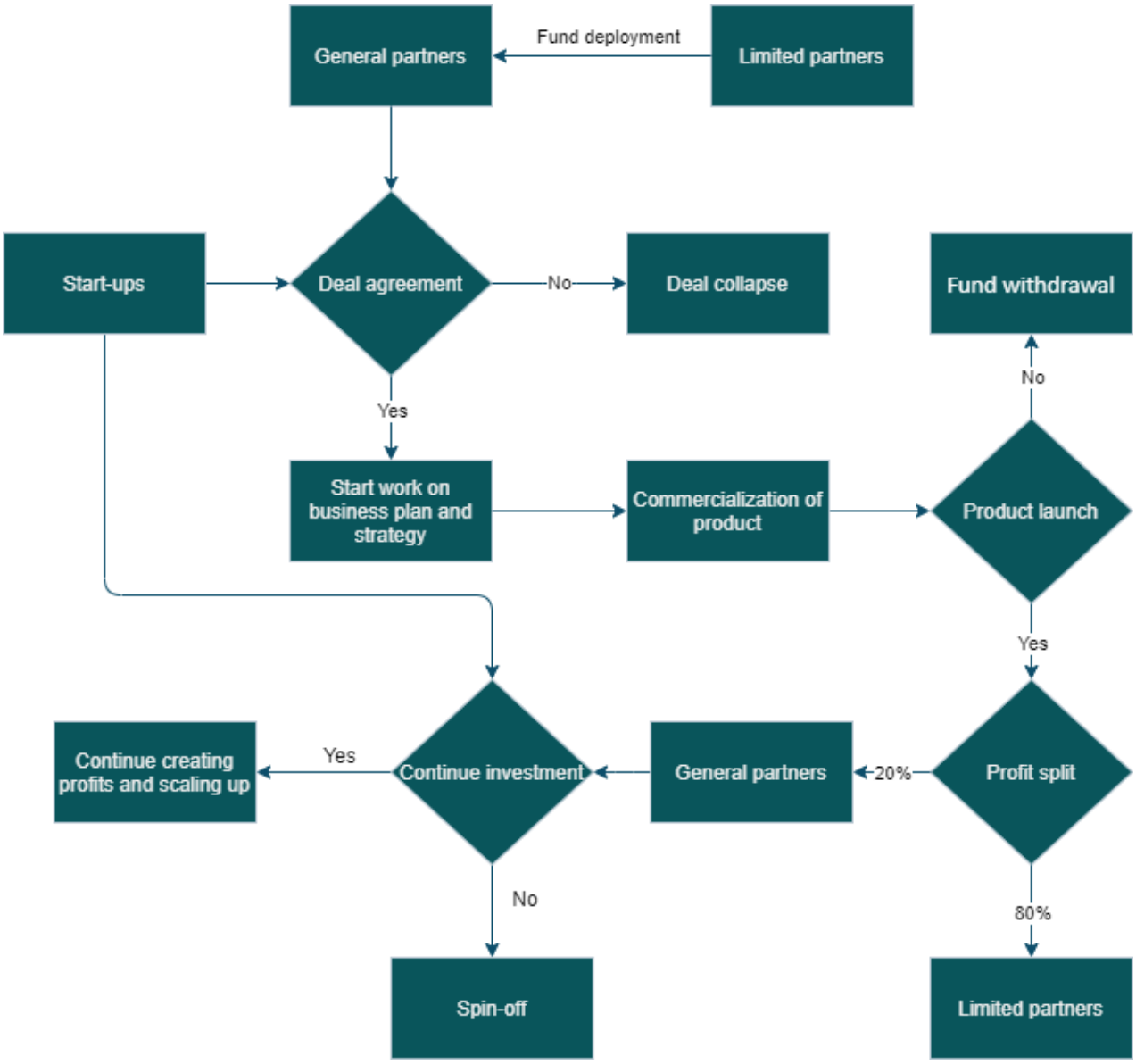

Figure 13 - Venture capital model

The limitation of circular venture capital lie in the hesitancy of investors to put money in an investment which carries high risk and difficult to predict financial returns. Although sustainable start-ups face similar barrier, the risk of having a circular business model is higher due to the specific limitations mentioned above. Figure 10 displays a modified version of the venture capital model which can help with the implementation without the limitations. One solution for the risk of investment within circular start-ups is the use of government issued social impact bonds (SIBs). "A social impact bond (SIB) is a funding instrument that sees private investors pay for an intervention to address a social challenge. How much the government pays investors is linked to the degree to which social and/or financial objectives are achieved. 'Bond' is a rather misleading term here, as SIBs are not bonds but performance contracts between problem owners, entrepreneurs and investors, with the latter shouldering the risk" (Koekoek & Zwietering, 2020). The involvement of SIBs within venture capital does not mitigate the risk of uncertainty of financial returns. What SIBs do is that they allow flexible innovation not constricted by deal terms and they SIBs are based on the social and financial objectives. Hence, bigger the impact, bigger the pay out by the government. If financial profits are not achieved through an investment, the impact created by utilising circular business models is still profitable.

In figure 10, the differences can be seen between a traditional venture capital model and the proposed circular venture capital model. The intermediate evaluators are separate entities which evaluate the change in the impact metric from past projections to the current impact solutions deployed. These evaluations are then mentioned to the government and the pay-off is decided by the evaluators based on the deal terms agreed upon between the investors, VC firms, and start-ups. The immediate risk of losing the entire investment for private investors is removed by the SIBs while allowing freedom in innovation to the start-ups which no longer have to be bound to deal terms by the VC firms. Creating an impact is rewarded and hence the implementation of circular venture capital, if done right, can create transformative impact globally.

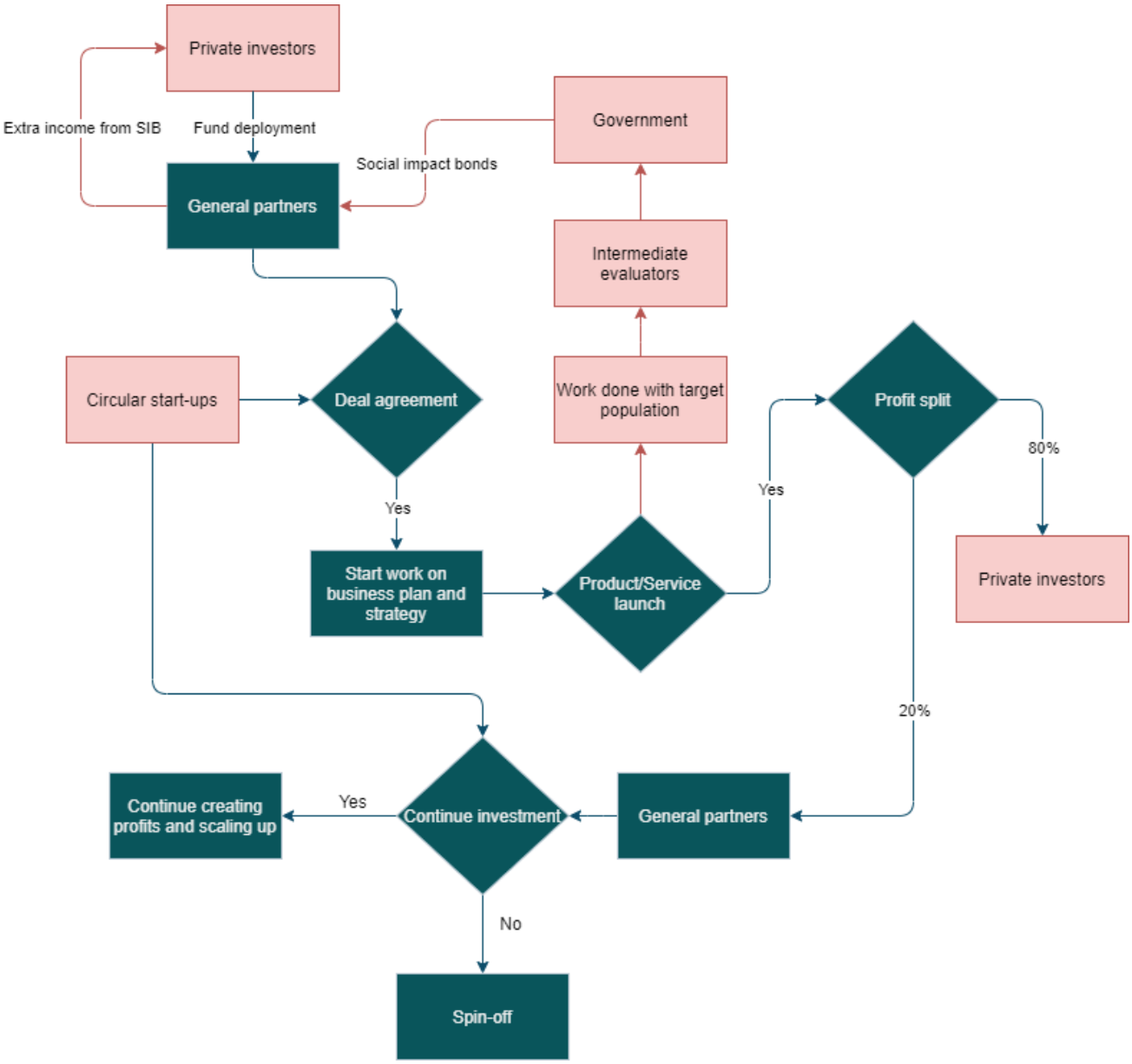

Figure 14 – Proposed circular venture capital model

5.4 | LIMITATIONS AND FUTURE RESEARCH

Identification of limitations is a crucial step for any researcher to properly discuss and draw conclusions from the results. This section focuses on the limitations with both the literature review (5.4.1) and the semi-structured interviews (5.4.2). Section 5.4.3 discusses the potential for future research on the topic of sustainability in venture capital as well as circular venture capital.

5.4.1 | Limitations in literature review

The goal of the literature review was to comprehensively understand the concepts of sustainability, circularity, and venture capital in tandem and review the relevant academic work on these topics. Another goal of the literature review was to find knowledge gaps in the literature. Even though an inclusive review was conducted, there is a good probability that some relevant important topics might have flown under the radar. Another major limitation of the review was the number of research done on the topic of the impact sustainable venture capital has on the success of sustainable start-ups. Unconventional connections between the two elements were harder to find.

Sparsity in the mention of the term, circular venture capital, was a crucial limitation of the literature review. Related topics were studied, factors and barriers were validated through the use of semi-structed interviews to construct a proposed model framework for the implementation of circular venture capital in a practical setting. Due to the complex methodology used within the secondary objective of the research, some information could be missing from the output.

5.4.2 | Limitations in semi-structured interviews

The first limitation of the interview method was the sample size. At the end of the research, the sample size only consisted of 6 subjects in total (4 SVCs and 2 SEs). This limitation was a result of multiple elements that could not be controlled. The first issue with the sample size was the lack of responses generated. In total, around 25 SVCs and 15 SEs were directly approached within whom, 4 and 1, respectively, responded with a positive inclination towards the research. Other methods such as the snowballing method was used to create a wider search base which resulted in one SE responding to the request. The target of a minimum of 10 interviewees was not met and that remains a crucial limitation of the study. The second limitation occurred due to time constraints and the inability and unavailability of the subjects for multiple interviews. Although this limitation did not hinder the progress of the research, verification of facts could have been made easier than going through transcripts and video recordings of the interviews.

Conducting semi-structed interviews has general limitations as well. The qualitative and exploratory nature of the study does not give concrete evidence like a quantitative study. The results are subjective and based on the perspectives of the interviewees. As the research is open-ended, the verification and investigation of causality of results from the interviews is not possible. The final limitation of this method was the labour-intensive approach it had. Conducting interviews, transcribing the conversations, coding the data gathered and then analysing the results takes up a lot of time.

5.4.3 | Future research

Throughout this research, some points were identified that can be used as starting points for future research:

- No information is available in quantitative methods which indicate the success factor of sustainable start-ups. This can be done by conducting case surveys and analysing metric performance and KPIs of these ventures.
- Research can be done on the development of circular venture capital models and tools for the predictability of the models with the output variables being the aforementioned KPIs and impact metrics.
- In the future, if new factors influencing the success of sustainable start-ups is extended, this research can serve as a template for building more comprehensive lists.
- Case surveys can be used in understanding the business models of sustainable and circular start-ups better as the methods used in this research were time consuming and with multiple limitations.
- A more elaborate sample of interviewees needs to be used to validate the findings of this research.

5.5 | THEORETICAL AND PRACTICAL RELEVANCE

The need for accelerated sustainable development is at the forefront of every country in the world. As identified during the research, start-ups are one of the fastest way to achieve this development. Due to their innovations targeting social and environmental problems and their ability to adapt to market changes, sustainable start-ups provide compulsive reasons for their success. Within history, venture capital was seen as the fastest way for entrepreneurial acceleration, while this has remained true, the difference in values between SVCs and traditional VCs has created a difficult path for sustainable entrepreneurs to create lasting impact. This research identifies the reasons for the failure and elaborates on the reasons for the success of these start-ups and provides a comprehensive list within one study for the ease of implementation. To attain true sustainable development, there is a need to create systemic change within industries and as SE-2 said, when asked if start-ups are the fastest way to achieve sustainable development, "*Yes. Because I think there is a fundamental need to build things from scratch again, to try and do it better from the start.*". This chapter discusses the irrelevance of this research has on the theoretical as well as practical perspectives on the topics of sustainable and circular venture capital. Below we discuss the knowledge gaps identified during the research and help understand the implications that this research has on those gaps.

There were multiple knowledge gaps found during the research. The first gap was recognized when Bocken (2015) mentioned in their paper the lack of research done on SVC as the topic was quite new at the time. As the importance to understand SVC was prioritized over time, the impact that SVC can have on the success of sustainable start-ups was not

widely considered in literature. As mentioned in the limitations of the research, the unavailability of specific literature on this impact, makes it difficult to comprehensively understand the relationship between SVC and sustainable start-ups. This research aimed at closing that knowledge gap and provide a complete list of all the factors in one place. This was done by understanding both aspects of the relationship and providing motivations, role of SVCs, enablers as well as barriers as found in the results. The proposed framework helps in that aspect and provides an all-encompassing illustration of the results for ease of understanding. When looking at theoretical relevance within this aspect, many of the factors mentioned in the literature were validated for their practicality by experts in the field but some were disregarded as too general and irrelevant. The most obvious example of this is the removal of business model innovation as an evaluating factor but more of a mediating one. This adds to the theoretical relevance of the research as future studies can provide the correct emphasis on the variables and not overlook crucial factors such as the importance of the media or research institutes for the success of sustainable start-ups. As the research concentrated its efforts on understanding the practical implications of the relevant factors, many such factors were found that were overlooked or not given enough importance while the opposite remains true. Another gap which is acted upon within this research is the unavailability of the topic of circular venture capital within academia. It is a long-held consensus that the lack of availability of literature on the topic is due to infeasibility of the concept. During the research on circular venture capital, it was mentioned that the lack of involvement of academia in turn hampers the development of circular financing. This is due to the absence of correct information given to financiers and the unobtainability of metrics and tools that ensure the emergence of the concept. This research aimed at concentrating its efforts on understanding the initial limitations in the implementation of circular venture capital. SVCs who specialise in building circular businesses, indicated to the researcher how difficult it is to finance circular businesses due to the inability of these businesses to produce returns based solely on impact. This was taken into consideration when articulating the proposed circular venture capital model.

Besides academic contributions of this research, there are relevant, practical implications as well. This paper can be used by a variety of actors such as sustainable and social entrepreneurs to understand the complexity of financing impact first ventures. The list of factors can help these entrepreneurs understand the requirements of attracting investors and also mitigate the structural elements within industries. The proposed circular venture capital model can be implemented by a company with enough resources and vision in tandem with the local governments due to the inclusion of SIBs.

This work is relevant in the fields of venture capital as well as it investigates the relationship between start-ups and venture capital in a more hands-on way. The proposed model for the implementation of circular venture capital needs to be worked on more by experts in the field to materialize the concept into reality. This would help create impact in a more regenerative way and accelerate the transition to circularity in industries.

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6 | Conclusion

This last chapter concludes the research by answering the main research question. Section 6.1 reiterates the main research question and objectives along with general conclusions Section 6.2 dives deep into the recommendations from the researcher.

6.1 | CONCLUSION TO THE RESEARCH

Here the research question and the objectives of the research are recalled below:

The main objective of the thesis is: *To determine the role, influencing factors and impact that sustainable venture capital has on the success of sustainable start-ups*. With the secondary objective for the research being: *To explore whether circular venture capital can exist in practice*.

The main research question is: *How do sustainable venture capitalists influence the success of sustainable start-ups?*

Most literature on sustainable venture capital since the formation of the term at the beginning of the century was based around the basic differences between traditional venture capital and sustainable venture capital. As time progressed, the influence of governmental bodies and policies on the operations of SVC was discovered and highlighted. More recently, the inclusion of new topics such as sustainable development goals, industrial symbiosis, circular business models etc. was identified. The lack of research done on the relationship of SVC and sustainable start-ups was used as a knowledge gap that was answered during the thesis.

To influence the success of sustainable start-ups, SVCs first need to understand if the start-ups and its components conform with the needs of the SVC's portfolio. To analyse this, research was focused on accumulating a list of motivators and demotivators for the SVC to invest in sustainable ventures. This part of the research was also focused on answering the first sub-question: *What are the motivations behind the investments made by sustainable venture capitalists?* In total, 20 factors were found in the literature and through interviews within which 65% (13) of the list are identified as motivating factors while 35% (7) were identified as demotivating factors for SVCs to invest in sustainable start-ups. These factors envelope multiple categories , external and internal alike: Financial, environmental and start-up focused categories. Some examples of the factors found were: *good fit with the investment thesis, existing network, triple bottom line approach, impact assessment, lack of exit opportunities and uncertain market environments etc.* Along with these factors, the roles that SVC play in shaping the influencing factors for the success of sustainable start-ups was also investigated. *To create a business model with a dual metric approach which include financial scalability as well as impact metrics. The offer of impact focused networks and access to markets with incumbent forces along with purpose driven investments* were some of the major roles that SVC play in the development if impact ventures.

One of the most significant sub-question was to understand and compile a list of influential factors that affect the success of sustainable start-ups. The sub-question was: *What are the critical factors that influence the success of sustainable ventures?* The answer to this question was critical to understanding the complexities behind the growth of sustainable start-ups and to understand the urgent need for impact financing. It was found that within the total number of factors found, a majority of them were barriers towards the success of sustainable start-ups. This highlights an important point within the research where the difficulties for these start-ups to scale up is met with barriers that are mostly out of the hands of the venture themselves. Hence, the importance of impact investing is highlighted. Within a total of 39 factors found, 17 (~44%) were enablers while around 22 (~56%) were factors that hinder the success of these ventures. Some examples of the new findings within the context of influencing factors were: *Founder networks, research institutes, impact proposition, bad cash management, team diversity and product-market fit etc.*

The second objective and the last sub-question of the research led to interesting findings. The last sub-question was: *What is circular venture capital and how can it be implemented?* The lack of academic data available on circular venture capital forced the researcher to take an interpretative approach to the topic. Due to sparse literature on circular financing along with discussions with the experts within the field of sustainable financing, a working definition of circular venture capital was established. *Circular venture capital can be defined as the sole financing of start-ups with circular business models to enable circular economy and accelerate the transition towards sustainable development.* This definition was developed by the researcher due to negligible mention of the term in academic literature. The implementation of circular venture capital is challenging due to many implementation barriers present. Most of these barriers have to do with the difficulty in predicting financial returns from circular business models which scare away investors. With these barriers in mind, a circular venture capital implementation model was proposed which aims at mitigating the risk of zero/distant financial returns through an investment.

The main research question was derived from knowledge gaps present in the literature of sustainable venture capital. So how does sustainable venture capital influence the success of sustainable start-ups? The importance of SVC can be understood by looking at the factors that act as barriers towards the success of sustainable start-ups. Sustainable entrepreneurs and especially ones with impact first start-ups generally tend to lack a strong business rigor and acumen. This is something that any expert in the field of venture building can help them with. Where SVCs play an imperative role is when the impact metrics are the sole focus of these ventures. SVCs help in balancing the financial goals as well as the impact goals of the start-ups. Cash management, specific networks within the sustainability industry, creation of products which fit market requirements and helping small ventures mitigate the industrial structures like incumbent forces and access to markets is the role that SVC play in enabling a sustainable start-up to be successful.

Impact start-ups play a crucial role in transforming long held business ideals and practices. This done by introducing disruptive innovations, creating social and environmental impact

while focusing on scaling up the venture from a strictly business building perspective. Scalability vs social impact is a question that SVCs help in answering. If the impact start-ups are taught how to circumvent barriers and grow their organization the impact they create increase as well, they are the key in creating impact that is transformational to the industry. Next, the researcher recommendations are discussed.

6.2 | RECOMMENDATIONS

This section identifies certain recommendations that different groups like academics, sustainable entrepreneurs and venture capitalists can take from this research.

6.2.1 | Recommendations for academia

During the course of this research, multiple barriers were found in identifying relevant papers specific to this topic and topic of circular venture capital. The main recommendations for academics through this research will be to engage in the study and possibilities of the implementation of circular venture capital. As more and more circular start-ups come through to achieve circular economic transition, the more help they will require in understanding their options in financing. Understanding the concepts of venture capital is not enough and just like sustainable venture capital came up from to practice through research done in academia, circular venture capital needs to have the same opportunity. Another recommendation would be to create robust and scientific based tools and predictive models for the circular business models. This has been a barrier for the implementation of circular venture capital.

6.2.2 | Recommendations for sustainable entrepreneurs

The main recommendation for sustainable entrepreneurs will be to study and understand the difference between creating impact on a small scale with the resources they have and having the ability to grow their businesses without the help of external forces. Sustainable venture capitalists can help balance the metrics and performance indicators but with this research, the hope is that sustainable entrepreneurs understand the importance of having the knowledge and business acumen to bypass the barriers and focus on the enablers that lead to the success of their sustainable start-ups.

6.2.3 | Recommendations for venture capitalists

Circular start-ups are the future of every industry. Creating business models which enable regenerative growth in finance, resources and impact is inevitable given the sustainable development goals in each country. The main recommendations for venture capitalists would be to use the proposed circular venture capital implementation model and develop it further. Financial unpredictability is not a reason to not invest in purely circular business models. This model can be used as a starting point to develop more comprehensive models that can be used in practice.

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Appendices

I – Themes and key questions from interviews

II – Taxonomy of sustainable business model patterns

III – Interview Protocol

IV – Codes and quotes from interviews

Appendix I – Themes and key questions from interviews

Theme	Sub themes	Key questions
Introduction	1. Motivation behind involvement in organization. 2. Investment portfolio and exit strategies.	1. Why did you get involved in this organization? What was the vision behind it? 2. What value can a switching to a sustainable business model bring to the industry? 3. What is your investment portfolio?
Success and failure of sustainable businesses.	1. Examples of successful and failed businesses. 2. Reasons for success and failure. 3. Opinion on influencing factors. 4. Analysis of influencing factors found in literature. 5. Importance of business model.	1. What are some of the examples of successful sustainable business? What were the critical factors that made them successful? 2. What are the examples for sustainable businesses that failed? What were the factors that played a role in that failure? 3. How important is the novelty of the business model as an investment motivation?
Sustainable venture capital and development of Success as a construct.	1. Impact of different actors in a sustainable business. 2. Important elements of success. 3. Roles of actors in financial performance, business model innovation and societal impact.	1. What is the role of sustainable venture capitalists in enabling the success of sustainable start-ups and how is different from traditional venture capital? 2. How would you describe success of a sustainable start-up? What are your thoughts on different important elements? 3. How would you rate the selected elements of success? 4. What are the other actors that influence the growth of sustainable start-ups? And

		how do they influence the success/failure? 5. Is there a difference in support/guidance needed between "conventional" and "sustainability" start-ups?
Circularity.	1. Opinions on circularity in young businesses and venture capital.	1. Is circularity more important than sustainability in development of start-ups and their success or vice-versa? 2. What are more likely to succeed and attract investor attention? Purely circular business models or purely sustainable business model (without circularity in processes)? 3. Is there a world where you can see circular venture capital materialize after the emergence of sustainable venture capital? And how important do you think this transition can be in achieving sustainability goals?
Future research	1. Recommendation on future research. 2. Possible solutions to the enable the success of start-ups.	1. What role can other actors play in the adoption of sustainability in different industries? 2. Are start-ups the fastest way to achieve sustainable development? 3. Do you have any suggestions as to what else can be added to the research?

Appendix II – Taxonomy of sustainable business model patterns

Primary associated value creation (group)[a]	SBM pattern groups	Associated value creation (group and pattern)[a]
Mainly economic	G1 Pricing & Revenue Patterns	Primary: mainly economic/ Secondary: social–economic
	P1.1 "Differential pricing"	Social–economic
	P1.2 "Freemium"	Social–economic
	P1.3 "Innovative product financing"	Mainly economic
	P1.4 "Subscription model"	Mainly economic
	G9 Service & Performance Patterns	Primary: mainly economic / Secondary: ecologic–economic
	P9.1 "Pay for success"	Mainly economic
	P9.2 "Product-oriented services"	Mainly economic
	P9.3 "Result-oriented services"	Ecologic–economic
	P9.4 "Use-oriented services"	Ecologic–economic
Social–economic	G7 Access Provision Patterns	Primary: social–economic/ Secondary: multiple
	P7.1 "Building a marketplace"	Social–economic
	P7.2 "E-transaction platforms"	Social–economic
	P7.3 "Experience-based customer credit"	Social–economic
	P7.4 "Last-mile grid utilities"	Social–economic
	P7.5 "Value-for-money degrees"	Social
	P7.6 "Value-for-money housing"	Mainly social
	G10 Cooperative Patterns	Primary: social–economic/ Secondary: none
	P10.1 "Cooperative ownership"	Social–economic
	G2 Financing patterns	Primary: social–economic/ Secondary: mainly economic
	P2.1 "Crowdfunding"	Mainly economic
	P2.2 "Microfinance"	Social–economic
	P2.3 "Social business model: no dividends"	Social–economic
Social	G6 Giving Patterns	Primary: social / Secondary: none
	P6.1 "Buy one, give one"	Social
	P6.2 "Commercially utilized social mission"	Social
	G8 Social Mission Patterns	Primary: social / Secondary: social–economic
	P8.1 "Expertise broker"	Social
	P8.2 "Market-oriented social mission"	Social
	P8.3 "One-sided social mission"	Social
	P8.4 "Social business model: empowerment"	Social–economic
	P8.5 "Two-Sided Social Mission"	Social
Mainly ecological	G3 Ecodesign Patterns	Primary: mainly ecological / Secondary: ecologic–economic
	P3.1 "Hybrid model / Gap-exploiter model"	Ecologic–economic
	P3.2 "Maximise material productivity and energy efficiency"	Mainly ecological
	P3.3 "Product design"	Mainly ecological
	P3.4 "Substitute with renewables and natural processes"	Mainly ecological
	G4 Closing-the-Loop Patterns	Primary: mainly ecological / Secondary: ecologic–economic
	P4.1 "Co-product generation"	Ecologic–economic
	P4.2 "Industrial symbiosis"	Ecologic–economic
	P4.3 "Online waste exchange platform"	Ecologic–economic
	P4.4 "Product recycling"	Ecologic–economic
	P4.5 "Remanufacturing / Next life sales"	Mainly ecological
	P4.6 "Repair"	Mainly ecological
	P4.7 "Reuse"	Mainly ecological
	P4.8 "Take back management"	Mainly ecological
	P4.9 "Upgrading"	Mainly ecological
Integrative	G11 Community Platform Patterns	Primary: integrative / Secondary: none
	P11.1 "Sharing business"	Integrative
	G5 Supply Chain Patterns	Primary: integrative / Secondary: multiple
	P5.1 "Green supply chain management"	Mainly ecological
	P5.2 "Inclusive sourcing"	Mainly social
	P5.3 "Micro distribution and retail"	Social–economic
	P5.4 "Physical to virtual"	Mainly economic
	P5.5 "Produce on demand"	Mainly economic
	P5.6 "Shorter supply chains"	Integrative

Appendix III – Interview protocol

This section provides the interview protocol used for all the semi-structured interviews during the research. The protocol is presented in a step-by-step manner for ease of understanding and to provide a concise but detailed report on how the interviews were conducted.

Step 1 – Design of a general script

The script was designed to allow the researcher to follow a more organized conversation with all of the participants. This does not mean that everything said and asked in the interviews were same. Due to the difference in expertise of the interviewees ranging from entrepreneurs to SVCs, two separate questionnaires were designed in a way that produce more relatable factors which can be further coded in a similar manner.

Step 2 – Introduction of participants

The interviews started with a general introduction of the participants, their experience in the business and their motivations behind choosing the field of sustainability or sustainable venture capital for entrepreneurs and venture capitalists respectively. This allowed the researcher to discuss these experiences in more detail if required and to set up a rapport with the participants. This also gave an opportunity for the researcher to ask for consent and permission to record the interview at the beginning of this step.

Step 3 – Introducing the topic in detail

After the introduction of the participants, the actual interview begins with the researcher explaining the structure of the interview and provides a detailed explanation of the topic, the motivation for the thesis and progress up until that point. This provides the interviewees with an opportunity to ask questions about the topic and understand the requirements of the interview.

Step 4 – Question on the success and failure of sustainable start-ups

This step is essential in answering the main research question as it dives into the motivations of SVC and the role, they play in enabling the success of a start-up. In the case of entrepreneurs, they are first asked about if they have had experience with any sort of venture capital while building their business and if so, how did that impact their business operations. After collecting the SVC side of the conceptual model, the influential factors found during the literature survey are discussed and used as a frame to determine the legitimacy of the factors in a practical set-up.

Step 5 – Questions on circularity in businesses and venture capital

This step focuses on the secondary objective of the thesis where circular venture capital is discussed. First the difficulty in financing circular businesses was discussed which was swiftly followed by the idea of having a circular venture capital. This step was used as a

probing mechanism to help engage the participants in the formation of a venture capital model which can be used to finance circular business models more often. Things like implementation issues and ideas on circumventing them were then discussed in an open manner. This gave the researcher a clear view on the possibilities of the topic and made it easier for him to visualise and construct an implementable model with the potential to be further developed in future research.

Step 6 – Conclusion and general protocol

After the round of questions was ended, the participants were asked if they have any questions about the topic or any recommendations for future interview subjects. This concluded the interview.

As a general protocol for the interviews, there were certain points that come to light:

1. Open ended questions were designed to elicit rich and detailed answers.
2. The language used was English but the infrequent use of Dutch words by the participants was clarified by the interviewer so as to not miss on important details.
3. Consent forms were sent out after the interview which provided the researcher with permission to use the data gathered in the interviews.
4. The interviews were limited to a maximum of one hour.
5. All the interviews were conducted on Zoom due to Covid-19 restrictions, except one which was a phone interview.

Appendix IV – Codes and quotes from the interviews

Themes	Codes	Quotes
3 elements of success	Business model innovation: Positive	*~ I think the software business model is going to work. Probably going to outperform the hardware business model.* *~ a sustainable start-up should be one which has figured out a business model. And can grow at a good pace and eventually become big* *~ Something that genuinely delivers greater value and you're able to communicate that clearly, yes. And then as a result, investors care about that.*
	Business model innovation: Negative	*~ I don't the BM always has to be something really new, so you can also perform really well in a different way.* *~ Rationally, we should say no, it doesn't and both customers and investors are smart enough to, you know, see through them.*
	Societal impact	*~ It's judged on CO2 impact, so that's kind of like impact performance. And I think those are the main ones for us.* *~ It's really the test when it makes the combination of, of a financially viable business with a circular or sustainable product, for sure.* *~ I think most people would agree that people are seeking an improvement on environmental & social impacts.*
	Financial performance	*~ So, we have our fund by our shareholders, you know, is judged on financial performance.* *~ Success would be if we grow this to be a company which can survive on its own revenues.* *~ Financial success is, is the key for making sustainable impact.* *~ Financial success is still important*
Barriers to the success of sustainable start-ups	Finance	*~ Start-ups most prone to fail in our portfolio is due bad cash management.* *~ They need access to finance.* *~ Access to line finance is a big problem.*

		~ It's just hard to compete because you have lower resources and don't necessarily have the same promise of a big exit out of your employee. *~ And it was a very specifically lack of capital.*
	Value creation	*~ You need to be very sure that the impact proposition and the theory of change behind it is watertight.* *~ So you're not focused on a specific, specific type of market. So too broad an attention space.* *~ Re-identifying sustainable, scalable business models while you know, delivering on your impact goals. I see that as a fundamental tension, that's really challenging to, to solve.*
	Industry	*~ First one is product market fit is not achieved. So simply put the market does not have a need for the product or service that you built up.* *~ So, entry into the markets was one thing that was very difficult for start-ups. And that was one of the reasons that they failed it.* *~ Access to markets or, or at least the ability to compete in the markets as well is a challenge.*
	Team	*~ Team blowouts, luck, bad luck and number of things.* *~ The governance side, on the shareholding side, on the network side, on the hierarchy side, you start to see strings and the ability for the company to change becomes very limited.* *~ Naivity of people who think that they can do it but don't see the hurdles themselves.* *~ With people who are impact first, typically do lack like fundamental business skills.*
	Environment	*~ Big hurdles nowadays are media and politics.* *~ You need corporates, you need big structures. Otherwise, society collapses. But if you don't change by means of innovation, society dies. So, you need both of them, but you need them in balance.*

		~ But I also think that having incumbent forces, but it depends on the market.
Enablers to the success of sustainable start-ups	Value creation	*~ making something that people want to buy, but that's kind of like the most obvious one.* *~ So have to bring innovation and some you know, some way and then take it forward, make, make that scale.*
	Team	*~ It's the team. I think if you have young, motivated founders that are intelligent and problem solving oriented, that's when I think that's when you're most likely to have a success in your portfolio.* *~ The founder network that the network of the founders is also a very important thing.* *~ I think like from business building angle, especially in the early stage, it has a lot to do with the founders themselves.* *~ The team add a very significant part of the probability of success.* *~ Attract high quality talent.* *~ Early stage, a lot of it is of course, around talent first.*
	Environment	*~ I had argued that it's the government's job. But if it's not the government, then it's venture capital.* *~ Connectors around them can essentially connect them with the right people who can accelerate their journey.* *~ The first is research institutions and academia, right? So, the technology transfer, intellectual property spin out, the kind of mechanisms that you can employ as a university or as an institute to you get that cutting edge research out there and commercialized is super important.* *~ But then also there's government and policy makers especially of course in Europe.* *~ Engaging with the right parts of the ecosystem at the right time in order to facilitate your startup.*
	Finance	*~ You must have a financial plan that will continue to change.*

		~We tend to measure success on basis of financial performance. *~Financial success is, is the key for making sustainable impact.* *~ Financial success is still important.*
	Industry	*~ The field in which you are trying to work or operate is as an important factor* *~ Commercialization, timing element there around you know, you could be developing the best, you could be developing like the best new drug delivery mechanism for cancer, which is the start-up I mentioned earlier. And yet there's just no market factors, which would actually help you.*
	Business model	*~The second one would be obviously the business model has to make sense. The idea must make sense like that.* *~You look at is the, the business plan that they have. So, the quality of the plan if you have a perfect plan, it's 25% of the probability of success.*
SVC motivations	Financial performance	*~ We look at a three things: Financial return, the societal and economical return* *~ If you're not financially interesting, If you're not financially viable, then you won't make a big impact.* *~ We invest in companies that already have some revenues.*
	Scalability	*~ So we do not only look at financial performance before we invest, but also a business model. Is it new? Scalable?* *~ We also have to look at what, what stage are these companies in? So that's also important for us and It depends on the company, how much impact we can have as an, as an investor on the growth of the company.*
	Impact	*~ So we also have to invest in the province and it has to have a link of sustainability.* *~ Three main areas of investments, so that is circular economy, sustainable mobility and energy transition.*

		~ People are seeking an improvement on environmental social impacts and depends on where you live. Like some people leave like reduction of harm. And so, across the spectrum to like, you know, improvement of improvement of groups and actually outcomes. Right. And I think if you look at investors then I think there's people across that sort of dynamic. *~ Purposeful investments tied to the outcomes.*
	Portfolio fit	*~ So there must be some kind of, you know provable, CO2 reduction impact that the company makes with either their product or their, or the surface they lend. We do both hardware and software.* *~ Has to be in the province of North Holland.*
	Team	*~ So, our team is obviously a very important one.* *~ When we invest in more venture capital type of companies, then it's definitely the team. The team is really important.*
SVC role	Strategy	*~ The willingness to look at companies that have a very definite focus on making impact used to be a disqualifying thing for traditional VCs.* *~ They come in with their networks with practical experience of having built businesses.* *~ That is where venture capitalist can make a real difference if they have a lot of expertise themselves and they can add this mirror function for the scale-ups.* *~ They know the product better than us, but we can help, but we mostly help with this more strategic thinking.* *~ A lot of it is trying to get them to really navigate the system well and really not lose sight of that, the impact they're trying to deliver.* *~ Engaging with a you know, a public sector organization through an acceleration program,*

		because it means that you're getting faster to feed user feedbacks than you would do otherwise. *~ Network and specifically network in the sense of first, customers or users and network in the sense of scaling partners*
	Impact creation	*~ As an impact VC, we have additional value will be in the in the sense of like ESG monitoring, helping them define their impact KPIs.* *~ We care about multiple impacts, we care about financial return, but that second, and that's used as that as a means to keep the business going and to keep, you know, the investor going.* *~ I'm not going to give you one metric, which is like growth. I'm going to give you a metric as well, which is around how you deliver great impact.* *~ What's our bigger mission? How can we expand the impact beyond just increasing in line with our sales? So what are the other things we can do which still makes business sense?*
	Team development	*~ Hiring additional people in the team with more leadership experience as the team grows can help them scale their data infrastructure or scale their operational capacity in a way that doesn't kind of hurts the R and D and the tech element you want to do.* *~ Do we have the right people? Are the people motivated in the right way? How do we motivate people? Is money, the right motivation, and that sort of stuff.*
	Network	*~ VCs would typically also do is bring in the network.* *~ They come in with their networks with practical experience of having built businesses.* *~ Some more sector specific investors, they'll have a lot of connections. So ultimately you maybe fill up your cap table with people with varied experiences.*

		~ So, because there's a sort of nascent areas, there's a lot of other work potentially that are venture capitalists' kind of type to make sure the ground is fertile so their portfolio companies succeed, you know? And so I think was an increasing role for that in really impactful venture capitalists. *~The network they wanted, and they came to for us was actually access to the public sector*
	Finance	*~ Willingness for our longer investment horizons, too.* *~ The CapEx and the investment required for us would be smaller as compared to someone in hardware.* *~ Purposeful investments tied to the outcomes.* *~ The life cycle of these non-quity institutions works often out of step with that of a start-ups and that is where SVC helps.*
Traditional vs sustainable venture capital	Subject expertise	*~ If a venture capital firm doesn't have deep expertise, the really inside out knowledge, not theoretical expertise, but operational expertise. They know what they're talking about. If they don't have it, they cannot act as a scale-up venture capital.* *~ What's our bigger mission? How can we expand the impact beyond just increasing in line with our sales? So, what are the other things we can do which still makes business sense. You know, in the long-term what can we do? That's going to expand our handprint, which is like the good version of footprint you know, to maximize the impact beyond, you know what we can do through sales and other things.*
	Importance of impact	*~ More traditional venture capital firms, know how to grow. Sustainable companies do sometimes tend to focus more on the sustainability and not so much on the how to grow my business and how can I expand it? And that sort of thing, sustainable venture*

		capitalist, where impact investors can, can help them with. *~ The primary driver for traditionally for venture capitalists and start-ups has been growth. But I think that that paradigm is different when you're looking at sustainable start-ups. They require different metrics around finance and impact.* *~ What's our bigger mission? How can we expand the impact beyond just increasing in line with our sales? So, what are the other things we can do which still makes business sense. You know, in the long-term what can we do? That's going to expand our handprint, which is like the good version of footprint you know, to maximize the impact beyond, you know what we can do through sales and other things.* *~ They've merely seen the business model was a means to create more impact. And those are the ones that are very hard to invest in if you're a typical investor.* *~ It constrains a lot of innovation rather than enabling a lot of innovation is the terms in which the VCs have the agreed the deal. The overemphasis on like user base growth rates, that sort of stuff also. But it's always about money, always.*
	Network	*~ They can add value, but it depends on the investor. Many times, you'll have investors who are not really part of the market that you are in explicitly, but they're passionate about the space. They understand what you're doing. So, they'll put in money, but they may not have a direct customer connect for you. Whereas some more sector specific investors, they'll have a lot of connections.* *~ Because there's a sort of nascent areas, there's a lot of other work potentially that are venture capitalists' kind of type to make sure the ground is fertile, so their portfolio companies succeed, you know? And so, I*

		think was an increasing role for that in really impactful venture capitalists.