



# Sustainable Practices in Startups

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### **Abstract**

The thesis focused on evaluating sustainable measures that startups adopt in emerging markets and their role in achieving growth and competitive success. The increased importance of sustainability globally calls for closer inspection of how the emerging businesses adopt sustainable methodologies, the very thing that sustains innovation and long-term prosperity. The current study uses a qualitative approach where interviews of semi-structured interviews and analysis of case studies are undertaken to gain insights from startup founders and key stakeholders.

The study shows that startups mostly use sustainability by innovating their products, optimizing their supply chains, and soliciting stakeholder input. It is observed that sustainability initiatives have a positive impact on the startup's reputation; they can bring them a competitive advantage as well as an increase in financial results. Startups, however, tend to be limited by limited resources and clunky regulations that prevent a concerted process of implementation of sustainable approaches.

Leadership commitment and association with relevant networks will increase startups' potential uptake of sustainable practices. Analyzing the construals and enablers of the startups' process of integrating sustainability provides theoretical contributions that come under the study of sustainable entrepreneurship. It guides virgin entrepreneurs interested in sustainability, touching base on important aspects such as proactive implementation, collaboration with stakeholders, and fostering a cooperative business environment. This work explains how sustainable entrepreneurship helps achieve key societal outcomes like environmental preservation and social fairness and outlines pathways for further research in a dynamic area.

### **Keywords/tags (subjects)**

Sustainable practices, SDGs, green innovation, Corporate social responsibility (CSR), environmental responsibilities

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# 1 Introduction

## 1.1 Background of the Study

### 1.1.1 Introduction to Sustainability in Business

Today, a firm's corporate strategy, operational model, and new entrepreneurial ventures must be sustainable for profitability. As global industries confront increasing environmental, social, and economic challenges, implementing sustainable business models has become essential. Sustainability embraces a sustainable development paradigm in business rather than only complying with statutory mandates. Sustainable business strategies are essential for any industry aiming to contribute to sustainable development (Giovannoni & Fabietti, 2013).

The rise of sustainability in business can be attributed to sustainable development. The United Nations Brundtland Commission defined sustainable development as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (Glavič & Lukman, 2007). As global economies transition towards sustainable growth, corporations are expected to engage in responsible practices that minimize detrimental impacts.

### 1.1.2 The Role of Sustainable Practices in Startups

The startups are vital for economic development, job generation, and innovation. Many corporations aim for environmentally sustainable practices; however, most corporate cultures are frequently set in stone. However, unlike traditional establishments, startups can readily integrate sustainability into their business model as they are more adaptable (Schaltegger & Lüdeke-Freund, 2012). New firms seek an approach that is sustainability-propelled (or sustainability-driven). This is prominent in new-age businesses where market differentiation and innovation give a competitive edge. Studies suggest that firms that take sustainability seriously can flourish in the long run and are more likely to win over potential investors. Sustainable entrepreneurship has been evolving as a business that provides value without harming the environment and society.

Sustainable startups strive to solve global problems, including climate change, resource scarcity, and social inequity, by integrating sustainability into their operations (Bhatnagar et al., 2022). These businesses focus on environmentally friendly technologies, circular economy structures, and ethical suppliers. Moreover, new business models are feasible using these entities.

### **1.1.3 Sustainability in Emerging Industries**

New industries are rapidly forming as globalization and technological improvement occur. Starting a green startup in such areas will be a smart investment. Industries like renewable energy, sustainable fashion, green finance, and circular economy-based firms are all examples of sectors that promote innovation owing to their focus on sustainability. Startups in these areas employ sustainable practices to differentiate themselves in the market and achieve a competitive advantage.

An example is the green startups in India that receive attention because they integrate sustainable finance mechanisms (such as green bonds, impact investment, etc.) into their business models (Bhatnagar et al., 2022). Likewise, startups concentrating on sustainability in Europe and North America have pioneered breakthroughs in waste reduction, carbon neutrality, and sustainable supply chains (Schick et al., 2002). These examples highlight how sustainability shapes a startup's strategy and lifespan.

### **1.1.4 Corporate Strategies and Sustainability**

Today's organizations regard sustainability as a crucial element of company strategies rather than an extra service. Nowadays, a corporation has to boost its position by getting close to sustainability. More and more huge noncorporations are recognizing the importance of sustainability, and this trickles down to the startup ecosystem that is being pushed to comply with sustainable standards just like the big organizations.

More and more organizations have implemented specific sustainable measures, visible in CSR, ESG, or sustainable innovation. White (2009) argues that firms must establish sustainability plans that complement company objectives and resolve global problems. This has pushed startups to incorporate it in their strategy instead of what an above as thought above.

### **1.1.5 Challenges and Opportunities in Sustainable Startups**

Due to the obstacles sustainable businesses confront, there are many opportunities. New enterprises that aim to implement sustainability-led models have substantial obstacles due to restricted access to capital, the absence of policies to assist sustainable startups, and high expenses for green technologies (Martins de Souza et al., 2024). Also, sustainable entrepreneurs find it hard to

scale as consumer knowledge and market demand for sustainable products and services vary by area.

Even with these hurdles, companies can take advantage of the possibilities that integrate sustainability into business. Government assistance, green finance choices, and increased customer desire for ethical brands make it easier for sustainability-focused startups to prosper (Mühle et al., 2024). Moreover, entrepreneurs can strengthen their efforts to promote sustainability by cooperating with enterprises, NGOs, and investors.

Understanding and implementing sustainability in business for a prosperous entrepreneurial operation. Startups in new industries can implement sustainable practices into their operations for long-term growth and competitiveness. As sustainability becomes a part of corporate strategies, market differentiation, investor trust, and regulatory compliance will benefit businesses with a sustainable business model from inception. The following phase of the study will further analyze a company's logic, methodology, and sustainable practices, explaining their eco-friendly business methods and justification.

## **1.2 Research Motivation**

### **Importance of Researching Sustainable Practices in Startups**

Learning about sustainable practices in a startup is vital, especially in the case of new industries with evolving business models. In today's economy, sustainability has emerged as one of the most critical aspects in a corporate strategy to boost environmental and financial performance and competitive positioning (Porter & Derry, 2012). New enterprises lack large firms' resources and face far higher unpredictability in the market. Incorporating sustainability at the design stage might help these enterprises fit with global sustainability goals and attract investors. This section examines why one should study sustainability in startups, personally and socially.

#### **1.2.1 Personal Motivation**

Our interest in sustainability and entrepreneurship makes us want to examine sustainable practices in startups. We are interested in how entrepreneurs may include sustainability measures in their business strategy to decrease the harm they bring to the environment. Sustainable entrepreneurship is a novel idea that pushes enterprises to place environmental and social considerations in core

decision-making (Schaltegger & Lüdeke-Freund, 2012). Our short-term and long-term academic and professional aspirations align with studying sustainability in startups. We want to investigate how businesses may remain competitive while bringing about constructive change.

As global sustainability concerns are becoming too serious, like climate change and depletion of natural resources, businesses can balance profit-making and ethical duties while creating solutions. Understanding how businesses include sustainability from the outset can give valuable foundations for future entrepreneurs, investors, and policymakers who aspire to establish a greener and more resilient economy (Tiba et al., 2021).

### **1.2.2 Societal Motivation**

Sustainability is not an option but a need for any corporate organization. New industries like renewable energy, sustainable farming, and green technology highlight how startups can help us become more sustainable. Looking into young enterprises that have sustainability as a core aspect might give new views from which to analyze the challenge of sustainability.

The necessity to establish a sustainable corporate structure to meet key global challenges is the societal impetus underlying this research. According to the United Nations Sustainable Development Goals (SDGs), businesses must become active partners in responsible consumption and production, climate action, decent work, and economic growth (Nosratabadi et al., 2019). This research focuses on sustainable startups to highlight business strategies that help accomplish these aims. It would also help young entrepreneurs in making actionable decisions.

Moreover, startups focusing on sustainability help create jobs, maintain ethical supplier chains, and build circular economies. Startups targeting the fashion sector are redefining how apparel is made and consumed by tapping into recycled materials and/or ethical labor (Todeschini et al., 2017). In the same way, green finance efforts offer critical funding to sustainability-oriented firms, assuring their sustainability and impact (Bhatnagar et al., 2022).

This assists entrepreneurs or policymakers in developing a framework for a better understanding of this information. The project will contribute to understanding sustainable entrepreneurship and provide practical methods for integrating sustainability from Inception as a core part of business.

This research will help stakeholders understand how a business environment focused on profitability in the long term may be built that aids the greater cause of sustainability and the attainment of the erstwhile SDGs.

### **1.3 Problem Statement**

Startups encounter numerous hurdles in adopting sustainable practices, which may impact their competitiveness and growth. The following research problems explain these challenges.

Companies often have limited human, financial, and technological resources for sustainable operations. These constraints may affect overall competitiveness & growth. This restriction may impede their power to execute broad sustainability strategies (Mühle et al., 2024; Tiba et al., 2021).

Many entrepreneurs may lack understanding or competence regarding sustainable techniques and their advantages. This gap can inhibit entrepreneurs from recognizing the importance of adding sustainability into their business models (Martins de Souza et al., 2024; Schick et al., 2002).

Startups experience market pressure, due to which they focus more on short-term earnings rather than long-term sustainability targets. The drive to show profitability soon can dissuade them from behaving sustainably.

Opting for long-term sustainability projects may not be tempting for many firms. Startups may not have the means and skills to comply with the environmental rules (Glavič & Lukman, 2007; Müller & Pflieger, 2014).

Many consumers are becoming increasingly aware of and demanding sustainable products; however, not all consumers respond to sustainability when making purchase decisions. When consumers do not care, startups have reduced commercial motivation to embrace sustainable practices (Bhatnagar et al., 2022; Tiba et al., 2021).

Established enterprises that previously accounted for the sustainability advantage may impose competitive pressure on the startups (Bhatnagar et al., 2022; Tiba et al., 2021). New entrants may find difficulties in differentiation due to this state of affairs (Jagdale, 2024; Martins de Souza et al., 2024).

New enterprises could have issues monitoring the effects of their eco-friendly efforts and adequately communicating with consumers about them. It can be hard to demonstrate the value of sustainability to stakeholders without precise measures (Andersen et al., 2013; Nosratabadi et al., 2019)

These difficulties have a cumulative influence on the competitiveness and growth of companies. While competitors may shift towards sustainable techniques, startups that readopt, or if not accepted, imply they may lose out to competition. If startups overlook sustainability, it can undermine their reputation and potentially cause them to miss out on opportunities in the market. The market is being affected increasingly by consumer choices. Consumers like to buy things that are eco-friendly and excellent for the environment.

## 1.4 The Objectives of the Study

The main objectives of this study are to explore and assess the various dimensions of sustainable practices within startups. The specific research objectives are as follows:

Table 1: Research objectives

RO	Research Objective	Descriptions
1	To Explore Strategies for Integration	Investigate the strategies employed by startups to integrate sustainable practices into their business models from inception effectively.
2	To Assess Impact on Competitiveness	Evaluate how adopting sustainable practices influences startups' competitiveness in their respective markets.
3	To Analyze Growth Trajectories	Examine how sustainable practices affect the growth trajectories of startups, focusing on both short-term and long-term outcomes.
4	To Identify Barriers	Identify the barriers startups face when implementing sustainable practices and explore potential solutions to overcome these challenges.
5	To Understand Stakeholder Perspectives	Investigate how various stakeholders (e.g., investors, customers, industry experts) perceive the importance of sustainability in startup success.

## 1.5 Research Questions

This study addresses several key research questions related to sustainable practices in startups.

Table 2: Research questions &amp; descriptions

	Research Question	Description
1	How do entrepreneurs in developing sectors use sustainable practices right from the start?	This investigation aims to identify entrepreneurs' existing tactics to integrate sustainability effortlessly into their organizational foundation. By doing so, we highlight the best-performing ways and creative approaches to incorporating sustainability that can benefit other firms in this sector.
2	How do sustainable practices help give startups strength and become a major success?	Determining how sustainability works within a competitive advantage framework is essential for startups pursuing long-term success. The aim is to explore how sustainability defines businesses' competitive advantage in market bidding, with customers, and based on performance metrics.
3	What barriers do emerging businesses face in sustainable practices in their daily operations?	It is crucial to know the problems startups face to develop personalized support structures that motivate a more sustainable way of conducting business. This research discusses the major challenges hindering effective progress in making startups more sustainable.
4	How do enablers facilitate the uptake of sustainable practices by startups?	The understanding of the forces that promote the adoption of sustainability may provide fruitful insight to both entrepreneurs-in-the-making and policymakers. The major goal is to provide the main enablers for startup companies to gain successful sustainability integration.
5	How do stakeholders perceive the importance of sustainability in a startup's success?	A new venture's sustainability strategy development requires the involvement of multiple stakeholders. Conspicuously in question is how the nuances of varying sustainability perspectives impact the degree of enthusiasm and stakeholder commitment channeled into entrepreneurial pursuits.

### 1.5.1 Research design/methodology:

This study will employ qualitative methodology, utilizing interviews, industry reports, and case studies with startup founders to gather in-depth insights into their experiences with sustainability.

Data will include:

- Interviews with founders and key stakeholders.
- Case studies of successful sustainable startups.

Data Sources: Startups in emerging industries. Primary data will be collected through interviews with startup founders and industry experts. Secondary data will include existing literature, reports

on startup performance, and sustainability benchmarks and case studies. Ethical concerns include ensuring informed consent from interview participants and maintaining confidentiality of sensitive business information.

### **1.5.2 Potential findings from the research**

We expect to uncover Insights into:

- The types of sustainable practices are most beneficial for startup growth.
- The relationship between early adoption of sustainability and long-term competitiveness.
- The types of sustainable practices are most beneficial for startup growth.
- The relationship between early adoption of sustainability and long-term competitiveness.

Recommendations for future startups on Integrating Sustainability effectively.

## **1.6 Significance of the Study**

This study will help the sustainable entrepreneurship field and future entrepreneurs by utilizing this work. As sustainability becomes a key factor in business strategy, understanding how startups can implement sustainable practices is essential. The contribution of this study is that it can provide knowledge or practically help towards knowledge creation.

### **1.6.1 Contributions to Academic Knowledge**

#### **A. Enhancing Theoretical Frameworks**

This study seeks to add value to the existing theoretical frameworks concerning sustainable entrepreneurship through empirical evidence on how startups undertake their operations. This research will help demonstrate and further investigate the connection between sustainability and entrepreneurship. It explores how businesses approach sustainability these days. The study's results will either validate or update existing models, whereby the study will provide clarification based on analysis that shows that startups leverage sustainability for advantage (Martins de Souza et al., 2024; Mühle et al., 2024).

#### **B. Addressing Gaps in Literature**

Most of the current literature on sustainable entrepreneurship deals with established firms, leaving a gap in understanding the unique challenges and opportunities startups face. This study will fill that gap by looking into startups in emerging industries. As a result, it will advance the literature regarding how startups may incorporate sustainability from the outset (Schick et al., 2002; Tiba et al., 2021).

### **C. Promoting Interdisciplinary Research**

To encourage different types of research to investigate sustainable entrepreneurship. Sustainable entrepreneurship is, by nature, an interdisciplinary phenomenon.

A research and survey-based study will provide useful insights into the entrepreneurial processes of businesses. When business managers and scientists team up, they can develop incredible solutions that tackle tough sustainability problems. Plus, they gain a broader perspective on how companies can flourish.

### **1.6.2 Practical Implications for Future Entrepreneurs**

#### **A. Guiding Sustainable Business Practices**

The study's findings will benefit future entrepreneurs intending to implement sustainability into their businesses. The study will help identify strategies and best practices employed by successful startups, providing a roadmap for new startups aiming to incorporate sustainability from the beginning. This can help entrepreneurs to steer clear of common traps and increase their probability of constructing resilient, sustainable businesses (Blowfield, 2013; Müller & Pflieger, 2014).

#### **B. Informing Investment Decisions**

More investors now use sustainability considerations when making decisions between different investment opportunities. This research generates insights that present investors with information about sustainable startup attributes that produce attractive investment opportunities. When investors grasp sustainability's positive effect on competitive performance and business expansion, they back up startups implementing these practices within their operations. The concurrence of investor interests with entrepreneurial strategies drives increased sustainable venture funding (Bhatnagar et al., 2022; Tiba et al., 2021).

## **C. Encouraging Responsible Consumer Behavior**

Consumers increasingly prefer to support businesses that show dedication to social responsibility and environmental accountability because they understand sustainability issues better. This study showcases how sustainable practices promote startup success, which could motivate environmentally conscious consumer actions. By comprehending this trend, entrepreneurs can enhance market attractiveness for their products by tailoring their offerings to appeal to environmentally conscious consumers (Jagdale, 2024; White, 2009).

### **1.6.3 Policy Implications**

#### **A. Influencing Policy Development**

The findings of such research may be meaningful to policymakers to help them initiate easy entrepreneurship. Once the barriers to adopting sustainable practices by the startups are identified, all the policy-making opinions will be knowledge-based to influence policies that will give sustainable conditions to green businesses. Policymakers can apply them as ideas to design programs and incentives that will encourage startups to implement sustainability in their business (Glavič & Lukman, 2007; Schaltegger & Lüdeke-Freund, 2012).

#### **B. Supporting Ecosystem Development**

The research also helps develop entrepreneurial ecosystems that are themselves sustainability-oriented. With the knowledge of what triggers or inhibits sustainable practices of startups, the stakeholders, including the government, academic institutions, and industry bodies, can brainstorm and develop ideas to create networks that promote sustainable entrepreneurship. Such ecosystems can offer the startups resources, mentorship, and training to flourish (Martins de Souza et al., 2024; Mühle et al., 2024).

This current study has great promise in taking the knowledge of sustainable entrepreneurship forward, and at the same time, provides some beneficial information for prospective future entrepreneurs and policymakers. In its effort to be relevant to the academic discourse and the real world, the research manages to tackle critical questions surrounding adopting sustainable practices in startups. The implications of this research go beyond single startups; It has implications in delivering a sustainable future for industries and communities.

## 1.7 Structure of the Thesis

The thesis is organized in five main chapters, each building upon the previous one around sustainable startup practices. The first chapter is the introduction. It sets the stage by presenting the research motivation, problem statement, objectives, questions, and importance. This chapter lays the ground for the research by demonstrating the significance of sustainability in entrepreneurship and new venture creation and similar contexts. It explains why we must see how startups can adopt sustainability measures from day one to grow and compete.

The literature review will have a second chapter, where existing theories and studies related to sustainable entrepreneurship will be reviewed. This part of the paper talks about the important ideas of sustainability. This also includes the definitions and importance of sustainability in business. This chapter explains how the research bridging the literature gaps will be achieved by collating past research findings. It also looks at many frameworks and definitions of sustainability, which is important to understand how it is relevant to startups.

The third chapter outlines the research design and methodology of this study. It explains how we used a qualitative method to gather data by interviewing startup founders and industry experts and conducting case studies of successful, sustainable startups. This chapter outlines the methods used for data collection, the sample used, and the data analysis used. It deals with the ethical aspects concerning the research process and ensures that confidentiality is maintained and informed consent is obtained.

The fourth chapter includes in-depth details of the findings of the research. This chapter deals with the approaches startups adopt to imbibe sustainability in their processes and the challenges they encounter. Suit on these practices, we assess the impact on competitiveness and growth using qualitative interviews and case studies. This section reveals how startups have used sustainability and the restrictions that stop them from using it.

The last chapter of the thesis summarizes and discusses the thesis findings about the theory and practice. The authors discuss the research questions and objectives together with the contribution of this thesis to responsible entrepreneurship. Additionally, recommendations are made for aspiring entrepreneurs who want to practice sustainable entrepreneurship in their startups. It also

showcases what more projects can be made and what we can get further. The thesis aims to provide a comprehensive picture of the sustainable practices taken up by the startups in a structured manner, which can benefit the academic and practical side of sustainable entrepreneurship.

## **2 Literature Review**

This literature review explores the existing knowledge on sustainability, which might benefit the startup in the emerging sector. This chapter covers the meaning and value of sustainable practices supporting entrepreneurs in successfully establishing a business. The review will answer the research questions given in the introduction. That is, how startups should characterize and design their businesses from genesis in a way that allows the integration of sustainability, and how it affects their competitiveness and growth.

This chapter features multiple parts that approach sustainability from the eyes of entrepreneurs. This part will start with a definition of sustainability and its commercial significance. Next, we will dig into existing frameworks and models that guide environmental, social, and governance (ESG) practices. The assessment will look at sustainable entrepreneurship, the integration of sustainability in business models, and identifying competitive advantages from adopting sustainability. In this literature review, I have consolidated information from current studies and theoretical discussions that would offer validity to the study done in this thesis.

### **2.1 Sustainability in Business**

Sustainability is a phrase that has acquired substantial literature but requires a circular definition that spans various domains. Sustainability is providing today's requirements so that the future generation can meet their needs, i.e., ecological sustainability. However, it has numerous other meanings, such as economic sustainability. The focus is on balancing sustainability's economic, environmental, and societal components. Sustainability refers to the capacity to use resources responsibly today, without jeopardizing future generations' ability to do the same.

Many authors have tried to elaborate on sustainability in business terms concerning the three pillars encompassing environmental development, quality of life, and economic performance (Dyllick & Hockerts, 2002; Hockerts & Wüstenhagen, 2010). The triple-bottom-line approach is another

name for the integration of these pillars. It advises that organizations not simply judge their success by financial performance, but rather consider social and environmental performance (Elkington, 1997). This comprehensive approach highlights the importance of incorporating sustainability as a fundamental component of corporate strategy, rather than an afterthought.

The issue of sustainability in business has gained increased attention over the years. Global issues, climate change, depletion of resources, and social inequalities are more pronounced with businesses under pressure to implement sustainable practices (Porter & Kramer, 2011). These days, stakeholders, customers, investors, and regulators prefer to favor sustainable companies (Eccles et al., 2014). Startups aiming to distinguish themselves in competitive markets may find this shift in customer behavior challenging and an opportunity. For entrepreneurs, embracing sustainability can be a beneficial way. Connecting with the beliefs of consumers who care about the environment and society can increase brand image and consumer loyalty.

Bocken et al. (2014). Also, by having new methods of doing things, sustainability will assist in fueling innovation, as they will be motivated to produce products and services (Mason & Simmons, 2014). Lastly, applying sustainable techniques in business operations could minimize operational errors, thereby leading to cost reductions in the long run. In the last few years, there have been several frameworks and models to help firms implement sustainable practices, concentrating on the environment, social, and governance (ESG). These frameworks provide systematic procedures for analyzing and improving sustainability performance.

- A. The ESG framework helps investors and corporations evaluate an organization's sustainable practices. Governance looks at firms' leadership; this includes the audits, internal controls, and rights of shareholders (Khan et al., 2016). This signifies that a corporation wants the best for shareholders, boosting investors' confidence. The ESG Framework is considered a beneficial tool for startups searching for investment since organizations with higher ESG performance are considered to have reduced risk by investors (Eccles et al., 2014).
- B. Another important organizational paradigm that aims to shape their purpose to the desires of society is the Sustainable Development Goals (SDGs) introduced by the United Nations. The raised SDGs refer to the 17 goals adopted in 2015 to draw global attention to issues such as inequality, poverty, climate change, conflict, environmental destruction, and injus-

tice (United Nations, 2015). Programmes and interventions can utilize the SDGs as a blueprint for what they should be pursuing and for identifying when and how they can gauge the effects of what they are doing (Schmidt et al., 2019).

- C. The circular economy is a functioning system built on an alternative to the traditional linear model for consumption. A linear economy is a way of life in which people purchase a product, utilize it, and dispose of it. Linear, as a word, refers to a straight procedure that a product can follow, which starts and ends with a middle. Along the line, there is no thought related to recycling or reuse. However, in cases of CES, the products and services developed are built to last. They are reused, remade, and recycled, inspired by what is defined as a circular economy (Geissdoerfer et al., 2018). It is a problem that allows firms to recharge themselves concerning their supply chains and the life cycles of their products, as one of the ways of reducing a negative impact on our lands. A good example would be the concept of a green supply chain, where chain flows are changed to facilitate the easy practice of environmentally friendly activities. The startup can differentiate itself from the rest if new solutions are made available in cases where the principles of the circular economy are followed, leading to cloud-literate consumers.
- D. The Natural Capital Protocol offers something enterprises can use to measure and value their relations with natural capital, such as the world's stocks of natural assets (Natural Capital Coalition, 2016). This will enable the businesses to analyze risks and find opportunities associated with ecosystems, biodiversity, and natural capital to which they belong. Startups can use this approach to help make intelligent choices concerning the environment and increase their sustainability credentials.

As we progress towards a corporate future, sustainability is increasingly considered a cornerstone of business plans. This chapter addresses the concept of sustainability through the perspective of interpretation—economic, environmental, and social. Examining current frameworks, such as ESG standards, the SDGs, circular economy models, and natural capital protocols, allows entrepreneurs to steer their sustainability initiatives.

## **2.2 Sustainable Entrepreneurship**

Sustainable entrepreneurship is a new type of entrepreneurship that links sustainability and entrepreneurship. What is sustainable entrepreneurship?

Sustainable entrepreneurship refers to creating economic, social, and environmental value through new business models and practices that prioritize.

This idea has gained popularity in the last few years as people perceive the necessity for addressing the world's challenges, like climate change, the lack of resources, and social inequity, while generating a profit. Just having good environmental policies will not make businesses good sustainability practitioners. There must be social equality and economic viability, too.

Sustainable entrepreneurs contain many crucial characteristics: overview. These folks are driven by something other than profit. Sustainable businesses are frequently imaginative, employing unique ideas for generating goods and services for sustainability concerns (Dean & McMullen, 2007). In addition, sustainable entrepreneurs tend to apply systems thinking and explore the linkages between the economy, the environment, and society (Bocken et al., 2014).

There is a special opportunity for new businesses to integrate sustainability ideas into their business strategies right from the beginning. On the other hand, a disadvantage of a developed firm is its immobility and flexibility that come with a startup. Their inertia gives startups the liberty to innovate in sustainability without the wariness that afflicts established enterprises. For instance, it is possible to develop startups for sustainability right from day one for their operations, supply chains, and products. Thanks to startups, you can approach the matters of sustainability and social welfare from day one. It helps in creating a business strategy that makes consideration for the same.

Traditional ideas regarding sustainability in a blockbuster's commerce model incorporate a change of the value proposition to appeal to the consumer demand for responsible goods and services. Entrepreneurs can also develop eco-friendly products by cutting the bad effects on nature or set up services to help make society more balanced, like fair trade and ethical sourcing. When companies develop business models where sustainability is a value proposition, they can be unique from their competitors for the customers who choose sustainable products.

Sustainable entrepreneurship cannot be only environmental; It skips a broad spectrum that includes social equity and viability of the economy. Schaltegger and Wagner (2011) define sustainable entrepreneurship as another stage beyond the basic form of entrepreneurship into the area of

business practice dealing with integrating constituents relating to the problem of sustainability at the heart of business processes.

As the United Nations asserts, sustainable development could be expressed as "...development which meets the needs of the present without compromising the ability of future generations to meet their own needs" (Brundtland Commission, 1987). Beneath this umbrella, sustainable entrepreneurs will try to create businesses that will benefit society and the environment in the long term. The all-around nature of such an approach necessitates close interconnection between economic, ecological, and social life systems. It signals the necessity for fostering innovative interventions concerning intricate problems.

### **Characteristics of Sustainable Entrepreneurs**

Different characteristics of sustainable entrepreneurs compared to traditional entrepreneurs are described in the literature. Such people are mostly motivated by this goal rather than profit; the wish to positively change society and the environment (Schaltegger & Wagner, 2011). The orientation to ethics and social responsibility, respectively, is the major cause of decision-making by the designers of sustainable entrepreneurship.

One of the greatest attributes is their innovative ability. Sustainable entrepreneurs show so much creativity and problem-solving capability and can employ creative means of developing products and services that work towards sustainability issues (Dean & McMullen, 2007). For instance, firms that have risen to prominence in manufacturing electric vehicles based on the venture of renewable energy have demonstrated how innovation could be coordinated with the aspiration of sustainability.

Moreover, sustainable entrepreneurs always integrate systems thinking in their decision-making processes, because they understand that systems are interrelated to contain economic, ecological, and social systems (Bocken et al, 2014). Such an integrated vision allows them to see the opportunities for value creation and sustainability, which could be easily overlooked had they been studied one-sidedly. From a sensitivity to how various elements of their own business relate to general societal and environmental issues, owners of sustainable enterprises can make decisions based on sound information that enables them to have greater influence as business leaders.

### **Opportunities for Startups to Incorporate Sustainability**

Startups can take advantage of special opportunities for sustainability at the base of business development. The flexibility and agility one enjoys as a startup are some of the greatest benefits when it comes to being a startup compared to the firms that have established themselves. This flexibility allows startups to experiment with creative ways of obtaining sustainability out of the constraints experienced by large corporations (Mason & Simmons, 2014). For example, a startup may develop a business around sustainability in its planning through the operations, supply chains, and products.

The innovation created by the startups has the potential to generate sustainable business models that blend environmental and social considerations into their basic operations. Not only that, but by incorporating sustainability into their value propositions, startups can position themselves as alternatives in the marketplace (thus differentiation of startups) and appeal to an ever-increasing portion of shoppers who consider sustainability when buying (Dangelico & Pujari, 2010).

For instance, Warby Parker has already become the leader in the eyewear business thanks to the socially responsible business model (whereby a pair of glasses is donated for every pair sold). Not only does this get socially conscious customers, but this makes this company's brand image better.

Furthermore, startups can use a sustainable supply chain as a competitive advantage. Startups can achieve holistic sustainability performance by actively searching for suppliers aligned with their sustainability values with similar-minded, collaborative partners (Kumar & Singh, 2018). Not only will that make them stronger in their supply chain, but that is also a nice way to build up credibility with those consumers who require that they source ethically.

### **Redefining Value Propositions**

Introducing sustainability in the startup business model involves designing and redesigning the value proposition of the startup business model to allow it to serve the aspirational needs of people for responsible products and services. For instance, the startups can put their effort into producing products that are friendly to the environment, and reduce the problem of the environment, or services that will foster the development of social fairness, fair trade, and ethical sourcing. In turn, sustainability in value propositions will allow startups to earn a differentiation in the market, as well, by meeting a rapidly growing number of consumers who consider sustainability among their buying preferences for products (Dangelico & Pujari, 2010).

This redefinition of value propositions demands a close knowledge of consumer preferences and market trends. Startups must do market research to identify the loopholes in the market where there is the possibility of providing sustainable alternatives to overcome existing voids. For instance, food startups that emphasize organic ingredients or the choice of plant-based eating are starting to make the consumer's growing demand for healthy and environmentally friendly dishes available to their customers.

### **Fostering a Culture of Sustainability**

Such a culture in the organization leads to long-term success for the startups. This can be done with a leadership focus on sustainability, employee participation in sustainability practices, and how these are promoted through the organization's entire structure (Scherr & Palazzo, 2011).

Leadership determines an organization's culture. When the leaders give the picture of sustainability and live with it, they will create the essence for the rest of the organization. Employees will be engaged in sustainability efforts if they discern that their leaders are serious about their responsiveness to sustainability. Besides that, sharing the responsibility of supporting sustainability initiatives could be possible because green teams/innovation challenges could engage employees and make them feel accountable towards the sustainability exercise.

Meanwhile, sustainability should be a part of the organizational practice, which is practiced with constant training and teaching of employees. For example, sustainable production targets such as these can only be realized if startups build their human resources on resources and training for sustainable living. Eventually, this empowerment translates into job satisfaction, stimulation / deep organization-level innovation, and efficiency.

### **Frameworks for Sustainable Entrepreneurship**

Numerous models have been described on how to take one through the startup venture process towards sustainable entrepreneurship. Business Model Canvas – one of the frameworks that has forced sustainability into the framework. This tool reveals to entrepreneurs how sustainability can be visible in one step of their business model (Osterwalder & Pigneur, 2010). Startups can develop strong strategies and map important components such as a customer segment, value proposition, channels, customer relations, etc., so that the strategies align with the market and sustainability goals, respectively.

Also, the circular economy concept provides a model for implementing it for starting businesses to provide products and services that will increase the efficiency of the use of resources and waste reduction (Geissdoerfer et al., 2018). Under a circular economy approach, businesses are forced to change the linear approach to doing business, i.e., they must change linear practices into closed-loop systems in which material used is recycled and reused instead of being disposed of after use. Spry businesses with practices that use the principles of the circular economy can use environmental awareness and waste reduction by reaching out to them.

Another great piece for startups intending to build their business around sustainability can be taken from The Natural Capital Protocol (Natural Capital Coalition, 2016). This protocol specifies natural asset measurement and valuation, i.e., stocks of global natural capital, for enterprises to determine their impact on ecosystems and biodiversity. Using this lens, startups can make informed decisions on the environmental impact they cause and their sustainable credentials.

### **Barriers to Adoption**

Although there are numerous instances for startups to practice sustainability, numerous impediments prevent this effort. Financial barriers are one of the obstacles that new businesses find in their way toward sustainable practices. Startups may seek to favor temporary profit solutions over creating sustainable projects for the future because of common startup financial impediments (Schaltegger & Wagner, 2011). While racing for quick returns, the startups may overlook the key startup expenditures that accrue when the sustainable technologies are introduced.

The detailed intricacies of sustainability regulations are a significant challenge to startups. Awareness of and adherence to environmental regulations tend to present substantial challenges to startups due to the high advanced expertise and equipping requirements needed (Hockerts & Wüstenhagen, 2010). Founders of startups usually struggle to understand the regulatory environment or find resources to comply with it.

### **Enablers of Adoption**

By contrast, the existence of many enablers makes it easy for startups to integrate sustainability into their organizational operations effortlessly. Leadership commitment is crucial; Organizations obtain consistent messaging from day one by acknowledging the importance of sustainability as an integral organizational value (González-Benito & González-Benito, 2006). Although unrestrained

sustainability campaigning by leaders could be uplifting employee engagement and increase sustainability initiatives, it could also backfire and poison an already overworked workforce or pushback.

A networking and collaborative environment can be leveraged as a resource for startups trying out sustainable practices. Through interaction with sustainability-oriented associations, incubators, and accelerators, startups gain better access to important resources, incentives, and investment opportunities (Kuckertz & Wagner, 2010). With such platforms, the startups can share information and access the support needed to surpass limited knowledge and financial challenges.

As the consumer urge for sustainability grows, all the businesses in the stages of development are working hard to tap new avenues for growth. Consumers pursuing sustainability prefer organizations that are current with industry shifts and utilize their unique strengths to achieve sustainability standards (Nielsen, 2015). The new business website encourages smaller companies to make their products sustainable & their operations environmentally friendly.

At its core, sustainable entrepreneurship involves making environmental and social goals equal to gaining financial success. The novelty of startups is the consistent incorporation of sustainable principles in their business processes, which should enable them to promote this paradigm. By carefully managing sustainable initiatives, these entrepreneurs can promote innovation and create increased social and ecological results.

Sustainable entrepreneurs highlight a significantly higher focus on societal impact than value-created innovations compared to the majority of other people, according to research presented here. Based on the constraints in terms of resource limitations and policy barriers, startups are more likely to adopt sustainability if organizational leadership is in alignment and customers have adopted more environmentally friendly behaviors. Extensions are informed by frameworks that provide crucial guidance and viewpoints to help startups incorporate sustainability into their business model framework.

Sustainable entrepreneurship is good for startups, but its role is basic to achieving universal targets, which are essentially aimed at preserving nature and equitable access. As the trend in sus-

tainable initiatives continues to gain momentum, there is a need for additional research to determine ways that these values can be applied in different business models of different sectors and locations.

### **2.3 Competitive Advantages**

As organizations become more sustainable, they typically increase their connection to customers, workers, the supply chain, and major financial stakeholders. Stakeholders' engagement in sustainability discussions means that companies are more likely to discover the collaborative possibilities to enhance their competitive position (Peloza & Papania, 2008). When sustainability becomes strategically embedded in corporate activities, it creates opportunities for positive collaboration with suppliers and enhanced negotiating positions. Similarly, employees who actively support the sustainability mission of their firm are more engaged and productive (Scherer & Palazzo, 2011). When suppliers and workers have positive ties with the startup, it contributes to their ecosystem.

Studies suggest that sustainability minimizes the chances of compliance penalties and reputational damage penalties. Countries are regulating corporations with stricter rules than ever before. Businesses implementing sustainable practices now will better adjust to these rules (Hockerts & Wüstenhagen, 2010). Startups showing that they are following environmental regulations can avoid penalties and make their brand more reputable to users and investors.

Sustainability can be a source of competitive advantage, 'a concept dubbed 'shared value' (Hockerts & Wüstenhagen, 2010). When companies link their business aims with society's requirements, they produce value for shareholders and stakeholders (Porter & Kramer, 2011). This strategy helps corporations develop methods to tackle societal problems and make money simultaneously. Adopting principles of innovation not only provides a competitive advantage but also leads to excellent effects for society and the community at large (Porter & Kramer, 2011).

Sustainability may contribute to the competitive advantage for startups through improved brand image, operational efficiencies, innovation, stronger stakeholder relationships, better risk management, and shared value generation. As consumers increasingly demand responsible business practices, it is simpler for a startup to succeed if it is sustainable. Startups can succeed while aligning with society by bringing sustainability into their key processes.

## 2.4 Integration of Sustainability in Startups

Including sustainability in corporate operations has become a fundamental need for every firm. Sustainable practices allow startups to capture client attention relatively rapidly. Startups are uniquely positioned to include sustainable practices in their core operations from day one, taking advantage of their nimble nature and ability to adapt, establishing business models with social and environmental considerations. This section covers studies of a startup's process of integrating Sustainability from Inception, including barriers/enablers.

Startups frequently use various techniques to integrate sustainability into their business models. A prominent alternative design for Sustainability means producing things and services that operate with little environmental effect throughout life (Vezzoli et al., 2015). This comprises using materials created sustainably, minimizing energy usage, and recycling or reusing designs. Companies like Patagonia and TOMS have developed their brands on sustainable practices, underscoring that they have been doing it since the beginning (Dangelico & Pujari, 2010).

One of the successful strategies is integrating sustainable chain management, and employees can work with suppliers with similar sustainability values. Taking such an approach allows firms to meet more sustainability goals while engaging stakeholders friendly to the firm's mission. Literature shows that early adoption of a sustainable supply chain approach gives organizations a unique advantage in market competitiveness and visibility (Sharma et al., 2020).

Maintaining frequent contact with stakeholders is essential for sustainability to become one of a startup's activities. Stakeholders and customers, workers, investors, and local communities must come together to ensure that startup sustainability practices are rooted in the needs and views of direct parties (Freeman et al., 2010). By getting closer to stakeholders, the startups strengthen their sustainability work, making them more apparent to the consumers and thus promoting more brand loyalty.

### **Hurdles to Implementation**

Sustainability dissolution is helpful, but some hindrances make it impossible for the startups to adopt environment-friendly practices. Many startups fail because of the absence of proper financial resources. Financial constraints that affect the majority of startups rarely allow them to focus on long-term sustainability efforts. However, they should focus on day-to-day survival to avoid collapse

(Schaltegger & Wagner, 2011). To focus on quick returns, many startups are unwilling to invest in sustainable technologies or processes that take an upfront investment.

Not being aware of and skilled in sustainable techniques is another hurdle. Some entrepreneurs do not know the new trends and technologies in sustainability, restricting their potential to deploy successful alternative technologies (Bocken et al., 2014). Not recognizing this might lead to losing an innovation opportunity and growth in the sustainability field.

Startups striving to become more sustainable can find problems owing to market forces. To show success more rapidly, they typically forsake sustainability for standard business methods (Hockerts & Wüstenhagen, 2010). Investor pessimism can bedevil businesses, frequently focused on short-term rewards instead of long-term sustainability prospects.

Different enablers make the adoption of sustainable practices by startups more favorable. If sustainability is fundamental to an entrepreneur's strategy, leadership commitment is essential in sustaining these practices. This outlines the trajectory of sustainability practices that companies will pursue. Good sustainability leadership encourages employees to collaborate with coworkers to collaborate and innovate.

Networking and collaboration opportunities are also enablers for startups looking to implement sustainability. Collaboration with industry associations, incubators focusing on sustainability, and accelerators provides tools, coaching, and finance at an effective cost (Kuckertz & Wagner, 2010). These networks allow for knowledge sharing and help entrepreneurs overcome constraints linked to knowledge and money.

To tie it all up, businesses and consumers have a big opportunity for sustainable products. Today, customers have a rising interest in green products, and startups can address these demands to take a piece of the market while supporting green initiatives (Nielsen, 2015). The change in consumer behavior drives startups to innovate sustainably and spend on green practices.

Table 3: Factor, Description, and Impact on Sustainability Integration

Factor	Description	Impact on Sustainability Integration
Financial Resources	Availability of funds to invest in sustainable technologies	Limited funds can hinder investment in sustainable practices
Knowledge & Expertise	Awareness and understanding of sustainable practices	Lack of knowledge can result in ineffective strategies
Leadership Commitment	Founders' dedication to sustainability	Strong commitment can drive organizational culture
Stakeholder Engagement	Involvement of stakeholders in sustainability initiatives	Enhances alignment of practices with stakeholder values
Market Pressures	Competitive pressures prioritize short-term gains over long-term sustainability.	Can deter investment in sustainable practices
Consumer Demand	Increasing preference for sustainably sourced products	Encourages startups to innovate toward sustainable solutions

## 2.5 Gaps

The literature review provided information on how companies integrate sustainability into their plans. The summary of major findings demonstrates that startups have ample chances to integrate sustainability into their business due to the flexibility of entrepreneurs to innovate. Some design for sustainability, sustainable supply chain management, and stakeholder engagement. This makes for effective integration of sustainability into operations. Factors such as limited financial resources, lack of experience, and market pressures offer substantial hurdles for many businesses. Conversely, facilitators such as leadership commitment, networking opportunities, and increased

customer demand for sustainable products can help successful integration. These dynamics highlight how many things work with each other when it comes to the adoption of sustainability by entrepreneurs.

Although research on sustainable business is widespread, there are still gaps in the literature. Much accessible research refers to already established organizations or a certain industry. There is more scope to explore diverse sorts of startups and their sustainability approach/practices. Furthermore, there is limited research on the long-term impact of sustainability integration on startup performance indicators beyond market positioning.

### **3 Methodology**

The methodology chapter explains the design of the research and methods to reveal how startups in emerging industries embrace sustainable practices at the beginning and how the practices affect their growth and competitiveness. This chapter gives a deeper insight into the research methodology, data assessment, sampling method, data analysis, and ethical activities. In its design, the methodology guarantees rigor and validity in replying to the research questions discussed in the previous chapters.

#### **3.1 Research Design**

##### **3.1.1 Qualitative Research Approach**

Qualitative experimental findings confirm that such approaches can effectively illuminate the complex nature of sustainable entrepreneurship in startups and, therefore, are preferred in this research. Through applying qualitative approaches, scholars can get insights into the activities, motivations, and visions of the participants, which are generally underrepresented in quantitative research (Creswell & Poth, 2017). Conversely, for this research, the emphasis is placed on finding the fundamentals and inspirations within entrepreneurial behavior rather than purely on assessing business model design.

Due to its tenets, the qualitative approach also allows them to be flexible, letting them employ various data collection methods and revise question structures according to the perceptions

brought by the participants. Modifying the research method becomes more necessary if a discipline rapidly develops or new practices are introduced. The actual participation of startup founders among other critical stakeholders informs this study's insightful inquiry into sustainability perceptions and their linkages to the business model development.

This research utilizes qualitative methods in advancing our understanding of the social and environmental factors that constitute the inner core of startups. In exploring interactions between stakeholders through interviews and comparative case studies, the present research reveals emerging patterns of the relationships between ventures and stakeholders and the effects of external environments on their commitment to sustainable management. These deep results form the basis for exploring the delicate connection between sustainability and entrepreneurial endeavors.

### **3.1.2 Research Strategy**

The use of case studies and semi-structured interviews was included in the research method because case studies, especially, provide important qualitative data.

#### **A. Case Studies**

Analyzing these studies helps us identify critical aspects of both implementing and understanding the results of sustainable practices in the real world of companies. These case studies demonstrate an exemplary startup that has led to new ways of integrating business success and environmental accountability. It can be understood from the example analysis how business realities reflect and apply academic principles. For the empirical study, research was conducted on three case studies, each examining how sustainability is used in a different new type of business. These case studies present the sustainability situation in several different industries.

**EcoEnergy Solutions** was started in 2019 and works in the field of renewable energy. This business concentrates on bringing solar energy to residential and commercial customers. They make an effort to reduce carbon emissions by encouraging solar technology and conducting workshops on the benefits of green energy for their local community. EcoEnergy Solutions works towards making energy use more sustainable by cutting down on fossil fuels.

In 2020, **WasteWise** was founded to focus on waste management and recycling. Advanced technologies are used in WasteWise to transform waste into things we can reuse, helping to cut back on waste sent to landfills and support the circular economy. Moreover, they organize educational sessions to help people learn how to reduce waste and why being sustainable with waste is essential. They take care of waste more efficiently and safely so that the environment can benefit as a result. **GreenGrow**, the third case, started in 2021 and concentrates on sustainable farming. By sustainably farming, the company ensures there are no hazardous chemicals are used on their food. GreenGrow prefers to pack their products using biodegradable materials and partners up with nearby organic local farmers to ensure eco-friendliness. Jack in the Box supports healthy and environmentally friendly food production and aids local farming groups. GreenGrow proves it is possible to do sustainable farming that does not harm the environment or reduce the quality of its goods.

These companies are involved in renewable energy, handling waste, and supporting agriculture, but they all support sustainability from the start. By describing the problems and solutions facing different startups, these cases reveal how they can be helpful to their businesses and also support the community. In addition to helping the environment, these startups illustrate that being sustainable can give them an advantage in competing and succeeding in emerging markets.

## **B. Semi-Structured Interviews**

As their methodological framework, researchers for the study selected the semi-structured interview method. In such interviews, researchers obtain the capability to have deep and adaptable dialogues with startup leaders and critical sustainability actors. Using semi-structured techniques, the researchers can speak about sustainability issues without limiting the commitments of the participants to reveal their personal experiences honestly.

The flexibility of the approach makes semi-structured interviews an appropriate means of research in probing subjects like sustainability, as they provide a space for ventures that can fall from the radar during structured talks. Data from these interviews will augment the case study's findings by diversifying how the topic is analyzed.

This research seeks to achieve a comprehensive understanding of sustainable entrepreneurship through the use of case studies and semi-structured interviews. The research features personal accounts and situates these accounts against the backdrop of larger organizational and environmental factors around sustainability. Semi-Structured Interview details given below:

In total, 10 interviews were conducted with founders, CEOs, sustainability managers, consultants, and investors. The procedure ensured that everyone had experience and knowledge in sustainability. In March and April, conversations via WhatsApp, Zoom, and Google Meet in English took between 10 and 20 minutes. The questions were specifically about taking a sustainable approach, facing obstacles, and enjoying the gains. Records of the interviews were made and then translated into English to ease analysis.

Table 4: Aspects and details of the interviews

<b>Aspect</b>	<b>Details</b>
<b>Number of Interviews</b>	<b>10</b>
<b>Interviewees</b>	<b>Founders, CEOs, Sustainability Managers, Consultants, and Investors.</b>
<b>Selection of Interviewees</b>	<b>Purposive sampling to ensure interviewees had significant experience/expertise in sustainability.</b>
<b>Language of Interviews</b>	<b>English</b>
<b>Interview Question Design</b>	<b>It was based on the adoption of sustainable practices, challenges faced, and benefits observed.</b>
<b>Timing of Interviews</b>	<b>March-April</b>
<b>Interview Places</b>	<b>Whatsapp,Zoom,Google meets</b>
<b>Duration of Interviews</b>	<b>Each of the interview was for 10-20 minutes</b>
<b>Recording and Transcription</b>	<b>Interviews were recorded with participant consent and transcribed into english for analysis.</b>

## Research Design Overview

A diagram below indicates the general approach to research design used by this study:

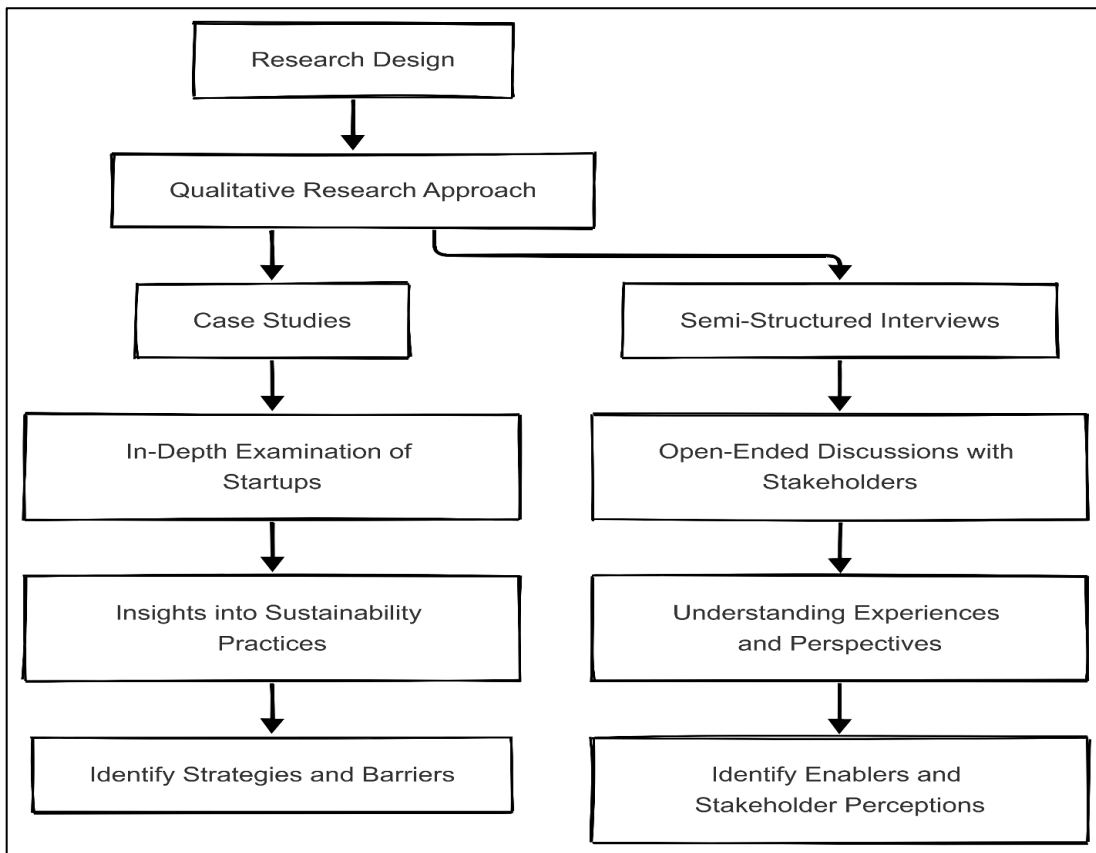


Figure 1: Research Design

Using case studies and semi-structured interviews, the chapter takes a qualitative approach to learning about sustainable entrepreneurship in startups. Combining these approaches, the research will systematically examine how startups apply sustainable practices and identify key research questions such as implementation, barriers, enablers, and stakeholder perspectives. This methodology makes it easy for the researcher to derive relevant insights concerning the interrelations inherent in sustainable entrepreneurship in the emerging market.

## 3.2 Tools Used

The research did not necessitate a huge amount of specific software and tools because it involved more of a literature review. Nevertheless, AI tools such as Grammarly have been utilized for better

linguistic results, and ChatGPT has been used for checking facts and data and for fast communication with relevant published research documents.

### 3.3 Data Collection Methods

This part explains the strategies employed in this research to collect data, with case studies serving as primary methods of collecting qualitative information on sustainable entrepreneurship in the context of startups, while semi-structured interviews act as secondary means to retrieve qualitative data.

#### 3.3.1 Case Studies

Case studies are the primary source of information through which readers can closely examine the innovative strategies startups use to adopt sustainable practices. The readers, therefore, have a wide angle of vision regarding the unique sustainability initiatives implemented in each of the organizations and the challenges faced.

##### A. Selection Criteria

Table 5: Startups were selected based on the following criteria:

Criteria	Description
Industry	Startups must operate within emerging industries, particularly those focused on sustainability, such as renewable energy, waste management, and sustainable agriculture.
Age	Startups must be relatively new, typically founded within the last five years, to capture insights from their early experiences with sustainability.
Sustainability Focus	Startups must demonstrate a commitment to sustainability as part of their core business strategy, including practices that reduce environmental impact or promote social equity.

The selected startups correspond to the scope of the research and provide essential information about sustainability methods in developing areas.

##### B. Sample Size

The research included three distinct case studies that reflected the wide variety of sectors in emerging industries. Business strategy management, environmental initiatives, and outcomes were all covered comprehensively in the three case studies. The selected startups include:

Startup A (EcoEnergy Solutions): Focused on renewable energy solutions.

Startup B (WasteWise): Engaged in waste management and recycling initiatives.

Startup C (GreenGrow): Concentrated on sustainable agriculture practices.

The understanding of how different startups embrace the concept of sustainability is thoroughly achieved from these cases, allowing cross-sector comparisons.

### 3.3.2 Structure of the Interview

With the help of semi-structured interviews, stakeholders and founders narrated their experiences and learning's about adopting sustainable practices in their startups. Through participating in this approach, participants will have opportunities to participate in reflective sharing of their experiences in terms of sustainability issues.

#### A. Participant Selection

We selected representatives from various territories in the startup that had a focus on sustainability and its related knowledge base:

Table 6: Participant selection

Role	Description
Founders	Startup founders who have been involved in decision-making related to sustainability can provide insights into the company's strategic direction.
Key Stakeholders	Individuals with expertise in sustainability practices, such as sustainability managers, external consultants, or industry experts who can offer perspectives on sustainability initiatives.

By choosing this method, the research is guaranteed to get acquiescent subjects, who are well acquainted with the particular area.

#### B. Overview of Participants

The study included ten semi-structured interviews with founders and key stakeholders who operated within the selected startups.

Table 7: Summarizes participant demographics

Participant	Role	Startup Name	Industry Sector	Years in Role
P1	Founder	EcoEnergy Solutions	Renewable Energy	4
P2	CEO	WasteWise	Waste Management	3
P3	Sustainability Manager	GreenGrow	Sustainable Agriculture	2
P4	Co-Founder	EcoEnergy Solutions	Renewable Energy	4
P5	Marketing Director	WasteWise	Waste Management	3
P6	Operations Manager	GreenGrow	Sustainable Agriculture	2
P7	Investor	EcoEnergy Solutions	Renewable Energy	5
P8	Consultant	WasteWise	Waste Management	3
P9	Co-Founder	GreenGrow	Sustainable Agriculture	2
P10	Business Development	EcoEnergy Solutions	Renewable Energy	4

This diverse group of participants provided a wealth of insights into how their respective startups have approached sustainability.

### C. Interview Protocol

We developed a semi-structured interview guide to keep a consistent structure for our conversations while allowing interested parties to focus on major issues in-depth. Moreover, the key questions addressed during the interviews were:

Table 8: Interview protocol

Interview Area	Key Questions
Background Information	Can you tell me about your role in the startup? What is your professional background?
Sustainability Strategies	What strategies has your startup implemented regarding sustainability?
Challenges Faced	What challenges have you faced when trying to integrate sustainability into your operations?
Perceived Benefits	What benefits have you observed from adopting sustainable practices?
Stakeholder Engagement	How do you engage stakeholders regarding your sustainability initiatives?

Participants participated in interviews that were typically in the range of 10 – 20 minutes. We used WhatsApp, Zoom, and Google Meet for video conferencing to ensure accessibility irrespective of place and time. By giving this flexibility, a larger population of participants could be reached, and therefore, enlivened the properties represented in the interviews.

### 3.3.3 Questionnaire

As well as conducting interviews, a questionnaire was created to maximize the qualitative results gathered from case studies and semi-structured interviews. The questionnaire aimed to derive statistical information on critical factors towards sustainable entrepreneurship among emerging businesses. The following important factors were surveyed in the questionnaire among respondents:

Table 9: The key variables included in the questionnaire

Variable	Description
Company Age	The number of years since the company's founding (in years).
Industry Sector	The primary industry sector in which the startup operates (e.g., renewable energy, waste management).
Sustainability Practices	Specific sustainable practices the startup adopts (e.g., use of renewable materials, waste reduction strategies).
Financial Performance	Qualitative revenue growth assessment over the past three years (e.g., increased, stable, decreased).
Market Positioning	Perception of market competitiveness compared to peers (e.g., leading, competitive, struggling).
Stakeholder Engagement Level	Degree of stakeholder engagement in sustainability initiatives (e.g., high, moderate, low).

After the interviews, the questionnaire was conducted online with respondents to get more quantitative data to complement the qualitative findings.

This part of the study reports how case studies and semi-structured interviews became central tools for obtaining qualitative insights on sustainable entrepreneurship within startups. The practical application of both methods in the research improves our understanding of how sustainability affects startup business models, addressing critical issues regarding strategy, challenges, drivers, and stakeholders' attitudes.

This research focuses on a selective case study and identification of participants to ensure valuable and insightful data sought to support informed conclusions about sustainable entrepreneurship as a rapidly developing economic trend.

### **3.4 Data Analysis Techniques**

Here, the main analytical methods applied in the present study are presented; thematic and case study analysis are key methods for interpreting the qualitative data obtained from interviews and case studies. Through the use of these techniques, systematic, meaningful insights that can address the fundamental issues of sustainable entrepreneurship in startup businesses can be drawn.

#### **3.4.1 Thematic Analysis**

This technique is essential for researching qualitative data because it is extensively used in educational research, as it was documented by Braun and Clarke (2006). Using this systematic strategy, researchers gather significant information from interviews and case studies, making it easier to have a more focused and learned position on hard issues. Through collect-theory, researchers can fully explore the antecedents, motivations to engage, and overall impact of participants in the startup industry.

##### **A. Steps in Thematic Analysis**

Thematic analysis is limited to a chain of crucial actions to ensure the thorough and elaborate analysis of qualitative data:

1. **Becoming Familiar with the Data:** First, the researchers read the transcripts repeatedly to familiarize themselves with the participants' experiences. The first step is of utmost importance for the comprehensibility of the data and makes the possibility of identifying key themes available. This is the first stage, in which the observation of the design problem could be made, and the creation of preliminary concepts and perspectives as to which data elements could be relevant could be made.
2. **Coding:** Codes represent keywords and concepts associated with the sustainability practices, implementation problems, and promising results of applying sustainability. During the analysis, the investigators notice fragments of text continuously and apply relevant code (or labels) to connected text segments. The investigators can code by hand rather than using technologies such as NVivo or Atlas to facilitate their analysis.
3. **Theme Development:** Codes developed are classified by themes to show distinguishing patterns that help answer the research questions. Then the researchers categorize the codes at this stage by identifying recurrent themes and patterns, grouping the information into larger

categories. To demonstrate, bottlenecks relating to the finances can be consolidated under the heading “Barriers to Adoption” together with “Advantages in Terms of Customer Loyalty,” which covers the general umbrella for codes addressing customer retention.

4. **Reviewing Themes:** Having identified primary themes, the researchers bring them to their maximum level and confirm them in the gathered information. The researcher analyzes the first set of collected data and tests whether the emerging themes reflect the participants' experiences. Researchers improve their themes by harmonizing similar themes, splitting some, or nullifying irrelevant themes to get a clearer perspective.
5. **Defining and Naming Themes:** Giving clear-cut descriptions of each theme improves the reporting process's clarity. Summarize each theme's basic elements and discuss the latter's closeness to the research's overall goals. Each scholar clearly expresses his/her themes in a succinct and straightforward language, promoting the exchange of research findings.

Table 10: Theme name and Description

Theme Name	Description
<b>Barriers to Adoption</b>	<b>Challenges startups face in integrating sustainability practices include financial constraints and regulatory complexities.</b>
<b>Benefits of Sustainability</b>	<b>Positive outcomes resulting from sustainable practices such as enhanced brand loyalty and customer satisfaction.</b>
<b>Stakeholder Engagement</b>	<b>Strategies employed by startups to involve stakeholders in sustainability initiatives and their impact on business outcomes.</b>

### 3.4.2 Case Study Analysis

The analysis of case studies involves examination of data from the profile of every startup, particularly on their approaches towards sustainability, challenges they have had, and how they engage stakeholders. By this analysis, similarities and differences of case studies are made clear, thus contributing to the better explication of how startups manage sustainability in practice.

#### A. Case Study Framework

Various fundamental elements make up the structured area that guides case study analysis as follows:

1. **Startup Profiles:** For every company profile, we describe its major characteristics, such as specialty, prominent historical standards, purpose, and special environmental approaches. We also see through these profiles that both the young and the mature businesses have integrated the key sustainable practices into their workplaces.
2. **Sustainability Strategies:** The study analyses the unique sustainability projects every startup adopts, i.e., creative products, working methods, supply networks, and interaction with local communities. Mapping of these strategies is done to explain the way startups will position their operations to achieve their sustainability targets.
3. **Challenges Faced:** The need to identify the top barriers to integrating sustainability is brought by understanding the challenges involved when it is introduced. The analysis of interview transcripts and case study observation reflects difficulties that include financial resource limitations, regulatory demands, and strong competition from other businesses.
4. **Stakeholder Engagement Efforts:** The case study explores how startups relate to stakeholders during their sustainability efforts. This analysis examines how startups create alliances with other entities, participate in local community efforts, and communicate with customers and investors about their sustainability goals.

## **B. Comparative Insights**

The convergence of findings from several case studies allows research to bring comparative views on the overarching themes, challenges, and effective solutions adopted by startups in different sectors. This comparative analysis makes the study's overall findings more informed by demonstrating how different contexts make sustainability practices adoptable. In this research, we describe the analytical methods applied, predominantly thematic and case study analysis, to examine the qualitative effects of interview and case study applications. Through systematic thematic analysis, researchers can comprehensively analyze participant observation while identifying key themes relevant to sustainable entrepreneurship.

Researchers can learn from analyzing cases of startups, the way startups put sustainable practices into action, and the challenges they face. Using these analysis tools, researchers can study startups' behavior as they implement sustainability and identify the critical drivers behind such decisions.

Table 11: Steps in thematic analysis

Step	Description
<b>Familiarization with Data</b>	Reading transcripts multiple times to understand participants' experiences.
<b>Coding</b>	Identifying key phrases or concepts related to sustainability practices, challenges, and benefits.
<b>Theme Development</b>	Organizing codes into broader themes captures significant insights related to research questions.
<b>Reviewing Themes</b>	Ensuring identified themes accurately represent the data through revisions as needed.
<b>Defining and Naming Themes</b>	Developing clear definitions for each theme facilitates reporting findings effectively.

Through providing an analytic overview using an elaborated summary of analytic approaches, this overview facilitates the interpretation of the research's qualitative data and maintains methodological rigor throughout the study.

### 3.5 Ethical Considerations

The ethical dimensions evoked extensive discussion during the research:

1. **Informed Consent:** Upon being informed of the research purposes and procedures to be followed during the study, the participants signed and returned the consent form and the research plan.
2. **Confidentiality:** The data of every participant was anonymized and kept private to protect participants' identities with their corresponding privacy, and recordings were also protected.
3. **Voluntary Participation:** Neighbors involved in the study would be allowed to leave at any time without paying any penalties.
4. **Research Integrity:** The researchers strictly followed ethical protocols created by their academic libraries to ensure transparency and integrity when sharing their results.

### 3.6 Limitations of the Study

This methodology aims to highlight sustainable entrepreneurship based on the analysis of startup initiatives. Some of the limitations of this framework should be realized in the startup ecosystem:

1. **Sample Size:** Because of the small sample size, the conclusions cannot be generalized to startups in other early industries.
2. **Subjectivity:** Qualitative research is inherently subjective; how researchers view data is reflected through their perspectives.
3. **Contextual Factors:** The results presented apply to startups operating in specific geographical or cultural circumstances.
4. **Anonymisation:** Due to the need to protect private information, the names of companies and their exact activities are not mentioned. This means readers cannot quickly find the original authors.

### 3.7 Anonymity and Use of Comparable Public Case Studies

All the startups took part under pseudonyms to keep their information confidential and their data protected. This allowed the company to protect its data and ensure everyone in the negotiation could discuss freely. For startups, disclosing company strategies could result in them losing an edge over competitors. Anonymisation is essential since it fits with ethical guidelines and increases the trust of study participants. To improve the research's impact, it draws parallels to cases that the public is aware of.

- **EcoEnergy Solutions** shares attributes with *SOLshare* and *Grameen Shakti*, which are noted for solar microgrid solutions in Bangladesh.
- **WasteWise** is similar to *Waste Concern* and is recognised for its community-based recycling programs.
- **GreenGrow** is similar to *GreenPath Food* and *AgroTech*, which focuses on organic farming and ethical sourcing.

It has some important purposes:

- **Privacy and Advantage in the Market:** Many startups compete with large companies. Uncovering how things operate within the armed forces may make them less effective.
- **Anonymity:** Remaining anonymous, participants were free to share their views without concern for others learning about them. Whenever the data gathered is kept anonymous, it complies with the institution's principles for the use of confidential data.

Though they do not precisely match, they give some insight into how practices in Bangladesh are part of the growing trend toward sustainability in entrepreneurship.

## 4 Results

This chapter presents a review of research data on sustainable entrepreneurship in emerging industrial startups. The research analyses qualitative information obtained from case studies and semi-structured interviews. The findings show how startups implement sustainable practices and what affects competitiveness and growth, and describe barriers during integration and enablers for sustainable practices and stakeholder views on sustainability. The data findings appear in tables and figures along with graphical elements, improving comprehension and showing the data in an understandable manner. Simple graphics and diagrams help the audience better understand the significant discovery points from the analysis phase.

### 4.1 Findings Related to Research Questions

#### 4.1.1 Adoption of Sustainable Practices by Startups

With a vision for the start of an industrial revolution, all three startups present innovative solutions to integrate sustainability into their business models. The analysis resulted in the following themes:

- **Eco-Friendly Product Development**

Designing products with minimal environmental impact was the prominent focus of all startups. For example, Eco Energy Solutions aims to develop a solar energy system that minimizes the dependency on fossil fuels. Waste Wise utilizes advanced recycling technology to turn waste into reusable material. Green Grow's organic farming techniques eschew the use of dangerous pesticides and fertilizers.

Table 12: Summarizes the eco-friendly product strategies adopted by each startup

Startup Name	Eco-Friendly Product Strategy
EcoEnergy Solutions	Solar energy systems, installation and maintenance services
WasteWise	Advanced recycling technologies for waste conversion
GreenGrow	Organic farming practices, biodegradable packaging for produce

- **Sustainable Supply Chain Management**

All case studies identified sustainable supply chain management as a critical strategy. The idea was to ensure that each startup engaged suppliers who had sustainability as a priority. For example, GreenGrow partners with local organic farmers to ensure that their supply chain is conducting their business in an environmentally friendly way.

- **Stakeholder Engagement**

All startups engaged stakeholders to promote sustainability initiatives. Local communities are actively involved in WasteWise programs involving recycling and waste reduction education campaigns. Consumers can also attend one of EcoEnergy Solutions' workshops that educate consumers on the benefits of renewable energy.

#### 4.1.2 Sustainability Practices and Their Impact on Competitiveness and Growth

The analysis reveals that considering sustainability practices has a positive effect on the competitiveness and growth of all three startups.

- **Enhanced Brand Reputation**

As a notable benefit from adopting sustainable practices by the startups, all of them documented improved brand reputation. Participants also found that the consumers themselves are seeking out environmentally responsible brands.

Table 13: Environmental responsibility

Startup Name	Impact on Brand Reputation
EcoEnergy Solutions	Increased customer trust and loyalty
WasteWise	Positive media coverage and community support
GreenGrow	Recognition as a leader in sustainable agriculture

- **Market Differentiation**

Each startup used sustainability to differentiate itself from competitors in its market. During their growth and marketing strategies, EcoEnergy Solutions was seen as a sustainable option in the renewable energy sector, whereas WasteWise found an opportunity to work in the waste management sector and promote Circular Economy principles.

- **Revenue Growth**

Revenue growth, which is credited to the sustainability initiatives of all startups, has been collected in all phases. For example, GreenGrow noted that it has been seeing a 30% leap in sales over the past year because more consumers are asking for organic produce.

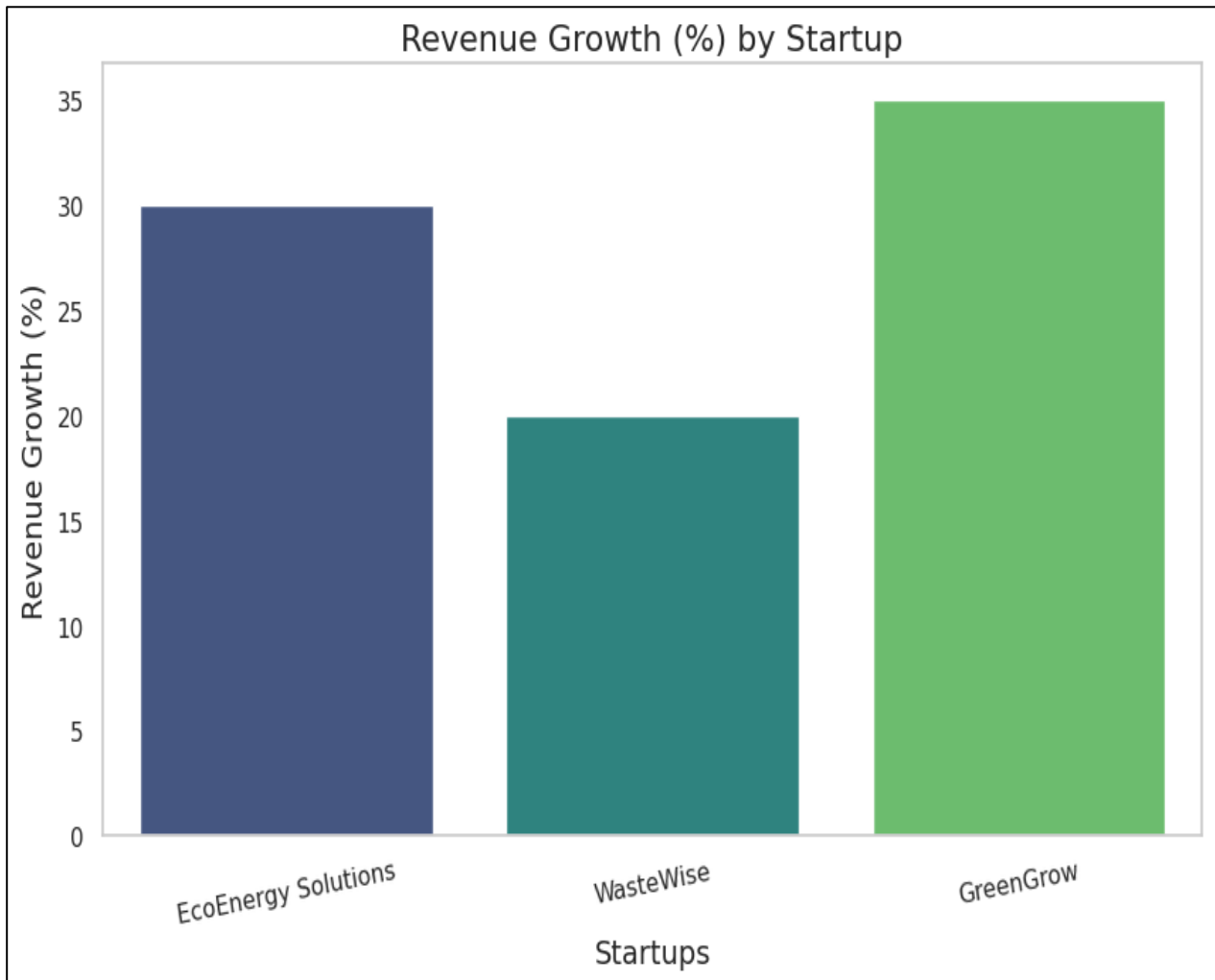


Figure 2: Revenue Growth (%) by startup

#### 4.1.3 Barriers Faced in Integrating Sustainability

Although successful, participants encountered the following barriers to the integration of sustainability practices:

- **Limited Financial Resources**

All in all, being a Startup, we were limited by the resources we could allocate towards the implementation of sustainable technologies. Initial investment for sustainable practices, participants noticed, was often financially constrained and thus slowed the implementation of some practices.

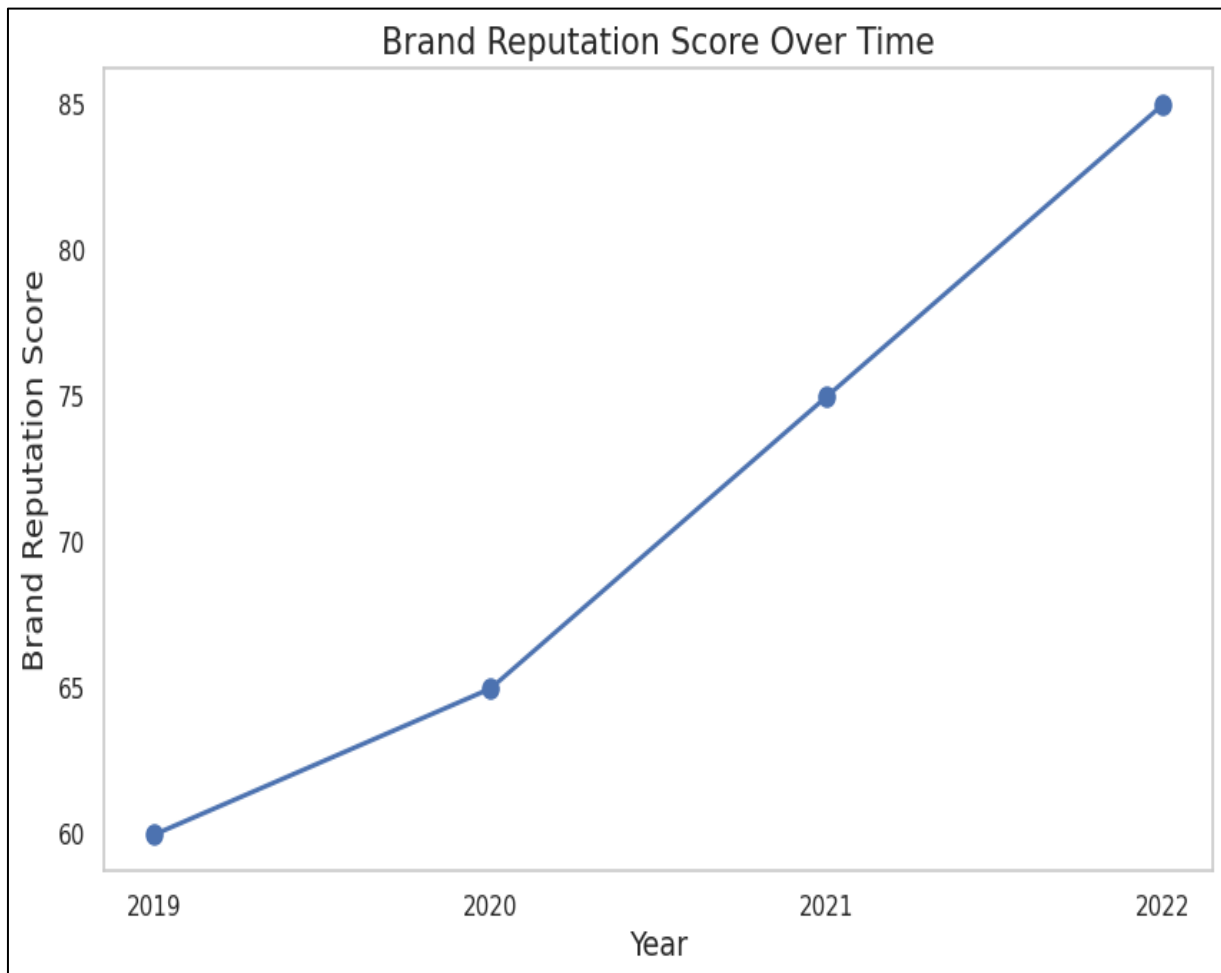


Figure 3: Brand Reputation

- **Regulatory Complexities**

Participants also identified an obstacle in navigating the regulatory requirements regarding sustainability. Startups often did not have the additional expertise needed to comply with environmental regulations.

#### 4.1.4 Enablers Facilitating Sustainable Practices

Several enablers that enabled the adoption of sustainability practices by startups were subsequently found.

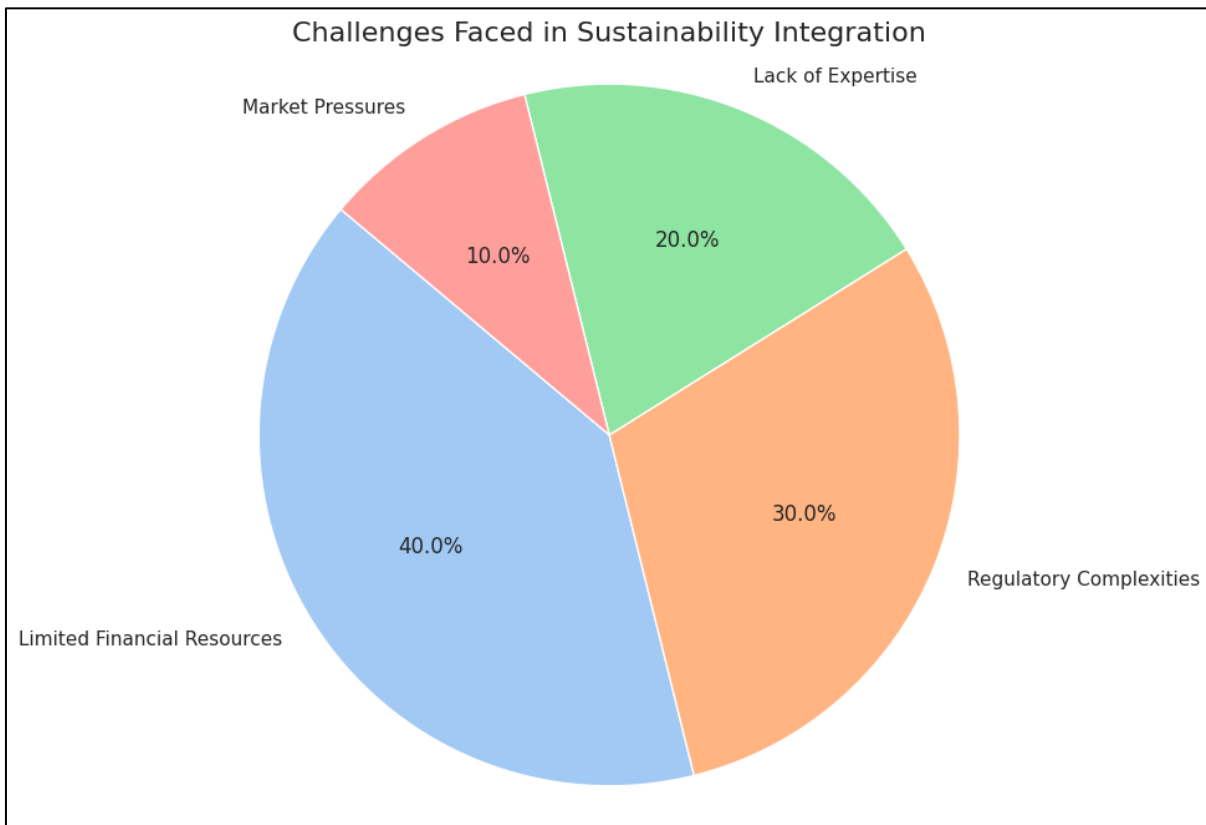


Figure 4: Challenges faced in sustainability integration

- **Leadership Commitment**

Every startup team mentioned that top management support plays a vital role in driving sustainability practices. Leaders in top positions set industry leaders on the path towards sustainability programs and built sustainable company cultures.

- **Access to Networks and Resources**

Top management team endorsement drives successful sustainability initiatives. Participation linked to networks and resources made sustainability work easier for these startups. The company built valuable knowledge by teaming up with industry groups and working with outside groups.

#### 4.1.5 Stakeholders' perceptions

Regarding Sustainability, participating companies saw different levels of importance in sustainability among their customer base, suppliers, and investment groups.

**Customers :** Customers now put a premium on brands that show they care about the environment. Customers supported eco-friendly business projects through excellent feedback.

**Investors:** Investors were more interested in funding businesses with sustainable business plans as they realized how profitable these endeavors would be in the long run.

## 4.2 Summary of Interview Insights

All the key insights from the semi-structured interviews can be found in the table below. It explains the duties of every team member, the sustainability techniques their startups employ, the issues encountered, the benefits seen so far, how they involve stakeholders, and helpful tips for future business people. The goal of this summary is to highlight similarities between the cases and what supports sustainable entrepreneurship.

### Wastewise

Table 14: Wastewise Interview summary

Interviewee Role	Sustainability Strategy	Key Challenges	Benefits Observed	Stakeholder Engagement Methods	Advice to Entrepreneurs
<b>CEO, WasteWise</b>	Advanced recycling tech, waste education programs	Complex regulations, financing, public behavior	Media coverage, loyal clients, funding support	Cleanups, town halls, school programs	Align business with community; use data to prove impact
<b>Marketing Director, WasteWise</b>	Digital storytelling, awareness campaigns, community engagement	Skepticism, low public attention, budget limits	Strong brand, referrals, online growth	Contests, reports, co-branded campaigns	Use real stories, measure outcomes, involve your audience
<b>Consultant, WasteWise</b>	Recycling upgrades, stakeholder forums, school waste training	Permits, behavior change, tech funding	Better recycling rates, recognition, team alignment	Local forums, feedback loops, city meetings	Collaborate early, document clearly, build green culture

WasteWise achieves major sustainability by using modern solutions, involving communities, telling stories and working hard to fix challenges related to laws, finances and habits, while remaining trusted by all participants and demonstrating significant results

## Eco Energy Solutions

Table 15: Eco Energy Solutions Interview summary

<b>Interviewee Role</b>	<b>Sustainability Strategy</b>	<b>Key Challenges</b>	<b>Benefits Observed</b>	<b>Stakeholder Engagement Methods</b>	<b>Advice to Entrepreneurs</b>
<b>Founder, EcoEnergy Solutions</b>	Solar energy systems; community education	High tech costs, rural infrastructure, regulatory delays	Customer trust, investor interest, media coverage	Workshops, newsletters, social media	Start with sustainability in your mission; collaborate and be patient
<b>Co-Founder, EcoEnergy Solutions</b>	Green supply chain, clean energy events, student scholarships	Local sourcing, training staff, pandemic supply chain issues	New contracts, team morale, CO <sub>2</sub> savings	Energy Day, innovation workshops, city partnerships	Balance mission and scale; invest in tech and community
<b>Business Dev. Manager, EcoEnergy</b>	Bundling solar + EV, clean tech alliances, sustainable expansion	Client ROI concerns, tech changes, budget tradeoffs	Strong partnerships, premium clients, growth visibility	Data-driven pitches, site visits, newsletters	Know your market, use metrics, expand carefully with integrity
<b>Investor, EcoEnergy Solutions</b>	Sustainable core product, green sourcing, stakeholder transparency	Balancing cost vs mission, regulation risks	Brand strength, reliable growth, co-investment	Reports, strategy sessions, event invitations	Sustainability was essential to investment decision

While it faces obstacles such as cost, poor infrastructure, and delays in rules, EcoEnergy Solutions encourages sustainability by installing solar panels, creating environmentally-friendly supply chains, and holding workshops for the community. Workshops, events, and detailed reports from their stakeholders have earned their trust, grabbed the attention of investors, and fostered both new contracts and reductions in CO<sub>2</sub>. Leaders and founders tell entrepreneurs to start by deciding on a mission, buy the best technology, and focus on data to expand rightly and with values.

## Greengrow

Table 16: GreenGrow Interview summary

Interviewee Role	Sustainability Strategy	Key Challenges	Benefits Observed	Stakeholder Engagement Methods	Advice to Entrepreneurs
<b>Sustainability Manager, GreenGrow</b>	Organic farming, biodegradable packaging, water conservation	Expensive inputs, variable supply, educating market	Loyal customers, healthier soil, stronger partnerships	Farm tours, feedback, staff meetings	Scale slowly with strong values; track your impact
<b>Operations Manager, GreenGrow</b>	Composting, eco-packaging, efficient irrigation	Cost of inputs, weather, certification paperwork	Cost savings, premium pricing, partner trust	Farmer training, staff input, supply feedback	Plan ahead, involve teams, use grants and track sustainability
<b>Co-Founder, GreenGrow</b>	Local sourcing, compost programs, community workshops	Farmer hesitation, customer education, logistics	Loyal base, healthy soil, business credibility	Shared governance, open communication, NGO partnerships	Build trust with stakeholders; track and communicate results

GreenGrow succeeds sustainably by using organic methods, engaging the community and speaking transparently, helping overcome challenges related to costly input and making people understand the idea while earning trust, loyalty, and respect for the environment.

We have analyzed the full results from our research through case studies and interviews with startup founders and industry members. Studies show emerging industry startups integrate sustainability into their business operations using different methods while experiencing better competition and development. Effective sustainable practices depend on strong leadership support and professional connections despite running into money problems and government rules at work. Companies succeed at sustainability through perceptions of their various interested parties when they involve these parties in their sustainability initiatives.

## 5 Discussion

### 5.1 Answers to the Research Questions

The purpose of this study was to examine the sustainable strategies implemented by startups in developing areas during the initial stages of their venture and how those strategies have contributed to business development and competitive success. In this goal, the research focused on addressing six critical issues that guided the investigation. The results from conducted case studies and interviews shed light on important aspects of sustainable entrepreneurship in startups, providing valuable information regarding the way these companies approach sustainability.

The summary of the answers to the key research questions, based on the findings of this study, is given below:

#### **Main Question: What strategies do startups employ to adopt sustainable practices from inception?**

Among the top strategies that emerged from the research, there was a focus on the development of innovative products that will work to minimise effects on the environment. Each startup revealed the willingness to develop products that would not only address the needs of the market but would also help as well to contribute to the sustainability goals. For example, EcoEnergy Solutions concentrated on the solar energy systems that diminish the usage of fossil fuels, while WasteWise used advanced recycling technologies to convert waste into reusable materials.

These results accede with other findings that suggest innovation plays an important role in the process of sustainable enterprise (Dean & McMullen, 2007; Bocken et al., 2014). Startups can afford to experiment with new ideas and technologies, and this way, they can come up with unique solutions to the social and environmental problems the world faces. This flexibility is especially important in the fast-moving markets where the preference of the consumer is increasingly shifting towards sustainable services.

Moreover, another effective strategy that was used by startups was sustainable supply chain management. Incorporation of sustainability into the supply chains was a common theme in all the

case studies. For instance, GreenGrow's collaborations with the local organic farmers meant their supply chain integrated sustainable agricultural practices.

This concept appeals to the literature that highlights the significance of supply chain sustainability (Kumar & Singh, 2018; Dangelico & Pujari, 2010). Collaborating with suppliers who are keen on sustainability, startups can improve their overall sustainability performance as well as gain credibility from consumers. Such practices do not only enhance operational efficiency but also encourage collaborative partnership, which can bring forward innovative solutions through the supply chain.

In addition, stakeholder engagement strategy became one of the most important tools for advocating sustainability initiatives among startups. Involving stakeholders (customers, employees, suppliers, and local communities) enabled startups to plan out their sustainability movements according to the stakeholders' expectations and needs. For example, WasteWise engaged local communities and employed them on its recycling programs and educational campaigns of waste reduction.

Scholars suggest that it is critical to engage stakeholders for successful sustainability programmes (Freeman et al., 2010; Pelozo & Papania, 2008). By establishing relations with stakeholders, startups can improve their image and consumer loyalty for those who are keen on ethical practices. In addition, stakeholder engagement can promote networks of sharing knowledge and cooperation with the potential to enhance sustainability outcomes.

### **SQ1: How does adopting sustainability practices influence the competitiveness of startups?**

It was found out from the analysis that making sustainability practices an aspect of start-up business was greatly effective in improving the reputation of the brand among the three start-ups. According to their participants, the increased trust and loyalty of customers is a direct effect of their commitment to sustainability. Such a finding is in harmony with the current literature that brands known to have sustainable practices tend to see the benefit in terms of improvements in customer perceptions (Eccles et al., 2014; Nielsen, 2015).

Market competition especially in markets where consumers can have access to enormous information concerning companies' practices is where brand reputation is highly valuable.

Startups that do a good job in publicizing their sustainability initiatives can create a niche for themselves and appeal to the increasingly environment-conscious consumers.

Moreover, sustainability practices enabled each startup to be unique from other competitors in its market. For instance EcoEnergy Solutions established itself as a leader in renewable energy through stressing on its commitment towards sustainable technologies. Likewise, WasteWise established a niche in waste management through the promotion of principles of circular economy.

The differentiation is consistent with findings by Porter and Kramer (2011) that firms can create shared value when their business strategies are tuned to the needs of the society. By being on the front row in sustainability, startups can not only take market shares but add to the society in achieving objectives such as conservation of the environment and social equity.

Furthermore, revenue growth in all startups resulted from their sustainability initiatives. GreenGrow has, for example, seen an increase in sales by 30% in the previous year thanks to the increased consumer needs for organic produce. This led to the financial viability of sustainable entrepreneurship and defeats the traditional idea that sustainability has to cost (Winston et al., 2018).

It has been confirmed by research that consumers are becoming more inclined to pay premium for environmentally friendly or socially responsible products (Nielsen, 2015). Start-ups that will take advantage of this trend can succeed financially and in terms of positive environmental outcomes.

### **SQ2: What specific sustainable practices are most beneficial for startup growth?**

Activities within the sphere of sustainable sourcing, creation of lucrative eco-products, as well as acceptance of the concept of circular economy, were suggested as crucial practices for startup development. Primary advantages of these initiatives included an advantage in operational performance and the enjoyment of a market of a growing number of sustainably minded consumers, which should fuel long-term expansion.

### **SQ3: What barriers do startups encounter when integrating sustainability into their business models?**

Though there have been many successes among the startups, participants reported a lack of financial resources as a major barrier to aspects of implementing sustainability into operations. Many of such startups are working under tight budgets and may focus more on the immediate financial viability rather than saving for long term sustainability goals (Schaltegger & Wagner, 2011). This lack of finances is most times the hinderance to their investing in sustainable technologies or practices that have high up front costs.

This finding goes in line with other researchers identifying the aspect of financial restriction as a common problem among startups (Kuckertz & Wagner, 2010). To overcome this barrier, in order to provide the capital required, the startups may need to look for other sources of funding or grants set to cater for sustainable initiatives.

Additionally, participants also reported that the complexities of regulation in regards to sustainability were another barrier. Adhering to environmental regulations usually entails not just more expertise but funds, which may not be available to most startups (Hockerts & Wüstenhagen, 2010). The problem with understanding and complying with the regulatory requirements can prevent startups from embracing bold sustainability objectives.

These findings imply that has a good reason why policymakers should consider introducing supportive regulatory systems that will make it easy for startups to comply with ease but also promote sustainability. Setting clear guidelines and resources may help reduce the burden on new ventures that are looking to incorporate sustainability in their operations.

#### **SQ4: How do stakeholders perceive the importance of sustainability to startup success?**

The participants' expressed that the customers' perceptions as to sustainability are very important in determining their business strategies. The concern for the environment has become increasingly important for the customer and they would rather buy the product from brands that are environmentally responsible.

This agrees with research conducted on the behaviour of consumers showing that socially responsible brands tend to be highly loyal to their consumers (Harrison, Goodyear, Ivori, & Sundararajan, 2010). Well-communicating startups on their sustainability efforts can build relationships with customers and their loyalty towards the brands.

Moreover, There was also an emerging interest on the part of the investors in investing in startups, which had sustainable business models. The participants observed that investors are now seeing how investments in ventures that espouse sustainability values is sustainable in the long-term. This trend highlights the growing weight of environmental, social and governance (ESG) factors in the processes of making investment decisions (Eccles et al., 2014).

**SQ5: What recommendations can be made for startups looking to enhance their sustainability efforts?**

In order to see long-term success, startups should make sustainability a key decision at the start of their business. By integrating sustainability into their benefits, contacting stakeholders when starting, and using green finance to address these aspects, startups can attain this goal. Also, the startups can benefit from collaboration with the sustainability networks and create training programs to increase their employee' expertise.

## **5.2 Managerial Implications**

This research provides essential implications for these managers and entrepreneurs who are interested in the embedding of sustainability in their strategies. The findings imply the fact that leading sustainability can provide organizations with a competitive advantage that his lasting in the long run. Managers also need to accept that sustainability is a part of business success and not a topic treated as a trend or a bonus. Integrating sustainability at the core of startup operations allows them to differentiate and resonate with a developing audience of consumers, investors, and stakeholders concerned about environmental and social issues.

Leading in the business world today, one must understand how crucial brand reputation is within the context of sustainability. For the startups under study, by taking on sustainable practices in the early stages, they were able to align their commitment to eco-friendliness with an essential competitive edge in the marketplace. By the end of the day, this strategy enabled them to win the trust and commitment of the forward-thinking customers who are ready to support environmentally and socially responsible companies.

Sustainability, therefore, not only reinforces brand reputation but also offers startups an opportunity to build meaningful stakeholder relationships with key stakeholders such as investors and suppliers. Stakeholder interaction is crucial in building a sustainable business model because it

ensures that its sustainability activities resonate with the interests of its leading partners. Activity holders need effective communication links with customers, employees, and external partners to inculcate sustainability as the central organizational precept.

In addition, the study emphasizes the importance of green finance in enabling startups to switch to sustainable business models. The lack of funds tends to restrain the application of environmentally friendly technologies and processes by startups. As a result, the search for funding types such as impact investing and grants for sustainability may constitute an important strategy of the managers for the funding of long-term sustainable initiatives.

### **5.3 Assessment of the Results in the Light of Earlier Literature**

The results of this study are consistent with past research into sustainable entrepreneurship, which highlights just how startups have one clear benefit when it comes to embedding sustainability into the very heart of their business plans. Schaltegger and Lüdeke-Freund (2012) state that startups are better at being able to implementing sustainability in their processes than established firms, who tend to have problems relating to legacy structures. The outcomes support the current study's finding that sustainable practices at the core of startup operations undermine competitive disparities in the expanding sector.

This research is in line with the learning by Bocken et al. (2014) that sustainability requires more than minimising environmental harm, but it also opens up new business opportunities. By sustainable implementation, these startups were also able to innovate their offering and make themselves unique in the market, thereby increasing their growth and commercial success.

Furthermore, this research presents fresh insights into the existing corpus of research. Specifically, the research calls attention to the most significant impediments encountered by startups in the integration process, such as difficulty in funding, lack of skill, and dealing with complex government regulations. Preliminary research has identified financial constraints (Schaltegger et al., 2017) as an important problem, while this research provides a more detailed perception of the challenges that start-ups face in dealing with regulatory and policy settings in emerging industries.

Furthermore, the research highlights the important role of stakeholders' engagement, extensively discussed in the research concerning sustainable entrepreneurship (Porter & Kramer, 2011). Startups are better able to align their sustainable practices with the values of their partners in the

course of interactions with investors, customers, and suppliers, which helps to promote sustainable growth.

## **5.4 Limitations**

The findings from this study about startups' sustainable ventures are helpful, but they come with a few limitations. Further, only the three case study startups were the backbone of the sample that was researched. Although this study allowed for a deep assessment of the sustainability practices in the sample, one can not be sure that the conclusions can be generalised to other startups that operate in different areas of the globe or industry segments.

Besides, the study was mainly built around the qualitative data obtained from the interviews and the case studies. While this approach generates a lot of detail, it is, by nature, subjective and can be altered by the opinions of the interviewees. Certain responses may have been biased depending on some perspectives, as an attempt to paint their organizations favorably.

The scope of the study was narrowed down to the investigation of the first stages of the implementation of sustainability in startups. Because the investigation is constrained to early stages, it does not reflect the long-term effect of sustainability on the novel development and success capability. Future scholars should examine the relationship between sustainable practices and the long-term growth and success of startups as they grow.

Because the study limited its focus to startups in certain areas of emerging industries, there may not be an accurate picture of the startup experience in other market segments. Future research has to address sustainability within other industries to provide a better insight into the adulterations and benefits startups experience while introducing sustainable practices.

## **5.5 Recommendations for Future Research**

Further research in the future may cover the critical areas that this study failed to appropriately capture and thus contribute to deepening our understanding. First, a longitudinal research approach undertaken for a meaningful period could be used to track the sustainability activities of startups and their long-term impact on business performance, market position, and competitive superiority. Such a study would help us to understand the role of sustainability in the Performance and competitiveness of startups in their evolution.

Moreover, future studies could use a quantitative framework to test the generalizability of the findings of the present work and provide more thorough insights into the correlation between sustainability and the performance of startups. Since there is a larger sample and there is more rigorous statistical analysis, researchers can establish with more accuracy how sustainability influences the progress and achievements of startups.

The future study can research the impact and effectiveness in various areas. Several regions equally have different issues and opportunities for startups to adopt sustainable practices, and a comparison of these differences can provide crucial guidance to both entrepreneurs and policymakers.

In addition, other research should be conducted to examine sustainability implementation in different industries and identify the particular hindrances and benefits present in each industry. Such research would be valuable in explaining the extent to which sustainability is embedded in different business strategies and how it impacts the growth and outcome of startups in different industries.

## **5.6 Conclusion**

The study aimed at understanding the ways through which start-ups in fast-developing industries begin using sustainable measures from the start-up, and the effect such measures have on their growth and market advantage. As the research shows, embracing sustainability is a must-have for start-ups for their growth and competitiveness. Carving sustainability as a central foundation of their business plans enables startups to win over the competition, attract eco-conscious consumers and investors, and realize potential for sustainable success.

Also, the study highlights issues such as financial inadequacies, bureaucratic issues, and a lack of skilled workforce as serious obstacles to sustainable behaviors in startups. However, startups that aim to build sustainability, at the sum of their operations, can create a competitive edge that drives their growth and impart a positive impact on the environment and society.

Important recommendations include establishing sustainability as a key part of a startup's value proposition from the off, promoting stakeholder engagement early, and utilisation of green financial tools to encourage sustainability projects. The principles of guidance provided in this

thesis are projected to be a much-needed resource for future startups, to allow them to incorporate sustainability in their businesses and contribute to a more resilient world economy.

To conclude, creating sustainable practices confers on startups the opportunity of creating value for themselves and the community. Startups can address important global problems climate change, resource exhaustion, and social inequality, by promoting innovation and the enhancement of economic, environmental, and social well-being. This work contributes to studying sustainable entrepreneurship and forms the basis for further research and implementation of this topic.

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## Appendix 1. Interview Protocol & Case Study Profile

### 1. Interview Protocol

The semi-structured interview protocol applied during the data collection phase is presented below. With this guide, there was consistency, but participants had the flexibility of expressing themselves by elaborating on certain topics.

#### Semi-Structured Interview Questions

##### 1. Background Information

- Can you tell me about your role in the startup?
- What is your professional background?

##### 2. Sustainability Strategies

- What strategies has your startup implemented regarding sustainability?
- How did you identify these strategies?

##### 3. Challenges Faced

- What difficulties did you experience when attempting to incorporate sustainability in your
- What effect have these challenges had on your business?

##### 4. Perceived Benefits

- What benefits have you observed from adopting sustainable practices?
- How have these benefits influenced your overall business performance?

##### 5. Stakeholder Engagement

- How do you engage stakeholders regarding your sustainability initiatives?
- What feedback have you received from stakeholders about your sustainability efforts?

## 2. Case Study Profiles

### Case Study 1: EcoEnergy Solutions

- Industry: Renewable Energy
- Founding Year: 2019
- Business Model: Installs solar energy systems for its residential and commercial clients.
- Sustainability Practices:
  - Shift focus to solar technology in order to reduce carbon emissions.
  - Community involvement through teaching workshops on renewable energy.

### Case Study 2: WasteWise

- Industry: Waste Management
- Founding Year: 2020
- Business Model: Provides unique recycling solutions and waste management services.
- Sustainability Practices:
  - Applies innovative recycling technologies to convert waste to reusable materials.
  - Works with local municipalities to promote recycling education.

### Case Study 3: GreenGrow

- Industry: Sustainable Agriculture
- Founding Year: 2021
- Business Model: Produces organic fruits and vegetables using sustainable farming practices.
- Sustainability Practices:
  - Implements organic farming techniques that avoid harmful pesticides.
  - Uses biodegradable packaging for products.

## Appendix 2. Data Table

### Tables

Table 1: Summary of Startup Strategies

Startup Name	Eco-Friendly Product Strategy
EcoEnergy Solutions	Solar energy systems; installation and maintenance services
WasteWise	Advanced recycling technologies for waste conversion
GreenGrow	Organic farming practices; biodegradable packaging for produce

Table 2: Impact on Brand Reputation

Startup Name	Impact on Brand Reputation
<b>EcoEnergy Solutions</b>	Increased customer trust and loyalty
<b>WasteWise</b>	Positive media coverage and community support
<b>GreenGrow</b>	Recognition as a leader in sustainable agriculture

## Questionnaire

The participants were asked to fill out the following questionnaire after interviews, to gather quantitative data in connection with the sustainable practices of startups

Question No.	Questionnaire Item	Options/Response Type
1	Company Age (in years):	Open-ended
2	Industry Sector (e.g., Renewable Energy, Waste Management, Sustainable Agriculture):	Open-ended
3	Sustainability Practices Adopted  (Select all that apply):	<ul style="list-style-type: none"> <li>• Eco-friendly products</li> <li>• Sustainable supply chain management</li> <li>• Stakeholder engagement initiatives</li> </ul>
4	Financial Performance (Qualitative assessment of revenue growth over the past three years):	<ul style="list-style-type: none"> <li>• Increased</li> <li>• Stable</li> <li>• Decreased</li> </ul>
5	Market Positioning (How would you describe your market competitiveness?):	<ul style="list-style-type: none"> <li>• Leading</li> <li>• Competitive</li> <li>• Struggling</li> </ul>
6	Stakeholder Engagement Level (Rate the degree of stakeholder engagement in your sustainability initiatives):	<ul style="list-style-type: none"> <li>• High</li> <li>• Moderate</li> <li>• Low</li> </ul>