Scaling Sustainable Business Models through Strategic Design

A Framework for Designing Resilient & Sustainable Businesses

Master Thesis | Anshuman Panigrahi

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Scaling Sustainable Business Models through Strategic Design:
A Framework for Designing Resilient & Sustainable Businesses

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Dedicated to all the designers, entrepreneurs and innovators who are working tirelessly to create a more sustainable and equitable world.

I hope this framework can serve as a useful tool and a source of inspiration for you.

Preface

This thesis stems from my deep passion for sustainability and business innovation and falls at the intersection of these two fields, which I find incredibly fascinating and crucial in today's world. Startups now face many challenges and opportunities in scaling their impact and operations and need a more holistic and strategic approach to designing and implementing sustainable business models that can create positive change. This led me to explore the potential of strategic design as a discipline that can bridge the gap between sustainability and scalability and provide a framework to guide and inspire sustainable startups in their scale-up journey. I believe the current focus of sustainability initiatives is mainly driven by an environmental and social perspective but not a business one. My primary motivation for the thesis is to explore how sustainability can become more profitable so that more and more businesses are motivated to integrate sustainability into their core value proposition.

Overall, my personal motivation and learning goals for this thesis are driven by a genuine desire to contribute meaningfully to the field of Sustainable Business Model Innovation and develop the literature necessary to contribute positively to the business world through design.

Acknowledgements

I would like to express my sincere gratitude to my supervisors, Dr. Shahrokh and Dr. Giulia, for their invaluable guidance and support throughout this thesis. Their expertise, feedback and encouragement have been instrumental in shaping this research project. I am also grateful to the founders of sustainable startups who generously shared their insights and experiences with me during the interviews. Their stories and perspectives are what bind this thesis together. Furthermore, I would like to thank all the students who participated in the business case workshop and provided constructive feedback on the pre-framework. Their enthusiasm and creativity have helped me refine and validate the framework. Finally, I would like to acknowledge the support and love of my family and friends, who always believed in me and motivated me to pursue my passion. This acknowledgement would be incomplete without mentioning Daman, Tejas, Deepesh, Yash, Lori, Sjoeke, Raga, Ojas and many more friends who kept me going with tea and countless cups of coffee.

This thesis would not have been possible without you...

Delft. July 2

Executive Summary

Sustainability's role in the current business environment is increasing for several reasons, such as regulatory requirements and consumers favouring eco-friendly practices. Nevertheless, sustainability-focused startups often struggle to scale their impact due to several challenges, including the lack of a comprehensive framework that helps them transform their Sustainable Business Model to be scalable and resilient. This study seeks to connect this gap by creating a framework that aids startups in scaling their operations and impacts using strategic design. The research methodology is structured around the Double Diamond Design Process starting with an extensive literature review focusing on sustainable business model innovation and scalability, several frameworks that enable them, and some strategic design tools. This is followed by empirical studies involving semi-structured interviews with founders of sustainable startups and a business case workshop, where students are asked to create scale-up strategies for an imaginary startup through a pre-framework developed in the previous phases.

This results in the development of the Sustainability Scale-Up Framework (SSF), which enables sustainable startups to develop resilient scale-up strategies using strategic design. The SSF consists of several interconnected components: Vision, which involves establishing a clear and compelling vision aligned with the startup's sustainability goals and worldview; Value Propositions, which focus on developing innovative products and services that meet stakeholder needs; Value Creation Mechanisms, aimed at optimising processes and operations to enhance efficiency; and Impacts & Strategies, which create implementable strategies to maximise impact. This multifaceted approach ensures that startups can navigate the scaling process effectively while maintaining their commitment to sustainable vision. The study also identifies some common challenges to scaling, like vision alignment and sustainability value tensions, and underscores the role of strategic design in overcoming these challenges by fostering innovation and adaptability. By integrating strategic design thinking with business strategy, the SSF provides a structured and iterative approach to addressing the complexities of scaling sustainable startups.

In conclusion, the SSF offers significant theoretical and practical contributions to the field of Sustainable Business Model Innovation and Business Scalability. It provides a structured approach for startups to scale their impact sustainably, addressing critical barriers and leveraging innovative strategies. Future research could explore the long-term implementation of the framework across various industries and geographies, further refining its components and validating its efficacy. This thesis presents a robust framework that integrates strategic design principles to support the scalability of sustainable startups, paving the way for these businesses to achieve long-term success and impact.

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CHAPTER 1

Introduction

This chapter introduces the project and gives some background on sustainability and sustainable business models. It also defines the problem, assignment, and approach and presents a reading guide for this project.

In this chapter:

1.1. Background

Sustainability is a key challenge and opportunity for businesses in the 21st century. Being a business today is about more than just making profits. It is also about caring for our planet and treating people fairly (N. M. P. Bocken & Bogaert, 2016). In recent years, sustainability has transitioned from a peripheral concern to a central strategy for businesses seeking long-term success (Ivory & MacKay, 2020). One primary reason is the mounting regulatory pressures as governments enforce policies to curtail carbon emissions and promote eco-friendly practices (Porter & Kramer, 2006). Another reason is that consumer awareness regarding environmental issues influences purchasing decisions, prompting companies to adopt sustainable practices as an ethical obligation and a strategic differentiator (Schaltegger & Wagner, 2011). This consumer-driven demand for sustainability is compelling businesses to integrate environmental considerations into their operations (Hart & Milstein, 2003).

In 2023, the number of executives who recognised the business case for sustainability tripled compared to the previous year. This shift is not only a response to regulatory pressures or consumer demands but a strategic move to harness the opportunities presented by sustainable practices (Garcia, 2024). As businesses prepare to increase their investments in sustainability in 2024, the business case for sustainability has been solidified.

Investing in sustainable technologies can lead to innovation and operational efficiencies, resulting in cost savings through reduced energy consumption and waste minimisation. These improvements can enhance financial performance and shareholder value (Orlitzky et al., 2003), essential for sustainable startups to lay their foundations and scale up.

When can you call a business a 'Startup'?

The European Startup Monitor (Kollmann, 2016) defines a startup as a business with these three characteristics:

- They are younger than 10 years.
- They feature highly innovative business models and/ or technologies.
- They strive for sales and employee growth (Scaling up).

A commitment to sustainability can bolster a business's brand reputation and engender loyalty among stakeholders, attracting customers, employees, and investors who prioritise environmental stewardship (Bhattacharya & Sen, 2004). This alignment can foster a motivated workforce and a robust corporate culture, contributing to long-term business success (Laszlo & Zhexembayeva, 2017).

Furthermore, sustainability serves as a critical component of risk management. Ignoring environmental and social governance (ESG), factors may expose businesses to regulatory non-compliance, supply chain vulnerabilities, and reputational harm

(Klassen & McLaughlin, 1996; Korkmaz, 2022)(Klassen & McLaughlin, 1996). By embedding sustainability into their strategic framework, startups can mitigate these risks and create resilient scale-up strategies by ensuring ESG compliance, creating robust supply chains and building reputable brands in the face of global shifts.

While sustainability offers several of these advantages to businesses, transitioning to sustainability presents several challenges, which are multifaceted and often hamper a startup's ability to scale up. One of the primary challenges is the initial cost of adopting sustainable practices. Implementing eco-friendly technologies and processes can require significant upfront investment, which can be a barrier for small and medium-sized enterprises (SMEs) and startups (Purwandani & Michaud, 2021).

Another challenge is the lack of clear standards and metrics for measuring sustainability. Without universally accepted guidelines, businesses may struggle to assess their environmental impact accurately and communicate their sustainability efforts to stakeholders (Lozano, 2012). This poses a huge challenge for startups that rely on communicating their environmental and social impact to establish themselves as sustainable brands.

Furthermore, the complexity of supply chains can make it difficult for businesses to ensure sustainability throughout their operations. They must collaborate closely with suppliers to guarantee that materials and processes meet sustainability criteria, which can be challenging, especially in global supply chains (Seuring & Müller, 2008; Zhu et al., 2024). This threatens startups as this supply chain may create a bottleneck for their expansion.

The short-term focus of many businesses, driven by the pressure to deliver immediate financial returns to shareholders, can conflict with the long-term perspective required for sustainability. This short-termism can prevent businesses from investing in sustainability, which will pay off over time (Slaper & Hall, 2011).

In conclusion, startups face challenges such as high initial costs, lack of clear standards, internal resistance, complex supply chains, short-term focus, and regulatory uncertainty when adopting sustainability, especially when looking to scale their impact. Addressing these challenges requires a concerted effort from businesses, governments, and other stakeholders to create an environment conducive to sustainable practices.

What is Strategic Design?

Strategic design is an emerging design field defined in literature as "a professional field in which designers use their design practices to co-determine strategy formulation and implementation towards innovative outcomes that benefit people and organisations alike." (Calabretta & Gemser, 2017).

The strategic design approach is one approach to tackle these challenges and create opportunities for startups to create sustainable value. Strategic design offers comprehensive tools and methods to overcome these challenges. It emphasises the integration of design thinking and business strategy to develop innovative solutions that are both sustainable and economically viable (Gallego et al., 2020; Manzini & Vezzoli, 2003). Strategic design also advocates for

developing clear standards and metrics for sustainability. Utilising design principles can create more effective measurement tools that capture the full spectrum of sustainability, including environmental, social, and economic dimensions (Boons & Lüdeke-Freund, 2013).

Cross-disciplinary collaboration is a cornerstone of strategic design, enabling businesses to address the high initial costs of sustainability by pooling resources and expertise. By fostering partnerships across different sectors, startups can share the burden of investment and accelerate the development of sustainable technologies, which will eventually help them scale up (Ghezzi et al., 2022).

What is the 'Systemic thinking approach?'

The systemic thinking- approach is defined as a holistic approach to analysis that focuses on the way that a system's constituent parts interrelate and how systems work over and within the context of larger, complex systems (Hossain et al., 2020).

Moreover, by addressing the complexity of supply chains, strategic design provides frameworks for mapping and analysing supply networks, identifying opportunities for sustainable improvements at each stage (Tischner et al., 2000). This systems-thinking approach enables startups to implement sustainability holistically, ensuring consistency and scalability across the supply chain (Sevaldson, 2011).

The short-term focus of startups can be mitigated by strategic design's emphasis on long-term planning and scenario development. By envisioning future states and designing for longevity, sustainable startups can align their business models with practices that yield long-term benefits and ensure growth (Dunne & Raby, 2013).

In conclusion, strategic design emerges as a pivotal approach for startups aiming to navigate the complexities of sustainability and economic viability. It provides robust frameworks that can marry design thinking with business strategy, fostering innovation that is both sustainable and profitable. Its comprehensive tools and methods, alongside its advocacy for clear sustainability standards and metrics, enable startups to measure and implement sustainability multi-dimensionally. Cross-disciplinary collaboration further enhances the approach by reducing initial costs and promoting the development and scaling of sustainable technologies. This synthesis of design and strategy, therefore, can be a key for startups to thrive in an increasingly complex and sustainability-conscious business landscape and hence forms the backbone of this thesis.

1.2. Research Goals

As explored in the previous section, strategic design can have a significant impact in the domain of sustainable startups. Sustainable startups face various challenges in scaling up their impact, such as limited resources, market barriers, regulatory uncertainties, and stakeholder conflicts (Kraus et al., 2018). However, they also have the potential to disrupt the status quo and transform the existing systems towards sustainability (Hockerts & Wüstenhagen, 2010).

Furthermore, the existing literature on strategic design for sustainability is mainly focused on product or service design rather than business model design, which is a crucial aspect of scaling up impact (N. M. P. Bocken et al., 2014). Furthermore, Innovations in business models can yield greater returns than innovations in products or processes (Chesbrough, 2007). At the more theoretical level, there is a lack of a comprehensive framework that integrates strategic design principles into sustainable startups to enhance their scalability (Breuer et al., 2018).

Considering these theoretical and practical research gaps in the literature, this thesis attempts to investigate how strategic design can help sustainable startups overcome the challenges of scaling up their impact. The main research question for the thesis is:

"How can we apply Strategic Design to develop a framework that supports sustainable startups in scaling up?"

To address the main research question, this thesis will explore the following sub-questions:

RQ 1. Why do many sustainable startups fail to scale up despite their initial success?
RQ 2. What are the applications of strategic design for innovating the business models of sustainable startups?

The sub-questions aim to provide a comprehensive understanding of the problem domain, the potential solutions, and the design process involved in developing the framework. The sub-questions will also guide the literature review, data collection, analysis, and synthesis of the research. These questions are aligned with the overall objective of the thesis, which is to contribute to the knowledge and practice of strategic design for scaling sustainable startups.

The core goal is to develop a framework using strategic design to help startups transform their sustainable business models to be resilient and scalable.

The next section of this chapter describes the thesis methodology and structure.

1.3. Methodology

The infographic represents the structure of the thesis, along with an overview of different chapters. The thesis is divided into three parts: A literature review, empirical studies and the final model, along with an introduction and conclusion. The structure follows a basic Double Diamond Design Cycle, with two iterations of the framework. This aligns with the second sub-research question of the thesis, i.e., applying strategic design for innovating the business models of sustainable startups.

The Double Diamond Design Process

The Double Diamond design process is a model that represents a structured approach to design and problem-solving. It consists of four key phases: Discover, Define, Develop, and Deliver (*Make Life Better by Design - Design Council*, n.d.). In this thesis, the literature review forms the discover and define part, the empirical study are used to co-develop the final framework and the final model part is where the elements and usage of the framework are explained, formulating the 'Deliver' part of the Double Diamond.

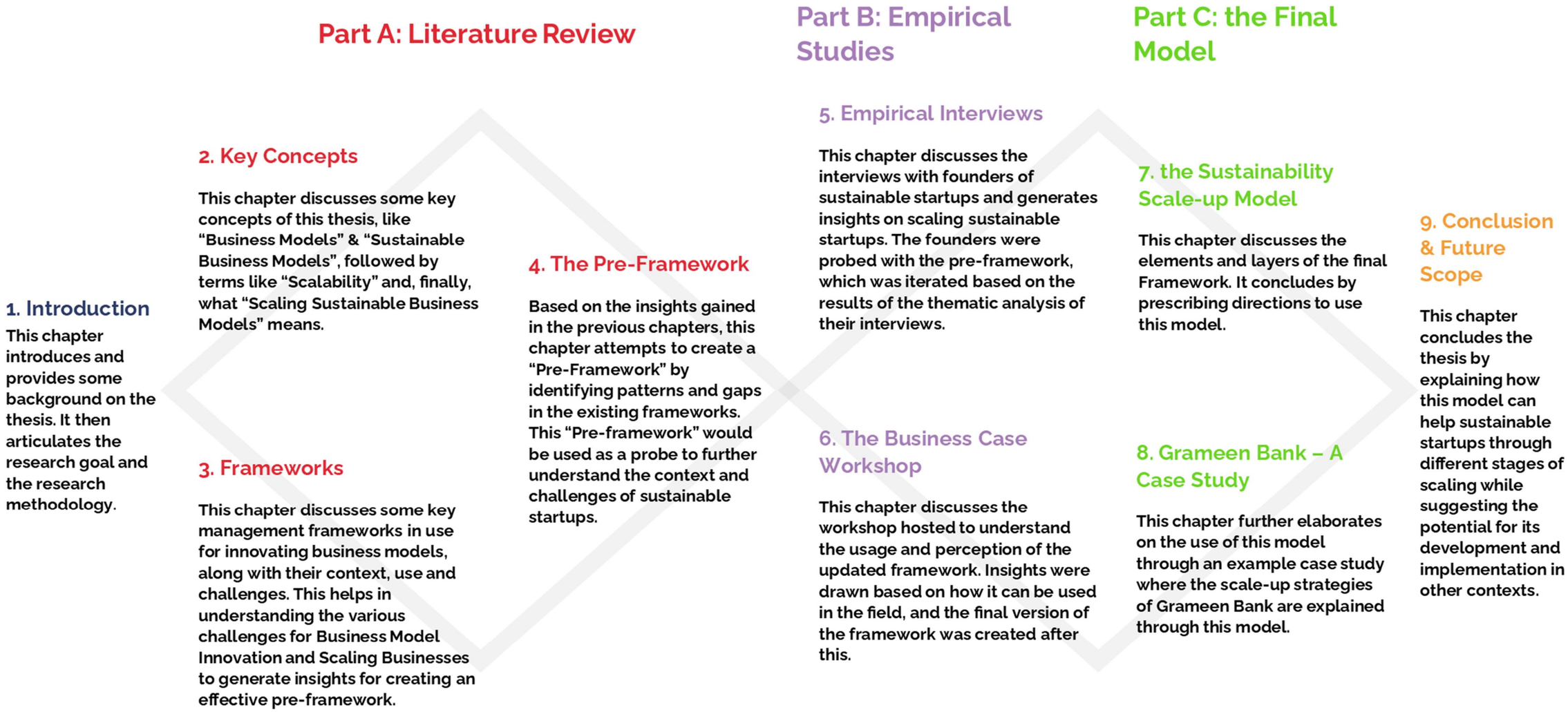


Figure 1: Thesis Methodology & Structure

Part A Literature Review

CHAPTER 2

Key Concepts

Although the term “Business Model” has been in academic discussions for over sixty-five years, it has not reached a common consensus. The same can be said for other terms like “Business Model Innovation”, “Sustainable Business Model” & “Sustainable Business Model Innovation”. This chapter introduces and elaborates on these terminologies and defines how these terms will be used throughout the thesis. It attempts to understand the different interpretations and definitions of these terms from literature and tries to define them in the context of this project. Then, it explores concepts like scalability and, finally, what scalability means for sustainable startups.

In this chapter:

2.1. Business Models

Business Model (BM) is a central topic in management research and practice, as it describes how organisations create and capture value in a competitive environment. However, the definition and conceptualisation of business models have changed significantly over time, reflecting the economic, technological, and social shifts. In this section, we explore the emergence and evolution of BMs across time and try to identify the main themes, perspectives, and gaps in the literature.

The term "business model" was first used in the late 1950s and early 1960s in the context of the emergence of new industries and technologies, such as computers, airlines, and television. However, the term was not clearly defined or widely adopted by scholars and practitioners at that time. According to Osterwalder et al. (2005), the earliest academic reference to business models was made by Bellman et al. (1957), and it appeared for the first time in the abstract and title of a paper by Jones (1960), who used it to describe the configuration of a firm's activities and resources. However, Jones did not provide a formal definition or a framework for analysing business models.

The concept of business models gained more attention and popularity in the 1990s, especially with the advent of the Internet and the dot-com boom (Zott et al., 2011). Many scholars and practitioners recognised the need to understand and explain how new entrants and incumbents could leverage digital technologies to create and capture value in different ways. For example, Timmers (1998) defined business models as "an architecture for the product, service and information flows, including a description of the various business actors and their roles; a description of the potential benefits for the various business actors; and a description of the sources of revenues". Similarly, Rappa (2001) proposed a taxonomy of business models based on the sources of revenue and the value proposition of online firms. These early studies focused on the description and classification of business models, rather than their analysis and evaluation.

In the 2000s, the concept of business models shifted from a descriptive and taxonomic approach to a more analytical and normative one. Instead of simply categorising and comparing different business models, scholars and practitioners began examining how business models can be designed, evaluated, and innovated to create and deliver value to customers, stakeholders, and society. For example, Osterwalder & Pigneur (2010) defined a business model as "the rationale of how an organisation creates, delivers, and captures value". Similarly, Teece (2010) argued that a business model "describes the design or architecture of the value creation, delivery, and capture mechanisms employed by the enterprise". These studies highlighted the importance of aligning the business model with the external environment and the internal capabilities of the firm, as well as the need to experiment and learn from feedback and data.

The concept of business models continues to evolve and expand in the current decade as new technologies, markets, and social trends emerge and challenge the existing ways of doing business. Some of the emerging topics and issues include the role of digital platforms and ecosystems in enabling and transforming business models (Parker et al., 2016), the impact of sustainability and social responsibility on business model design and innovation (Boons & Lüdeke-Freund, 2013) and the dynamics and evolution of business models over time and across contexts (Demil et al., 2015). These studies suggest that business models are not static or fixed but somewhat fluid and adaptable. They require constant monitoring and updating to ensure their viability and relevance in a changing world. The next section will delve into the concept of Business Model Innovation (BMI) and discuss its main drivers and enablers.

2.2. Business Model Innovation

Similar to business models, Business Model Innovation (BMI) is a multifaceted and complex phenomenon that requires an interdisciplinary and integrative approach to understand its drivers, processes, and consequences. BMI has been widely used to describe a firm's business model's creation, development, or transformation, which can result in competitive advantage, improved performance, and social value (Amit & Zott, 2012). BMI can involve changes in the value proposition, the value creation and delivery mechanisms, or the value capture logic of a firm (Foss & Saebi, 2017). BMI can also entail the emergence of new business models, such as platforms, freemium, or open models, that challenge traditional business methods (Massa et al., 2017).

The concept of BMI has gained increasing attention from academics and practitioners, especially in the digital economy, where technological innovations and environmental changes create opportunities and pressures for firms to rethink their business models (Wirtz, 2020). However, the definition and scope of BMI remain ambiguous and contested as different scholars adopt different perspectives, analysis levels, and innovation dimensions (Bucherer et al., 2012).

The origins of BMI, similar to business models, can also be traced back to the late 1990s and early 2000s when the dot-com boom and bust highlighted the importance of having a viable and innovative business model in the new economy (Zott et al., 2011). Some of the pioneer studies on BMI focused on the role of technology and e-commerce in enabling new ways of creating and capturing value in various industries, such as music, publishing, SMEs and retail (Timmers, 1998; Weill & Vitale, 2001; Zott et al., 2011). These studies also proposed typologies and frameworks to classify and analyse different types of BMs and their characteristics, such as value drivers, revenue streams, firm performance and network effects (Afuah & Tucci, 2001; Rappa, 2001).

One of the earliest attempts to define BMI was made by Chesbrough (2007), who argued that BMI is the process of discovering new ways of creating and capturing value for customers and stakeholders, often enabled by novel technologies. He distinguished between BMI and product or process innovation, claiming that BMI focuses on the system-level changes that affect the entire BM rather than the component-level changes that affect specific products or processes. He also

suggested that BMI can be radical or incremental, depending on the degree of novelty and impact of the changes.

Another influential definition of BMI was proposed by Teece (2010), who defined BMI as the design and implementation of a new activity system that enhances the firm's ability to achieve and sustain a competitive advantage. He emphasised the role of dynamic capabilities, such as sensing, seizing, and transforming, in enabling firms to innovate their BMs in response to changing market conditions and customer needs. He also highlighted the challenges and risks of BMI, such as imitation, inertia, cannibalisation, and coordination.

Foss & Saebi (2017) offered a comprehensive definition of BMI and defined BMI as the "design, novel combination, alignment, and integration of the key elements of a BM, that is, value proposition, value creation and delivery architecture, and value capture mechanisms". They identified four types of BMI according to the nature and scope of the changes: extension, revision, reconceptualisation, and creation.

Concluding, BMI can be seen as a strategic and creative process that involves designing, combining, aligning, and integrating the key elements of a BM to create and deliver value for various stakeholders. However, not all BMs are equally sustainable or desirable from a social and environmental perspective. The next section reviews the literature on SBMs and how they have evolved over time and differ from conventional BMs in terms of their goals, principles, and practices.

2.3. Sustainable Business Models

A Sustainable Business Model (SBM) integrates the social and environmental dimensions of sustainability into a firm's core logic and value proposition. Unlike BMs, SBMs aim to create and deliver value for multiple stakeholders, not only customers and shareholders but also employees, suppliers, communities, and the natural environment (N. M. P. Bocken et al., 2014). SBMs also seek to reduce or eliminate the negative impacts of their activities on society and the planet and to contribute positively to achieving the United Nations Sustainable Development Goals (UN SDGs) (Schaltegger et al., 2016).

The term SBM emerged in the early 2000s as a response to the growing awareness and concern about the social and environmental challenges facing humanity, such as climate change, poverty, inequality, and biodiversity loss. The concept of SBM was influenced by various streams of literature, such as corporate social responsibility, stakeholder theory, natural resource-based view, circular economy, and social entrepreneurship (Boons & Lüdeke-Freund, 2013; Geissdoerfer et al., 2017; Stubbs & Cocklin, 2008). However, there was no clear and consistent definition of what constitutes a SBM and how it differs from a conventional business model.

One of the first attempts to define SBM was made by Hart & Milstein (2003), who proposed that an SBM creates competitive advantage by addressing the social and environmental issues that affect the firm and its stakeholders. They argued that SBMs can generate value in three ways: by reducing costs and risks, enhancing reputation and legitimacy, and creating new market opportunities and innovations. They also

suggested four strategic dimensions of SBM: pollution prevention, product stewardship, clean technology, and base-of-the-pyramid.

Another definition of SBM was offered by Lüdeke-Freund (2010), who defined an SBM as a BM that creates positive net effects on natural and social capital while maintaining economic viability. He emphasised the importance of measuring and managing the triple-bottom-line performance of SBMs. He identified four components of SBM: value proposition, value creation and delivery, value capture, and value network. He also proposed a typology of SBMs based on the degree of innovation and sustainability orientation: efficiency, consistency, sufficiency, and transformation.

In summary, SBMs aim to address the social and environmental challenges of the 21st century by creating value for multiple stakeholders and enhancing the triple-bottom-line performance of organisations. The next section expands on this further by delving into the concept of Sustainable Business Model Innovation (SBMI) and discussing its main drivers and enablers.

2.4. Sustainable Business Model Innovation

The notion of Sustainable Business Model Innovation (SBMI) emerged from the recognition that SBMs are not static but dynamic and evolving and that they require continuous experimentation and learning to cope with the complexity and uncertainty of sustainability issues. N. M. P. Bocken et al. (2014) defined SBMI as "the process of designing, implementing and scaling up SBMs". SBMI involves both radical and incremental changes in the value proposition, value creation and delivery, and value capture mechanisms of a business model, as well as the alignment of these elements with the sustainability vision and goals of the organisation. SBMI also requires the engagement and collaboration of multiple stakeholders, both internal and external, to co-create and co-deliver value for, from, and with them.

One of the earliest attempts to conceptualise SBMI, along with SBM, was made by Hart & Milstein (2003). Along with the four components of SBM previously discussed, they also suggested that SBMI requires a shift in the mental models and organisational cultures of business leaders and stakeholders, as well as the development of new capabilities and competencies for innovation and learning.

Since then, several scholars have contributed to the development and refinement of SBMI, drawing on various theoretical perspectives and empirical evidence. Some of the key contributions include N. M. P. Bocken et al. (2014), who proposed a comprehensive framework for SBMI, which consists of eight archetypes of SBMs, further discussed in the next chapter. They also developed a process model for SBM innovation involving four phases: initiation, ideation, implementation, and integration.

Geissdoerfer et al. (2017) developed a process model for SBMI, which consists of five phases: clarification, ideation, evaluation, prototyping, and validation. The authors argued that SBMI requires both analytical and creative thinking, as well as experimentation and iteration, to achieve sustainability goals and customer satisfaction.

(Evans et al., 2017) introduced the concept of business model innovation for sustainability (BMIS), which focuses on the systemic and network aspects of SBM. They defined BMIS as "changes to a firm's transactions with its stakeholders that contribute to the normative goals of sustainable development". The authors also presented a framework for analysing and designing BMIS, which includes the following elements: value proposition, supply chain, customer interface, financial model, and governance.

Rauter et al. (2017) explored the role of leadership in SBMI using a multiple-case study approach. They found that leaders can facilitate SBMI by providing a clear vision and direction, fostering a culture of innovation and learning, empowering and motivating employees, engaging and collaborating with stakeholders, and monitoring and communicating the progress and outcomes of SBMI.

Breuer et al. (2018) examined the challenges and opportunities of SBMI in different sectors and regions using a cross-case comparative analysis. They identified four main drivers of SBMI: customer demand, regulation, resource scarcity, and social awareness. They also highlighted four main barriers of SBMI: lock-in effects, market failures, stakeholder resistance, and lack of capabilities. They suggested that SBMI can be enabled by various factors, such as education, collaboration, incentives, and experimentation.

To conclude, this section summarises the different perspectives and approaches of different authors on innovating SBMs. The authors formulate different mechanisms and frameworks to understand and balance the values of different stakeholders in an SBM. The next section discusses the literature on scalability, defining what scaling up means and how it has evolved over time.

2.5. Scalability

Scalability is the ability of a business to grow and increase its performance, efficiency, and profitability without a proportional increase in its resources, costs, or complexity (Eisenmann, 2006). Scalability is a key factor for the success and sustainability of businesses, especially in the context of rapid technological changes, global competition, and dynamic customer demands (Aldieri & Vinci, 2021). However, scalability is not a straightforward concept, and it has been approached from different perspectives and disciplines in the academic literature. This section provides an overview of the evolution of the academic literature on the scalability of businesses and attempts to identify the main themes that emerge from the existing research.

The concept of scalability emerged in the late 20th century, in parallel with the advent and diffusion of information and communication technologies (ICTs) and the

emergence of new BMs and industries. The term scalability was initially used in the fields of computer science and engineering to describe the ability of a system or a network to handle increasing amounts of work or to accommodate growth without compromising its performance or quality (Bondi, 2000). The term was later adopted and adapted by other disciplines, such as management, economics, and sociology, to refer to the ability of a business or an organisation to grow and expand its operations, revenues, and impact without increasing its costs or complexity (Eisenmann, 2006; Winter & Szulanski, 2001).

The academic literature on the scalability of businesses can be roughly divided into three phases, according to the main focus and scope of the research. The first phase, which spans from the late 1980s to the late 1990s, was characterised by a technical and operational perspective on scalability, mainly influenced by the computer science and engineering literature. The research in this phase focused on the technical aspects and challenges of scaling up ICT systems and networks, such as hardware, software, architecture, performance, reliability, and security (Bondi, 2000; Duboc et al., 2007). The research also explored the implications of scalability for the design and management of ICT-based businesses and services, such as e-commerce, online platforms, and software as a service (SaaS) (Eisenmann, 2006).

The second phase, which spans from the late 1990s to the late 2000s, was characterised by a strategic and organisational perspective on scalability, mainly influenced by the management and economics literature. The research in this phase focused on the strategic aspects and opportunities of scaling up businesses and organisations, such as value creation, competitive advantage, innovation, and growth(Winter & Szulanski, 2001; Zott & Amit, 2007). The research also explored the organisational aspects and challenges of scaling up businesses and organisations, such as structure, culture, processes, capabilities, and governance (Eisenhardt & Martin, 2000; Teece, 2007).

The third phase and more contemporary phase is characterised by a social and environmental perspective on scalability, mainly influenced by the sociology and sustainability literature. The research in this phase focuses on the social and environmental aspects and impacts of scaling up businesses and organisations, such as social value, social innovation, social entrepreneurship, and social responsibility (Dees et al., 2004; Nicholls, 2010).

One of the main challenges of literature on the scalability of businesses is to define and operationalise the concept of scalability and to identify its dimensions and types. There is no consensus on a single definition or measure of scalability, and different authors have proposed different frameworks and criteria to classify and assess scalability. However, some dimensions and types of scalabilities are identified from the literature to help better scope this project.

- **Quantitative versus qualitative scalability.** Quantitative scalability refers to the ability of a business to increase its output, such as products, services, customers, revenues, or profits, without a proportional increase in its input, such as resources, costs, or complexity. Qualitative scalability refers to the ability of a business to improve its output, such as quality, performance,

efficiency, or customer satisfaction, without a proportional increase in its input, such as resources, costs, or complexity (Bondi, 2000; Eisenmann, 2006).

- **Horizontal versus vertical scalability**. Horizontal scalability refers to the ability of a business to expand its output by Increasing the number of units or components of the same type or level, such as servers, machines, branches, or franchises. Vertical scalability refers to the ability of a business to expand its output by Improving the capabilities of its existing Infrastructure and offerings, such as adding functions and features or improving production capabilities (Bondi, 2000; Duboc et al., 2007).
- **Internal versus external scalability.** Internal scalability refers to the ability of a business to scale up its own operations, processes, and capabilities, such as production, distribution, marketing, or innovation. External scalability refers to the ability of a business to scale up its network, partnerships, and ecosystem, such as suppliers, distributors, customers, or stakeholders (Winter & Szulanski, 2001; Zott & Amit, 2007).
- **Geographic versus functional scalability**. Geographic scalability refers to the ability of a business to scale up its output across different locations, regions, or markets, such as local, national, or international. Functional scalability refers to the ability of a business to scale up its output across different domains, sectors, or industries, such as manufacturing, services, or education (Eisenmann, 2006; Teece, 2007).
- **Social versus environmental scalability**. Social scalability refers to the ability of a business to scale up its social value, impact, or mission, such as solving a social problem, addressing a social need, or creating a social change. Environmental scalability refers to the ability of a business to scale up its environmental value, impact, or mission, such as reducing its environmental footprint, enhancing its environmental performance, or contributing to environmental sustainability (Dees et al., 2004; Nicholls, 2010).

These dimensions reflect the different ways that a business can increase its value proposition, reach more customers, expand to new markets, diversify its offerings, or enhance its impact. Each dimension of scalability has its own benefits and challenges, as well as trade-offs and synergies with other dimensions. For example, scaling internally may require more resources and capabilities, while scaling externally may depend on the availability and quality of partners and networks. Scaling geographically may increase market share and revenue, while scaling functionally may increase innovation and differentiation. Scaling socially may improve reputation and legitimacy while scaling environmentally may reduce costs and risks.

In summary, scaling businesses is a complex and multifaceted phenomenon that poses significant opportunities and challenges for both theory and practice. It calls for a more holistic and systemic understanding of the mechanisms, dimensions, and processes that enable or constrain the scaling up of value creation and delivery, as well as the impacts and implications of such scaling up for the business stakeholders.

The next section dives deeper into what scalability means in the context of SBMs, discussing several of its challenges and opportunities.

2.6. Scaling Sustainable Business Models

The literature on the scalability of SBMs is relatively scarce and fragmented, as the literature on SBMs is still emerging and evolving (Geissdoerfer et al., 2018). However, some studies have attempted to explore and analyse the scalability of SBMs using various methods and approaches, such as surveys, interviews, observations, experiments, simulations, etc. They have focused on different sectors, industries, regions and countries, such as energy, mobility, agriculture, health, education, etc. and have also examined different aspects and dimensions of scalability, such as the drivers, barriers, enablers, strategies, outcomes, impacts, etc. Some of the main findings and insights from the empirical evidence and case studies on the scalability of SBMs are as follows:

- It is not a linear or deterministic process but a dynamic and contingent one that depends on the interplay of various internal and external factors, such as the characteristics of the SBM, the market, the industry, the policy, the culture, the environment, etc. (Evans et al., 2017).
- It is not a purely technical or managerial challenge but a socio-technical and institutional one that requires overcoming not only the operational and financial constraints but also the cognitive and normative barriers, such as the lack of awareness, knowledge, trust, legitimacy, acceptance, etc. (Evans et al., 2017).
- It is not a one-size-fits-all phenomenon but a context-specific and path-dependent one that requires different types and modes of scalability, such as replication, adaptation, transformation and network, depending on the nature and direction of the scaling process (Massa et al., 2017).
- It is not a spontaneous or autonomous outcome but a deliberate and collaborative one that requires the involvement and support of various actors and stakeholders, such as customers, suppliers, employees, competitors, regulators, policymakers, investors, media, NGOs, etc.(Massa et al., 2017).
- It is not a single or isolated objective but a multiple and integrated one that involves balancing and aligning the economic, environmental and social dimensions of value, the interests and expectations of multiple stakeholders, and the individual, organisational and systemic levels of analysis (Schaltegger et al., 2016).

These insights point indicate a need for a framework that incorporates the internal and external factors of a business, considers not only socio-technical aspects but also balances the cognitive and normative barriers, promotes collaborations, and

helps align the social, environmental and economic values of a multi-stakeholder system.

Through the literature review, some challenges and opportunities on the scalability of SBMs are identified and discussed, which are as follows:

Table 1: Challenges & Opportunities for Scaling of Sustainable Business Models

Challenges	Opportunities
The lack of a clear and consistent definition and measurement of SBMs and scalability hinders the comparability and generalizability of the findings and insights and limits the development of a coherent and cumulative body of knowledge (Geissdoerfer et al., 2018).	The development and application of more rigorous and robust methods and tools for defining and measuring SBMs and scalability, such as frameworks, indicators, metrics, models, etc., that can capture the complexity and diversity of SBMs and scalability and facilitate the communication and dissemination of the results and impacts.
The trade-off or tension between the innovation and standardisation of SBMs affects the degree and mode of scalability, as well as the balance and alignment of the economic, environmental, and social value (Massa et al., 2017).	The exploration and exploitation of the complementarity and synergy between the innovation and standardisation of SBMs can enhance the degree and mode of scalability and the balance and alignment of the economic, environmental and social value.
The resistance or inertia of the incumbent or dominant BMs creates path dependencies and lock-ins and hampers the adoption and diffusion of SBMs across markets and sectors (Evans et al., 2017).	The leverage or influence of the emergent or alternative business models creates windows of opportunity and niches and fosters the adoption and diffusion of SBMs across markets and sectors.
The uncertainty or volatility of the external environment affects the feasibility and viability of SBMs and poses risks and threats to the scalability of SBMs (Evans et al., 2017).	The adaptability or resilience of the internal organisation affects the flexibility and robustness of SBMs and offers opportunities and benefits for the scalability of SBMs.

This chapter provides a comprehensive overview of the key concepts and definitions related to business models, business model innovation, sustainable business models, sustainable business model innovation and scalability of sustainable business models. It has also highlighted the importance and relevance of these concepts for both research and practice, as well as the gaps and limitations that exist in the current literature and practice. The chapter has aimed to provide a clear and consistent flow for understanding and analysing these concepts and to set the stage for the following chapters, which will delve deeper into the specific aspects and dimensions of sustainable business model innovation and scalability.

To conclude, this chapter has shown that the scalability of SBMs is a complex and multifaceted phenomenon that involves various dimensions, factors, types, modes, challenges and opportunities and that requires a systemic and holistic perspective and a dynamic and contingent approach. It attempts to identify the different challenges that startups with sustainable business models face and eventually fail if they are not able to overcome them. It also identifies some implications and recommendations for research and practice that can help to advance the knowledge and practice of scaling up SBMs and achieve a significant impact on sustainability.

CHAPTER 3

Frameworks & Tools

This chapter explores the different frameworks and tools used in the current literature for innovating Businesses. We first explore the broad range of frameworks used in Business model innovation and then narrow down to the frameworks for sustainable business model innovation. After that, we explore the different frameworks that explain the scalability of startups and enterprises.

In this chapter:

3.1. Business Model Innovation Frameworks

Business model innovation is a complex and challenging task, as it requires a holistic and systemic perspective, a deep understanding of customer needs and preferences, and a creative and experimental mindset (Chesbrough, 2010).

To support and facilitate BMI, several frameworks and tools have been proposed and developed by scholars and practitioners. These frameworks and tools aim to provide a structured and comprehensive approach to analyse, design, test and implement new or improved business models. They are indispensable tools that enable businesses to scrutinise their competitive environment, make informed decisions, and implement efficacious strategies. This section undertakes a comprehensive review of some of these frameworks. They are categorised based on their primary focus, whether it be strategic positioning, organisational analysis, market strategies, value creation, cultural models, or decision-making tools.

Strategic Positioning and Competitive Advantage

The first category scrutinises frameworks such as Porter's Generic Strategies and Value Disciplines, which are instrumental in guiding firms towards achieving a competitive advantage (Porter, 1980). These frameworks offer a strategic roadmap for firms to position themselves uniquely in the market, thereby gaining a competitive edge. Additionally, Porter's Diamond of National Advantage and PESTEL Analysis provide valuable insights into the macro-environmental factors affecting competitiveness (Aguilar, 1967; Porter, 1990). These frameworks enable firms to understand the broader economic, social, and political factors that can impact their strategic positioning, focusing mainly on external factors.

Organisational Analysis and Development

Frameworks such as the McKinsey 7S Model and Bartlett and Ghoshal's Matrix are pivotal for assessing organisational alignment and effectiveness (Bartlett & Ghoshal, 2002; Waterman Jr et al., 1980). These models provide a holistic view of the organisation, considering both hard elements (strategy, structure, systems) and soft elements (shared values, skills, style, staff). The VRIO Framework and Profit Tree focus on internal analysis and profitability (Barney, 1991; Rappaport, 1986), enabling firms to assess their resources and internal capabilities and understand their contribution to profitability.

Market and Growth Strategies

The Ansoff Matrix and BCG Growth-Share Matrix provide strategic growth options and portfolio management techniques(Ansoff, 1957; Henderson, 1970). These models offer firms various strategies for growth, ranging from market penetration to diversification, and help in managing a portfolio of business units. The Technology Adoption Life Cycle and Product Life Cycle describe product market acceptance and maturity stages (Levitt, 1965; Rogers et al., 2014), providing insights into how products are adopted in the market and how their sales change over time. They help to innovate a business from a product perspective.

Value Creation and Delivery

The Value Chain Analysis and Value Net Model explore value creation through business activities and interactions (Nalebuff & Brandenburger, 1996; Porter, 1985). These models help firms understand how they can create value through their primary and support activities and how they interact with suppliers, customers, and competitors to create and capture value. The BM Canvas, for instance, offers a holistic view of value creation and capture (Osterwalder & Pigneur, 2010) providing a visual representation of the firm's value proposition, infrastructure, customers, and finances. These frameworks help in understanding and visualising the values that the BMs can create and deliver.

Decision-Making and Strategic Analysis

The A.T. Kearney Strategy Chessboard and Strategy Diamond are decision-making frameworks (Hambrick & Fredrickson, 2005; Mahler & Kearney, 2007). These models provide a structured approach to strategic decision-making, considering various strategic options and the trade-offs involved. SWOT Analysis and OLI Paradigm are tools for assessing strategic positioning and international business factors (Dunning, 2003; Stewart et al., 1965), helping firms understand their strengths, weaknesses, opportunities, threats, and the factors influencing their international business operations. These frameworks help businesses make structural and strategic decision making.

This section summarises some key strategic management frameworks and models, providing models for business analysis and strategy formulation for businesses. These clusters are identified based on different utilities of these frameworks and their context of use, which form the foundation for the main goal of this thesis, i.e., to develop a framework using strategic design to help startups transform their sustainable business models to be resilient and scalable. The chapter further delves into frameworks that specialise in SBMI, scalability, and strategic design in the next sections to understand the nuances of these specific contexts and build on this foundation.

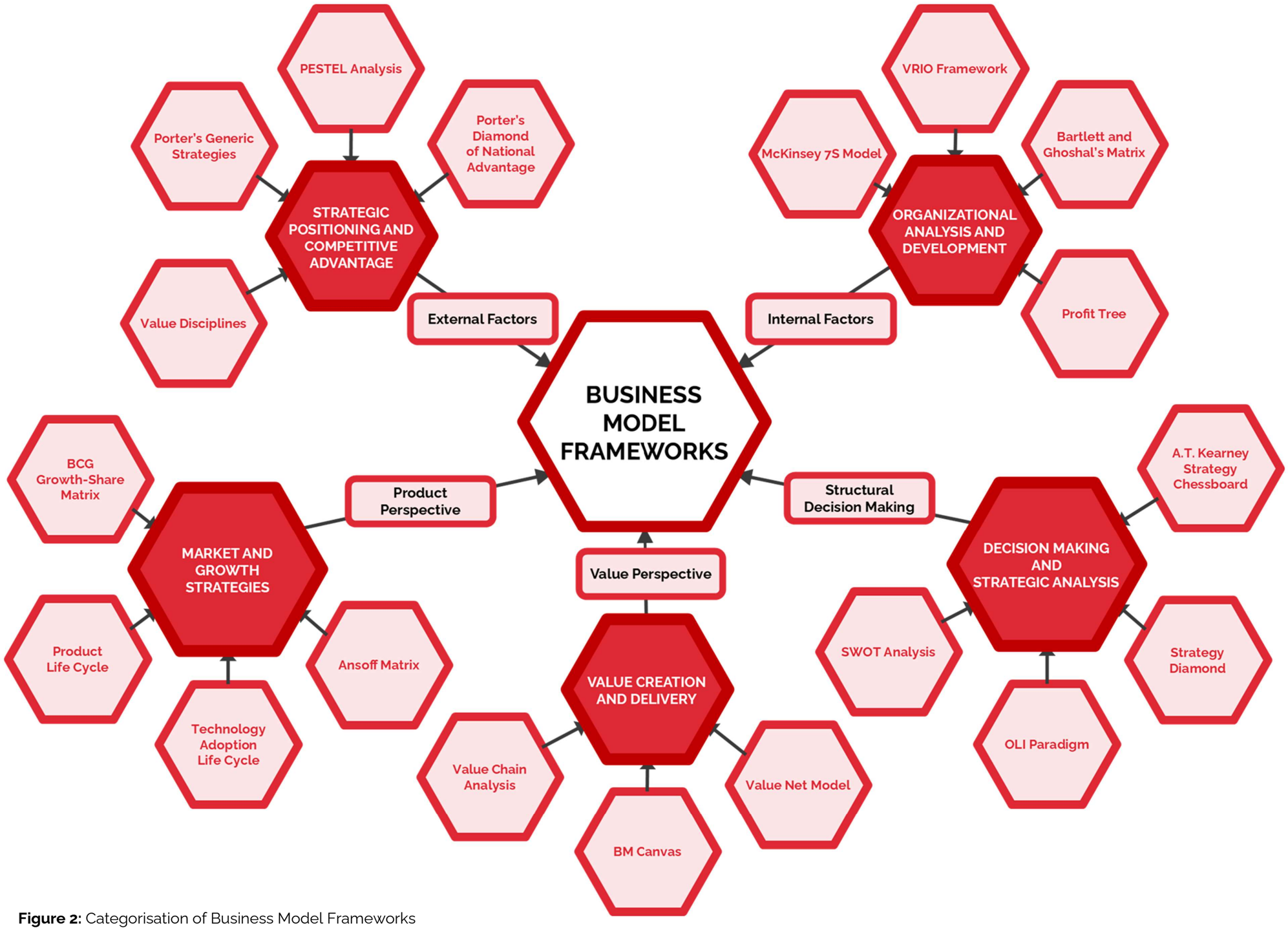


Figure 2: Categorisation of Business Model Frameworks

3.2. Sustainable Business Model Frameworks

Given the importance and complexity of SBMI, there is a growing body of literature that aims to conceptualise, operationalise, and evaluate different frameworks for SBMI. These frameworks provide theoretical and practical guidance for understanding, designing, and implementing sustainable BMs, as well as assessing their performance and impact (Evans et al., 2017). This section undertakes a comprehensive review of some of these frameworks.

Circular Collaboration Canvas

The Circular Collaboration Canvas (CCC) is a framework that supports the ideation and development of circular BMs, which are BMs that aim to decouple value creation from resource consumption by designing out waste and pollution, keeping products and materials in use and regenerating natural systems. It was developed by P. Brown et al. (2021) and adapts the BM Canvas to the circular context.

The tool integrates decision-making principles from the entrepreneurship theory of effectuation within a design thinking approach to stimulate collaborative ideation of circular propositions. It guides users through key topics by asking trigger questions that create discussion and ideation upon the challenge at hand.

It builds on the foundation that users are receptive to visualisation and effectuation-based questions to collaboratively ideate circular propositions. It also contributes to practice by supporting early and quick ideation to identify partners and perceived value, thereby aiding companies to collaborate and advance the design of circular propositions.

Sustainable Business Model Archetypes

The Sustainable Business Model Archetypes (SBMA) are a framework that supports the ideation and innovation of sustainable BM by providing a set of generic and prototypical patterns that can be applied or adapted to different contexts and sectors (N. M. P. Bocken et al., 2014). The authors identified eight archetypes of sustainable BMs, which are:

- *Maximise material and energy efficiency:* reduce the material and energy inputs and outputs of the BM by improving the design, production, and delivery of the products or services.
- *Create value from waste:* utilise the waste streams or by-products of the BM by transforming them into new products or services or by selling them to other actors.
- *Substitute with renewables and natural processes:* replace the non-renewable or harmful resources or processes of the BM by using renewable or natural resources or processes, such as solar energy, biodegradable materials, or biomimicry.

- *Deliver functionality rather than ownership:* offer the use or access to the products or services, rather than the ownership, by using models such as leasing, renting, or sharing.
- *Adopt a stewardship role:* take responsibility for the environmental and social impacts of the products or services throughout their life cycle by using models such as extended producer responsibility, take-back, or cradle-to-cradle.
- *Encourage sufficiency:* reduce the consumption or demand of the products or services by influencing the behaviour or preferences of the customers, such as through awareness, education, or incentives.
- Re-purpose the business for society/environment: address a social or environmental problem or need by using the core competencies or assets of the business, such as through social innovation, inclusive business, or the base of the pyramid.
- Develop scale-up solutions: create or enable systemic change by scaling up the impact or reach of the business model, such as through networks, platforms, or open innovation.

The SBMA are a useful framework for ideating and innovating sustainable BMs by providing a comprehensive and diverse set of patterns that can be applied or adapted to different contexts and sectors. They also support the identification and exploitation of the potential synergies among the archetypes, which can enhance the value and impact of the business model.

SBM Key Features

The study by P. Brown et al. (2021) presents a comprehensive review and framework development of the SBM. They argue that integrating sustainability into business functions is a challenge faced by practitioners, and they need to understand what aspects must be considered to achieve effective sustainability implementation.

The SBM key features framework features nine main aspects to consider, including sustainability, information technology, circular economy, value chain, core values, value creation, organisational values, performance management, and stakeholder engagement. These aspects guide practitioners to effectively embed sustainability into an organisation's business functions and fulfil stakeholder expectations. The framework captures important aspects of sustainability implementation, thereby aiding companies in effectively integrating sustainability into their business functions.

Value Mapping Tool

The Value Mapping Tool (VMT) is a framework that supports the ideation and innovation of sustainable BMs by providing a visual and interactive tool that helps to map, analyse, and communicate the value proposition, creation, delivery, and capture of the BM, from the perspective of multiple stakeholders. The VMT is based on the stakeholder theory (Freeman, 2010), which argues that the success of a business depends on the satisfaction and engagement of its stakeholders, such as the customers, the suppliers, the employees, the shareholders, the society, and the environment.

The VMT was developed by N. Bocken et al. (2013) as part of a research project on SBMI. It can help companies to map and communicate their value proposition, creation, delivery, and capture from the perspective of multiple stakeholders and to identify and address the positive and negative value exchanges that occur among the stakeholders. The authors also found that the VMT facilitated the dialogue and collaboration among the stakeholders, by providing a common language and framework for value mapping. VMT can be used as a tool for co-creation, experimentation, and validation of sustainable business models, in various sectors and contexts.

BCG's Four Steps

This is a comprehensive and systematic process for developing and implementing SBMs, based on the extensive experience of the Boston Consulting Group (BCG) with various companies across different industries and regions (Young & Gerard, 2021). The four steps are:

- *Expand the business canvas:* Use systems thinking and stakeholder discovery to comprehend the wider situation. Analyse trends and imagine scenarios to evaluate your business model for weaknesses and possibilities.
- *Innovate for a resilient business model:* Create ideas for how to run businesses that have clear positive impacts on the environment and society, by using BCG's seven archetypes of SBM-I as guidance.
- *Link to drivers of value and advantage:* Experiment and improve the business model to link the generation of environmental and social benefits to the generation of financial value and competitive advantage.
- *Scale the initiative:* Pilot and scale rapidly to increase the business model's influence and worth. Establish new industry standards, change stakeholder relations, and redefine the limits of competition.

The BCG's four-step approach provides a comprehensive framework for strategic planning and addresses the unique challenges faced by these entities and offers practical steps for effective strategic planning and execution.

SBM Scaling through Collaborations

The focus of this framework by Ciulli et al. (2022) is on the role of collaborations in scaling SBMs. The framework distinguishes four 'scaling-through-collaboration' strategies that firms can use. These strategies are proposed considering the type of initiator of the SBM (newcomer vs. incumbent firm) and the differentiation of the SBM's value proposition (high or low). They are:

- *Starlings:* These are the newcomers in the market with low value proposition differentiation. They are recommended to collaborate with other similar players or bigger partners to succeed in the market.
- *Geese:* These are the established companies with low differentiation of value propositions. They too are recommended to collaborate with other similar players or smaller partners to succeed in the market.
- *Eagles:* These are the established players with high value proposition differentiation. They can afford to scale and expand on their own.

- *Swallows:* These are the newcomers with high value proposition differentiation. They can afford to scale and expand on their own or be highly selective about their partners.

However, the authors also acknowledge that the adoption of these scaling strategies by firms hinges on different factors. This highlights the complexity of implementing SBM innovations and the need for further research in this area.

Sustainability Triangle (ST)

This is a simple and intuitive tool for assessing the sustainability performance of a BM, based on three dimensions: economic, environment and social, developed by Stubbs & Cocklin (2008). The tool uses a triangular diagram, where each dimension is represented by a side, and the area of the triangle represents the overall sustainability performance. The tool can be used to compare different BMs by plotting them on the same diagram and observing their relative positions and sizes; to identify trade-offs and synergies among the dimensions by examining the shape and balance of the triangle; and to set targets and indicators for improvement, by drawing a desired triangle and measuring the gaps and progress.

Triple Layered Business Model Canvas (TLBMC)

This is an extension and modification of BM Canvas, which adds two layers to the original nine building blocks. The environmental layer, which captures the impacts and dependencies of the BM on the natural environment, such as the resources used, the emissions generated, and the waste produced. The social layer, which captures the impacts and dependencies of the BM on the social stakeholders, such as the employees, customers, communities, and society (Joyce & Paquin (2016). The tool attempts to establish both horizontal and vertical coherence with the blocks connecting the elements both within and across layers to provide a key insight regarding their connection and impacts. The tool can be used to map and design sustainable business models, by integrating the three layers and aligning them with the value proposition, which is the core of the business model and the source of competitive advantage.

Flourishing Business Canvas (FBC)

This is another extension and modification of the BM Canvas developed by Upward & Jones (2016), which redefines the nine building blocks from the perspective of flourishing, which is a state of well-being for all life, including humans, animals, plants, and ecosystems. The tool can be used to create and evaluate BMs that contribute to the flourishing of human and non-human stakeholders, by using a set of questions and criteria for each building block, such as how the BM enables the stakeholders to thrive, how it respects the limits and cycles of nature, and how it fosters positive relationships and co-creation. The tool also applies the principles of systems thinking and complexity theory, which recognise the interdependence and unpredictability of the business model and its environment.

Sustainable Business Model Pattern Taxonomy (SBMPT)

This is a taxonomy of 45 patterns for sustainable BMs, organised into five categories: social, environmental, hybrid, repair, and governance, developed by Abdelkafi &

Täuscher (2016). Each pattern describes a specific way of creating, delivering, or capturing value that contributes to sustainability, and provides examples of existing companies that use the pattern. The tool can be used to inspire and evaluate SBMI, by combining and adapting different patterns according to the context and objectives of the BM. The tool can also help to identify the best practices and the benchmarks for sustainability in different sectors and markets.

Table 2: Summarisation of SBMI Frameworks

Framework	Description	Context of use	Limitations
Circular Collaboration Canvas (CCC)	Supports the ideation and development of circular BMs.	Collaborative ideation of circular propositions, using decision-making principles from the entrepreneurship theory of effectuation within a design thinking approach.	Does not capture the complexity and uncertainty of circular BMs or address the barriers and challenges of implementing circular BMs.
Sustainable Business Model Archetypes (SBMA)	Provides a set of generic and prototypical patterns that can be applied or adapted to different contexts and sectors.	Ideation and innovation of sustainable BMs, by providing a comprehensive and diverse set of patterns that can be applied or adapted to different contexts and sectors.	Does not consider the relationships and synergies among the archetypes.
SBM Key Features	Presents a comprehensive list of aspects of a SBM.	Embedding sustainability into an organisation's business functions and fulfilling stakeholder expectations, by capturing important aspects of sustainability implementation.	Does not provide specific guidance or tools for each aspect, may not reflect the dynamic nature of SBM,
Value Mapping Tool (VMT)	Supports the ideation and innovation of sustainable BMs through value chains from different stakeholder's perspectives	Mapping and communicating the value proposition, creation, delivery, and capture, from the perspective of multiple stakeholders, and for identifying and addressing the positive and negative value exchanges.	Does capture the complexity, tensions and dynamics of values, or the long-term and systemic impacts of the BM.
BCG's Four Steps	A comprehensive and systematic process for developing and implementing SBMs	Strategic planning and execution of SBMs, by using systems thinking and stakeholder discovery,	It lacks focus on the environmental and social values and does not account for the uncertainty and unpredictability of the market and environment.
SBM Scaling through Collaborations	Focuses on the role of collaborations in scaling SBMs.	Selecting appropriate scaling strategy for a SBM, by considering the type and differentiation of the initiator and the value proposition.	Does not capture the complexity and diversity of collaborations or consider the other factors that influence the scaling of SBMs, such as stakeholders and resources.
Sustainability Triangle (ST)	Assesses the sustainability performance of a BM, based on three dimensions: economic, environment and social.	Comparing different BMs, identifying trade-offs and synergies among the dimensions, and setting targets and indicators for improvement.	Does not reflect the complexity and interdependence of the dimensions or capture the long-term and systemic impacts of the BM.
Triple Layered Business Model Canvas (TLBMC)	An extension and modification of BM Canvas, adding the environmental and social layer.	Mapping and designing sustainable BMs, by integrating the three layers and aligning them with the value proposition, which is the core of the BM and the source of competitive advantage.	Does not provide sufficient guidance or criteria for each layer or block, or account for the trade-offs and synergies among the layers or blocks.
Flourishing Business Canvas (FBC)	Redefines the BM Canvas from the perspective of flourishing, which is a state of well-being for all life, including humans, animals, plants, and ecosystems.	Creating and evaluating BMs that contribute to the flourishing of human and non-human stakeholders,	It is not easy or practical to apply or measure and may not be compatible or acceptable with the existing market and institutional logic.
Sustainable Business Model Pattern Taxonomy (SBMPT)	A taxonomy of 45 patterns for sustainable BMs, organised into five categories: social, environmental, hybrid, repair, and governance.	Evaluating SBMI, by combining and adapting different patterns according to the context and objectives of the BM.	It covers only limited patterns or categories of sustainable BMs, or account for the tensions among the patterns.

After a comprehensive review of these SBMI frameworks, their context and limitations are summarised in Table 2. It can be observed that although they succeed in identifying sustainable values and acknowledge the importance of collaborations, they lack in addressing the relationships between these values and value tensions, lack mechanisms to consider their impacts or provide tangible implementation strategies. These challenges are translated into the SBMs of sustainable startups which might further hamper their scaleup, and thus form the basis for designing the intended framework.

3.3. Frameworks for Scalability

This section reviews the existing literature on frameworks that focus on the scalability of startups. The literature on scalability frameworks for startups is relatively scarce and fragmented, and different frameworks adopt different perspectives, assumptions, and methodologies.

The SCALERS Framework

The SCALERS framework, developed by Bloom & Chatterji (2009), is a model designed to conceptualise the scaling of impact for social startups. It was one of the first scholarly attempts to build a research agenda to better understand the scaling of social impact. It was developed in response to the challenge faced by social startups who, despite achieving initial success with their ideas, often had difficulty replicating these ideas on a larger scale.

The SCALERS model identifies seven organisational capabilities, or "drivers," that contribute to the success of social entrepreneurs when scaling up their efforts. These drivers are identified by the acronym "SCALERS": Staffing, Communicating, Alliance building, Lobbying, Earnings generation, Replicating, and Stimulating market forces.

This model has been recognised for its potential as a roadmap for social entrepreneurial organisations interested in scaling their impact. It has also been used as an evaluation framework that helps social entrepreneurs to track and assess scaling progress and to identify ways to improve.

The Greiner Growth Model

The Greiner Growth Model, proposed by Greiner (1989), is a theoretical framework that describes the phases of growth and evolution that startups typically undergo as they expand. The Greiner Growth Model outlines six distinct phases of organisational growth, each characterised by a period of evolution, followed by a revolutionary period that necessitates a major organisational transformation. The six phases are: creativity, direction, delegation, coordination, collaboration, and alliances.

- *Creativity:* The initial start-up phase, characterised by informal communication and a focus on product development.
- *Direction:* As the organisation grows, more formal processes and structures are implemented.
- *Delegation:* Further growth leads to increased decentralisation and delegation of responsibilities.
- *Coordination:* At this stage, the organisation implements more sophisticated coordination techniques to manage its increasingly complex operations.
- *Collaboration:* The organisation focuses on improving teamwork and collaboration across different parts of the organization.
- *Alliances:* In the final phase, the organisation may form strategic alliances or partnerships to continue its growth.

The Greiner Growth Model has been widely recognised for its insights into the challenges and transitions associated with organisational growth. It has been used as a diagnostic tool to identify the current phase of an organisation and anticipate future challenges. However, some critics argue that the model may oversimplify the complexities of organisational growth and may not apply equally to all types of organisations.

The Startup Genome Project

The Startup Genome Project is a framework that was developed by a team of researchers, entrepreneurs, and investors in collaboration with Stanford University and UC Berkeley in 2011 (Marmer et al., 2011). The framework is based on the idea that scalability is a function of the product-market fit and that startups can achieve scalability by following a structured and iterative process of customer discovery, validation, creation, and building. The framework uses a lifecycle model to describe the stages, activities, and outcomes of the scalability process and to suggest best practices and metrics for each stage. The Startup Genome Project can be summarized in the following stages:

- *Customer discovery*: the stage where startups search for a problem-solution fit by identifying and testing their target customer segments, value propositions, and channels. The main activities in this stage are customer interviews, surveys, and experiments, and the main outcomes are customer personas, problem hypotheses, and solution hypotheses.
- *Customer validation*: The stage where startups search for a product-market fit by validating and refining their business model, revenue model, and growth model. The main activities in this stage are customer feedback, analytics, and optimisation, and the main outcomes are product features, pricing, and distribution.
- *Customer creation*: The stage where startups execute their product-market fit by scaling up their customer acquisition, retention, and referral. The main activities in this stage are marketing, sales, and partnerships, and the main outcomes are customer segments, channels, and relationships.
- *Company building*: The stage where startups transition from a product-market fit to a scalable and sustainable business by building their organisation, culture, and processes. The main activities in this stage are hiring, training, and managing, and the main outcomes are roles, responsibilities, and values.

The Startup Genome Project can be represented by a circular diagram, where each quadrant corresponds to one of the stages, and each stage is divided into sub-stages and milestones. The framework suggests that startups can move clockwise along the circle, or loop back to a previous stage, depending on their scalability progress and feedback, and that they can achieve optimal scalability by finding and maintaining the product-market fit.

The Lean Scaleup

The Lean Scaleup is a framework that was proposed by Maurya (2016), a serial entrepreneur and author, in his book Scaling Lean. The framework is based on the idea that scalability is a function of the product-market engine and that startups can achieve scalability by following a lean and data-driven approach to building, measuring, and learning. The framework uses a dashboard model to describe the components, drivers, and indicators of the scalability engine and to suggest tools and techniques for each component.

The product-market engine is the core of the scalability framework, and it consists of three components: the value proposition, the growth model, and the business model. The value proposition is the promise of value that the product or service delivers to the customer, and it is validated by the problem-solution fit and the product-market fit. The growth model is the mechanism of acquiring, retaining, and monetising the customer, and it is validated by the traction and the revenue. The BM is the logic of creating, delivering, and capturing value for the customer, and it is validated by the unit economics and the profitability.

The scalability drivers are the factors that influence the performance and efficiency of the product-market engine, and they are divided into two categories: the internal drivers and the external drivers. The internal drivers are the actions and decisions that the startup can control and optimize, such as product features, pricing, marketing, and operations. The external drivers are the conditions and trends that the startup cannot control but can leverage or adapt to, such as customer behaviour, competition, regulation, and technology.

The scalability indicators are the metrics and measures that reflect the progress and outcomes of the product-market engine, and they are divided into two categories: the leading indicators and the lagging indicators. The leading indicators are the metrics that predict the future performance and impact of the product-market engine, such as the customer satisfaction, the customer retention, and the customer referral. The lagging indicators are the metrics that measure the past performance and impact of the product-market engine, such as the revenue, the profit, and the market share.

The Lean Scaleup can be represented by a rectangular diagram, where the product-market engine is the central element, the scalability drivers are the left and right elements, and the scalability indicators are the top and bottom elements. The framework suggests that startups can monitor and improve their scalability by using the dashboard as a feedback loop, and by applying the lean and data-driven principles and practices.

After a comprehensive review of these scalability frameworks, their context and limitations are summarised in Table 3. A closer look at the table reveals that although these frameworks succeed in identifying different phases of scaling up and some of the elements to be considered, they lack to consider the essential aspects of sustainability, being the social, economical and environmental values, identify the essential expansion in operational capabilities, and focus on some crucial factors like

fundraising, branding and creating circular economy. These insights along with the insights from the previous section are discussed in the next section, where the findings from the literature review are formulated into concrete design criteria for designing a framework for scaling sustainable business models.

Table 3: Summarisation of Frameworks for Scalability

Model	Description	Context of use	Limitations
The SCALERS Framework	Identifies seven organisational capabilities that contribute to the scaling of impact for social entrepreneurs.	Social entrepreneurial organisations interested in scaling their impact and evaluating their scaling progress.	Does not account for the diversity and complexity of social impact scaling, or the relationship between the organisational capabilities.
The Greiner Growth Model	Describes the phases of growth and evolution that organisations typically undergo as they expand.	Diagnosing the current phase of an organisation and anticipating future challenges and transitions.	Oversimplifies the realities of organisational growth and does not address effect of external factors.
The Startup Genome Project	Describes the stages, activities, and outcomes of the scalability process for startups.	Follows a structured and iterative process of customer discovery, validation, creation, and building.	May not capture the nuances and variations of the scalability process and limits itself to internal scaling.
The Lean Scaleup	Describes the components, drivers, and indicators of the product-market engine for startups.	Follows a lean and data-driven approach to building, measuring, and learning.	Require a high level of data literacy and experimentation skills to implement effectively, and hence may not be valid for the non tech context.

3.4. Key Insights

This chapter reviewed different frameworks found across the literature that facilitate BMI, SBMI and Scaling up. Based on the conclusions from each chapter, the essential features, insights and challenges are translated into design goals for the final framework of the thesis and tabulated in Table 4.

Table 4: Key insights from Frameworks

Sections	Key Insights	Design Goals
Business Model Innovation Frameworks	Identifies the key themes from contexts and uses of BMI frameworks, which would guide the foundation of the final framework.	To develop a framework that considers the following: 1. Internal factors 2. External Factors 3. Product perspective 4. Value perspectives 5. Facilitates structural decision Making
Sustainable Business Model Frameworks	Lacks in addressing the relationships between sustainable values and value tensions, mechanisms to consider their impacts or provide tangible implementation strategies.	To develop a framework that addresses the following: 1. Value relationships and Tensions between sustainability values 2. Sustainability Impacts 3. Implementable strategies
Frameworks for Scalability	Does not consider the essential expansion in operational capabilities or focus on niche focus on sustainability scaling.	To develop a framework that considers: 1. Operations aspects. 2. Dimensions of scaling. 3. Context of sustainability.

3.5. Strategic Design Tools

Strategic design, as articulated by Calabretta et al. (2016), is a discipline that integrates design principles with strategic business objectives to foster innovation and drive organizational success and benefit people alike. It emphasizes the role of design in shaping business strategies and the importance of designers in the strategic planning process. It is concerned with the application of design methodologies to complex systemic problems, aiming to enhance an organization's strategic and innovative capabilities (*What Is Strategic Design? An In-Depth Guide*, n.d.).

Building upon this foundation, it is evident that strategic design is not only a tool for enhancing an organization's innovative capabilities but also a catalyst for SBMI. Strategic design can support SBMI by applying human-centered and systemic design approaches that involve multiple stakeholders, explore alternative scenarios, and generate novel solutions that balance the needs and interests of different actors (Baldassarre et al., 2020). Moreover, strategic design can help embed sustainability principles into the core values and vision of an organization and facilitate the implementation and evaluation of sustainable business models through iterative prototyping and testing (Gaziulusoy & Ryan, 2017).

This section identifies and explores some of these strategic design tools which can be which facilitate the development and use of a framework to develop scale up strategies for startups with SBMs.

Double Diamond Process

The Double Diamond process is a widely used design methodology that consists of four phases: discover, define, develop, and deliver (*Make Life Better by Design - Design Council*, n.d.):

- *Discover:* This phase involves conducting research to understand the needs, preferences, and challenges of the target users and stakeholders, as well as identifying the opportunities and gaps in the existing market. This phase empathizes with the users and gain insights into their problems and motivations.
- *Define:* This phase is about synthesizing the findings from the discover phase and creating a clear and concise problem statement that guides the design process. The goal of this phase is to frame the problem in a user-centered way and establish the criteria for evaluating the solutions.
- *Develop:* This entails generating and prototyping ideas that address the problem statement and meet the user needs. This phase explores the possibilities and test them with the users and stakeholders, while iterating and improving based on the feedback.
- *Deliver:* This involves finalizing and implementing the best solution that emerged from the develop phase and ensuring that it meets the quality standards and expectations of the users and stakeholders.

The process alternates between divergent and convergent thinking, expanding the problem space and generating multiple ideas in the first and third phases, and narrowing down the focus and selecting the best solutions in the second and fourth phases. The overall methodology and structure of this thesis is based on the Double Diamond methodology, which was discussed in section 1.3. Methodology.

Vision in Product Design

Vision in Product Design (ViP) is a user-centered and problem-driven design process that aims to create innovative and meaningful solutions for complex problems through designing the underlying vision (Hekkert & Dijk, 2011). The process first deconstructs the existing design, focussing on its product features, interactions and context of use. This phase is followed by the design process, which also consists of three levels: the context, interaction and product level.

- *Context:* This level is about understanding the future context of use of design and creating an understanding of the overall domain. It involves exploring different trends and observations of the designer in the domain and clustering them into themes. This is followed by creating exploring patterns in the themes to create a worldview, which is then translated into a vision statement, which further guides the designer in the design process.
- *Interaction:* The vision statement is then visualised as analogies and relevant human-product interactions are identified from them.
- *Product:* The interactions are then transformed into product qualities and features, which are further ideated and iterated into concepts. The next step involves detailing and designing the final product.

The ViP process is an iterative and dynamic process that allows the designers to create a vision from their experiences and worldview, which further guides the overall design. It stimulates creativity and reflection that encourages the designers to question and transform the problem domain and the user needs, rather than merely satisfying them. By applying the ViP process, the designers can create solutions that are not only useful and usable, but also meaningful and valuable for the users and stakeholders, as well as for the society and the environment.

Essential practices of Strategic Design

These refer to the practices and guideline developed by Calabretta et al. (2016) which guide the strategic design process to co-create sustainable strategies. These guidelines are divided into four parts, which each describe key practices essential in designing strategies:

- *Setting Objectives:* The first part of the process entails co-developing the foundation of the strategic objectives. This involves two steps, envisioning which helps the stakeholders to incorporate a long-term vision in the project and inspiring which is motivating creativity in the involved stakeholders.
- *Configuring:* This part involves identifying and co-selecting the essential resources and tools required for the project. This involves simplifying, i.e. managing the complexity of the project by leveraging the right tools and structuring, which is creating a roadmap towards the final strategic objectives.

- *Orchestrating:* This part signifies the strategic designer's role of co-ordinating the stakeholder interests, which involves aligning stakeholder values with the strategic objectives and translating knowledge across stakeholders.
- *Embedding:* This involves the project implementation, embracing, which is creating an organisational commitment to the outcomes and educating the stakeholders about the role of design in the project, stimulating a design culture in the organisation.

The applications of these tools and practices in scaling sustainable startups, a central theme of this thesis, are discussed throughout the later chapters. They are used to manage and fulfil the design goals identified in the previous section which form the foundation of the next chapter to design a pre-framework that addresses the challenges of scaling a sustainable startup.

CHAPTER 4

the Pre-Framework

This chapter builds upon the insights from the literature review towards the goal of this thesis, i.e, to develop a framework using strategic design to help startups transform their sustainable business models to be resilient and scalable. The key insights are first discussed in the following sub-sections in detail and then the elements of the pre-framework are identified and analysed.

In this chapter:

4.1. Design Goals

The previous chapter undertook a comprehensive literature review, dissecting and analysing the key concepts and frameworks related to the research question. This section further expands on and clusters these goals, exploring design directions based on strategic design principles.

Value perspectives, relationships and tensions
Many of these frameworks are based on value chains and rely on the three pillars of sustainability: social, environmental and economical values. Although these values in isolation have been analysed in many of these frameworks (like the Flourishing BMC & the Triple Layered BMC), the relationship and tensions between these values is understudied. This thesis tries to use design principles to manage these tensions by creating a common connection between them. This is further discussed in section 4.1: A Vision Driven Business Framework further in the thesis.

Product perspectives, operational Aspects and Dimensions of Scaling sustainable startups
As discussed in the previous chapter, although the scalability frameworks identify several factors and phases of scaling a startup, they lack in considering the operational aspects (the different mechanisms through which businesses create value) and dimensions of scaling (refer section 2.5). These aspects are identified from the SBMI framework and integrated in the framework to fulfil the goals of the research, which is further elaborated in the section 4.2: Optimising the Value Creation mechanisms of this chapter.

Sustainability Impacts & Implementation Strategies
Although, sustainability startups are impact driven and need tangible proofs of their impacts to assemble policymakers, businesses and other stakeholders (Trautwein, 2021), the literature lacks frameworks that integrate these impacts at the core of their frameworks. Similar to value relationships, these impact relationships are understudied. This thesis tries to integrate these impacts and connect it to the other elements of the framework. This is further elaborated in section 4.3. Delivering and Capturing Impact. This section also provides structured elements that connect these with relevant value delivery and capture mechanisms, creating implementable scaleup strategy, an essential feature identified but missing in literature.

Facilitating structural decision making through the internal and external factors
This design goal originated from the insight that strategic frameworks require a structural approach to designing strategies. This goal was integrated with the value driven approach of traditional frameworks, where the design originated from the value proposition and capture (internal factors) and provided innovative implementation strategies through value delivery and capture mechanisms (external factors) that benefit people, organisations and the environment alike.

4.2. A Vision Driven Business Framework

The first insight derived from the literature was that most of the BMI frameworks are value-driven, i.e. they mainly focus on value proposition, value creation, delivery architecture and value capture (Foss & Saebi, 2017). Although this value-driven approach is essential for businesses to scale, focusing just on values becomes complicated for SBMs as they have three different values, i.e. the social value, environmental value and economic value (N. M. P. Bocken et al., 2014) which can often be conflicting. Therefore, sustainable startups may face serious challenges in the long term or must compromise on them if they operate with separate and unrelated social, environmental and economic values. compromise on them if they operate with separate and unrelated social, environmental and economic values.

A novel way to tackle this is a "Vision-driven" approach to develop the SBMI framework. The vision driven approach has been proven and validated in the design field through design methods like the ViP approach (Hekkert & Dijk, 2011). These methods rely on the intuition, creativity and worldview of the designer and have been proven to generate user-friendly and original solutions to complex design problems (Snoek & Hekkert, 1999). A similar method can be integrated to drive the complex values of a sustainable startup, which could be driven by a common vision. This vision is derived from the worldview and experience of a startup founder or business professional and can help them generate interconnected values, which in turn would help them realign their objectives for their startups to scale up, shown in Figure 3.

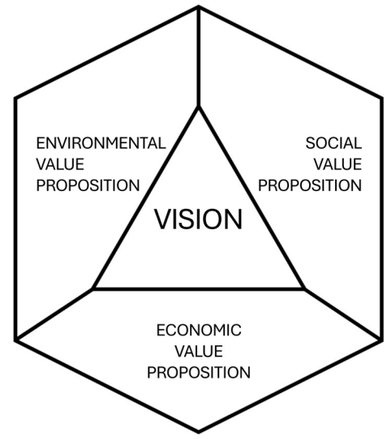


Figure 3: Building a "Vision-driven" SBMI Pre-Framework

4.2. Optimising the Value Creation mechanisms

In the previous section, the thesis attempts to tackle the value tensions between conflicting individual values, by deriving them from a single vision. In this section, we identify and move to the next step of value creation and identify mechanisms to make these more robust and resilient for scaling up. We identify three types of value creation tasks from the value propositions: the Social Value Creation, Environmental Value Creation and Economic Value Creation. These can be understood by identifying how the company creates the intended value propositions for the stakeholders. Since this framework focuses on the scale-up phase, sustainable startups might already have these value mechanisms in place, and they can be migrated to this framework. Enlisting these tasks in the framework helps the startup management to identify mechanisms that can fulfil and optimise these tasks while adhering to the core vision of the business model.

Based on the literature review, these value-creation tasks were mapped with the most important creation mechanisms to define a rudimentary relationship between them. These relationships are illustrated in the second layer of the SBMI Pre-Framework, see Figure 4.

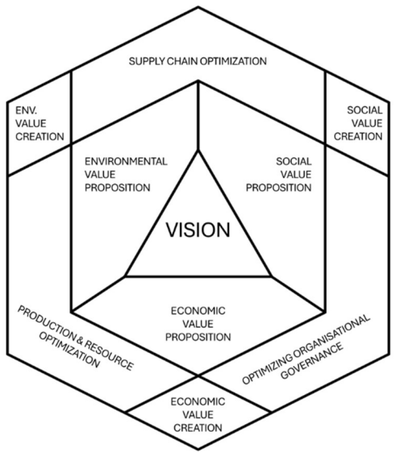


Figure 4: Adding Value Creation Mechanisms

Supply chain and production & resource management optimisation are derived from the SBMA (Sustainable Business Model Archetypes) framework, which identifies the essential archetypes of SBMI by N. M. P. Bocken et al. (2014). They are mainly based on the materials and waste management aspect of these archetypes. This model also focuses on the organisation governance as this helps the startup to adopt a resilient internal organisation, which is identified as one of the most important factors for a sustainable startup to scale up (Evans et al., 2017). Identification and optimisation of these mechanisms also ensure a degree of standardisation within the organisational processes, which is essential for a scaling startup (Massa et al., 2017).

4.3. Delivering and Capturing Impact

The third and final layer of the framework is about the impacts that the startups want to achieve and the mechanisms to deliver and capture them. These delivery and capture mechanisms are derived based on the inter-relationships of the environmental, social and economic impact. They superimpose the essential elements identified in SBMI frameworks like the Triple Layered Business Model Canvas (Joyce & Paquin (2016)) and Flourishing Business Canvas (Upward & Jones, 2016) that focus on waste & Product lifecycle optimization and Scalability frameworks such as the SCALERS (Bloom & Chatterji, 2009), the Startup Genome Project (Marmer et al., 2011) and the lean Scaleup Canvas (Maurya, 2016) which focus on customer acquisition and building collaborations. The final pre- framework is shown in the Figure 5, below.

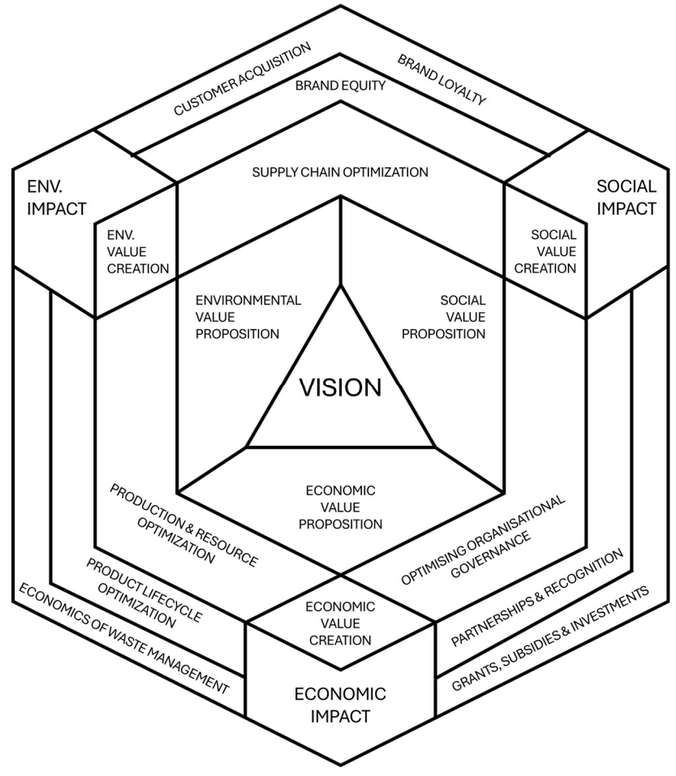


Figure 5: SBMI pre-framework for scalability

This pre-framework is a culmination of the insights generated by a literature review of articles around SBMI and Scalability of businesses. In the next part of the thesis, this would be tested and validated to generate further insights and improvements to the pre-framework through an empirical study consisting of qualitative interviews.

Part B

Empirical Studies

CHAPTER 5

Empirical Interviews

This chapter delves into empirical interviews, a cornerstone of the research which further explores the practical applications of Sustainable Business Model Innovation by Sustainable Startups. It begins with the interview planning & participants section, outlining the methodical approach to gathering qualitative data. Next, it transitions to thematic analysis, where the collected quotes and codes are dissected and clustered to uncover underlying patterns. Finally, key insights are summarised, offering a synthesized understanding of the underlying themes of the qualitative interview.

In this chapter:

5.1. Interview Planning

The primary aim of the semi-structured interview process was to delve into foundational practicalities that contribute to the success and scalability of startups and scale-ups with a focus on sustainability. This study used qualitative, in-depth, semi-structured interviews because they are the most appropriate method for the exploratory nature of this study (Jain, 2021). Drawing upon the findings from an extensive literature review, an initial pre-framework was developed which incorporates the essential components that sustainable startups must consider scaling up effectively.

This pre-framework is structured to serve as a conversational tool during interviews, prompting participants to engage in an in-depth discussion about its constituents. It is designed to evoke thoughtful responses and constructive criticism, allowing for a comprehensive evaluation of the framework's elements based on the real-world experiences and insights of the interviewees. The feedback obtained would be instrumental in refining the pre-framework, ensuring it accurately reflects the practicalities of scaling sustainable ventures. The key sub-research questions of the interview are the following:

- **What are the essential building blocks of a sustainable startup?**
- **Why do many Sustainable Business Models (SBMs) fail to scale up despite their initial success?**
- **How applicable is the pre-framework in a sustainable startup's context?**

Using these research questions and the pre-framework as a foundation, an interview guide (see Appendix 1) was crafted to facilitate a natural dialogue while ensuring all relevant topics were explored. This guide also ensured that the interviews across the participants were consistent, and the thematic analysis later could be structured and effective. The interview guide first started with a brief introduction to the study. It was then divided into three broad phases:

- ***Part I:*** *Introduction and background of their startup (approx. 20 mins):* This section was primarily about the general introduction of the founder and their startup. The conversation revolved around their journey and vision as a founder and the major challenges they face/expect to face while scaling up.
- ***Part II:*** *Insights on the pre-framework (approx. 30 mins):* The framework is then presented to the participants with a brief explanation of its different elements. Then, they were asked to share their first thoughts on the framework, followed by a systematic set of questions about its different elements, their interrelationships and their applicability and validity in their startup.
- ***Part III:*** *Finalizing and concluding thoughts (10 mins):* In this section, their final remarks on the pre-framework, along with the potential challenges they foresee to implementing this in scaling up their startup, are discussed. The section, along with the interview, ends with some general comments and open feedback on the framework.

The Part I of the interview guide dealt with the second sub-research question, i.e., what are the challenges for scaling up despite their initial success. The next two parts focused on the building blocks of a sustainable startup and how relevant was the pre-framework in their startup's context (the first and third research question). The overall structure of the interview and the interview guide were designed based on the recommendations of Adams (2015).

5.2. Participants

Choosing participants carefully was crucial, as the quality of the data and insights depended on their input. Purposive sampling was employed to identify individuals who can contribute meaningfully to the research. In this case, these were the founders of sustainable startups & initiatives (in larger organisations). Startups and initiatives were from three different stages of their business lifecycle – introduction, growth and maturity (Pettinger, 2020), and from different sectors and geographical regions of the world. This was done to understand and analyse the aspirations and perspectives of startups in their incubation phase, the challenges that they face while scaling up and how they overcame these challenges, along with ensuring that the data collected is not limited or biased by their sectors or region. Ethical considerations were paramount, necessitating approval from the HREC (Human Research Ethics Committee), with particular attention to informed consent and the Data Management Plan.

Each interview was designed to last between 45 to 60 minutes, providing ample time for participants to reflect and respond thoughtfully to the questions posed, while preventing both interviewer and interviewee fatigue (Adams, 2015). In terms of logistics, the interviews are arranged to accommodate both online and offline settings, offering flexibility to the participants and catering to their convenience. This hybrid approach also ensured a broader range of insights, as it was not limited by geographical constraints. The profiles of the interviewees are detailed in Table 5.

Table 5: Interviewee Profiles

Interviewee Number	Company Description	Country	Role
Interviewee 1	Sustainable Design Consultancy	Netherlands	Co-Founder
Interviewee 2	Sustainable Design Consultancy	India	Co-Founder
Interviewee 3	Sustainable Fashion Startup	Netherlands	Co-Founder
Interviewee 4	Sustainable Apparel Startup	India	Founder
Interviewee 5	Design Consultancy	India & Netherlands	Co-Founder & CEO
Interviewee 6	Sustainable Bicycle Bell Startup	Estonia	Co-Founder
Interviewee 7	Sustainable Cup Cleaning Solutions Startup	Netherlands	Co-Founder
Interviewee 8	Sustainable Water Consultancy	India	CEO
Interviewee 9	Sustainable Concrete Startup	United Kingdom	Co-Founder & CTO
Interviewee 10	Sustainable Menstrual Hygiene Startup	India	Managing Director

5.3. Analysis

Deductive thematic analysis (Braun & Clarke, 2012) was used to understand the intricacies of the collected data. This approach was deemed appropriate in systematically structuring the qualitative data derived from semi-structured interviews, ensuring a rigorous examination of the pre-framework's elements and their applicability within the startup ecosystem.

The transcripts were first reviewed multiple times to get a sense of the overall content, and codes were developed based on the themes derived from the elements of the pre-framework using Atlas.ti. These codes were then grouped and analysed to generate insights about these elements. The deductive nature of the analysis facilitated a focused exploration of predefined themes. Some elements of the pre-framework were merged, and new elements were also created to ensure that the themes aligned with the experiences of the participants. Moreover, the deductive thematic analysis allowed for consistent and comparative analysis across participant responses, thereby enhancing the reliability and validity of the findings (Jain, 2021).

Through this analysis, 4 major themes and 13 sub themes emerged. although the themes and sub-themes were initially derived from the pre-framework, they were later merged, shuffled and modified, and new themes and sub themes were created based on the qualitative analysis of interviewee quotes. A graphical representation of the thematic tree (based on the pre-framework) is shown in Figure X. The themes and sub-themes are further discussed in detail in the following part of this section. To structure the analysis and make it more readable, the themes and sub themes are described in the following format:

Theme

(Illustration showing the theme's location on the framework)

Theme description

1. *Subtheme 1:* Subtheme description.
   - Insight 1
   - Insights 2

   "Relevant Quotations" (Interviewee Number)
2. *Subtheme 2:* Subtheme description.
   - Insights 1
   - Insights 2

   "Relevant Quotations" (Interviewee Number)

The detailed Code tree can be found in Appendix 2.

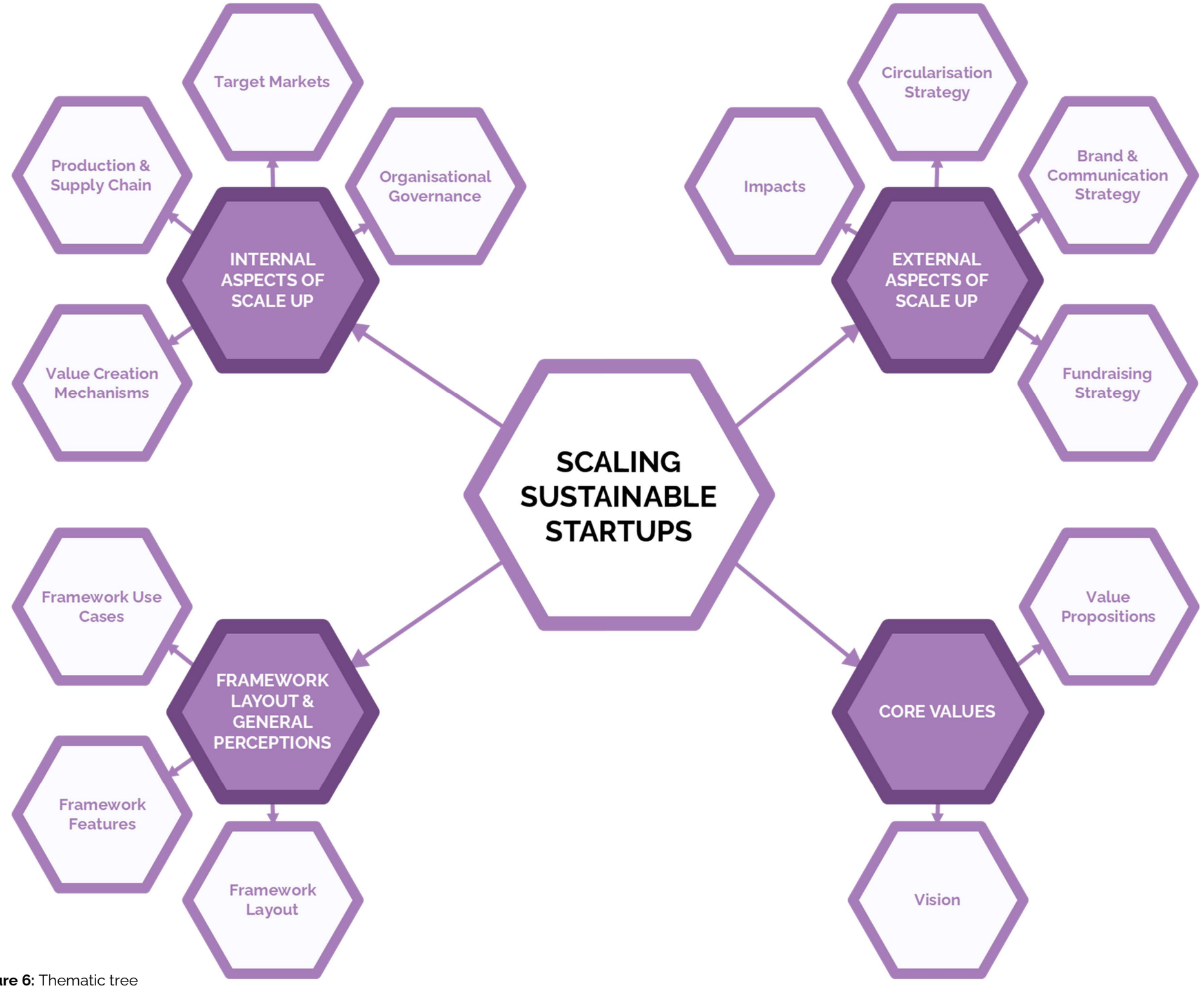


Figure 6: Thematic tree

1. Framework Layout and General Perceptions

This theme encapsulates the general perceptions of the participants on the layout and how they perceived the pre-framework during the interview. These insights can be further broken down into the following subthemes:

1. *Framework Use Cases:* This sub-theme is about how the framework can be used and what could be its potential uses in the sustainability startup landscape.
    - The analysis pointed out that the framework raises important questions, stimulates startup teams for discussions and provides a template that helps them structure the essential steps required to scale up.
    - It could help them structure their thinking and generate actionable insights and strategies to scale up.
    - It also acts as a powerful communication tool to communicate a sustainable startup's scale-up strategy.
    - An interesting suggestion was to convert this framework into a digital tool which could improve its user experience. This was an interesting design direction, but the idea was eventually dropped due to the time and resource limitations of this project.

    " Want to scale up? How do we find those people? Because. We're bunch of people. The 4 of us and. I don't really know. You know, if we're going to hire somebody who we're going to hire? What kind of person do you need? Yeah, I don't. Know. And this time optimization is pretty important. So yeah, there's already 3 questions you can ask, which are quite paramount to. The future of your business, so I think. That's actually that's really good." (Interviewee 1)

2. *Framework Features:* This sub-theme enlists some essential features the participants found interesting about the framework.
    - Overall, the feature that the framework is driven by a central vision was very novel and a good starting point for scaling up.
    - The directional nature of the framework was identified as a differentiating feature as it could guide the participants to work through it in a systematic manner.
    - Another interesting insight that came up in a few interviews was if the dimension of time could be integrated into the framework so that it could help in tracking the evolution of a sustainable startup. This idea led to the exploration of creating a Dynamic Business Model (Nyström & Mustonen, 2017) but then was dropped during the ideation phase to manage the complexity of the framework.

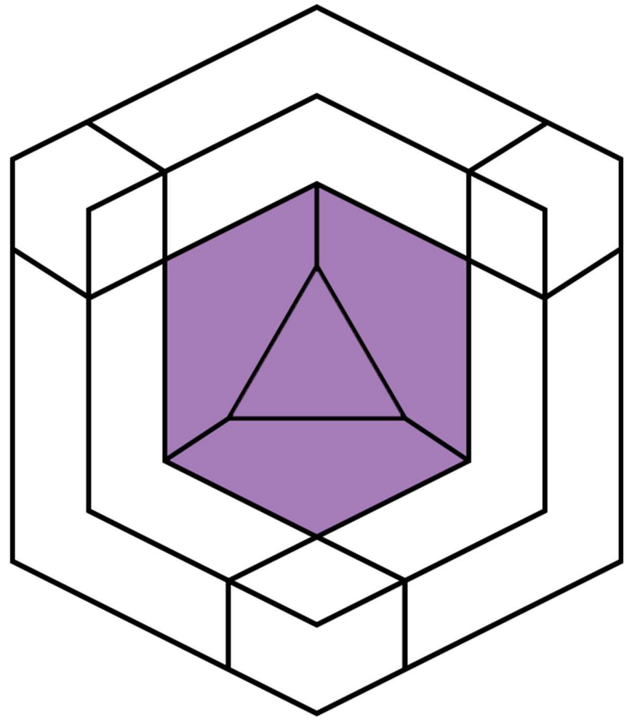
    "It's sort of like a top down versus down up approach where it's like from proposition to large or larger and it's cool how you're linking like social-economic, social-environments or environments-economic." (Interviewee 4)

3. *Framework Layout:* This subtheme discusses the feedback of the participants about the layout of the framework.
    - The overall layout of the framework was very intuitive to the participants and the layered structure helped them visualise directionality in the framework.

    - The participants could recognise social, economic and environmental values to be the guiding principle of the framework, with vision being the central theme.
    - The framework was too complex for the participants to understand in a short glance, but they were able to understand it after a short explanation.
    - Colour and illustrations were identified as powerful probes that could be added to guide the users through it and help to reduce its complexity.
    - The participants also expressed that the position of the elements could influence the users while using the framework. Hence, it is important to create clear guidelines to use this framework.

    " Yeah. It may not be clear at the beginning how do these like exactly overlap, but you explain it here so all that makes sense." (Interviewee 5)

2. Core Values



This theme emerged from insights regarding the vision and the core values of the startup, which form the inner-most section of the pre-framework. They are subdivided into two sub-themes:

1. *Vision:* This sub-theme discusses the participant insights and feedback about the "Vision" part of the pre-framework.
    - Personal values were considered essential driving forces of founders of many of the interviewed startups. The vision could incorporate these personal values along with their sustainability goals.

- Startups should balance both sustainability and economic values when creating their vision. They often lose sight of money or sustainability if they focus too much on one or the other while scaling up.
- Visions of many interviewed startups were often guided by the personal observations and experiences of the founders.
- It is not intuitive for companies to use their visions as a guide, especially while scaling up. Hence, it is very important to make these visions tangible.

"What we found very important and during our entire project timeline so far as that we not only keep in mind environmental impacts, social impacts and economic impact, but also our own values because that's what we follow when we are sometimes lost, when we're making a mistake." (Interviewee 4)

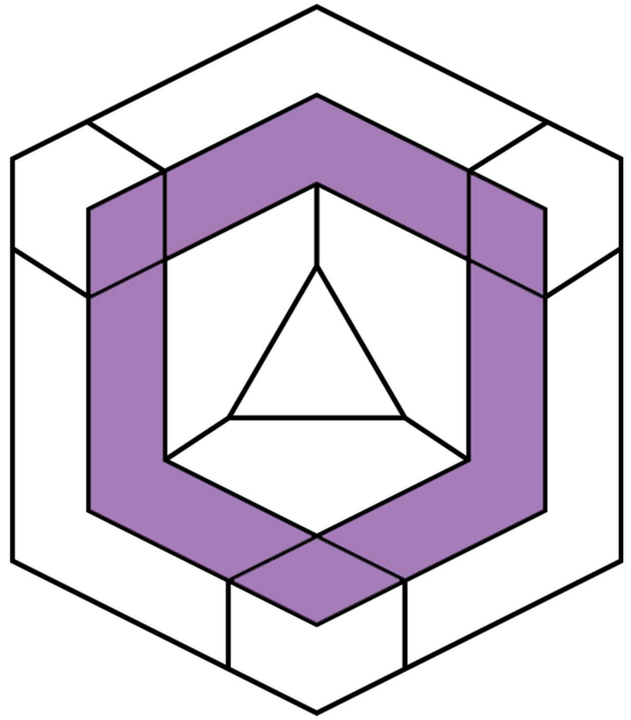
"So, if there could be ways in your framework where this vision can be made tangible, through visualization or through storytelling through drafting like a hypothetical speculative detail of the future that might make it easier to define your value propositions as well." (Interviewee 9)

2. *Value Propositions:* This sub-theme discusses the insights about the various value propositions discussed in the interviews. These propositions are further subdivided into economic, environmental and social values in the pre-framework:
   - *Environmental Value Proposition:* These value propositions were mainly focussed on reducing waste, reuse and conservation of resources. There was also an interesting quote which also pointed to the concept of sufficiency, which could be integrated here.
   - *Social Value Proposition:* These were focussed on sustaining rural communities and creating a source of livelihood. The concept of "Beneficiaries" was also raised here, which means a certain group that benefits from the sustainable startup but doesn't pay. Another interesting social value proposition was to include "convenience" by removing the hassle of being sustainable. This point emphasizes how customer values can be transformed to fit these value propositions.
   - *Economic Value Proposition:* These mainly focussed on propositions like providing "Value for Money". This was identified as an essential element to maintain Business Sustainability while scaling up.

"...because we make stuff every stuff thing that we make has a negative environmental impact, so. (Interviewee 1)

"Beneficiaries are we define it to mean those who have received the pads either completely free or at subsidized prices." (Interviewee 10)

3. Internal Aspects of Scaling up



This theme covers the insights that are relevant for developing the internal capabilities of the startup in order to scale up, which forms the second layer of the pre-framework. They are subdivided into four sub-themes:

1. *Value Creation:* This sub-theme discusses the insights about the various value creation mechanisms discussed in the interviews. These mechanisms are further subdivided into economic, environmental and social values in the pre-framework:
   - *Environmental Value Creation:* This element mainly translates into the product attributes and mechanisms that help the sustainable startup's offering to fulfil its environmental value proposition. It could include using monomaterial products (Dairabayeva et al., 2022) or reducing plastic in their product or packaging.
   - *Social Value Creation:* This element translates into the mechanisms that the startup can use to fulfil its social value propositions. This could range from investing in CSR (Corporate Social Responsibility) activities, providing workshops or improving accessibility to its beneficiaries.
   - *Economic Value Creation:* This element focuses on the Pricing model of the startup to make it financially sustainable.

"So that's why all our production and sewing goes through social workplaces, where we give workshops and sewing, and they help with our bags, so that we

also like create positive engagements between sustainability social workers and students in that way." (Interviewee 4)

2. *Production and Supply Chain:* This element involves the optimization required in the supply chain and production processes to ensure that the startup can meet the supply requirements for the new demand during the scale-up. The codes in this cluster involved evaluating, exploring and implementing new production methods and alternate supply chains.

   "A lot of the work that we've been doing is focusing on how to scale up the production and start thinking about the manufacturing aspects as well, and how you to scale up even further." (Interviewee 8)

   "Optimizing the manufacturing process, then figuring out what the supply chain is where all of your stuff is gonna come from. You wanna have, like, it's a strategic thing. So, you want to have reliable suppliers". (Interviewee 5)

3. *Target Markets:* This element involves identifying gaps in the existing markets or exploration of new markets to expand into while scaling up. Participants talked about their plans to move from B2C (Business to Customer) to B2B (Business to Business) and find the proper "Product-Problem Fit" in new markets in this section.

   "So it's right now we're B2C, but we wanna become more towards B2B." (Interviewee 4)

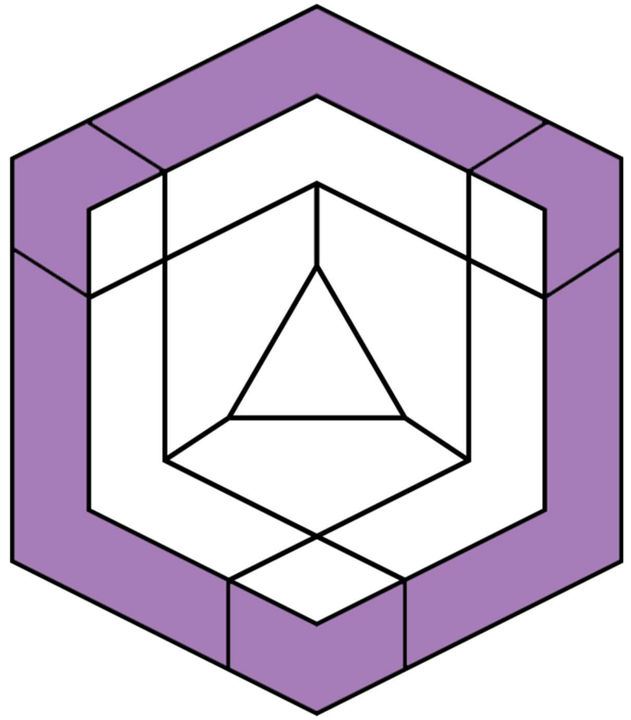
   OK, so what we do is we first of all make them understand the problem they are solving, OK, and try to get evidence that that problem really exists in the marketplace or wherever they are. (Interviewee 7)

4. *Organisational Governance:* Participants identified the importance of creating a clear division of responsibilities by creating departments and teams while scaling up. Factors like company values, finding and training and creating clear guidelines for the companies formed the foundation for the discussion about organisational governance.

   "[Startup name] manages a lot of complex dashboards and excel sheets where they where they manage and do everything but our our key startup teams don't have to get involved in that because they're more focused on what needs to be done. (Interviewee 2)

   "we have a model wherein we produce uh, we train women groups to produce and sell locally." (Interviewee 10)

4. External Aspects of Scaling up



This theme covers the insights that are relevant for creating essential strategies and measuring impact for sustainable startups to scale up, which forms the final layer of the pre-framework. They essentially incorporate the value delivery and capture mechanisms of the startup. They are subdivided into four sub-themes:

1. *Impacts:* This sub-theme discusses the insights about the various impacts that a sustainable startup wants to create, categorised into economic, environmental and social impact in the pre-framework:
   - Different metrics of measurement were identified by the participants to measure the environmental impact (LCA/GBI/Carbon Footprint) and social impact (Happiness Index/ Voting / Customer Satisfaction), but the recurring theme in the discussions was that these metrics varied in different startups. Hence it is essential for sustainable startups to come up with their own metric to guide their scale up.
   - Another recurring theme was that it was relatively easier but very important to measure the economic impact through the cash flow and valuation of the startup.
   - It was discussed that SDG Goals (Nations, 2015) could help in better comparing and communicating the impacts. Although there was some scepticism in some participants as these goals are not measurable, few of them mentioned that they are recognised and standardized and hence helpful in categorizing impact directions.

- Another interesting insight in this subtheme was that it is very important to validate and compare the impact created by the startup by scaling up by some global standards.

"So we look at environmental impact in such cases as a net impact." (Interviewee 7)

"...in fact measure our impact in terms of both the environmental impact and the social impact and the economic impact is actually just a byproduct of everything else that we're doing in something that we need to of course keep it sustained." (Interviewee 3)

2. *Circularization Strategy:* This element involves the strategies of sustainable startups to scale towards a circular economy. The codes in this cluster revolved around determining and optimising the total cost of ownership, the end of life of the product and the strategic use of the "Repair, Reuse & Recycle" principle. Themes of identifying relevant partners and analysing competitor relationships also came up in this section.

"And product life lifecycle optimization, I guess as well as we're really trying where it keep on iterating and redesigning the bags and the products. So that like we've gone testing and seeing like ohh in this situation, it's being broken and everything. So how do we?... Also, we're using waste, but how do we keep the quality of the products high? Because it's like upcycling often brings the quality low, so that's where product lifecycle also comes in, I guess." (Interviewee 4)

"...we are focused on reducing wastage and empowering rural communities through it. So it is basically an initiative whereby we're trying to reuse waste material, create a range of products or installations from it and this entire work is again done by the rural women".(Interviewee 3)

3. *Fundraising Strategy:* Funding was identified as one of the most important requirements for a startup to scale up. It was identified that unlike traditional startups; sustainable startups also depend on a lot of governmental subsidies and other grants for their funding. The importance of identifying important investor values and complying with essential ESG regulations also came up, which could help them become more investible.

"We were really lucky that we got two grants... We applied for 200 grants, and we got two grants." (Interviewee 8)

"Yeah, exactly. And I think that municipalities, they look a lot at ESGs, yeah, if the concept or product you want to deliver complies with that and if it does nice go grant such. (Interviewee 1)

4. *Branding and Communication Strategy:* A recurring social value that came across during the interviews was spreading awareness. Creating awareness about the various sustainable impacts of sustainable startups is important not only for creating customer acceptance but also for customer acquisition. The themes in this section also included creating a common design and communication language to ensure brand coherence, which is important when the startup scales into new markets or expands its product portfolio.

So when we started... one of the main problems we had and I think continued to have is a lack of awareness.... So for us, I think one of the major points of really growing or scaling up is making people aware of the work we're doing, why we're doing it and how they can be part of it.... And that is, I think, the goal we have in the next couple of years as well. And looking back, also as I said when we started, we work in a process called the upcycling. Hardly anyone we talked to knew what upcycling was. (Interviewee 3)

"If you use the argument of higher environmental impacts and higher social impacts, you can lower your acquisition cost, it fits really well with selling sustainability. So that's beautiful. I think that's a perfect, ok and the company should be aware of that. Yeah, I like that brand loyalty, so. (Interviewee 1)

5.4. Key Insights

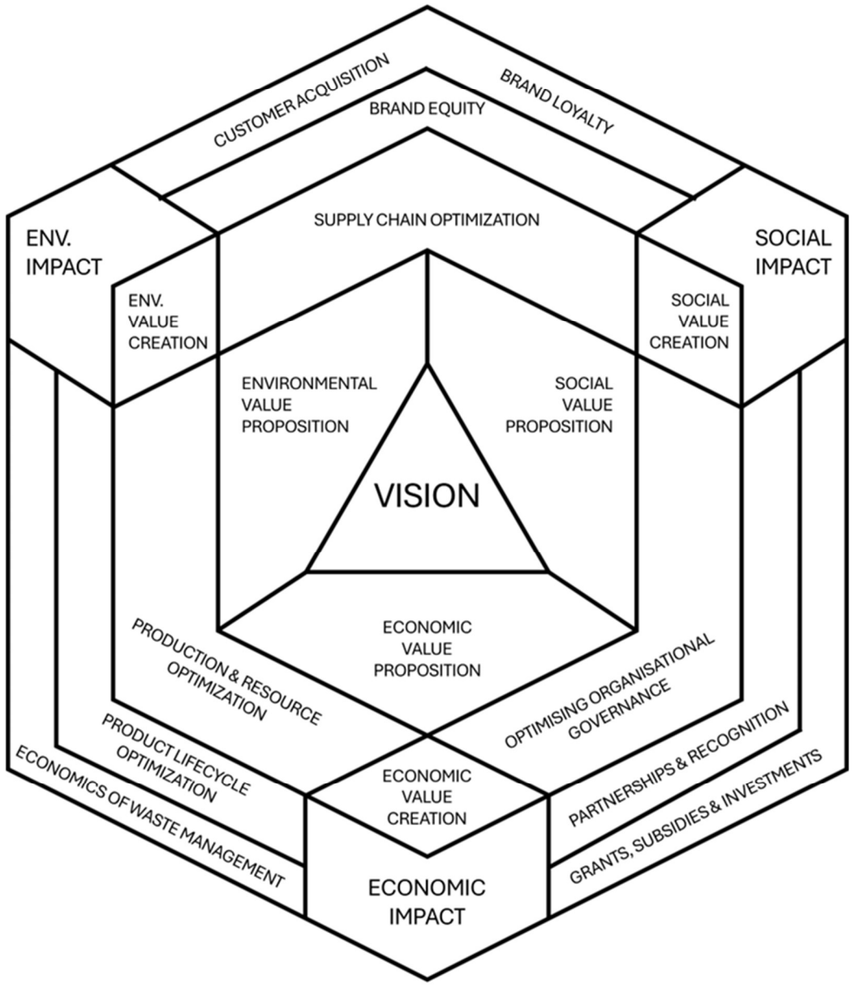
Based on the analysis of the empirical study, the pre-framework was improved, both conceptually and visually. The updated framework is presented in Figure XXX.

The core elements of the framework were rearranged to adhere better to the experiences of the sustainable startups. It was identified that supply chain and production were extremely interconnected and had to be considered as a single unit and had a strong economic connection. Apart from this, a new subtheme 'target markets' was identified. Target markets are an essential consideration while scaling up and hence added to the second layer.

A recurring theme in the interviews was the complexity of the framework. Although the framework was understandable and easy to work with after a short explanation, visual cues were missing that could guide the participants through this pre-framework. To address this issue, colour and line widths were used to create a clear separation in the layers, which would create a visual priority. Greyscale was used to make it more accessible, especially considering the research of Rigden (1999) on designing for colour-blind users.

To further manage the complexity of the framework, the delivery and capture mechanisms that formed the last layer of the framework were merged to form integrated strategies. The 'Partnerships', 'Product Lifecycle Optimisation' and 'Economics of Waste Management' were merged together as 'Circularisation Strategy', the 'Grants, Subsidies and Investments' was changed to 'Fundraising Strategy' and the 'Brand Equity', and 'Customer Acquisition' were merged together as 'Brand and Communication Strategy'. This was done based on the 'simplification vs effectiveness' code and helped in reducing the complexity of the framework further by simplifying the terms and the layers. The new iteration of the framework is visualised in Figure 7. This framework would be further analysed through a business case workshop to generate further insights into its user perception and utility, discussed in the next chapter.

Pre-framework



Iterated Framework

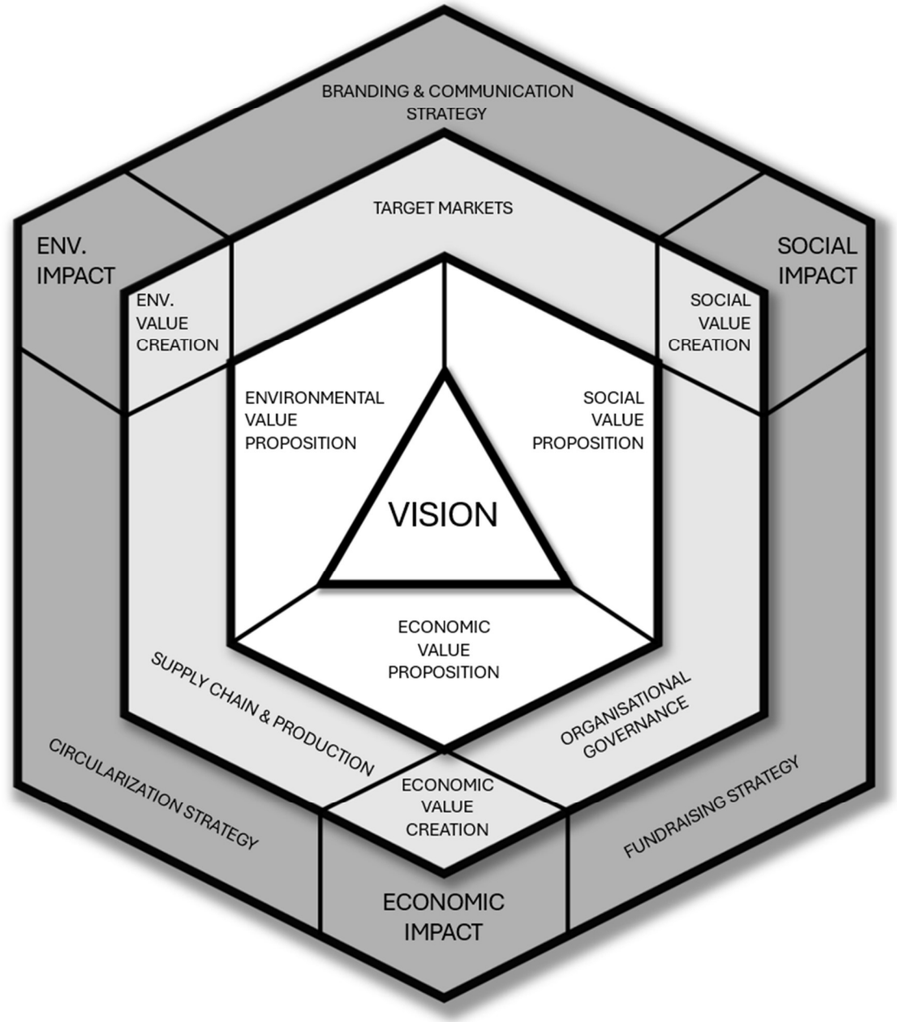


Figure 7: Iteration of the framework

CHAPTER 6

the Business Case Workshop

A business case workshop was hosted to validate the insights from the interview and gain additional insights on how this framework would be used in the field. It begins with the planning and design of the workshop, followed by the analysis section, where the qualitative and quantitative feedback of the participants are analysed.

In this chapter:

6.1. Workshop Design

Business case studies serve as a robust method for testing business frameworks due to their ability to provide real-world validation. By examining the application of theoretical frameworks within actual business scenarios, case studies offer insights into the practicality, adaptability, and effectiveness of these models. Yin (2003) posits that case studies provide a unique opportunity to test theories within real-life contexts, thereby validating or challenging the assumptions of business frameworks. They allow for an in-depth analysis of strategic decisions, outcomes, and the interplay between different business elements, which can reveal strengths and weaknesses in the frameworks being tested. Eisenhardt (1989) further argues that the in-depth nature of case studies allows for the exploration of complex problems, which is essential for the iterative process of framework building. Moreover, Siggelkow (2007) emphasises that case studies can uncover causal pathways and mechanisms that may not be apparent in purely theoretical models, thus contributing to the refinement of business frameworks.

Furthermore, case studies facilitate a comprehensive understanding of complex business dynamics, making them an invaluable tool for refining and enhancing business strategies and models. The case study in the workshop was used not only to test the applicability of the framework but also to understand the relationships between its different elements by providing empirical evidence and context-specific insights that can inform iterations.

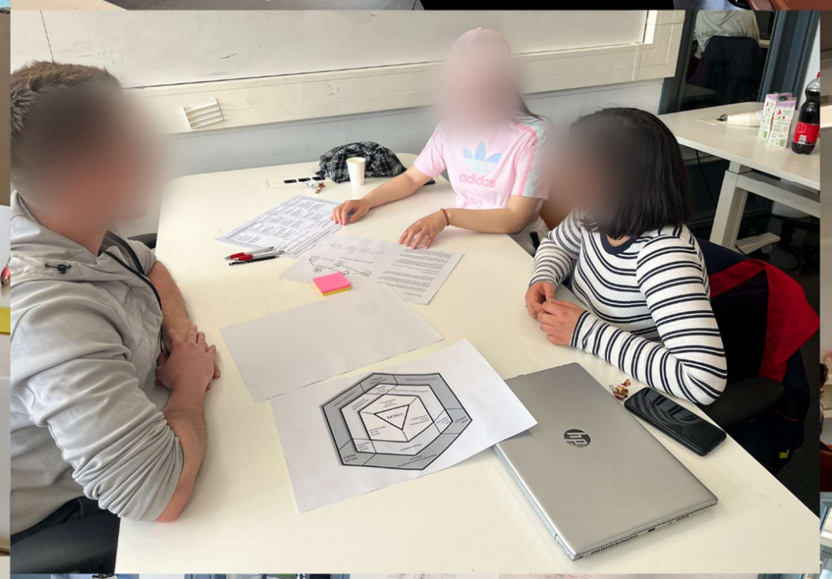
A set of multidisciplinary teams was selected for this workshop as they are essential due to the diverse perspectives and expertise, they could provide. The business challenges in the case study were multifaceted and required a holistic approach for effective resolution. The multidisciplinary teams consisted of a student with a business background, one technical and a design student, ensuring that different aspects of a business problem were considered. This diversity facilitated innovative thinking and creative problem-solving, as team members drew upon their unique experiences and knowledge bases to contribute fresh ideas and insights. This aligns with the strategic design principles that promote the involvement of design in strategy formulation and incorporates co-creation in the process (Calabretta & Gemser, 2017). The detailed team composition is tabulated in Table 6. The design of the case study workshop involves four stages:

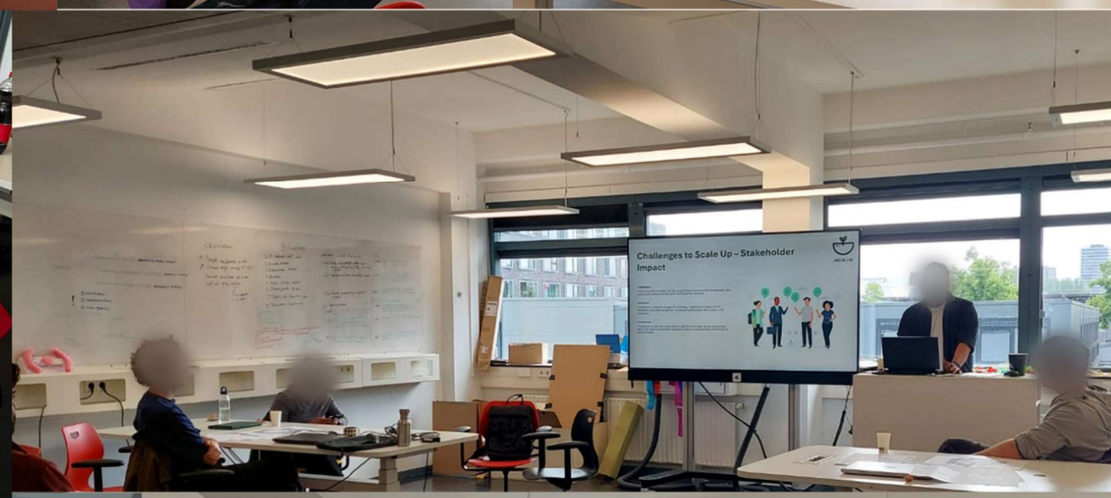
- *Part I: Introduction to the framework (approx. 15 mins):* This section was aimed at a short introduction to the framework. The teams were presented with the framework with an explanation of its different elements along with a basic guideline on how to approach this.
- *Part II: Introduction to the Business Case Study (approx. 15 mins):* The participants were then introduced to the business case study. The business case was about an imaginary startup, "Jollie Jar", and its challenges to scale up. A detailed explanation of the case study and challenges is explained in the next section.
- *Part III: Solving the Business Case (60 mins):* In this part of the workshop, the participants worked in teams to solve the scale-up challenge of 'Jollie Jar' using the framework as 'consultant teams'. I played the role of the 'CEO of Jullie Jar' and answered various questions related to the case and the companies. The teams asked interesting questions regarding other suppliers, unit economics, the possibility of market exploration, etc. The end results of the business case are briefly discussed in the following section of this chapter.
- *Part IV: Business Case Presentation (30 Mins):* In the concluding part of the workshop, the teams presented their strategies to everyone. The focus was mainly on their chain of thoughts and the process by which they designed the strategies using the framework. These presentations were followed by short questions about the framework and their experience of using it. Finally, the students were asked to fill out a short survey to analyse different aspects of their experience.

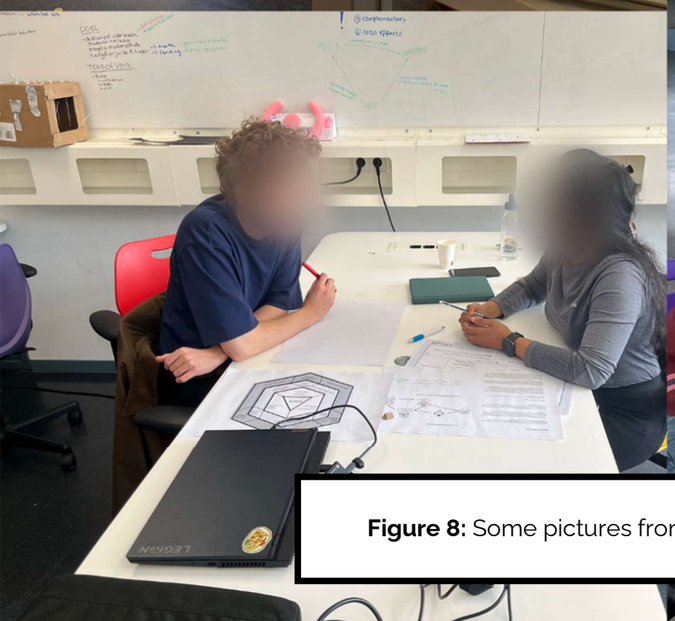
Table 6: Composition of Workshop Participants

Name	Expertise	Department/ Faculty	Team
Participant 1	Business	Technology, Policy & Management	Team 1
Participant 2	Technology	Integrated Product Design	
Participant 3	Design	Strategic Product Design	
Participant 4*	Business & Design	Integrated Product Design & Strategic Product Design	Team 2**
Participant 5	Technology	Environmental Engineering	
Participant 6	Business	Strategic Product Design	Team 3
Participant 7	Technology	Environmental Engineering	
Participant 8	Design	Integrated Product Design	

*Participant 4 is enrolled in a Double Master's Program
**Although Team 2 had a last moment cancellation, the team still has representation of Business, Design and Technology through Participant 4







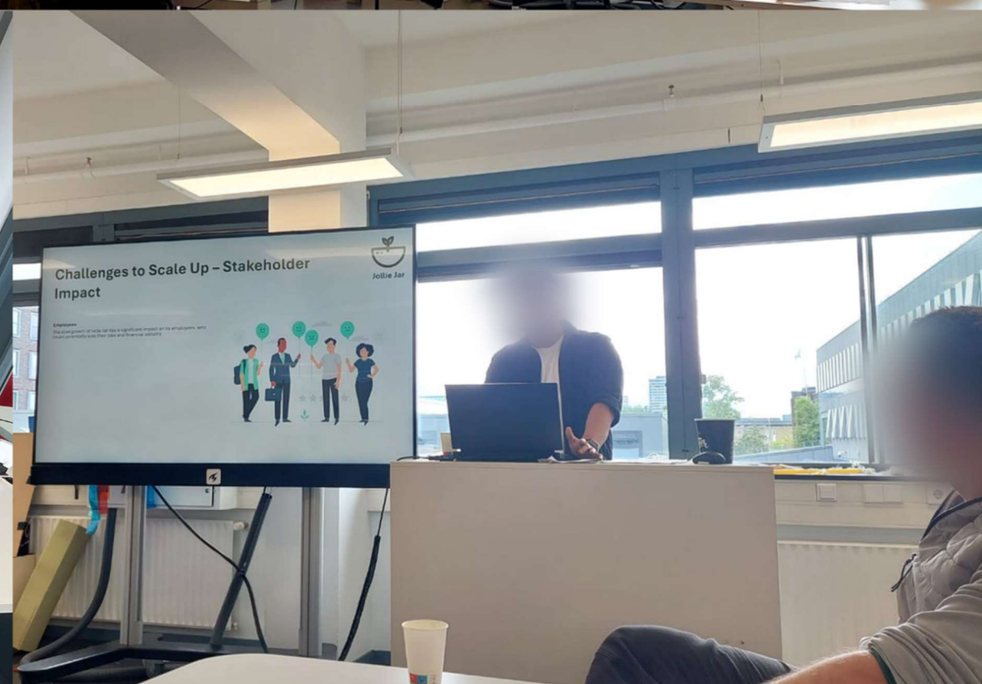


Figure 8: Some pictures from the business case workshop

6.2. The Curious Case of Jollie Jar

This section elaborates on the imaginary business case designed for this workshop. The handouts and test materials provided to the participants can be found in Appendix 3.

Introduction to Jollie Jar

Jollie Jar is a pioneering Packaging-free online supermarket based in the Netherlands, known for its innovative approach to grocery shopping with a focus on sustainability. Founded in January 2019 by IDE Alumni, the company delivers locally sourced, perishable groceries in reusable glass jars to customers' doorsteps. The jars come with a deposit that is refunded when they are returned, effectively reducing packaging waste and CO_2 emissions.

The goal is to make grocery shopping packaging-free, and the Jollie Jar offers a functional & convenient app to facilitate this process. Jollie Jar stands out for its commitment to reducing environmental impact and promoting a circular economy.

Jollie Jar Sustainable Mission:

Jollie Jar was founded with the mission of reducing plastic waste by delivering groceries in reusable jars. The company's focus on sustainable packaging and plastic waste reduction was innovative and received positive media attention. The focus is also to source the groceries from local communities to empower citizens in the neighbourhood.

Challenges to Scale up:

Despite its innovative approach and positive media attention, Jollie Jar struggles to scale up. This highlights the challenges of implementing a sustainable mission in a competitive market.

Flaws in Business Model

- *Dependence on Single Supplier:* Jollie Jar's heavy reliance on a single supplier makes the company vulnerable to supply chain disruptions and limits its ability to scale up its operations.
- *Challenges in Operations:* Jollie Jar faces challenges in scaling up its operations due to its lack of infrastructure. This limits its ability to meet growing demand and expand its reach.
- *Costly Reusable Jars:* Jollie Jar's reusable jars are expensive to produce and transport, which puts a strain on its finances. This makes the company less competitive and reduces its profitability.

Competition Pressure

- Jollie Jar faces competition from established players in the grocery delivery market, such as Albert Heijn and Jumbo, who have the advantage of scale and resources. This makes it difficult for Jollie Jar to compete on price. Their goal of only sourcing from local produce limits their product range as well.

Financial Mismanagement

- *Value Tensions:* Jollie Jar's financial mismanagement created by their tunnel focus on only their sustainable values resulted in overspending, which has resulted in misaligned budgets and decreased profitability.
- *Poor Cash Flow Management:* Jollie Jar's founders are not well-versed in handling financials. This led to poor cash flow management, which affected the company's financial performance and growth potential in the last Financial Year.
- *Lack of Funding:* Jollie Jar is struggling to secure additional funding to support its growth, limiting its ability to scale and expand into new markets.

Stakeholder Impact

- *Employees:* The slow growth of Jollie Jar has a significant impact on its employees, who could potentially lose their jobs and financial security.
- *Investors:* The failure of Jollie Jar to grow is showing a significant impact on its investors, who are losing their money and potentially their trust in the company.
- *Customers:* The failure of Jollie Jar could have a significant impact on its customers, who may lose a sustainable shopping option and potentially their trust in the company.
- *Industry Impact:* The difficulty of Jollie Jar to scale highlights the challenges of implementing sustainable business models in the grocery delivery industry, especially regarding cost and logistics.

Business Problem Statement:

The following business statement was given to the participants:

"In today's scenario, you (the teams) are some top consultancy teams, and I am the CEO of Jollie Jar.

Your goal today is to transform Jollie Jar from a startup facing these challenges into a scalable, financially stable, and impactful enterprise. This will require a multifaceted approach that not only resolves immediate financial concerns but also positions the company for long-term growth and success in the competitive grocery market.

You have to do so using the framework explained to you before this. Please use the Appendix for any additional information regarding the company. Feel free to ask me for any additional information that you may require to design the strategies.

After your discussion (1 hr.), we will have short presentations about your plans. The main focus of this would be your process of solving this business case using the framework and how you come up with the relevant strategies/ business recommendations. We then have a plenary discussion about the framework for about 15 minutes."

6.3. Analysis & Insights

The workshop essentially generated two types of data:

1. *Qualitative Data:* This data was derived from the team presentations at the end of the workshop as well as their feedback on the framework after the workshop in an informal discussion.
2. *Quantitative Data:* This was collected after the presentation through a short anonymous survey. The participants were asked to rate the framework based on 7 different parameters on a 5-point scale.

Overall, the participants had a positive outlook on the framework and mentioned that it helped them to structure their thoughts and look at the problem in a systematic and holistic manner. The insights can be categorised into 7 broad themes based on the different usability aspects of the framework, overall understanding of their presentation and informal discussions after the presentations:

Understandability

This parameter refers to the ease with which the participants could comprehend the structure, elements and relationships outlined within the framework. This is an important parameter as it is crucial to ensure that all its users can effectively engage with and utilise the framework to make informed decisions for sustainable startups to scale up. The ideas generated in this workshop were very detailed and included all the elements of the framework, which showed that the framework was understood by all. Also, there were no specific questions during the workshop about the framework, but they were directed around the business case, which shows that the participants were able to grasp the concept during the short presentation.

Usability

This parameter pertains to how user-friendly and intuitive the framework was for the participants. It encompasses the framework's design and layout, ensuring that it is accessible, easy to navigate, and practical to use for the business case. The framework was very usable based on the factor that all the teams could come up with tangible solutions and mentioned that this worked as an 'anchor' or created a 'boundary' that helped to keep the conversation running and focussed. However, there was an interesting observation on how the participants used the framework; rather than using the 'inside-out' direction, the participants first filled out the vision and the value propositions and then everything else they knew or were confident about the company. After this, they started to fill in the 'missing links' in the framework to come up with tangible and coherent business plans. They also mentioned that they were able to validate the framework from an 'inside-out' perspective to check that the scale-up plan was coherent. This insight presents an opportunity to add further flexibility to the framework.

Flexibility

This parameter refers to how easily the participants were able to adapt the framework to the business case. A flexible scalability framework allows an organization to pivot and modify its strategies and operations despite a broad range of disruptions. Based on the participant's feedback, they were able to fit the different aspects of scale-up challenges into the framework. They also mentioned that the structure of the framework did not restrict their solution space.

Creativity

This parameter encapsulates the framework's capacity to help participants generate innovative and novel strategies for scaling sustainable startups. This parameter indicates if it encourages out-of-the-box thinking and supports the generation of new ideas. The participants commented that this framework helped them to anchor to the vision and create mental boundaries, which helped them to come up with effective solutions. This is an indication that while the framework is good at exploring tangible and real-world solutions, it does not encourage distant or 'wild' ideas. However, it can act as an effective tool to validate such 'wild' ideas and integrate them into the scale-up strategy.

Coherence

This parameter signifies the logical consistency and alignment of its various elements. It ensures that all parts of the framework work synergistically towards scaling up a sustainable startup, and the strategies generated are implementable. The participants had a positive outlook on this aspect as they were able to generate coherent business strategies using the framework.

Applicability

This parameter refers to the relevance and suitability of the framework for the business case within the real-world context. It was used to assess whether the framework could be effectively applied to a business case, addressing specific challenges and achieving desired outcomes. The framework was able to accommodate all the challenges covering different aspects of a scale-up and, hence, can be deemed applicable.

Structural Consistency

This parameter refers to the degree to which the framework's components are systematically arranged and interconnected to support a sustainable startup to scale up. The layered approach, where the participants navigate from the vision to impacts in layers, was very appreciative and useful to the participants. However, the participants did not use the cues that showed the connections between different values. For example, "the target market to be the connection between social and environmental value creation". They rather treated all the elements independently within the layer. This was an interesting insight where the framework could be made simpler by emphasising more on the layered structure and less on the connections.

A general rating of the framework based on all these parameters can be seen in Figure 8.

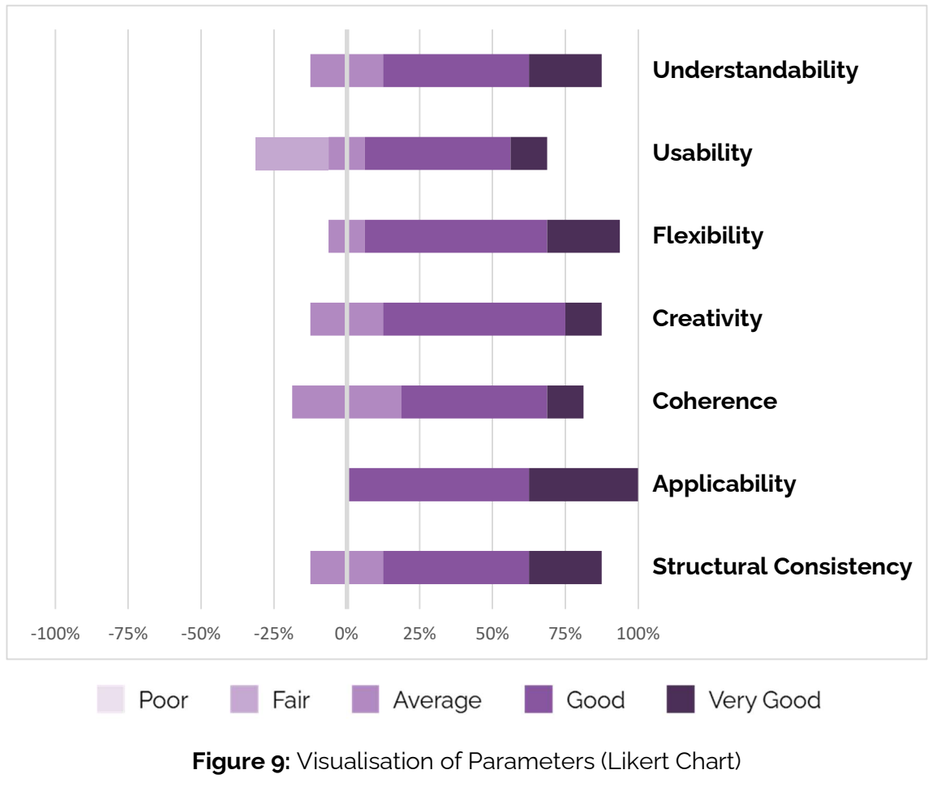


Figure 9: Visualisation of Parameters (Likert Chart)

The Participants were requested for anonymous feedback after the workshop through the survey. This sub-section quotes their experience of using this framework.

"Good workshop, maybe the business case development timeslot split into parts to make it more focused and structured"

"Comprehensive and challenging business case, the framework looks very generalisable and relevant for early-stage sustainable startups."

"I really enjoyed the workshop; the framework helps as an anchor. It arranges your thoughts and keeps you tethered to the question at hand! Good job and good luck with the project!!"

"Very good anchor point to brainstorm. Helps in articulating thoughts and ideas. Also effective in aligning business needs with design requirements."

The Likert Chart (Figure 8) further validates the conclusions and insights from the team presentation, with majority of the participants rating it "Good" and "Very Good" in most of the parameters. It stimulates the participants to undertake a systemic approach, i.e., design the scale-up strategy through a holistic approach focusing not only on the individual elements but also how these elements interact with each on a systemic level. Their way of working (described in detail in the 'Usability' parameter) is iterative in nature, which is refined and elaborated in Section 7.5: Directions of Use in the next chapter.

This systemic thinking approach and the need for multidisciplinary collaboration that the framework stimulates coupled the iterative approach of strategy creation resonates with strategic design, thus fulfilling the final deliverable of the thesis, i.e. a framework that helps startups transform their sustainable business models to be resilient and scalable using strategic design.

In the next chapter, the final iteration of the framework is presented, which is further visually refined. It also delves deeper into each element and layer of the framework, with detailed definitions, concepts and stimulations for them based on the knowledge culminated from the combination of all the previous chapters.

Part C

The Final Model

CHAPTER 7

the Sustainability Scale-up Framework

This chapter introduces the final output of this thesis, hereby called the 'Sustainability Scale-up Framework (SSF)', elaborates on the definitions and key concepts, and recommends tools and considerations for each of its elements. These definitions are derived from a culmination of the insights gained from the literature review, qualitative interviews and the business case workshop. After a detailed explanation of what every element means, this chapter then provides guidelines for using this Model in practice.

In this chapter:

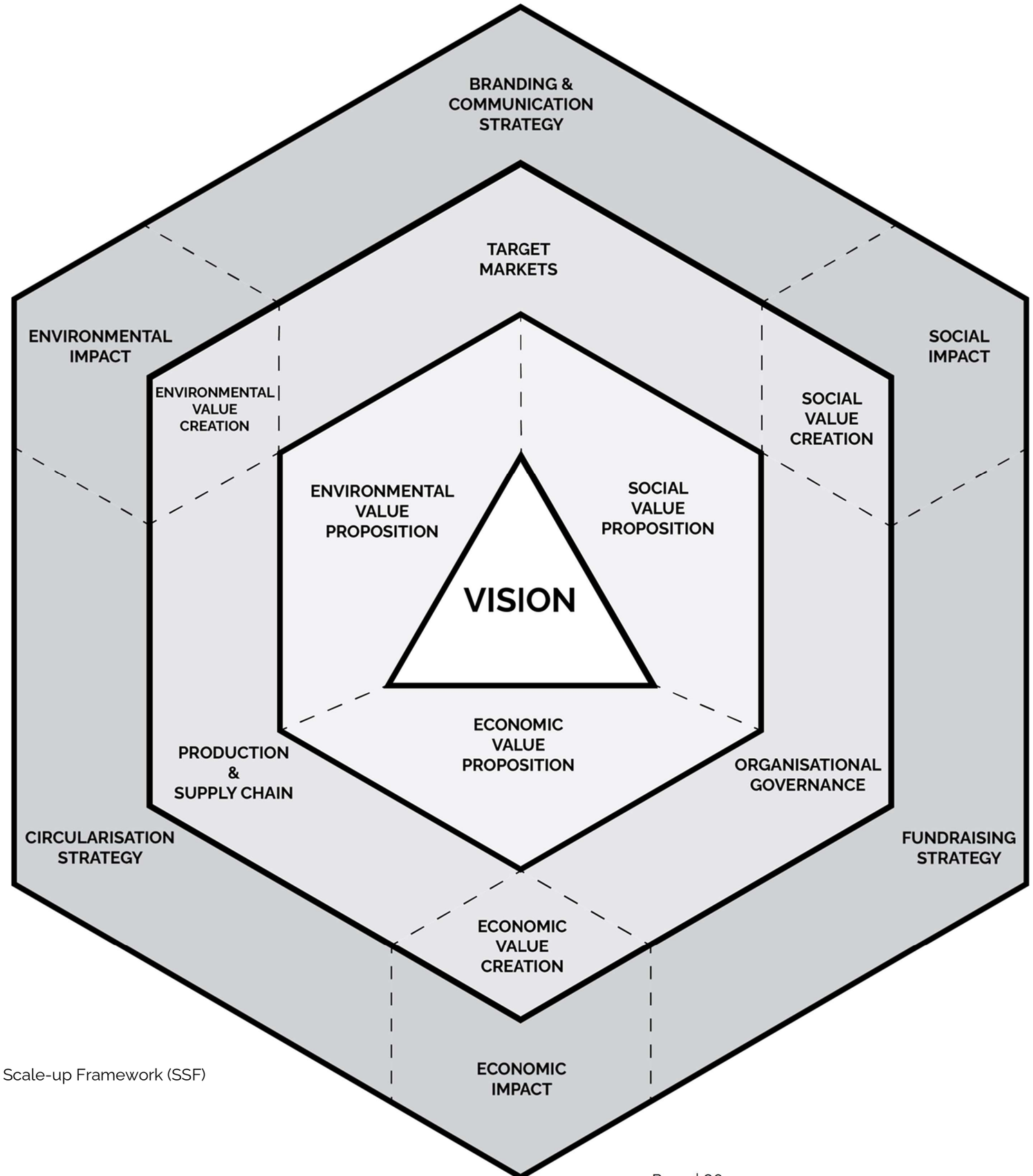


Figure 10: the Sustainability Scale-up Framework (SSF)

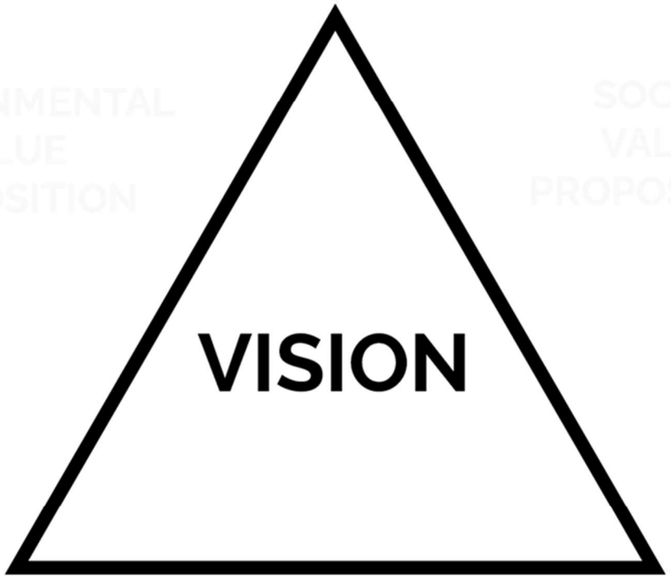
7.1. Vision

The Vision element represents the desired state the sustainable startup wants the world to achieve.

The vision serves as the guiding tool or framework for a startup. It encapsulates the long-term aspirations and the ultimate impact the startup aims to achieve. A well-articulated vision provides direction, inspires stakeholders, and helps maintain focus on the broader goals during the scale-up of a sustainable startup.

In crafting a vision, while it is essential to be ambitious, ensuring it resonates with the team and aligns with the startup's values and purpose, it is also necessary to be achievable and tangible. The vision should be clear enough to guide decision-making and flexible enough to adapt to changing circumstances.

It is very important to incorporate the overall aspirations of the startups on all three fronts: the social, environmental and the economic. The model is compatible with the existing vision of the sustainable startup that wants to scale, but it recommends a structure that helps the startup make its vision more tangible. This structure is derived from the Vision in Product Design method developed by Hekkert & Dijk (2011), which helps provide a structure to the vision. The process is briefly described in the Figure 11.



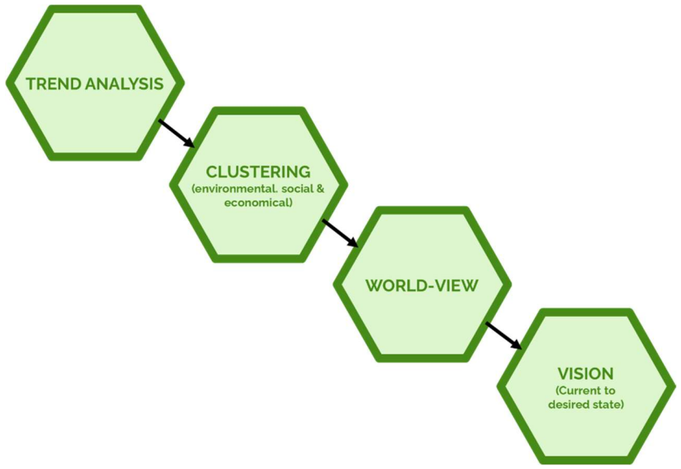


Figure X. VIP

Trend Analysis: This refers to quantitative and qualitative techniques used to identify essential phenomenon or trends around the world. There are various techniques available in strategy literature such as PESTEL (Johnson et al., 2008) which can be used for this.

Clustering: The Model recommends classifying these themes into "Economical. Social and Economic" trends. Then patterns are to be found within these trends and these are clustered together to find interesting problem directions.

Worldview: A worldview is the comprehensive perspective that shapes the future context for which the sustainable startups design their offering. This worldview is build based on the clustering of the trends and the experiences of the startup.

Vision: Based on the worldview, the vision statement can be created, which helps them to create a "desired state" of the world by changing the "desired behaviour' of their target group or create a 'desired experience' for them. The recommended structure of the vision is as follows:

"We want *[target group]* **to have** *[desired behaviour]/ [desired experience]* **by creating a world** *[desired state]*."

Examples of visions of some famous sustainable startups and companies:

"We want ***drivers*** *to have an* ***exhilarating, emission-free driving experience*** *by creating a world where* ***transportation is electric, sustainable, and accessible to all****."* (Tesla)

"We want ***outdoor enthusiasts*** *to have* ***durable and ethical gear*** *by creating a world where* ***all clothing is produced with the smallest environmental footprint****."* (Patagonia)

"We want ***meat lovers*** *to have the* ***taste and nutrition of meat*** *by creating a world where* ***protein is sourced sustainably without harming animals.****"* (Beyond Meat)

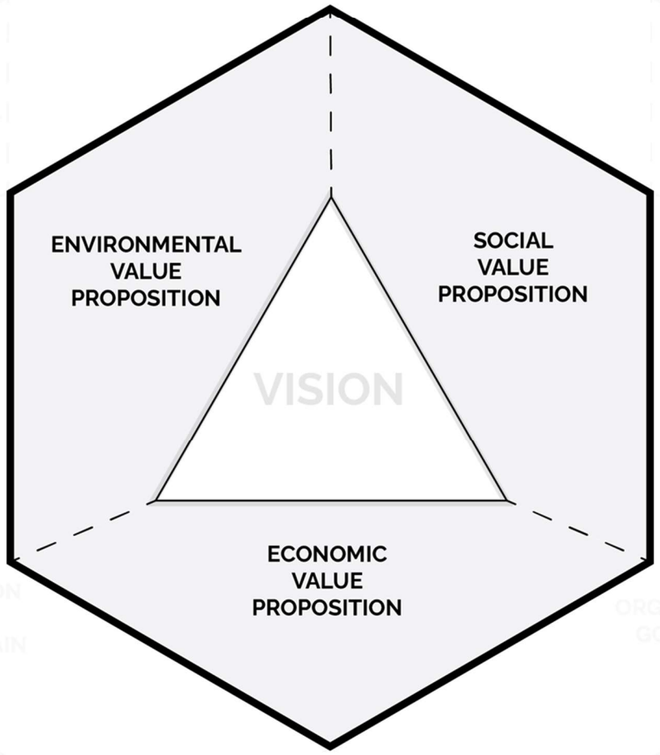
"We want ***smartphone users*** *to have* ***a long-lasting, repairable phone*** *by creating a world where* ***electronics are made with fair labour and minimal waste.****"* (Fairphone)

7.2. Value Propositions

The value propositions articulate the unique value the products or services of the sustainable startup provide to its customers, beneficiaries and the environment.

Value propositions are a promise of value to be delivered and a belief from the customer that their desired values will be experienced. For sustainable startups, a strong value proposition is crucial as it not only helps attract and retain customers by making clear the distinct benefits they offer, but also communicates the sustainable values they bring to their beneficiaries and the environment. It differentiates them in the market as it is essentially the reason why a customer would choose one product over another.

These propositions are divided into three essential pillars in the model: social, environmental and economic value propositions. As the sustainable startups scale, the complexity of their sustainable solutions can increase, making it harder to communicate a clear and concise value proposition. These pillars are essential to create structure and clarity, and a holistic balance of these three is crucial for a successful scale-up strategy. The value tensions arise due to the conflict between these values is a major theme discussed both in the literature (Glinik et al., 2024) as well as in the qualitative interviews performed during this research. This model attempts to manage these tensions by connecting them to a common vision by asking this non-exhaustive set of questions for the different value propositions:



Social Value Proposition:

1. How does the 'desired behaviour' improve community well-being?
2. What social problems are we addressing through our 'desired experience'?
3. Which customer and beneficiary needs does our 'desired state' satisfy?

Environmental Value Proposition:

1. How does the 'desired behaviour' contribute to environmental conservation?
2. In what ways does the 'desired experience' encourage eco-friendly habits?
3. Which environmental needs does our 'desired state' satisfy?

Economic Value Proposition:

1. How does the 'desired behaviour' drive economic growth or stability?
2. What economic challenges are we solving through the 'desired experience'?
3. How will our actions contribute to the long-term financial well-being of our stakeholders?

By answering questions like these, sustainable startups can formulate specific values to embody their vision and hence aim to reduce the mutual value tensions while scaling up. Some examples of these values are:

Community Development:

These propositions aim to revitalise underdeveloped areas through infrastructure improvements, local business support, or community engagement, enhancing the quality of life for residents.

Sustainable Agriculture:

Environmental-friendly farming techniques that ensure food security, support local economies, and protect natural resources, offering long-term benefits to society.

Zero-Waste Product Lines:

Products designed to eliminate waste during production and after consumer use, promoting a circular economy and reducing landfill impact.

Eco-Friendly Packaging:

Developing biodegradable or compostable packaging to replace traditional plastics, reducing environmental pollution and resource consumption.

Cost-saving:

Innovations that reduce production costs for businesses, such as energy-efficient machinery, which can lead to lower prices for consumers and higher margins for companies.

High Quality:

Offering higher quality at market prices ensures that the customers associate the startup with "value for money" and offerings that differentiate them from the competition

7.3. Value Creation Mechanisms

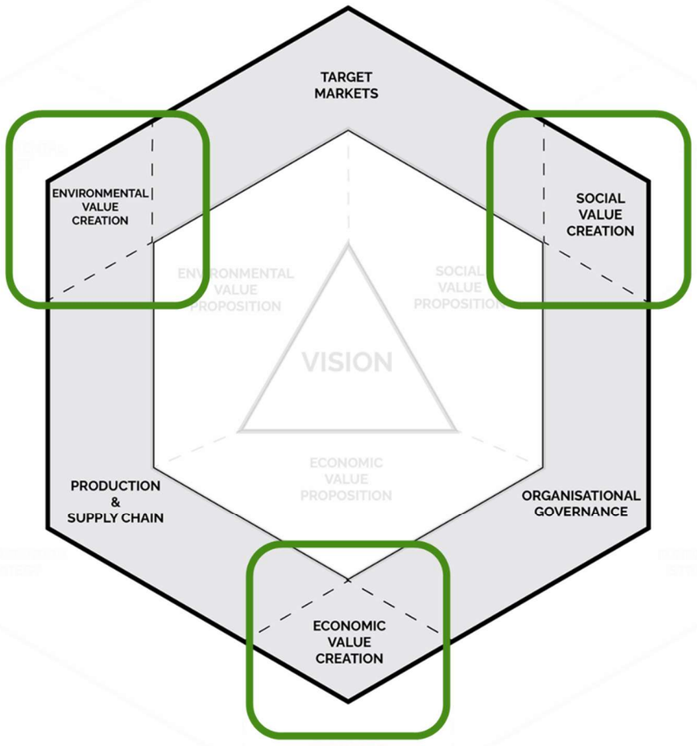
Value Creation Mechanisms are the fundamental processes and activities through which sustainable startup can generate their value propositions.

These mechanisms involve the development of unique products or services, enhancement of customer experiences, using environmental materials and innovation in financial and business models. This layer of the framework incorporates the internal infrastructure of the sustainable startup and helps to create coherency in the scale-up strategies.

This layer is further divided into two parts. The first part is about the environmental, social and economic value creation, which essentially describes the product/service features, policies and financial infrastructure required to create the values promised in the value propositions.

The second part of this layer consists of supplementary creation mechanisms that connect the elements of the first part with each other, namely Target Markets, Supply Chain & Production and Organisational Governance. These elements evaluate the existing infrastructure of the startup and find gaps to help them create resilient foundations to facilitate the scale-up.

The model recommends a directional approach to derive its 'Value Creations' layer. The environmental, social and economic value creation mechanisms are derived from their respective value propositions. This set of questions helps in this process:



Social Value Creation Mechanisms:

1. How do we influence people to adopt the 'desirable behaviour'?
2. How do we create the 'desired experience'?
3. What activities would help us to deliver our value propositions to our customers and beneficiaries?

Environmental Value Creation Mechanisms:

1. What changes can we make to our product/service to make it more environmentally friendly?
2. How do we create the 'desired experience' that encourages eco-friendly behaviour?
3. What activities do we undertake to reduce our environmental footprint?

Economic Value Creation Mechanisms:

1. What is our pricing strategy?
2. How do we earn money from our sustainable initiatives?
3. How can our business model sustain long-term profitability and growth

These questions help startups identify different mechanisms that facilitate them to create their value propositions. Some examples of these mechanisms are:

Job Training for Marginalized Groups: Providing skills development to the bottom of the pyramid could improve their economic status and create employment, which results in effective community development.

Health Awareness Campaigns:

Educating the public about preventive healthcare, nutrition, and lifestyle choices can lead to a reduction in diseases and overall healthcare costs, enhancing community well-being.

Urban Green Spaces: Creating parks and green rooftops in urban areas to improve air quality, provide recreational spaces, and support biodiversity.

Renewable Energy Adoption:

Implementing solar, wind, or hydropower solutions contributes to reducing carbon emissions and dependence on fossil fuels, promoting a cleaner, more sustainable environment.

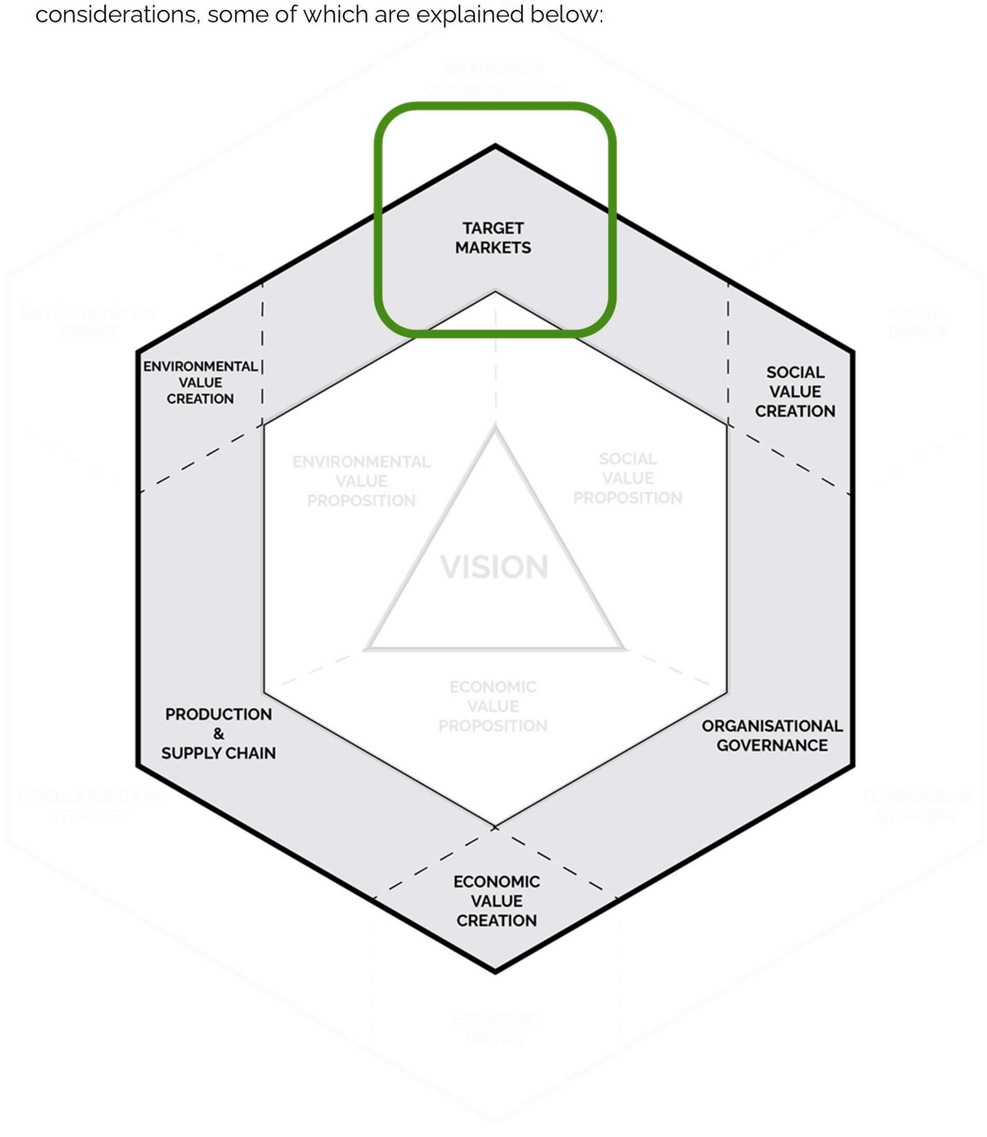
Microfinance Services: Providing small loans to entrepreneurs in developing countries, enabling them to start or expand businesses, which can stimulate local economies and reduce poverty.

Subscription-Based Models:

Offering products or services through a subscription model ensures a steady revenue stream for businesses and can provide consumers with cost-effective solutions

Target Markets

Target markets refer to the specific group of consumers or organisations the sustainable startup aims to reach by scaling up. This element is essential during the scale-up process, especially if the sustainable startup wants to create or increase demand for its offerings. Scaling up sustainable startups requires making essential considerations, some of which are explained below:



B2B customers:

Businesses that are looking for sustainable solutions to reduce their environmental impact and enhance their social responsibility. These customers are motivated by the benefits of sustainability for their reputation, efficiency, cost savings, and compliance. They are also interested in the innovation and quality of the products or services offered by the sustainable startup. Some examples of B2B customers are green hotels, eco-friendly restaurants, and corporate offices that want to implement sustainability practices and policies.

B2C customers:

Consumers who are conscious of the environmental and social implications of their purchasing decisions and are willing to pay a premium for sustainable products or services. These customers are driven by the values and beliefs that align with the sustainable startup's mission and vision. They are also attracted by the features and benefits of the products or services, such as durability, health, safety, and social impact. Some examples of B2C customers are organic food shoppers, fair trade clothing buyers, and renewable energy users.

Government entities:

Public sector organisations that have policies and regulations to promote sustainability and support innovation in this field. These customers are influenced by the public interest and the social and environmental goals of their mandates. They are also looking for reliable and effective solutions that can help them achieve their objectives and improve their performance. Some examples of government entities are environmental agencies, urban planning departments, and development cooperation agencies.

NGOs and social enterprises:

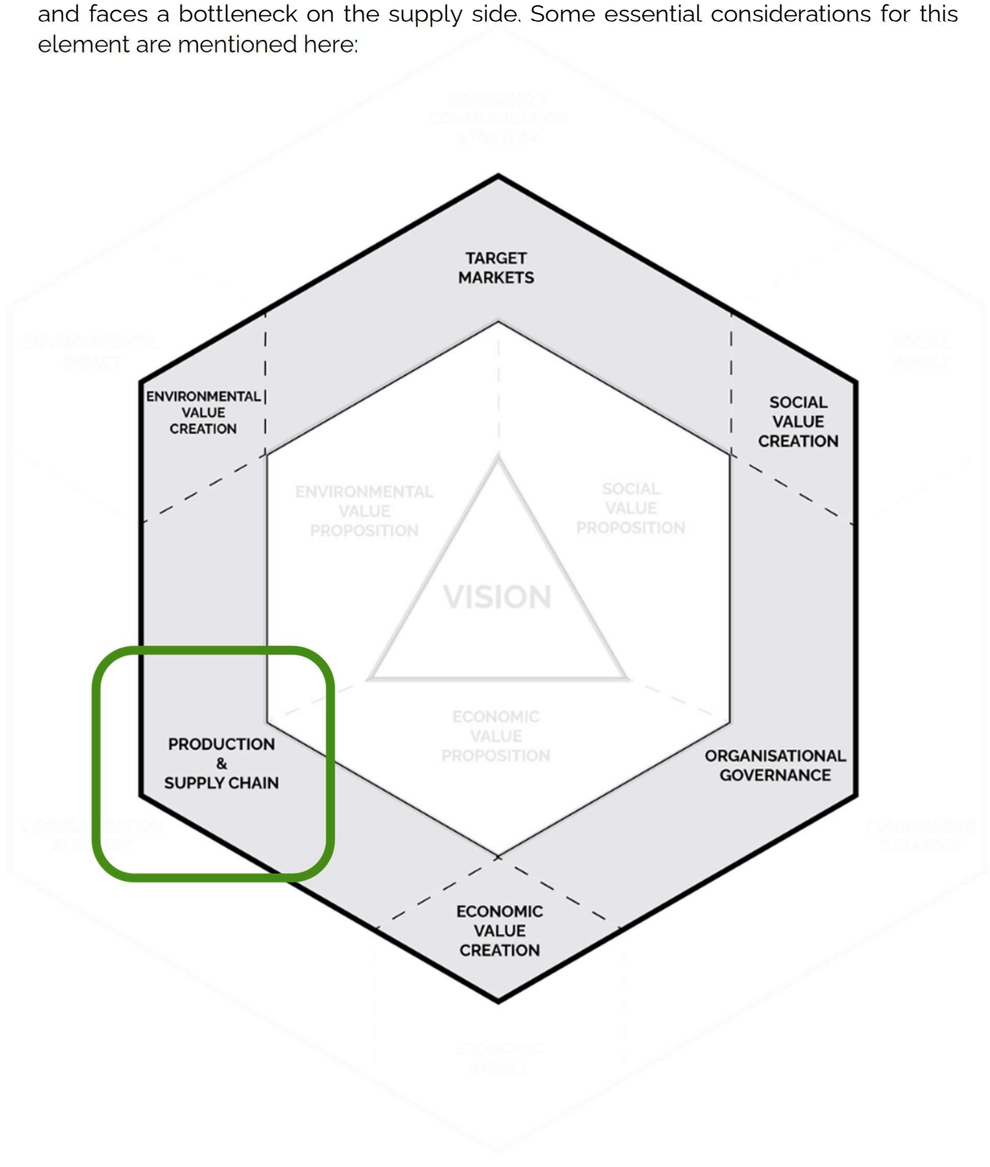
Non-governmental organisations and social enterprises that share the same vision and values as the sustainable startup and can benefit from its offerings or collaborate with it on joint projects or campaigns. These customers are inspired by the social and environmental impact of the sustainable startup and its products or services. They are also seeking for opportunities to enhance their reach, capacity, and sustainability. Some examples of NGOs and social enterprises are environmental advocacy groups, social innovation hubs, and community-based organizations.

International markets:

Markets in different countries or regions that have a high demand and potential for sustainable products or services and where the sustainable startup can leverage its competitive advantage and differentiation. These customers are influenced by the local needs, preferences, and trends of their markets, as well as the global awareness and demand for sustainability. They are also looking for solutions that can address their specific challenges and opportunities, such as resource scarcity, climate change, and social inequality. Some examples of international markets are emerging economies, developing countries, and regional blocs.

Supply Chain & Production:

Supply chain and production refer to the systems and processes that enable the sustainable startup to produce and deliver its offerings to its markets. This element is pivotal for scaling up, especially for a startup that has created substantial demand and faces a bottleneck on the supply side. Some essential considerations for this element are mentioned here:



Green production:

Green production is a way of reducing the environmental impact of producing goods or services by using renewable energy, circular economy, lean manufacturing, and eco-design principles. It can benefit startups by improving their efficiency, lowering their costs, enhancing their reputation, attracting eco-friendly customers and investors, reducing regulatory risks, and complying with environmental standards and certifications.

Lean manufacturing:

Lean manufacturing is a set of practices that aim to eliminate waste, improve quality, and increase efficiency in the production process. By applying lean principles, startups can reduce costs, increase customer satisfaction, and enhance their competitive advantage.

Automation & Digitization of production:

Automation and digitization can help startups streamline their production process, reduce human errors, and increase productivity and accuracy. By using technologies such as robotics, artificial intelligence, and cloud computing, startups can optimize their operations and logistics, improve their data management, and enhance their innovation capabilities.

Strategic partnerships and alliances:

Partnerships and alliances with suppliers and distributors can help startups access new markets, resources, and capabilities, as well as share risks and costs. By collaborating with suppliers, distributors, customers, or other stakeholders, startups can leverage their complementary strengths, increase their bargaining power, and create synergies and economies of scale.

Supplier diversification

Diversification can help startups reduce their dependence on a single production process or supplier, improving their revenue streams and mitigating the risks of market fluctuations and customer preferences. By having a variety of suppliers and catering to different offerings in their portfolio, startups can expand their customer base, mitigate supply chain disruptions and effectively overcome the supply bottleneck for their market demands.

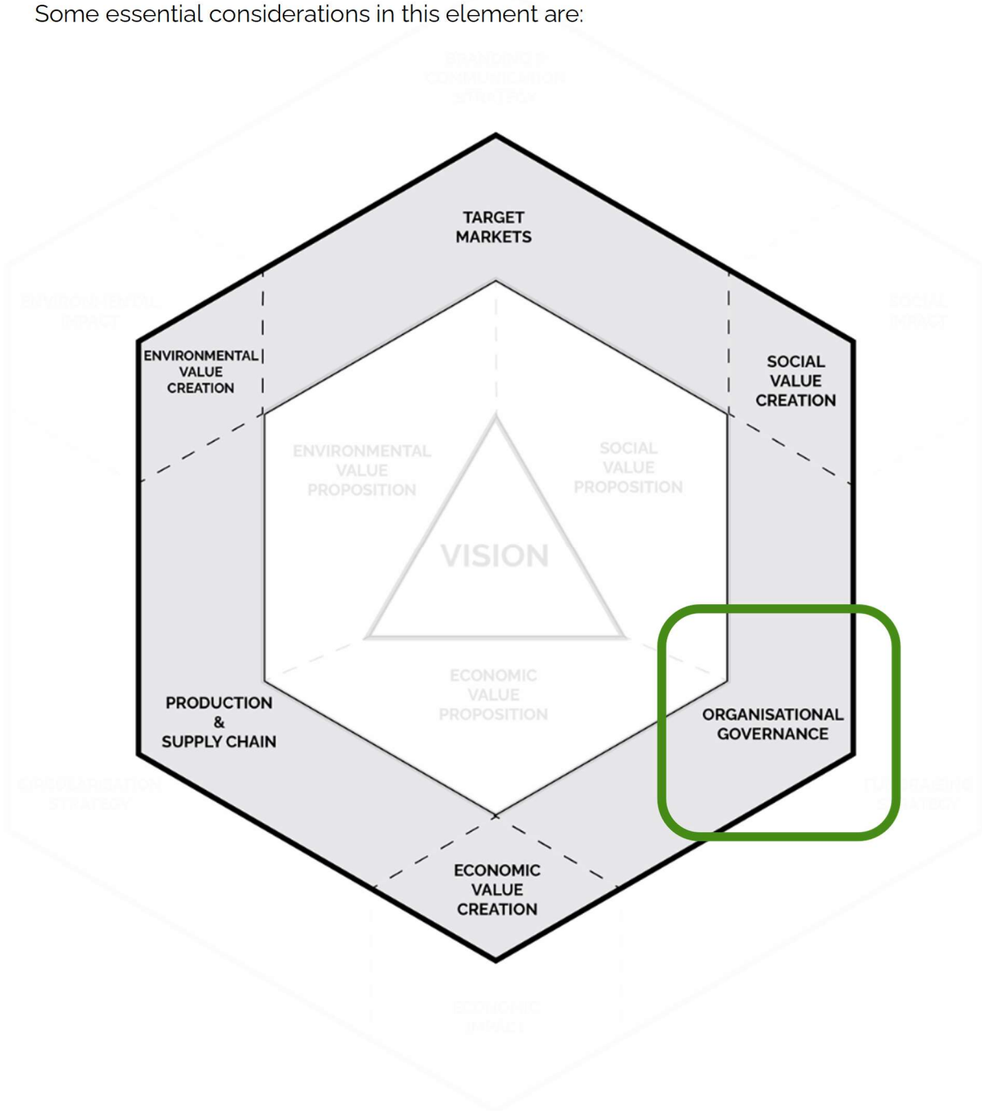
Ethical sourcing:

Ethical sourcing is the practice of ensuring that the materials, products, and services used in the production process are obtained from suppliers that respect human rights, labour standards, environmental protection, and fair-trade practices. It can help startups build trust and loyalty with their customers, employees, partners, and communities, as well as mitigate the risks of reputational damage, legal sanctions, and supply chain disruptions. By ethical sourcing, startups can also create a positive social impact and contribute to sustainable development goals.

Organisational Governance:

Organisational governance refers to the structures, processes, and customs that determine how an organisation is directed, administered, and controlled. It is crucial for startups to form resilient organisational structures while scaling to ensure that all their functions run as intended. Good governance ensures that the startup's activities align with its values and vision and that resources are managed responsibly for the benefit of all stakeholders.

Effective governance involves a balance between enabling the organisation to pursue its mission and ensuring it does so responsibly and sustainably. It's about steering the organisation towards achieving its goals while also meeting the expectations of stakeholders and complying with legal and regulatory requirements. Some essential considerations in this element are:



Talent Acquisition:

Sustainable startups need to attract and retain employees who have the skills, knowledge and passion to drive their mission and vision in order to scale up. Proficient talent can help startups innovate, improve efficiency, solve problems and create value for customers and stakeholders. Hiring proficient talent also means ensuring a good fit between the candidates and the startup's culture, values and goals.

Organisational Structure:

A company structure defines how a startup organises its functions, roles and responsibilities. A clear and effective company structure can facilitate communication, coordination and collaboration among employees, teams and departments. It enables scalability, flexibility and adaptability as the startup grows and faces new challenges and opportunities. Creating a company structure involves considering factors such as the startup's size, stage, strategy, objectives and resources.

Organisational Guidelines:

Guidelines for operations refer to the policies, procedures and standards that regulate how a startup conducts its business activities. These guidelines can help ensure quality, consistency, compliance and accountability across the startup's operations when they scale. They can also support the startup's sustainability goals by incorporating environmental, social and governance (ESG) criteria and best practices. Generating guidelines for operations requires identifying the key processes, risks, controls and performance indicators for the startup.

Employee benefits:

Employee benefits are the non-monetary rewards and incentives that a startup offers to its employees in addition to their salary. Employee benefits can help motivate, engage and retain employees by enhancing their well-being, satisfaction and loyalty. They can also reflect the startup's commitment to sustainability by offering benefits that support the health, safety, diversity and development of employees. Employee benefits can include health insurance, retirement plans, flexible work arrangements, training opportunities, recognition programs and social events.

Diversity, Equity & Inclusion:

DEI principles and practices promote a culture of respect, fairness and belonging for all employees regardless of their identity, background and perspective. DEI in the company can benefit sustainable startups by fostering creativity, innovation, productivity and customer satisfaction. It can also enhance the startup's reputation, credibility and social impact by aligning with the values and expectations of its stakeholders. DEI in a company involves implementing strategies such as recruiting diverse talent, providing equal opportunities, addressing bias and discrimination, and encouraging dialogue and collaboration.

7.4. Impacts & Strategies

Impacts refer to the measurable outcomes that startups aim to achieve through scaling up.

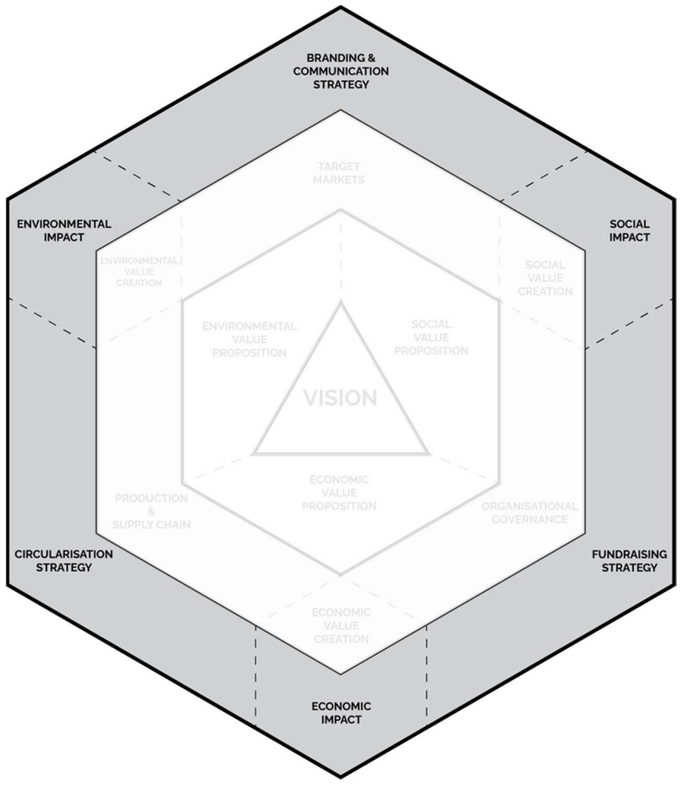
Strategies refer to comprehensive plans or sets of actions designed for the startup to scale up.

The final layer of the Model also consists of two parts: Impacts & Strategies. This layer focuses on what effect it has on the external context of the startup, for example, their customers, beneficiaries, the environment and other stakeholders involved.

The first part consists of impacts which intricately link the startup's core vision and the scale up strategy. The impacts evolve from the three pillars of the value creation layer, and are categorised as: environmental impact, economic impact and social impact.

The strategy elements are in the final layer besides the impacts, which focus on the delivery and capture of values for the scale-up. These strategies help sustainable startups to reach more customers, create partnerships and find potential investors for scaling up. These consist of three elements: Circularisation Strategy, Branding & Communication Strategy and Fundraising Strategy.

The Model recommends a set of questions that help sustainable startups derive the metrics and extent of their impacts:



Social Impact:

1. How do our value-creation mechanisms affect society?
2. How can we track and measure the 'desired experience'?
3. How can we compare our 'desired state' with the existing state of the world?

Environmental Impact:

1. How does the 'desired experience'/'desired behaviour' affect the environment?
2. What is the economic footprint of our value-creation mechanisms?
3. How can we benchmark the environmental footprint of our 'desired state' with the existing state of the world?

Economic Impact:

1. What is our valuation goal?
2. How much revenue can our business model generate?

Number of beneficiaries:

This metric indicates how many people are directly or indirectly affected by the startup's products or services. For example, a startup that provides affordable solar lamps to rural communities can measure how many households have access to clean and reliable lighting.

Customer satisfaction:

This metric indicates how satisfied or happy the customers are with the startup's products or services. For example, a startup that delivers healthy and organic meals can measure how satisfied the customers are with the taste, quality, and delivery of the food.

Carbon emissions:

This metric indicates how much greenhouse gas emissions are avoided or reduced by the startup's products or services. For example, a startup that offers electric vehicles for urban transportation can measure how much carbon dioxide they save from burning fossil fuels.

Life Cycle Assessment:

This metric indicates how much positive or negative impact the startup's products or services have on the environment. For example, a startup that produces biodegradable packaging can measure how much plastic waste they prevent from polluting the land and sea.

Income generated:

This metric indicates how much income or savings are created or increased by the startup's products or services. For example, a startup that connects small farmers to global markets can measure how much income they earn from selling their produce.

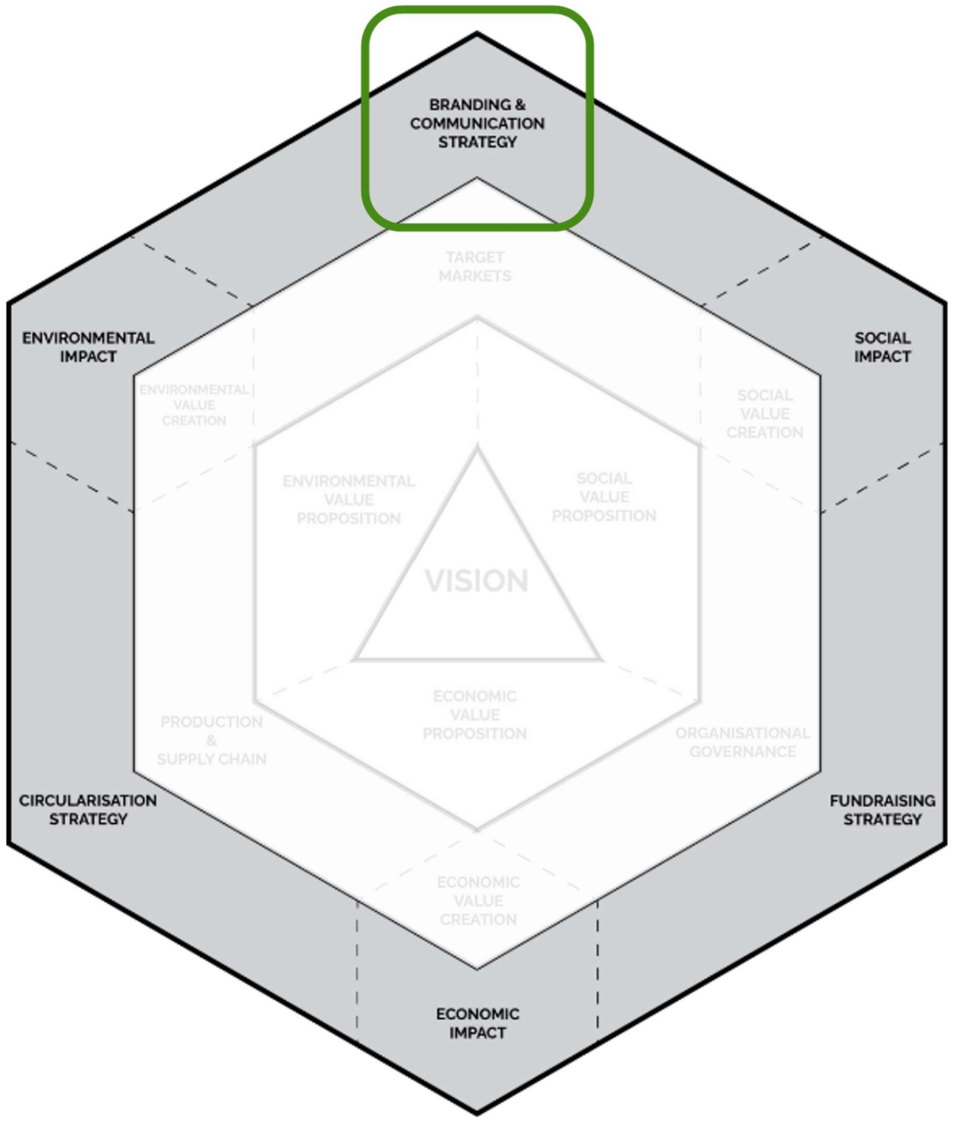
Startup Valuation:

This metric indicates how much the startup is worth in the market based on its current or projected financial performance. For example, a startup that offers solar-powered lighting solutions can measure its valuation by comparing it to similar companies in the sector or by using discounted cash flow analysis.

Branding and Communication Strategy:

Brand and Communication Strategy encompasses the development of a strong brand identity and the effective communication of that identity to the market. For sustainable startups, investing in an effective Brand & Communication Strategy is not just about creating a logo or a tagline; it's about weaving a narrative that captures the essence of the company and inspires engagement, loyalty, and growth.

Some essential elements of a Brand and Communication Strategy are:



Customer Acquisition:

This involves identifying, attracting, and converting potential customers into loyal buyers of your products or services. For sustainable startups, customer acquisition is a key challenge as they need to overcome the barriers of price, convenience, and awareness that often hinder consumers from choosing sustainable options.

Customer Retention:

Build long-term relationships with your existing customers by providing them with excellent service, value, and satisfaction. Encourage repeat purchases, referrals, and feedback from your customers. Leverage loyalty programs, social media, and newsletters to keep them engaged and informed about your sustainability impact.

Creating Awareness:

This involves educating and informing your target audience about the problem you are trying to solve, the solution you are offering, and the benefits of choosing your products or services. For sustainable startups, creating awareness is vital to overcome the knowledge gap and the scepticism that often exists among consumers about sustainability claims.

Communicating Sustainability Impact:

This involves reporting the environmental and social impact of your products or services. For sustainable startups, communicating sustainability impact is essential to demonstrate their commitment and contribution to the SDGs, the triple bottom line, and the circular economy.

Customer Acceptance:

This involves influencing and persuading your target customers to adopt and use your products or services. For sustainable startups, customer acceptance is a critical factor for scaling up as they need to overcome the resistance and inertia that often prevent consumers from changing their habits and behaviours.

Creating Consistent Brand Language:

This involves developing and using a consistent tone, style, and voice for your brand across all your communication channels and materials. For sustainable startups, creating a consistent brand language is important to build trust, recognition, and loyalty among your target customers and stakeholders across all their offerings as they grow.

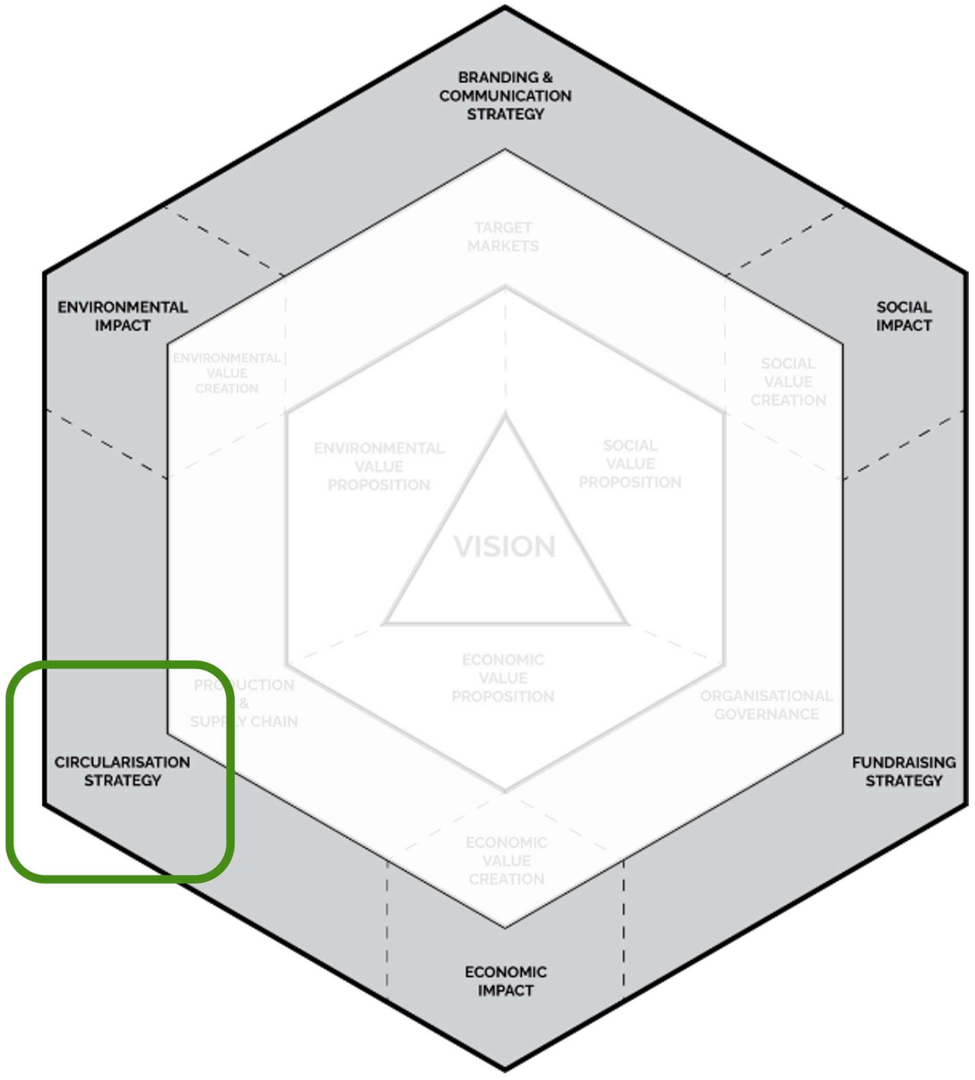
Sufficiency:

Sufficiency is a principle that aims to reduce the overall consumption and demand for resources by encouraging more mindful and responsible behaviours. A sustainable startup can adopt sufficiency strategies to scale up its impact, such as offering products or services that meet the essential needs of customers without excess or waste, promoting sharing or leasing models instead of ownership, or educating customers and stakeholders about the environmental and social consequences of their choices. For example, a sustainable startup that provides solar-powered lighting can offer a pay-as-you-go model that allows customers to only pay for the energy they use rather than buying the whole system.

Circularization Strategy:

Circularisation Strategy refers to the design and implementation of a BM that minimizes waste and maximizes the reuse and recycling of resources throughout the product life cycle. For sustainable startups, investing in a robust Circularisation Strategy is essential to scale up as it helps them manage their increasing wastes and costs through partnerships and collaborations.

Some essential considerations in this element are:



Partnerships:

A sustainable startup can benefit from finding partners who share its vision and values and can provide complementary skills, resources, or networks. Partners can help the startup to access new markets, customers, or suppliers, to collaborate on research and development, or to co-create circular solutions. For example, a sustainable startup that produces biodegradable packaging can partner with a food delivery company that wants to reduce its environmental footprint and offer a circular service to its customers.

Product Lifecycle Analysis:

Product lifecycle analysis assesses the environmental impacts of a product from cradle to grave, covering all the stages from raw material extraction, production, distribution, use, and disposal. A product lifecycle analysis can help a sustainable startup to identify the hotspots and opportunities for improving the circularity of its product, such as reducing the material and energy inputs, extending the product lifespan, or enhancing the recyclability or biodegradability of the product.

Enable Reuse, Recycle and Repair:
Enabling reuse, recycling and repair is a key aspect of a circularization strategy, as it prevents the waste of valuable materials and resources and reduces the need for virgin inputs. A sustainable startup can design its products or services to facilitate reuse, recycling and repair, such as using modular or standardized components, providing clear instructions or labels, or offering incentives or discounts for returning or exchanging products. A sustainable startup can also collaborate with other actors in the circular ecosystem, such as repair shops, recycling facilities, or waste collectors, to ensure that its products or services can be properly reused, recycled, or repaired after use. For example, a sustainable startup that makes clothing from recycled materials can partner with a local charity that collects and redistributes unwanted clothes or with a textile recycling company that can transform worn-out clothes into new fabrics.

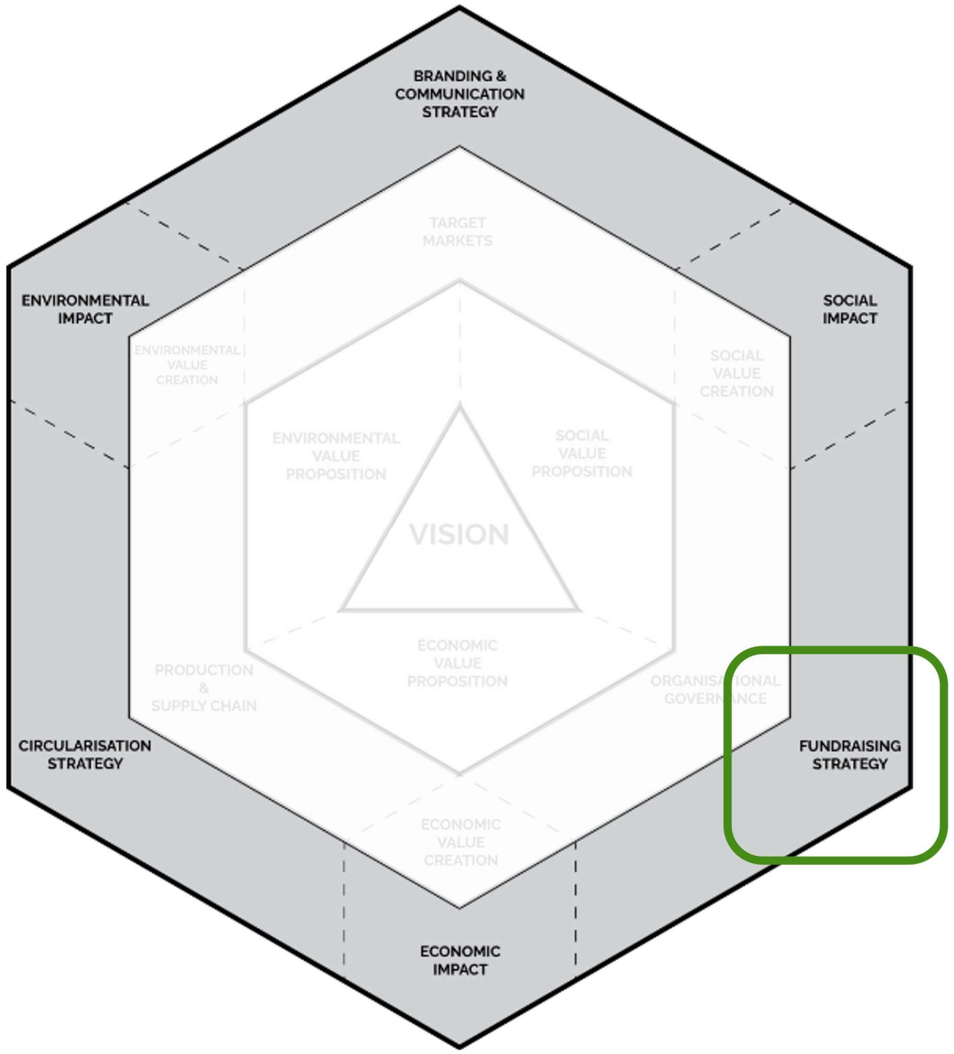
Waste Reutilization:

Waste reutilization is the process of transforming waste materials into new products or services, such as compost, biogas, furniture, or art. Waste reutilization is a vital component of a circularization strategy, as it reduces the environmental impacts of waste disposal, such as greenhouse gas emissions, land use, or pollution, and creates value from otherwise wasted resources. A sustainable startup can implement waste re-utilization in its business model by sourcing its inputs from waste streams, such as agricultural or industrial residues, or by offering solutions for waste management, such as collection, sorting, or processing. A sustainable startup can also leverage the potential of waste reutilization to generate social and economic benefits, such as creating jobs, saving costs, or enhancing community engagement. For example, a sustainable startup that makes paper from elephant dung can provide income and empowerment to local communities that collect and supply the raw material.

Fundraising Strategy:

A fundraising strategy is a plan that outlines how a sustainable startup will secure the financial resources it needs to scale up. It includes identifying potential sources of funding, such as grants, loans, equity, crowdfunding, or donations, and developing a compelling pitch that showcases the value propositions and impacts of the startup. A fundraising strategy is important for the scale up process because it enables the startup to overcome the financial barriers and risks that often hinder the adoption and diffusion of circular business models. It also helps the startup to build trust and credibility with stakeholders, such as customers, investors, partners, and regulators, who are essential for the success and sustainability of the business.

Some possible types of fundraising strategies for startups looking to scale up are:



Investments & Debt:

Startups can raise funds from individual or institutional investors who are willing to provide capital in exchange for equity or debt. Investors may be motivated by financial returns, social impact, or both. Investors may also offer non-financial support such as mentorship, advice, networks, or access to markets. Startups should identify potential investors who share their vision and values and prepare a compelling pitch that showcases their value proposition, traction, and scalability potential. They should also understand the terms and conditions of the investment, such as the valuation, dilution, exit options, and governance rights, and negotiate them accordingly.

Grants:

Startups can apply for grants from foundations, governments, NGOs, or other organizations that offer funding for specific purposes or sectors, such as innovation, social impact, or environmental sustainability. Grants are usually non-repayable and do not require equity or debt, but they may have eligibility criteria, application processes, reporting requirements, and performance indicators that the startups need to comply with. Grants can help startups scale up their offerings without giving up ownership or control of their ventures.

Subsidies:

Startups can benefit from subsidies that reduce the cost of inputs, operations, or outputs, such as tax incentives, rebates, vouchers, or discounts. Subsidies can be provided by governments, utilities, or other entities that want to encourage certain activities or behaviours, such as energy efficiency, waste reduction, or social inclusion. Subsidies can help startups lower their expenses, increase their margins, or reach new customers without affecting their revenue streams or growth prospects.

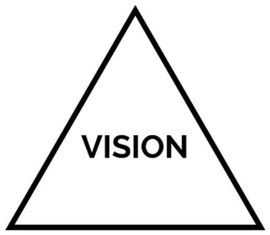
Recognitions:

Startups can participate in competitions, awards, or challenges that recognize and reward their achievements, innovations, or impacts. Recognitions can be organized by media, academia, industry, or other stakeholders who want to showcase or support the best startups in a given field or region. Recognitions can provide startups with exposure, credibility, feedback, or connections, as well as cash prizes, in-kind services, or access to opportunities, such as incubators, accelerators, or networks. Recognition can help startups gain visibility, validation, or traction without requiring any upfront investment or commitment.

7.5. Directions of Use

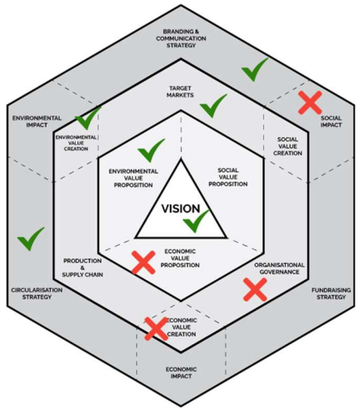
This section discusses how the Sustainability Scale-up Framework (SSF) can support the creation, analysis, innovation and validation of sustainable and scalable business models. It is recommended to use this model in interdisciplinary teams involving the founders, strategic designers, operational managers and key stakeholders from its various departments. Using this model follows an iterative process inspired by the work of Calabretta et al. (2016), who breaks down the strategic design process into 4 steps: setting objectives, configuring, orchestrating and embedding.

Step 1: Envisioning the Scale-up:



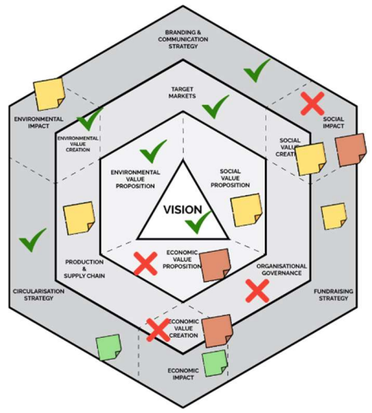
This part involves creating or revisiting the vision to make sure that it is tangible and scalable. The "Vision" section of this chapter explains more on how the startups can create a tangible vision by following a 4-step process, which results in a 'Vision Statement'. This statement helps in directing the SBMI process.

Step 2: Evaluating the existing model:



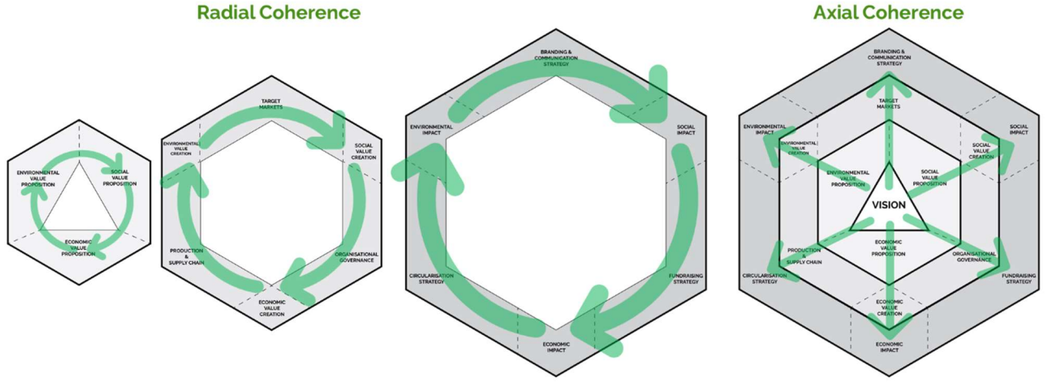
This step follows moving across the layers to fit in the existing business model of the startup in the (SSF), from the value propositions to creation mechanisms and, finally, the impact and strategy layer. Filling this in stimulates the startup to materialise and find gaps and bottlenecks in their existing business model.

Step 3: Innovating the scale-up strategy:



The next step follows ideation sessions to fill in the gaps found in the previous steps through the expertise of different stakeholders and departments. The considerations and guidelines presented in this chapter guide help these stakeholders visualise the values and value tensions in their business model and open up meaningful discussions. A new scalable and resilient business model incorporating strategies for the creation, capture and delivery of its value propositions is the output of this step of the SSF.

Step 4: Validating the scale-up strategy:



The final step involves validating the business model by ensuring that the strategies are coherent across the layers (Radial Coherence) and the diagonals of the SSF (Axial Coherence). The Radial Coherence helps identify the value tensions within each layer whereas the axial coherence helps in identifying gaps in the value chains of the social, environmental and economic values of the sustainable startup. Coherency in these two directions ensures the validity of the sustainable business model and helps make it more resilient and ready for its implementation.

Together they form an iterative process, which lies at the core of the strategic design approach which is discussed in the beginning of this section. The iterative process is further illustrated in Figure 11.

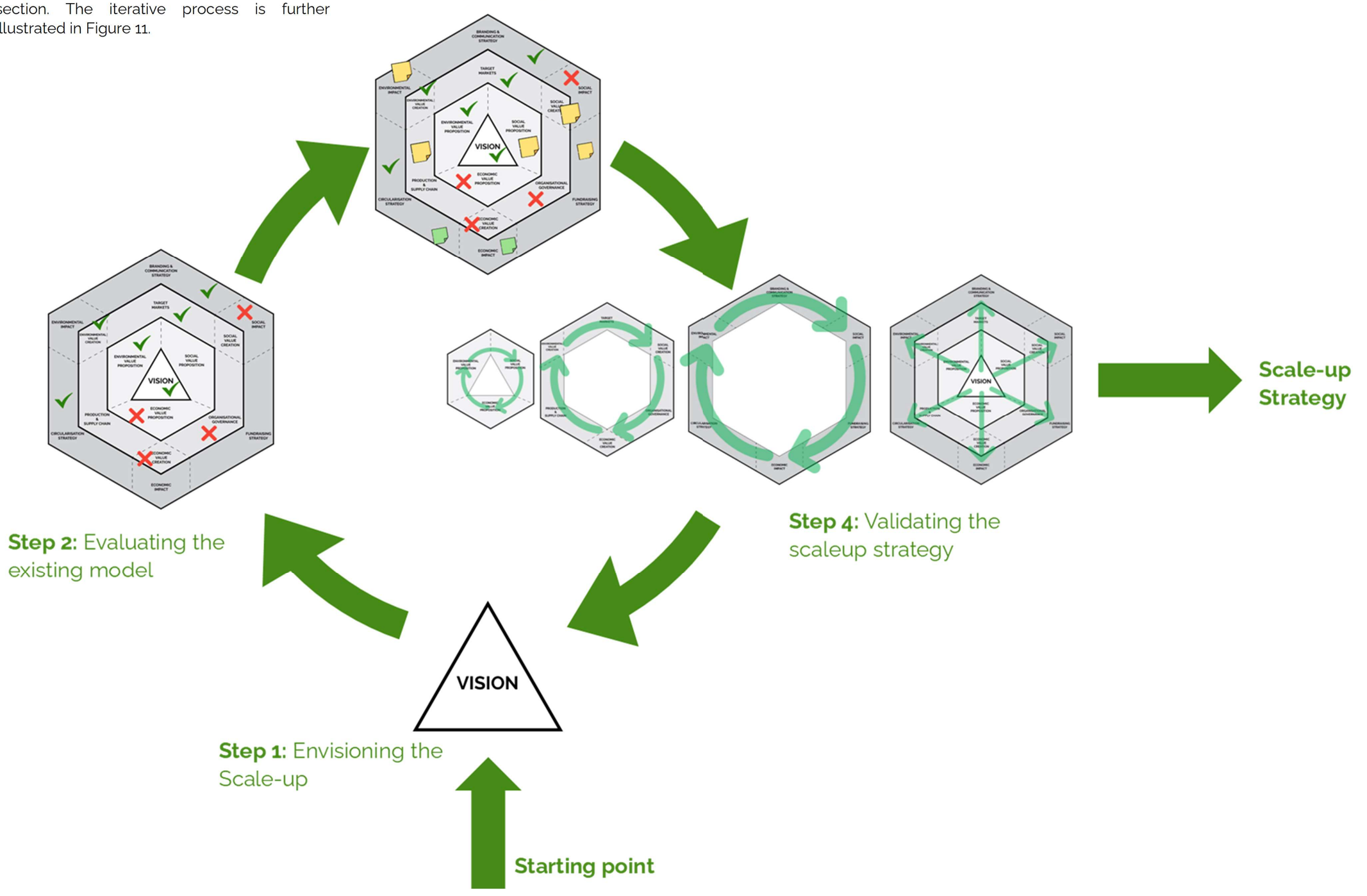


Figure 11: the iterative strategy design process through SSF

CHAPTER 8

using the Sustainability Scale-up Framework

This chapter further elaborates on the direction of use of the SSF through the case study of Grameen Bank, a sustainable microfinance bank that successfully scaled up its operations within Bangladesh and across countries. It starts with expanding on the microfinance model, followed by a brief introduction to Grameen Bank. Then it navigates through the framework using strategic design principles to show an example of how this framework can be used in practice.

In this chapter:

8.1. The Microfinance Model

Microfinancing is a financial model that provides small-scale financial services to those who lack access to conventional banking and related services. It primarily targets low-income individuals and small businesses, aiming to foster economic development, entrepreneurship, and poverty alleviation (Rahman, 2010). The microfinancing business model includes the provision of microloans, savings, insurance, and other financial products tailored to the needs of its clientele.

The model is characterized by its focus on community-based lending, often involving group lending schemes where borrowers guarantee each other's loans, thus mitigating risk and reducing the need for collateral (Gomez & Santor, 2008). This approach not only facilitates access to credit but also encourages community engagement and mutual accountability (Muhammad Abrar ul Haq, 2021).

Academically, the microfinance business model has been analysed for its sustainability and impact. Morduch et al. (2017) discuss the enduring subsidy and modest profit of the model, highlighting the challenges of balancing social goals with financial viability. The authors conclude that while microfinance can have only modest social and economic impacts, it plays a crucial role in providing services to clients sustainably when subsidies are applied judiciously.

Furthermore, research has evolved around various thematic clusters, including microfinance and economic empowerment, sustainability of microfinance institutions (MFIs), and innovative business models, indicating the breadth of academic interest in this field (Ibrahim et al., 2021; Nicastro et al., 2022).

This landscape of microfinancing is experiencing a paradigm shift, influenced by the rapid advancement of technology and the changing socio-economic environment. This shift is characterized by several key trends that are reshaping the delivery and impact of microfinance services, discussed below:

Technological Integration: The incorporation of financial technology (fintech) into microfinance operations has been a game-changer. Digital platforms and mobile banking with the integration of Artificial Intelligence (AI) have expanded access to financial services, enabling microfinance institutions (MFIs) to reach previously inaccessible populations (Ashta & Herrmann, 2021). This digitalization has also facilitated the development of innovative credit scoring models that leverage alternative data, enhancing the ability to assess borrower risk and tailor financial products (Nalic et al., 2024).

Product Diversification: Microfinance is no longer just about providing small loans. MFIs are diversifying their product offerings to include savings, insurance, and other financial services (James et al., 2023). This diversification is driven by a deeper understanding of client needs and the desire to provide a more holistic approach to financial inclusion.

Regulatory Evolution: As microfinance grows, so does the attention from regulators. There is an increasing focus on creating regulatory frameworks that ensure the protection of consumers while fostering the growth of MFIs (Morshed et al., 2020). These regulations are crucial for maintaining the integrity and sustainability of the microfinance sector.

Social Performance Measurement: The emphasis on measuring the social impact of microfinance has intensified. MFIs are increasingly held accountable for the social outcomes of their interventions, which has led to the development of various social performance metrics and reporting standards (D'Espallier & Goedecke, 2019).

Market Consolidation: The microfinance sector is witnessing a trend of consolidation, with larger MFIs acquiring smaller ones. This consolidation is driven by the need to achieve economies of scale, reduce costs, and increase market penetration (Mia, 2018).

This thesis further explores the context of microfinance through the lens of Grameen Bank, a pioneer in microfinance. It then attempts to explain in dissecting and exploring a scale up strategy for the bank through the SSF using the strategic design approach discussed in the previous chapter.

8.2. Grameen Bank: A Pioneer in Microfinance

Grameen Bank is one of the pioneers and most successful examples of microfinance in the world. Founded in 1976 by Professor Muhammad Yunus in Bangladesh, Grameen Bank provides small loans to poor people, especially women, who lack collateral and a formal credit history (Yunus, 1999). The bank operates on the principles of trust, solidarity, and social responsibility, and has a unique group lending model that relies on peer pressure and mutual support among borrowers. Grameen Bank aims to empower its clients and help them escape poverty through income-generating activities, savings, and social services. The bank has won several awards and recognitions, including the Nobel Peace Prize in 2006, for its contribution to economic and social development.

The bank was established in 1983 as a specialized financial institution to serve the poor, especially the rural poor, in Bangladesh. It was inspired by the experiments of Professor Muhammad Yunus, an economist and social activist, who started lending small amounts of money to poor women in the village of Jobra in 1976 (Luna & Soto-Belloso, 2016). He observed that these women were able to use the loans to invest in productive activities, such as basket weaving, pottery, or poultry farming, and repay the loans with interest. He also noticed that the loans had a positive impact on the women's empowerment, self-confidence, and social status (Saad, 2021).

The case study published by Stanford Business School (*Grameen Bank*, 2003) was analysed and some key essential elements from the bank are enlisted below:

- The bank's main product is the Grameen Credit, which is a microloan that depends on the borrower's needs and repayment capacity. The borrowers are required to form groups of five, and each group member has to endorse the loan applications of the other members. The group members are also responsible for ensuring that the loans are used for income-generating purposes and that the repayments are made on time. The bank does not ask for any collateral or guarantors but relies on the social capital and peer pressure among the group members. The bank also offers other financial services, such as savings, insurance, pensions, and education loans, to its clients.
- The bank's vision is to create a poverty-free world, where everyone has the opportunity to unleash their potential and improve their quality of life. The bank follows a set of 16 decisions, which are a code of conduct and a social charter for its clients and staff. The decisions include commitments to discipline, unity, courage, work, education, health, family planning, environment, and social responsibility. The bank also has a special focus on women, who constitute 98% of its borrowers as of May 2024(*Grameen Bank – Bank for the Poor*, n.d.). The bank believes that women are more likely to use the loans for the benefit of their families and communities and that empowering women can lead to social and economic transformation.
- The bank's impact and achievements have been widely recognized and acclaimed, both nationally and internationally. The bank has reached about 10.58 million borrowers and has a repayment rate of over 96.71% as of May 2024(*Grameen Bank – Bank for the Poor*, n.d.). The bank has helped reduce the incidence of malnutrition, illiteracy, child mortality, and gender inequality in Bangladesh. The bank has also inspired and influenced the development of similar microfinance programs in over 100 countries around the world (*Grameen Bank – Bank for the Poor*, n.d.).

The thesis tries to translate the various elements of Grameen Bank's successful scale-up strategies into the Sustainability Scale-up Framework using the iterative process derived from strategic design explained in the previous chapter as an example of how it can be used to understand, innovate and represent the scale-up strategy. The goal is to retrace and recast some of these strategies in this standardised format so that they can be easily communicated to and are workable by the different stakeholders of the business. In this process we also find interesting directions in which the bank can scale to increase its impact. The information used in the SSF is derived from the website of Grameen bank and few other reputable case studies and literature, a list and description of whose is tabulated in Table 7. The information from the case studies and literature was updated and validated from the annual reports of Grameen Bank wherever relevant to get the latest information.

Table 7: References used for designing the scale-up strategies

Sl.No.	Citation	Overview
1	(*Microfinance Trends 2023: Driving Financial Inclusion and Social Impact - Finance Derivative*, n.d.)	This website features some key trends in the microfinance sector.
2	(Dalla et al., 2024)	This paper explores the financial sustainability and social goals of the microfinance sector.
3	(*Grameen Bank – Bank for the Poor*, n.d.)	Website of Grameen Bank, with essential poverty alleviation indicators, quantitative data, annual reports (with financial statements) and other important information.
4	(*Grameen Bank*, 2003)	A comprehensive case study of Grameen Bank by Stanford Business School, discussing its organisational structures and lending activities in detail.
5	(Jha, 2019)	This paper explores the role microfinance plays in social development.
6	(Alam & Getubig, 2010)	Guidelines for establishing and operating Grameen Banks

8.3. Envisioning the Scale-up

Trend Analysis

The key trends of the microfinance sector were identified and discussed in detail in section 8.1. The Microfinance Model of this chapter. They are enlisted below:

- **Technological Integration**
- **Product Diversification**
- **Regulatory Evolution**
- **Social Performance Measurement**
- **Market Consolidation**

Some trends concerning the sustainability of microfinance sector are also explored, as they are crucial for creating the vision of a sustainable startup:

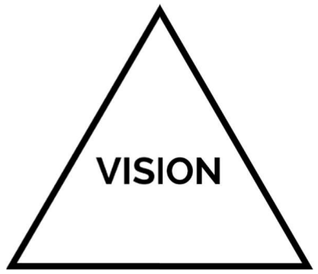
- **ESG Criteria Integration**: There's a growing emphasis on incorporating Environmental, Social, and Governance (ESG) criteria into lending practices, ensuring loans generate positive social and environmental impacts.
- **Focus on Financial Inclusion:** The shift from poverty alleviation to financial inclusion is significant, with efforts to provide a broader range of financial services to underserved communities.
- **Market Growth:** The global microfinance market is projected to grow significantly, indicating the scalability of microfinance as a solution for fostering financial inclusion.
- **Exposure to environmental shocks and stresses:** The increasing vulnerability and exposure of the microfinance clients and providers to the environmental shocks and stresses can increase their demand and need for microfinance products and services, such as microinsurance, micro savings, and microcredit.
- **Emergence of Climate smart Technologies:** The potential and role of microfinance in supporting and enhancing the environmental resilience and adaptation of the poor and marginalized, who can use microfinance to diversify their income sources, to invest in climate-smart technologies and practices, and to access renewable and clean energy sources.

Clustering Trends

These trends are then classified as social, economic and environmental trends:

Social Trends: Regulatory Evolution, Social Performance Measurement, Focus on Financial Inclusion.
Economic Trends: Technological Integration, Product Diversification, Market Consolidation, Market Growth.
Environmental Trends: ESG Criteria Integration Exposure to environmental shocks and stresses.

Patterns are identified in these trends are they are clustered into four clusters:



Market Development:	Market Consolidation Market Growth
Product and Service Innovation:	Market Consolidation Market Growth Technological Integration Product Diversification Focus on Financial Inclusion
Regulatory and ESG Factors:	Regulatory Evolution ESG Criteria Integration Exposure to environmental shocks and stresses
Performance Metrics:	Social Performance Measurement

Worldview
After consolidating the trends into clusters, a world view is created from the perspective of these clusters. These worldviews are explained below:

Market Development: In a world where market consolidation and growth are key trends, we can expect to see fewer but larger players dominating the market. This could lead to increased competition and the need for businesses to differentiate themselves. The growth of the market indicates opportunities for new entrants and expansion for existing businesses.

Product and Service Innovation: With the integration of technology, diversification of products, and a focus on financial inclusion, businesses are likely to invest heavily in research and development. They would strive to create innovative solutions to meet diverse customer needs and reach underserved markets. This could lead to a more inclusive and technologically advanced market landscape.

Regulatory and ESG Factors: The evolution of regulations, integration of ESG criteria, and exposure to environmental shocks and stresses suggest a shift towards sustainable and responsible business practices. Companies would need to adapt to changing regulations, incorporate ESG factors into their strategies, and build resilience against environmental risks, to build sustainable & resilient businesses.

Performance Metrics: The emphasis on social performance measurement indicates a shift from purely financial metrics to more holistic measures of success. Businesses would be expected to demonstrate their social impact and contribution to society, in addition to financial performance. This could lead to a more balanced, inclusive and equitable business ecosystem.

The Vision
Based on this world view, the vision of Grameen Bank is created in SSF's recommended structure:

"We want **underserved communities** to have **access to financial services and opportunities for economic growth** by creating a world that is **financially inclusive and sustainable**."

8.4. Evaluating the Existing Model

This step involves evaluating the existing business model of Grameen Bank to find gaps and opportunities to enable its scale-up. This is done in a layered approach where we systematically move outward from the central layers of value propositions. The post-its in the SSF are generated from a holistic analysis of different case studies, literature and Annual reports of Grameen Bank, among other resources tabulated in Table 7. A short explanation of these elements is shown below:

Value Propositions:

Social Value propositions:
Empowerment of women: Empower women to set up their own businesses.
Community Development: The Bank seeks to uplift and develop its rural communities.

Environmental Value propositions:
Sustainable Development: The Bank promotes environmentally friendly programs.
Resource Efficiency: The Bank seeks to promote waste reduction and resource efficiency.

Economic Value propositions:
Poverty Alleviation: To reduce poverty.
Financial Inclusion: Financial services for everyone.

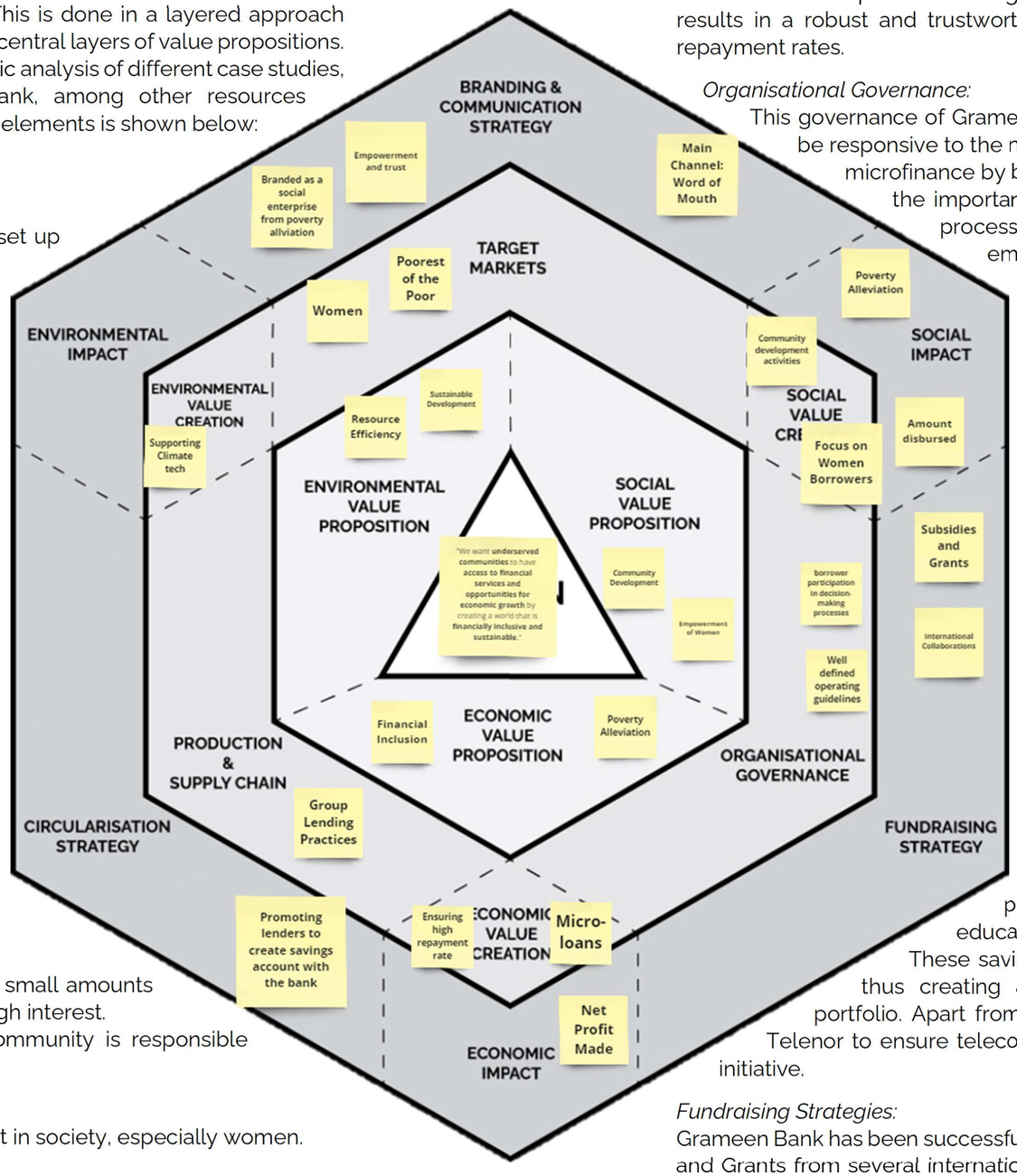
Value Creation:

Social Value Creation:
Focus on women borrowers: 98% of Grameen Banks borrowers constitute of Women from the impoverished sections of the society.
Community Development Activities: Group Lending and organising other activities.

Environmental Value Creation:
Supporting Climate Tech: Supporting small businesses contributing towards climate-tech.

Economic Value propositions:
Micro Loans: Provide collateral-free loans worth small amounts to start small businesses and earn revenue through interest.
Ensuring High Repayment rates: The whole community is responsible through the group lending mechanism.

Target Markets:
The current focus of Grameen Bank is the poorest in society, especially women.



Supply Chain & Production:
The main product of the bank is Grameen Credit, or collateral-free micro loans. This involves "Group based lending" practice where small community groups are formed, educated and empowered. The group acts as the guarantee for the credit, which results in a robust and trustworthy system of lending and borrowing with high repayment rates.

Organisational Governance:
This governance of Grameen Bank follows a layered structure designed to be responsive to the needs of its clients and to uphold the principles of microfinance by being accountable and transparent. It emphasises the importance of borrower participation in decision-making processes, reflecting the bank's commitment to empowering its clients and ensuring that its services are aligned with their needs.

Impacts & Strategies:

Social Impact:
The bank measures poverty alleviation through 12 indicators, which include access to housing, food, etc.

Economic Impact:
The Financial statements of the Bank are transparent and published on its website. The Bank remains profitable (as of FY 2022).

Brand & Communication Strategy:
Grameen Bank has been successful in branding itself as a social enterprise driven by poverty alleviation. It stands on the brand values of empowerment and trust, and the main communication channel is word of mouth through its communities, apart from its website.

Circularisation Strategy:
The Bank requires the borrower groups to open their own savings accounts with the bank and promotes the culture of savings through financial education.
These savings accounts then become a source of lending, thus creating a circular economy through its own product portfolio. Apart from this, it has also collaborated with partners like Telenor to ensure telecommunications for all through its Grameenphone initiative.

Fundraising Strategies:
Grameen Bank has been successful in raising funds through Governmental subsidies and Grants from several international organisations like the Norwegian Agency for

Development Cooperation (NORAD) and the Canadian International Development Agency (CIDA), among others.

Based on the trend analysis (in section 8.3.) and the existing model of Grameen Bank, three insights and corresponding directions were identified which would help create effective scale-up strategies for Grameen Bank:

1. **Migrant Workers - A new target Group:** Based on the existing trend of globalisation and migration, including migrant workers in the Grameen ecosystem is essential for its vision of Financial Inclusion.

2. **Technological Integration:** Technology is essential in improving the accessibility of its services to wider regions. Effective integration of Financial Technology (FinTech) in its ecosystem would enable it to scale both geographically and functionally.

3. **Introducing Green Loans:** The evaluation of the existing model revealed that Grameen Bank succeeds in performing from the social and economic perspective but lacks in its green initiatives. Introducing green loans focussed on small businesses specifically focussing on Green Technologies, such as renewable energy or sustainable aggrotech would enhance its environmental impact.

8.5. Innovating the scaleup strategy

This step involves finding gaps and opportunities in the existing model and ideating innovative strategies for fulfilling these gaps in multidisciplinary teams in a systemic approach.

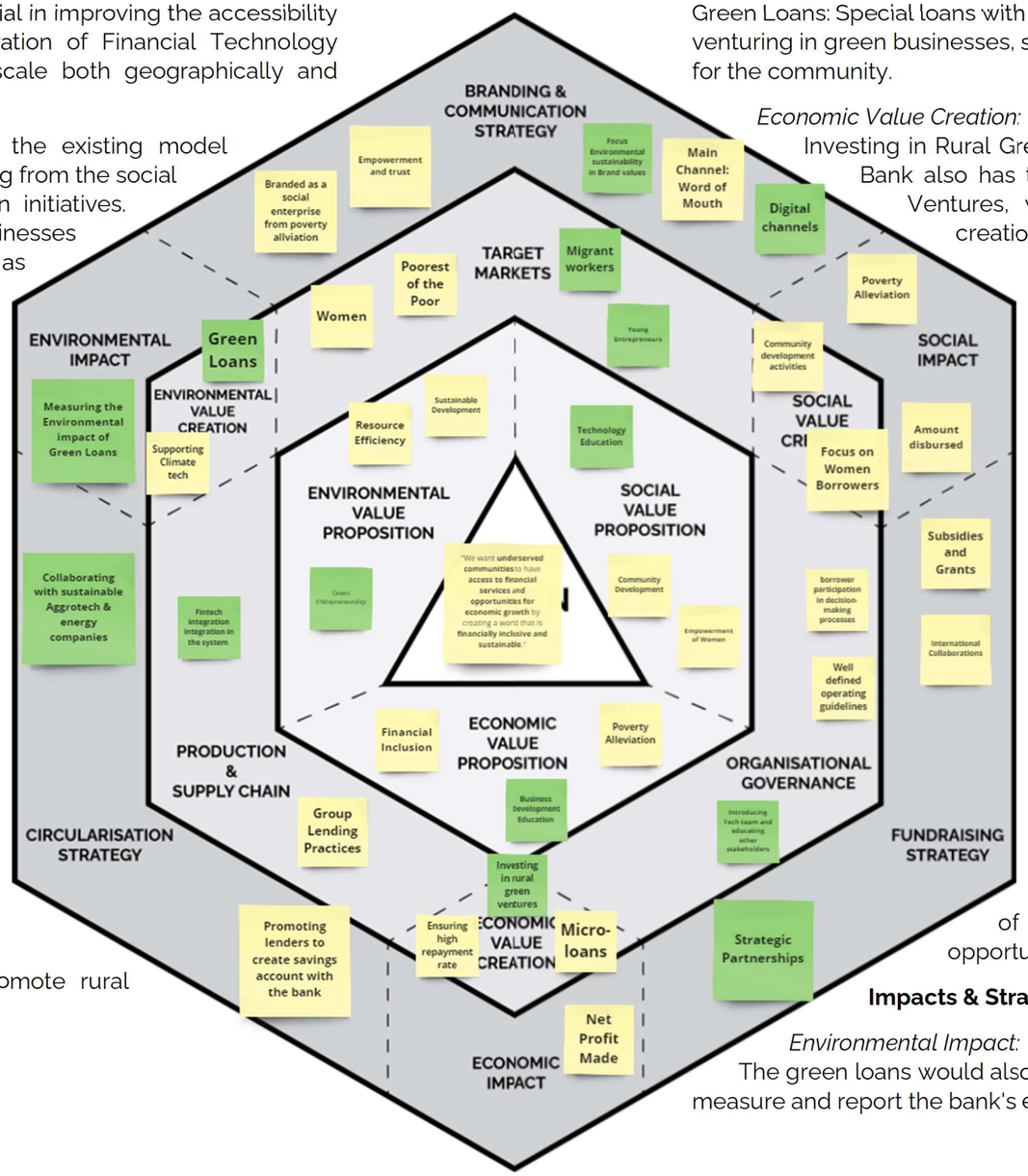
Through the ideation process, these elements are appended to so that these directions can be systematically integrated in the business model.

Value Propositions:

Social Value propositions:
Technology Education: Technology integration requires educating the borrowers and improve their technology literacy.

Environmental Value propositions:
Green Entrepreneurship: The bank needs to promote rural entrepreneurs to undertake green projects.

Economic Value propositions:



Business Development Education: The bank needs to promote Business Development for the borrowers to create profitable businesses from green loans.

Value Creation:

Social Value Creation:
Community Development Activities: Green entrepreneurship and business development training can be integrated into the existing community development activity.

Environmental Value Creation:
Green Loans: Special loans with lower interest rates can be offered to entrepreneurs venturing in green businesses, such as sustainable agriculture or renewable energy for the community.

Economic Value Creation:
Investing in Rural Green Ventures: Alongside the green loans, Grameen Bank also has the opportunity to invest in some of these Green Ventures, which would offer a new pipeline for revenue creation.

Target Markets:
As discussed in the previous section, migrant workers offer a promising new market for scaling the bank's social impact.

Supply Chain & Production:
The supply chain, i.e., the group-based lending system, has to be digitised to facilitate the FinTech, as discussed in the previous section. This would require building new digital workflows and infrastructure that is compatible with the Bank's context at the bottom of the pyramid.
The group-based lending system would also have to evolve to integrate the migrant workers into the system.

Organisational Governance:
The organisational governance also would have to be restructured to integrate new departments like technology and sustainability teams and make it robust to cater to the category of migrant workers. This also involves educating the stakeholders, revising the current standard operating procedures of the organisation, and creating employment opportunities within the community.

Impacts & Strategies:

Environmental Impact:
The green loans would also require new environmental indicators which would measure and report the bank's environmental impact.

Brand & Communication Strategy:
Integrating Sustainability reporting would also help Grameen Bank to integrate the environmental sustainability values in its brand, which would attract, promote and create awareness about green ventures in the community.
Digital education and Fintech integration would also help the bank to tap into digital communication channels which would help it scale its impact.

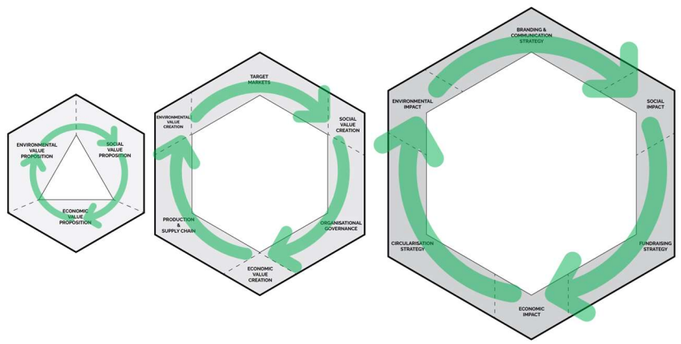
Circularisation Strategy:
The green loan and tech integration could attract established external partner companies which could collaborate with the local business to create a circular ecosystem from an economic perspective.

Fundraising Strategy:
The external partners could also act as strategic partners who could invest in scaling these strategies.
Reporting the environmental impact also qualifies the bank for environmental grants and subsidies in addition to the existing social grants.

8.6. Validating the scaleup strategy

The new scale up strategy is then to be validated and checked for Radial and Axial Coherence (see section 7.5. Direction of Use).

Radial Coherence:



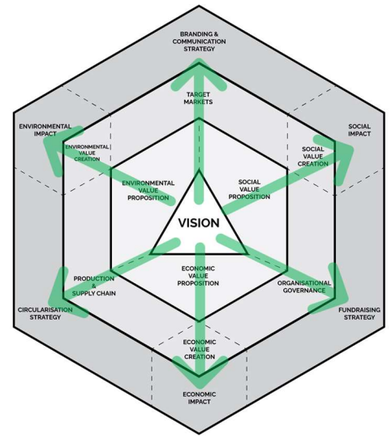
Value Proposition layer: The technological integration might face some resistance in the rural context where the rate of technological adoption might be lower. This creates tension with the value of financial inclusion, where borrowers who resist technology might be excluded from these loans

Value Creation layer: Including migrant workers might be incompatible with the "group-based lending" system as the system operates on the core value of trust. This

trust is created based on a community, and integrating people from outside the community into the system might generate some resistance.

Impacts & Strategies: Integrating digital communication channels might not resonate with the rural community due to its resistance to technology adoption, which might reduce its effectiveness. Also, fundraising through strategic partnerships will result in these partners interfering and influencing the strategic decisions of the bank, which might create conflict.

Axial Coherence:



The new scale-up strategy essentially introduces three value chains: Migrant Workers, Technological Integration, and Green Loans. Although theoretically, all three value chains align with Grameen Bank's Vision of creating a financially inclusive and sustainable environment for underserved communities, checking for this coherence requires a greater domain knowledge in each of these domains, which is out of the scope of this thesis.

The validation process requires a detailed understanding of the value tensions, value chains and value interactions of the Bank's business model and a holistic understanding of its resources to ensure that the strategy can be implemented. This can be achieved through the involvement of different departments of the bank and a ground level understanding of its operations, which is out of the scope of the current thesis.

Based on the results and reflections of validation, the insights are then used to refine the vision further, and the steps are iterated like a typical design process. These iterations are repeated, and scale-up strategies are co-ideated till the stakeholders from multi-disciplinary teams agree upon the implementable and sustainable scale-up strategies,

In conclusion, this chapter explores how the SSF can be used in practice through the example of a successful scaleup, the Grameen Bank. These steps can be repeated for different startups to help them transform their sustainable business models to become resilient and scalable.

CHAPTER 9

Conclusion & Future Scope

This chapter concludes the thesis by presenting its theoretical contributions to literature and some of its practical implications. The chapter then attempts to explain how the SSF enables strategic designers to integrate design thinking perspectives to the strategy formulation and implementation process. The chapter ends with acknowledging some of the limitations and avenues for future research for this thesis.

In this chapter:

9.1. Theoretical Contributions to Literature

The thesis aims to explore the literature on Sustainable Business Model Innovation scalability and strategic design to explore how can strategic design be used to develop a framework that supports sustainable startups in scaling up. Several BMI, SBMI and scalability frameworks are analysed to find gaps and patterns, which are then translated to design goals. Strategic design tools are then used to design a pre-framework, which is refined and validated through empirical interviews with founders of sustainable startups and a business case workshop. Based on the literature review and empirical interviews, many challenges for sustainable startups to scale up (RQ2) are found:

- *Balancing the triple bottom line of people, planet and profit while maintaining a competitive advantage in the market:* Unlike traditional business models, which are predominantly revenue-driven, SBMs have to balance all three values of sustainability. i.e. social value, environmental value and economic value, which can often be conflicting. Consequently, startups committed to sustainability might confront significant obstacles over time or may need to compromise these values to scale up.
- *Aligning the vision and values of the founders, employees, customers, investors and other stakeholders:* Startups during their incubation have a strong vision alignment but often lose this while scaling up due to the involvement of many other stakeholders and their values. Integrating and resolving these value tensions is essential for a sustainable scale-up.
- *Adapting the business model to external parameters:* The evolving context poses a challenge to sustainable startups as they have to adapt to several parameters like changing markets, customer needs, and environmental and social impacts while preserving the core value proposition and identity of the startup. This raises difficulties in managing and innovating the business as they grow, as might often deviate from its core values
- *Finding the right partners while being sustainable:* Finding the right partners, resources, capabilities and networks to support scaling up of the startup while avoiding the risks of overstretching, diluting or compromising the sustainability goals

The thesis contributes to the current literature on SBMI through the design of the Sustainability Scale-up Framework (SSF) that helps startups overcome these challenges and transform their sustainable business models to be resilient and scalable. This framework takes a strategic design approach to bridge the gap between the emerging SBMI and scalability frameworks through the SSF.

9.2. Practical Implications of the SSF

The SSF has several practical implications for startups, investors, policymakers, and researchers who operate in the domain of scaling up sustainable business models. Some of these implications are discussed below:

- *An assessment tool:* The SSF provides a comprehensive and systematic approach to assess the scalability and sustainability potential of a startup, as well as the gaps and challenges that need to be addressed. The framework can help startups map their current business model, prioritise their actions, and align their decisions with their sustainability goals.
- *A strategy creation and innovation tool:* The SSF also offers guidelines and prescriptions that can support startups in designing and implementing scalable and sustainable business models. The four step iterative approach of this framework enables stakeholders to co-create effective strategies with a holistic perspective of the social, environmental and economic values of the startup.
- *A Collaboration & Communication Tool:* The SSF can facilitate collaboration and communication between startups and their stakeholders, such as investors, customers, suppliers, partners, employees, regulators, and society. The framework can help startups articulate their vision and values, as well as demonstrate their social and environmental impact, competitive advantage, and financial viability. The framework can also help startups find and attract the right partners, resources, capabilities, and networks that can support their scaling-up process while maintaining or enhancing their sustainability performance.
- *A Research Tool:* The SSF can contribute to the research and development of more supportive, conducive and scalable SBMs for sustainable entrepreneurship and innovation. The framework can help researchers and regulators understand the needs and challenges of startups that aim to scale up their sustainable business models and design appropriate literature, policies and regulations that can enable and incentivise them. The framework can also help investors and researchers evaluate and compare the scalability and sustainability potential of different startups and provide them with relevant feedback and guidance.

These implications point towards the applications of strategic design and the role of strategic designers, who can leverage the SSF to assess and innovate new scale-up strategies for SBMs, facilitate effective collaborations and create literature and policies in the domain of SBMI and Scaling SBMs.

9.3. Design Thinking and the SSF

Based on the definition by Calabretta & Gemser (2017), one of the main capabilities of strategic designers lie in the effective use of design thinking in the strategy making process. The SSF can be seen as a design thinking tool that facilitates strategic designers to help startups align their SBMs from the desirability, viability and feasibility perspectives, which form the foundation of design thinking (T. Brown, 2008). This is visualised through the figure 10.

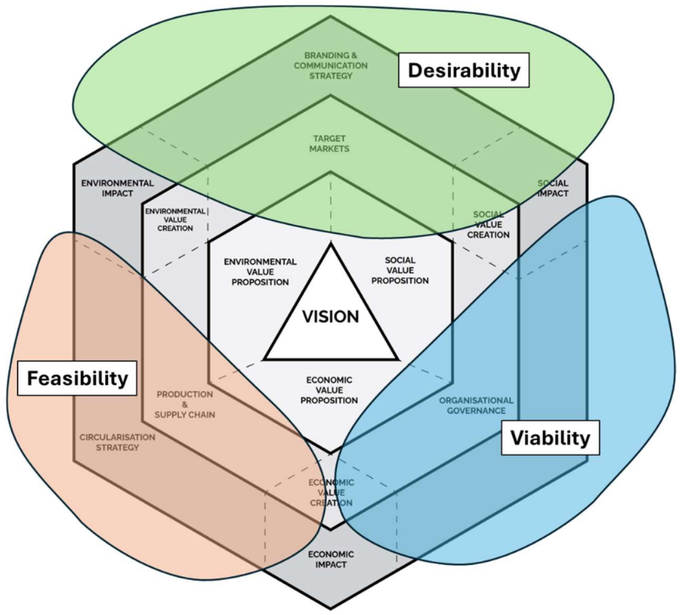


Figure 10: The Desirability, Feasibility & Viability Perspective of SSF

Desirability refers to the ability to create value for customers and society by addressing their needs and preferences, which is integrated into the Target Markets and Branding & Communication Strategy, helping startups identify customers whose needs they can fulfil and effective strategies to reach and communicate with them. Viability refers to the ability to generate revenue and profit by capturing a share of the value created. This is achieved through the Fundraising strategy and Organisational Governance elements that form the financial and organisational backbone of the scale-up strategies. Feasibility refers to the ability to implement the business model with the available resources and capabilities. This aspect is addressed by the Production & Supply chain and Circularisation strategies, which integrate the capabilities, resources and partnerships to execute the scale-up.

By following these phases, startups can develop and scale SBMs that are not only desirable, viable and feasible but also adaptive, resilient and transformative, in line with the principles of sustainability. The SSF can thus help startups adopt a design thinking mindset and approach, which can foster creativity, innovation and learning, effectively integrating strategic design in scale-up strategy formulation.

9.4. Future Scope and Limitations

The final section of the thesis acknowledges the limitations of the research directions for future research. One of the main limitations of this research is the small sample size of the empirical studies, which limits the generalizability and validity of the findings. The results may not reflect the diversity and complexity of the complete startup ecosystem and the sustainability domain. Future research could address this limitation by conducting more empirical studies with different types of startups and sustainability challenges, using a larger sample size and diversity. Also, multiple sources and methods of data collection and analysis, such as surveys, observations, experiments, or triangulation, can be used to increase the reliability and validity of the findings.

Another limitation is the lack of empirical data on the long-term outcomes and impacts of the SBMs developed and scaled by the SSF. The framework was derived from a literature review and expert interviews, followed by validation through a business case workshop with multi-departmental master's students and is focused on the process of SBMI and scaling rather than on the performance and evaluation of the SBMs. Therefore, it is not possible to assess the extent to which the SSF can help startups achieve their sustainability goals and create positive value for themselves and their stakeholders. Future research could be focussed on conducting longitudinal studies and action research that track and measure the results and effects of the SBMs over time, using appropriate indicators and methods.

The SSF presented in this thesis is a framework that focuses mainly on the context of sustainable startups. Although an example of Grameen Bank is provided to showcase this context of use, it has not been applied or evaluated in practice or in different contexts. Therefore, the effectiveness and applicability of the SSF to different contexts and situations require more validation. Future research could address this limitation by conducting action research or design science research that involves testing and refining the SSF in collaboration with practitioners and assessing its usefulness and usability in different contexts, such as larger enterprises and sustainable initiatives from governments. The SSF also stimulates strategic designers to develop tools pertaining to each element of the framework, further reinforcing their role in strategy formulation, especially for scaling SBMs.

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