How Swedish Sustainable Fashion SMEs Overcome Challenges in Sourcing Sustainable Materials

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Abstract

This thesis explores how small and medium-sized enterprises (SMEs) in the Swedish sustainable fashion sector address challenges in sourcing sustainable materials. The aim is to understand the strategies, constraints, and adaptations that enable these businesses to operate under limited resources while maintaining sustainability commitments. A qualitative research design was applied, using semi-structured interviews with four Swedish fashion SMEs that incorporate sustainable sourcing into their business models, including upcycling and ethical sourcing. The findings reveal that sourcing practices often rely on second-hand materials, donations, and small-scale suppliers, with a preference for natural fibers such as linen, cotton, silk, and hemp. Verification of sustainability claims is commonly based on trust, visual inspection, and informal testing, as access to formal certification is limited. Key challenges include inconsistent material availability, high costs of certified fabrics, and supply chain risks when working with international artisan producers. Despite these obstacles, SMEs adapt by using upcycling, small-batch production, and transparent communication with customers to build trust and brand identity. The study contributes to the understanding of sustainable sourcing in resource-constrained contexts and highlights opportunities for policy and industry support to strengthen SMEs' ability to source sustainably.

Keywords: sustainable fashion, SMEs, sourcing challenges, Sweden, upcycling.

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Chapter 1 - Introduction

1.1 General Background

The fashion industry and fashion manufacturing play an important role in the economic development of many countries. However, the massive production of fashion products has been generating significant negative outcomes for the environment and society. There are numerous research studies and investigations that specifically measure the sustainability of business models or identify the sustainability-focused factors driving business (Thorisdottir & Johannsdottir, 2019). Common negative impacts on the environment can be climate change, water pollution, high greenhouse emissions, waste pollution, or natural resource pollution (Thorisdottir & Johannsdottir, 2019). Fashion businesses and manufacturers need to implement actions to minimize their impact. The fashion industry must develop reliable strategies to prevent pollution. Additionally, businesses need to optimize their use of natural resources for future operations. Fashion production processes mainly involve making and wasting, and the actions toward sustainability are limited.

The fashion sector includes clothing, footwear, and other accessories, which require both natural and man-made resources to produce. The textile production is involved with the production of fiber, cotton, or polyester. These man-made materials are used in making shoes, clothes, bags, and clothing accessories. On the other hand, fashion is defined as 'visible media of change' which forms the cultural phenomenon, involving production and consumption (Čiarnienė and Vienažindienė, 2014). Fashion is a special symbol that reflects the economy, politics, culture, and social life. Moreover, fashion is the way people use to communicate and show their personality (Čiarnienė and Vienažindienė, 2014). From the consumer perspective, fashion is mostly interpreted by designers; however, with the development of globalization, consumers are more concerned about how the material is sourced (Čiarnienė and Vienažindienė, 2014).

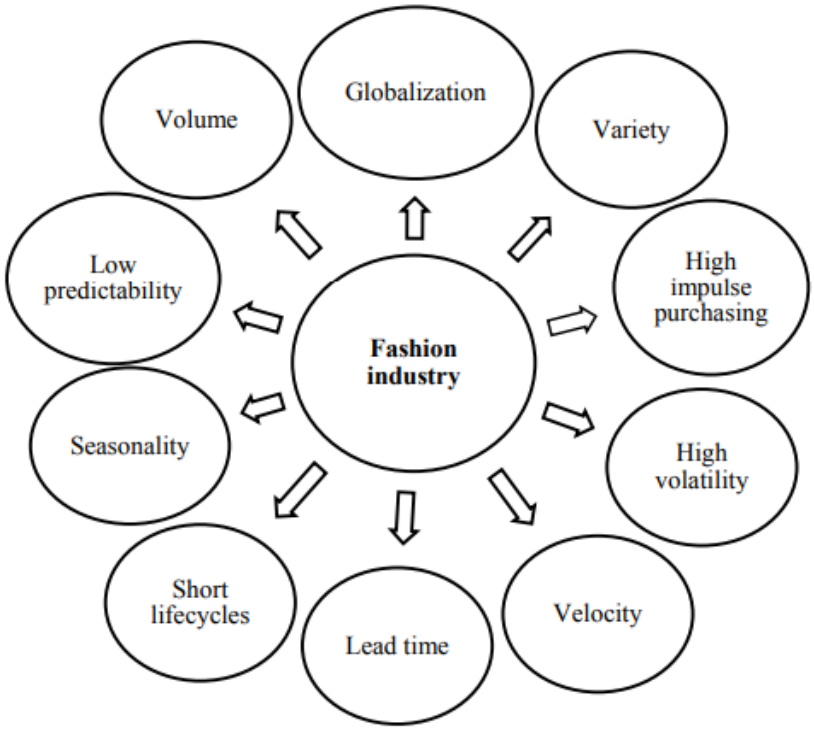

Figure 1: The Main Characteristics of the Modern Fashion Industry. Source: Čiarnienė and Vienažindienė, 2014

Clothing, footwear, or textile accessories manufacturers usually use style-based and non-style-based products. In addition, the consumption demand is changing speedily, making the manufacturer need to shorten its lead times (Čiarnienė and Vienažindienė, 2014). The Fashion industry is developing globally; therefore, many manufacturers are looking for cheaper locations to place their factory or manufacturing center to take advantage of local costs. There is a significant trend of vertical integration, which can be opening production to contract manufacturers or outsourcing the entire production in other countries (Čiarnienė and Vienažindienė, 2014).

The fashion industry globally has been more aware as one of the most resource-intensive and environmentally affecting industries. The carbon emissions from clothing manufacturing account for 2-8 % of the world's total greenhouse gas (GHG) emissions, with sector CO_2 emissions projected to reach 2.7 billion tons annually by 2023; the necessary action and strategies are needed due to the global concern about non-renewable resources and water-processing solutions (United Nations Environment Programme [UNEP], 2023). In recent years, the term sustainable fashion has

become more important with the new definition of ‘eco-fashion’ or ‘ethical fashion’, which has achieved significant attention from textile manufacturers and is considered (Thomas, 2020). According to Thomas (2020), fashion brand manufacturers and fashion designers have different perspectives and fundamentals of acting sustainability; therefore, the corporate policies and workplace consistency are more critical but not sufficient for the fashion industry's contribution. Because the fashion industry has changed rapidly, especially over the last 20 years, it has prompted retailers to look for more flexibility in design and quality while maintaining of reasonable cost (Bhardwaj & Fairhurst, 2010). The fashion market is becoming more competitive, and retailers need to refresh their product lines with the changes in product range, name, or design. It makes customers visit the retailer more frequently, enforcing the cash flow for retailers (Bhardwaj & Fairhurst, 2010). Fast fashion has strongly survived the economic crisis because of its instant gratification with a low pricing strategy (Bhardwaj &Fairhurst, 2010).

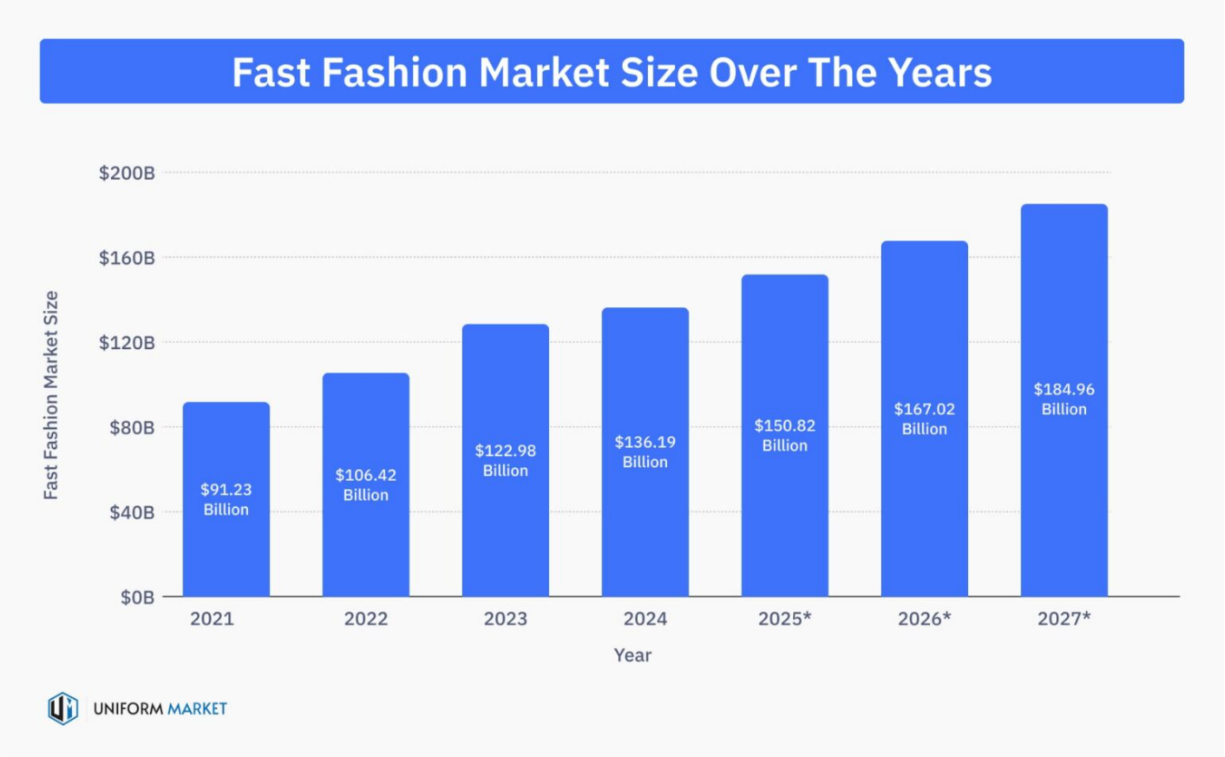

Figure 2: Fast Fashion Market size from 2021 to 2027 (projection) - Source: Uniform Market Statistic Library (2025)

The fast fashion market size has increased slightly from more than 90 billion dollars to 136 billion dollars in 2024 globally. This revenue is projected to increase to 185 billion dollars in 2027, making the annual growth percentage more than 10% annually. There are some popular fast fashion brands such as H&M, Zara, Shein, Fashion Nova, and Forever 21, which are taking the majority of market share in the US market (Uniform Market, 2025). However, there are only four fast fashion brands sharing the carbon emission figures with the public, which are ASICS, H&M, Marks and Spencer, and Patagonia (Uniform Market, 2025). The use of natural resources is also showing an increasing trend over the ten years from 2015 to 2025.

Natural resource	Usage In 2015	Usage In 2025
Water	141 billion cubic meters	170 billion cubic meters
Land	38 million hectares	41 million hectares

Figure 3: Natural Resource usage in 2015 and 2025. Source: Uniform Market, 2025.

The rising environmental impact can be related to the increase in clothing consumption (Niinimaki et al., 2020). Global clothing consumption has climbed up to 70 million tons of apparel per year, and its figure is forecasted to rise to 102 million tons by the year of 2030 (Niinimaki et al., 2020). Based on the rise in consumption, textile production has also increased, reflecting the emergence of fast fashion. There are many clear impacts of the fashion industry on the environment, such as pollution, water waste, carbon emissions, manpower rights, and gender inequality, which also need attention (Thomas, 2020). Some fashion and textile manufacturers in developed countries are spending more effort to shift the fashion economy into more comprehensive cooperation (Thomas, 2020). More than 80 billion pieces of clothing are purchased globally every year, many of which are made in China or Bangladesh, where the labor cost is cheaper than in other markets (Bick et al., 2018).

Sustainable fashion has a strong relationship with the use of resources and how the resources can be recycled, low-cost material and low-cost manpower, reduction in production, and circular economy models. The transition from fast fashion to sustainable fashion is not simple and transparent; it is driven by multiple factors to practices. Customer awareness, regulatory changes,

and brand strategies are navigating themselves away from other fast fashion manufacturers. The fashion industry reflects an important sector of any country's economy, with high value of revenue and employment resources. In addition, global health is another concern of fast fashion production, even if it can bring more job opportunities and security to people (Bick et al., 2018). However, the hazardous working environment that is required by most developed countries' regulations is not applicable in practice. The term ‘social cost’ is involved in fast fashion production because it damages human health, human production, and the environment (Bick et al., 2018). Bick et al. (2018) also stated that the production stage of the textile supply chain involves using both natural and non-natural fibers. The material of clothing products is mostly made of cotton or polyester, which requires oil and a large amount of water to make (Bick et al., 2018). The dyeing process includes an additional hazard because unused wastewater from the dyeing process is usually dissolved into the local water system. Not only water but also other toxicants are also discharged to surrounding residents (Bick et al., 2018).

SMEs are identified as companies or firms which are having significant turnover of less than 300 million dollars and fewer than 250 employees by the European Commission (Godhania, 2015). Godhania (2015) explains that SMEs are developing their innovation in operational optimization and customer relationships, but having limited resources and internal knowledge (Godhania, 2015). Short lifecycle matches with customer demand is the key success of the fast fashion industry. Retailers must balance the trend of fashion and the budget. Many retailers are abandoning the trend to focus on cost, but it may make them lose the competition in the market. Therefore, SMEs should maintain the production flow by spending more effort in sourcing, optimizing, manufacturing, and product development (Godhania, 2015).

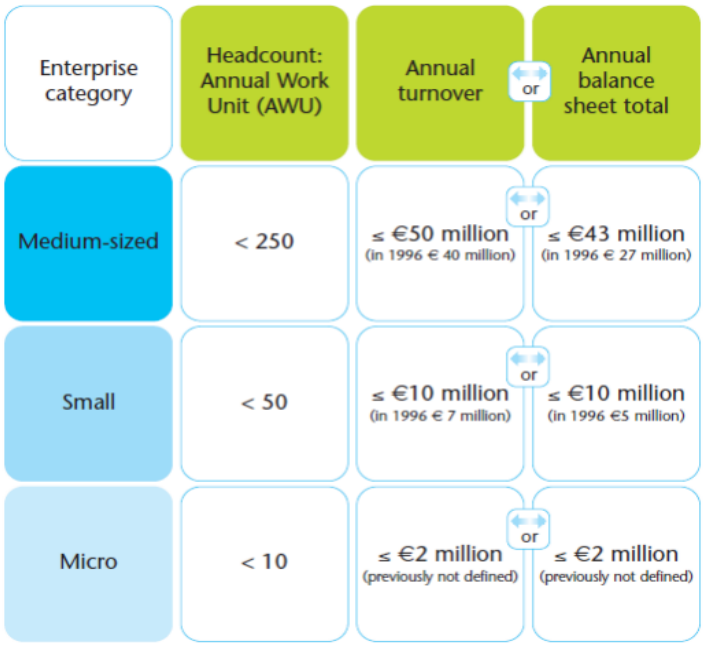

Figure 4: Definition of Corporate Size. Source: Weidstam, 2014.

However, SMEs in Sweden in particular and all SMEs in other countries in general are facing challenges in their core operations. The supply chain infrastructure is not extensive or sufficient to handle a scalable order. In addition, the sustainable resources are usually higher cost than the fast fashion production, making it harder for SMEs to find the appropriate resource with their limited budget. Many SMEs or entrepreneurs are calling for investment, which can increase the financial resources, so their commitment to sustainable materials can be certified. Stable financial resources help SMEs to build up a long-term relationship with their supplier and be able to conduct material assessment frequently. Expanding into the local and international markets may encounter some challenges from the regulatory landscape. Europe is more concerned about tackling climate change and environmental impacts from the fashion industry. There are some opportunities and innovative approaches that show how the future of fashion can be sustainable.

This report aims to provide a comprehensive analysis of current activities and key approaches in the sustainable fashion and fashion industry in Sweden and Europe in general. SMEs face many challenges in seeking sustainable resources in the fashion industry, but they also have the opportunity to adopt sustainable business models with their innovation. SMEs are key players and

important factors in supporting the country's economy. In addition to the analysis of SMEs, other aspects of fast fashion and the country environment of Sweden are provided.

1.2 Context and focus on Sweden

Sweden is one of the leading countries in sustainability, environmental innovation, and circular economy approaches. Sweden is one of the largest countries in the European region by area, but Sweden's population is relatively small (around 9 million people) (Ahlberg, 2009). Even though the country is affected by the European Union regulation and foreign policy, the Swedish government has its initiatives on stabilizing and protecting peace (Ahlberg, 2009). Therefore, with a small population, people are living and being protected strongly by the government (Ahlberg, 2009). Sweden joined the European Free Trade Association (EFTA) with other northern countries in 1960 and became a founding member of EFTA (Ahlberg, 2009). Moreover, Sweden democracy and parliamentarism emerged at the beginning of the 20th century. Sweden can be considered the first and foremost country in Europe in approaching sustainability thinking (Ahlberg, 2009). A Swedish strategy for sustainable development was raised in the year of 2004 as the government policy. Many works on sustainable development are collaborating with the economy, policy, and research with the objectives of finding new solutions to deal with climate change (Ahlberg, 2009).

Sweden and Scandinavia are considered favorable environments for businesses across various industries, including manufacturing, fashion production, e-commerce, and construction. With the advanced development of infrastructure and technology, Sweden offers an innovative and technological environment for SMEs to do business. According to the official data from the World Bank, the Gross Domestic Product (GDP) in Sweden was estimated to be more than 600 billion US dollars in 2024. From 1980 to 2024, the GDP grew with a trajectory rather than a consistent increasing trend; however, the GDP is forecasted to grow consistently between 2024 and 2030.

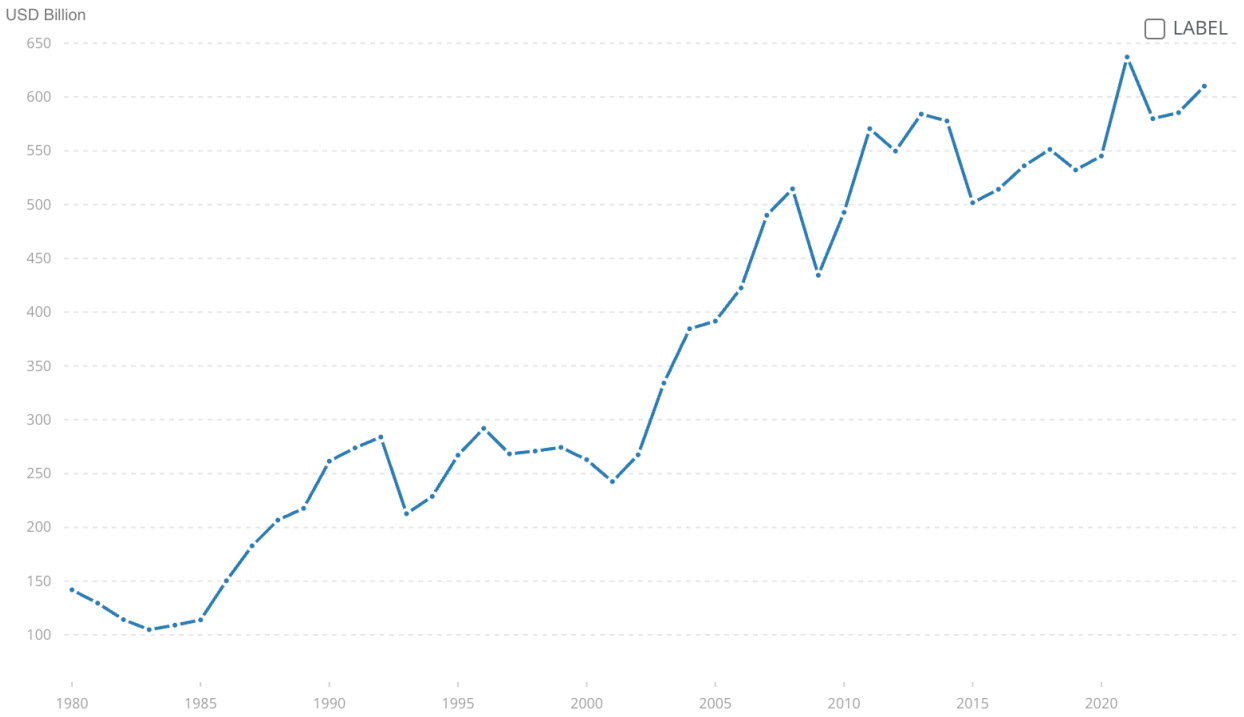

Figure 5: Sweden Gross Domestic Product Growth from 1980 to 2024. Source: World Bank, 2025.

Of the top 20 listed countries with the highest gross domestic product per capita, thirteen countries are from the European region. In addition, Sweden is also one of the top countries in Europe, which shows a high gross domestic product per capita. From the gross domestic product per capita figure, the strength of the economy can be measured because it reflects the standard of living. Sweden has a high living standard, capable of having organic and healthy standards.

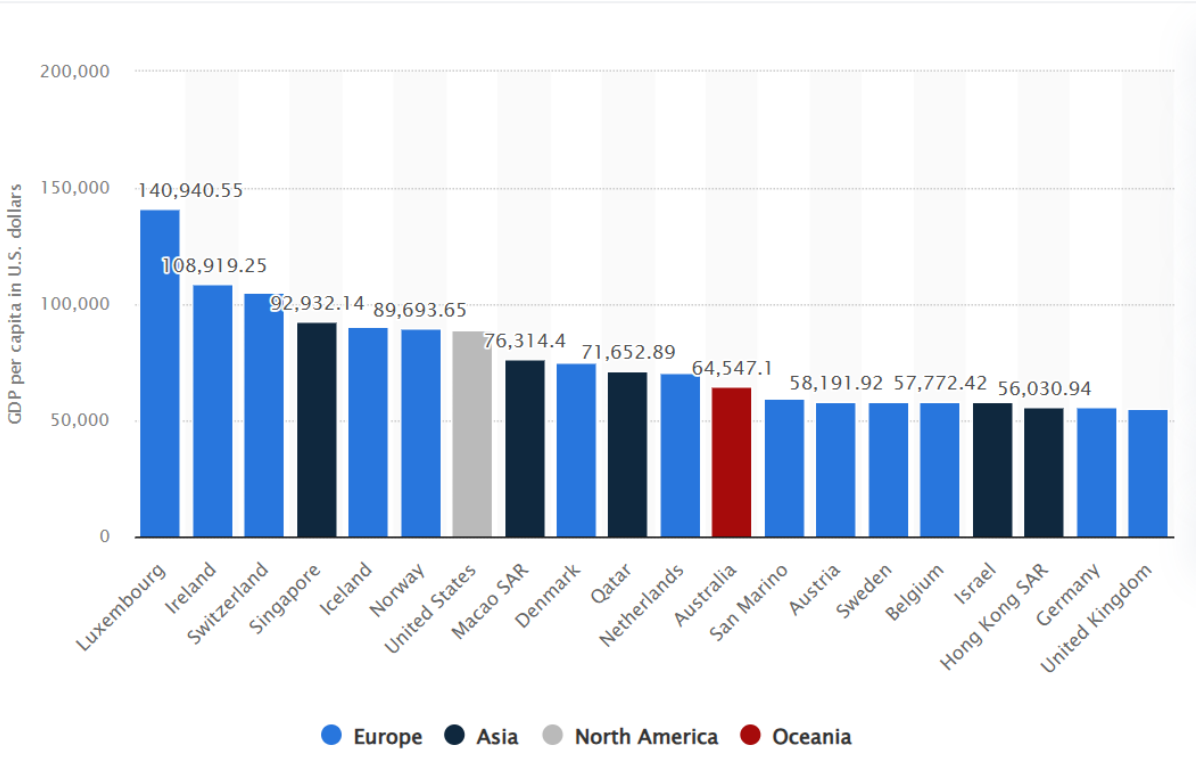

Figure 6: The 20 countries with the largest gross domestic product (GDP) per capita in 2025. Source: Statista, 2025.

1.2.1 Sweden's Sustainability Ecosystem

As the sustainable development initiatives taken since 2004, the Swedish government is aimed at reducing carbon emissions, emphasizing renewable energy, and reducing waste from production as the core objectives of dealing with climate change. The Swedish government has developed many approaches and solutions, such as grants, regulatory incentives, or supporting budgets for entrepreneurs (Niskanen et al., 2020). These approaches are helpful to SMEs in terms of having more funding for sourcing sustainable resources and production practices (Niskanen et al., 2020). With the high living standard, Swedish consumers show interest in consuming more environmentally friendly products when purchasing clothing or accessories. The term 'circular economy' has become more practical and has moved into the mainstream of many countries. The circular economy production can be defined as an organic flow of materials where the resources are extracted, used, and recycled (Niskanen et al., 2020). Sweden has a long history and

background of increasing circular material in the community through recycling activities (Niskanen et al., 2020). Even though the country has encountered many debates and challenges in adopting sustainable development, all the mainstream Swedish parties have embraced forms of ecological modernization in terms of environmental regulation (Niskanen et al., 2020). Moreover, the circular business model can be considered as an economic approach to maximize the use of resources while minimizing waste by designing products and services that promote recycling or refurbishing (Ghani and Hamad, 2024). In order to adopt a circular business model, it is important to redefine the business processes, value chain, and production to fully take advantage of resources (Ghani and Hamad, 2024).

1.2.2 The Swedish Fashion Industry and SMEs

From 2023 to 2024, the Swedish clothing retailer sector has increased nearly 1% year on year, which is worth more than six billion euros in 2024 (Ghani and Hamad, 2024). The fashion sector in Sweden has been overlooking the resource waste and environmental impact as the country has been trying to adopt the circular economy (Ghani and Hamad, 2024). By adopting a circular business model, the fashion manufacturers are believed to overcome the difficulties in their ecological footprint and move closer to a sustainable future. Therefore, SMEs in the fashion industry are also aiming to adopt a circular business model into their operation (Ghani and Hamad, 2024). Even though the awareness of green fashion is becoming higher trending, the market for these products is struggling in retailers due to limited production. The size of customers and revenue opportunities is also smaller (Ghani and Hamad, 2024). While SMEs are facing the struggle from circular practices, other large Swedish brands, such as Filippa or H&M, have successfully implemented innovative practical approaches. However, these brands are encountering other issues relating to workforce cost and resource consumption (Ghani and Hamad, 2024).

1.2.3 Challenges in Sustainable Material Sourcing in Sweden

The transition from fast fashion to slow or green fashion requires the transition from a linear business model to a circular business model innovation (Ghani and Hamad, 2024). The entire production from raw materials must be changed and reviewed accordingly.

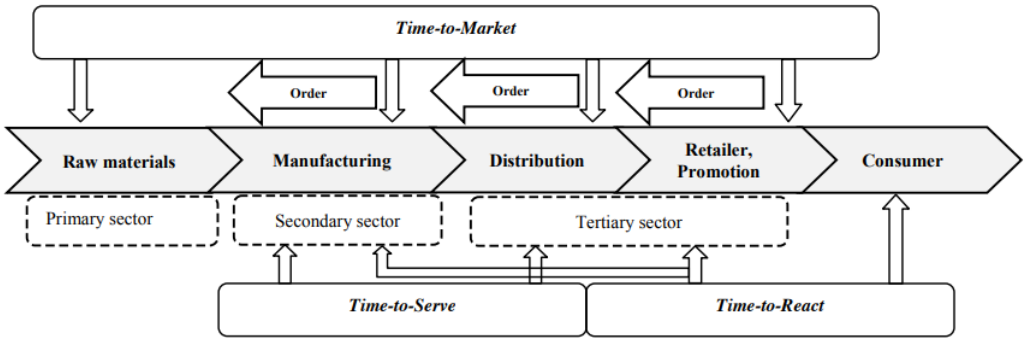

Figure 7: The Fashion Supply Chain Management Model. Source: Čiarnienė & Vienažindienė, 2014.

Even though Sweden is a large country compared to its population, sourcing sustainable materials is challenging. The local supplier of eco-friendly materials is usually quoting a high cost because it relates to its sustainable certification. In addition, importing from international sustainable suppliers is generating extra costs from logistic activities. Even though the Swedish government has promoted a circular economy and committed to sustainable development, the fashion industry is still small compared to other international manufacturing hubs, which causes supply constraints (Niinimäki et al., 2020). The sustainable materials, such as organic materials, recycled polyester, or bio-based cotton, are produced on a small scale, which is not capable of meeting the demand of SMEs, resulting in limited seasons and higher cost (Niinimäki et al., 2020). Four important materials are usually used to reduce environmental impacts, such as organic cotton, Tencel (lyocell), recycled polyester, and linen. Because these materials are produced at a higher cost than fast fashion materials, it is critical to maximize resource efficiency and reduce waste (Mullen, 2023). The Swedish government has regulated Extended Producer Responsibility (EPR), which requires sustainable suppliers to have a proper recycling strategy to avoid waste (Mullen, 2023). The regulation is not only for manufacturers, but also for Swedish households to separate textile waste from other wastes (Mullen, 2023).

1.2.4 Policy and Regulatory Environment

Swedish and European communities are playing an important role in SMEs development and strategies. The Swedish environmental regulation of some specific industries has been assessed

for its capabilities to achieve environmental protection goals. Moreover, the Swedish case can be defined as a successful case and a role model for a circular economy. The Swedish government has regulated some special policies, such as the European Green Deal, Circular Economy Action Plan, and Extended Producer Responsibility, to promote sustainable materials through a standard process from labelling to disposing (Roseveare, 2001). These policies are encouraging the SMEs to do sustainable fashion in the Swedish environment to receive more support. Moreover, the government is offering funding, incentives, and grants to SMEs or entrepreneurs who show innovative solutions with the objectives of sustainable development (Roseveare, 2001). The Swedish government and the Ministry of the Environment have taken integrated approaches to address environmental issues, such as promoting sustainability in the trade and commercial industry, following up closely with the assessment of sustainable development of environmental policy, or participating in the realization of environmental policies (Roseveare, 2001).

1.2.5 Swedish Cultural Factors

Culture and tradition play a crucial role in environmental responsibility because they provide a perspective from people and society. Sweden has a large immigrant population, which accounts for nearly 15% of the total population (Nekby, 2012). From the end of the Second World War, Sweden has been characterized by net immigration, including three main groups, which are Nordic countries, Southern and Eastern European countries, and refugee migration (Nekby, 2012). Since the middle of 1970, foreign-born people born in Sweden have had higher employment rates than native people. The difference between foreign-born and native can be explained by cultural integration (Nekby, 2012). As Sweden has a high gross domestic product per capita, the income level of people is also relatively high, and the spending is also equivalent to the earnings; therefore, people are looking for privilege and premium service for their consumption. With the cultural background of multiple migration layers, sustainability can be the foundation of an organization in an ecosystem environment. Furthermore, the Nordic region emphasizes local community features and regional sourcing; therefore, the use of local wool and recycled material from local suppliers is preferred.

Swedish culture is strongly affected by the ‘French model’ of high culture with classical music, opera plays, classic painting, theatre environment, and so on. It is said that Swedish culture is likely traditional ‘highbrow’ culture (Atkinson, 2021). Swedish culture, on the other hand, is

having a transition from a capitalist economy to a higher intellectual level (Atkinson, 2021). Sweden has raised the standard of living and rate of economic inequality since the end of the 20th century, and the existence and consumption of luxury products are becoming more prominent (Atkinson, 2021). Swedish consumers have a strong interest in their local brand more than international brands (Mitzner, 2018). For example, Swedish consumers prefer to purchase from their country's brand name, such as IKEA or H&M, but with its global giant brands like Amazon or Apple, local consumers are showing some suspicion. Swedish consumers in general do not like global or multinational presence in their country, even though how good or valuable these brands can bring to Sweden (Mitzner, 2018). Swedish consumers can be defined as conservative groups that make the local SMEs achieve advantages in consumer power (Mitzner, 2018). In the fashion and textile industry, some Swedish entrepreneurs or start-ups are welcomed in the local market.

1.3 Problem Statement

The 20th century is increasingly considered by priority on sustainability, and the fashion industry is also included. The fashion industry has significant issues and sustainability concerns, whether they are related to the environmental impact of manufacturing, production, or the supply chain. Sustainability is becoming a global concern in the fashion industry, even the sustainable development and strategies are being complied with by many manufacturers, but the impact on the environment must be disclosed more to the public.

Even though sustainable development needs more attention, SMEs around the world, and in Sweden, are encountering many challenges. The high cost of eco-friendly fabrics, not many of material providers, and the difficulties in applying for official certification from the government. These challenges are making it difficult to enter the market. Many relevant studies have gone through the SMEs' entry to the local market using sustainable materials in the fashion industry. However, this thesis aims to provide a comprehensive review and examination from the SMEs and customer perspectives. Relevant research usually focuses on the entire industry or examines some large fashion brands at the macro level; it is rare to find micro-level focus strategies by SMEs. It explains the necessity of identifying the gap between specific practices and strategies of SMEs' fashion brands in Sweden. The source and supplier are the focus of SMEs if they aim to develop as a sustainable brand; how SMEs are sourcing materials is also needed for an in-depth understanding.

1.4 Research Objectives and Research Questions

Main Research Question:

- How do Swedish SME fashion startups overcome challenges in sourcing sustainable materials, and what strategies do they employ?

Sub-questions:

1. What are the key barriers (cost, availability, certification, traceability) faced by SMEs when sourcing sustainable materials?

2. How do SMEs balance the pursuit of sustainability with the need for affordability and scalability?

3. What roles do local networks, supplier collaborations, and innovation play in their sourcing strategies?

4. How do policy frameworks and industry support mechanisms influence SME sourcing practices?

By finding relevant literature and conducting proper research methods, these questions can be answered to find another perspective at the micro-level practice that highlights the sustainable sourcing among SMEs and small firms in the fashion industry in Sweden.

1.5 Significance of the Study

This research offers valuable contributions across multiple areas:

- **Academic:** The research aims to address the gap between sustainable development in theory and practice with the case study of SMEs in Sweden. The aspects of business will be analyzed and identified, emphasizing the importance of the market and business environment in the fashion industry.

- **Practical:** Findings will help SME entrepreneurs identify effective sourcing strategies, leverage local networks, and navigate certification processes more efficiently. Identifying the effective sourcing strategies for SMEs to overcome the difficulty in finding suppliers, negotiating for long-term relationships with vendors, leveraging local networks, and supply chain.

- **Policy and Regulation:** The research aims to analyze the SMEs in the policy context of Europe in general and Sweden in particular. Some regulations and policies may be analyzed to support the challenges and issues of becoming a sustainable firm. Furthermore, the study emphasizes the technology and innovation potential of SMEs in using sustainable materials, encouraging other SMEs in the fashion industry to follow the Swedish government's target of being sustainable.

1.6 Thesis Structure

The thesis is organized as follows:

- **Chapter 1: Introduction** - Provide the issue of the fast fashion industry, explain why the fashion industry should be slightly moved to sustainable fashion, an overview of Sweden's environment and SMEs situation, research question, and research objectives are all provided.

- **Chapter 2: Literature Review** — finding the relevant literature about sustainable fashion, sustainable material, SMEs' challenges, sustainable fashion firms, and sustainable material standards.

- **Chapter 3: Methodology** — details the qualitative research design, participant selection, interview preparation, and how the data is collected.

- **Chapter 4: Data Collection** — presents the data collected from interviews, including barriers, strategies, and the impact of sustainability commitment to business operation and supply chain.

- **Chapter 5: Discussion** — further analysis on what has been collected in Chapter 4.

- **Chapter 6: Conclusion, Limitation, and Recommendation** — summarizes key lessons, reflects on recommendations, and suggests recommendations for future research and practical applications.

Chapter 2 - Literature Review

2.1 Introduction

Sustainable fashion is not only a useful measurement to reduce waste, improve safety materials in fashion textile products, but also aims at a higher goal of changing the awareness of consumers and fashion brands, thereby creating fashion products that not only have a beautiful design but can also be harmless to the Earth's ecosystem and social justice (Aakko and Koskennurmi-Sivonen, 2013). Sustainable fashion can be defined as development that matches current demand but does not interfere with the future needs of the next generation (Aakko and Koskennurmi-Sivonen, 2013). Even though many researchers find it hard to have a clear explanation of sustainable development in the fashion industry, more and more people are aware of 'sustainability' in the community (Aakko and Koskennurmi-Sivonen, 2013). Fashion and clothing have distinct concepts, while fashion is referred to as immaterial and clothing is material. Fashion is driving the clothing, which can be understood as a process and product. Fashion products are always determined as innovative products; designers and customers are a group of people who need to concentrate on sustainable development (Aakko and Koskennurmi-Sivonen, 2013). Because fashion is always changing, clothing does not have the same trends; designers and consumers must make the clothing changes in material to match the changes in fashion. The transition toward sustainable fashion includes a complex supply chain, organizational practices, customer awareness, and a regulatory framework.

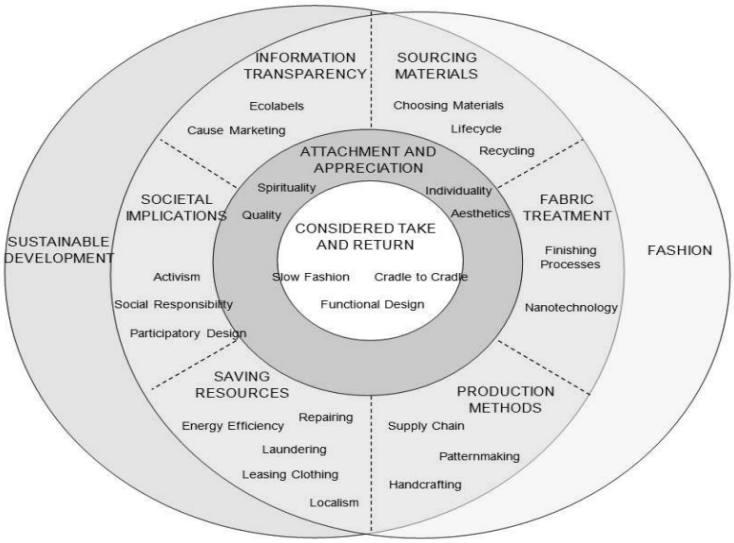

Figure 8: Model of Sustainable Fashion Design. Source: Aakko and Koskennurmi-Sivonen, 2013.

While large corporations have received more attention in sustainability development, small and medium-sized enterprises (SMEs) have yet to be critically studied. This chapter provides reviews and studies of existing literature on sustainable fashion, focusing on SMEs' business aspects and strategies in sourcing sustainable materials. It also examines industry initiatives and contextual factors specific to Sweden, giving a comprehensive understanding of challenges, barriers, and advantages faced by SMEs and small firms. The literature reviews contribute different aspects to the research because they provide academic insights and a regional context. An individual is making the changes slowly, but the entire community can create a great significant change. Sustainable activities can be conducted easily and quickly because it is easy to execute, but the challenges are how to be sustainable in the long term, which is the reason why many brands are taking the initiative to change to sustainable materials but abandon halfway because they cannot change on its deeper level (Aakko and Koskennurmi-Sivonen, 2013). In this part, the relevant studies of sustainable development in the fashion industry are provided.

2.2 Sustainable Fashion

Opposite to fast fashion is sustainable fashion, which is more difficult to define and has a clear definition. In the fashion industry, there are some common terms, which are cradle to cradle, functional design, and slow fashion (Aakko and Koskennurmi-Sivonen, 2013). Cradle to cradle is using recycled materials to produce clothing, which means rather than taking advantage of natural

resources, the material should be recycled and reused. The principle of cradle to cradle is that instead of throwing a product away, the material should be reused, no matter if the material is made from natural or non-natural sources (Aakko and Koskennurmi-Sivonen, 2013). The functional design is another concept that acts as a bridge among human needs, culture, and the environment, extending beyond traditional notions of function. Functional design weaves together use, appearance, meaning, methods, materials, and processes, aligning them with the deliberate intention (*telesis*) behind a product to meet human needs (Aakko and Koskennurmi-Sivonen, 2013). Slow fashion has become more popular in the fashion industry in the last few years. Slow fashion is more sustainable-driven (Pookulangara and Shephard, 2013). The materials of slow fashion are mostly greener fibers and eco-friendly, with the objectives of reducing waste and pollution, which has a significant impact on consumers who pursue a holistic lifestyle (Pookulangara and Shephard, 2013). Slow fashion also involves the terms of ethical fashion, Eco fashion, and sustainable fashion (Pookulangara and Shephard, 2013). It is difficult for retailers to be sustainable and maintain their operational costs. Slow fashion retailers cannot achieve the scale and profitability as fast fashion retailers (Pookulangara and Shephard, 2013).

Sustainability increases, which becomes a core strategy and consideration of many textile organizations (Pookulangara and Shephard, 2013). It affects company strategy, operation, customer relationship, human resource management, and vendor management (Pookulangara and Shephard, 2013). Slow fashion is adopting the classic by cutting down the production process, as part of corporate social responsibility and other core concepts, to improve its business performance. Moreover, slow fashion is about producing less, designing and consuming better (Pookulangara and Shephard, 2013). Compared to fast fashion, slow fashion is a newly adopted concept; some scholars have been exploring the clear definition of slow fashion. However, the concept was built on strong fundamentals and can guide the business to a better direction for future development (Pookulangara and Shephard, 2013). The concept of sustainable fashion is created as a response to the environmental, social, and ethical issues which are relating to textile production. The fashion industry is the linear economy, which can be characterized by the cycle of resource extraction, production and operation, consumption, and disposition. This cycle from extracting raw material to end-product has caused significant waste and pollution to the environment. Many brands and retailers aim to switch to a circular economy model to close irresponsible resource

extraction, promote recycling and reuse materials, and extend the product life. Beyond materials, sustainable fashion involves a complex reconfiguration of the entire supply chain, which often imposes significant financial and operational burdens on smaller players (Islam et al., 2021)

According to a United Nations investigation, the fashion industry ranks second in terms of pollution (after oil), responsible for about 10% of global carbon emissions - more than all international flights and shipping combined (Pookulangara and Shephard, 2013). The world consumes 80 billion clothing products each year, a fourfold increase compared to two decades ago. In recent years, fast fashion has become increasingly popular because of its affordable prices, diverse designs, constant updates, and popularity (Štefko and Steffek, 2018). Consumers, especially young people, increasingly favor new styles. However, the dark side of the fashion industry, especially fast fashion, is an issue that deserves attention and needs to be resolved (Štefko and Steffek, 2018). The term “fast fashion” is now, beyond its original name, used to refer to the breakneck speed of production and the short life cycle of clothing (Linden, 2016). For “fast fashion” brands, a fashion product takes only 3 weeks to go from sketch to distribution stores. Similarly, consumers are influenced by the psychology of following trends and want to quickly change their wardrobes, and will also discard a large number of clothes after a short period of use (Linden, 2016).

The main challenge of the sustainable fashion industry is to seek a more sustainable strategy toward the stakeholders, communities, and nature (Papasolomou et al., 2023). The organization should accept and resolve its social and environmental outcomes because the planet has limited resource capabilities (Papasolomou et al., 2023). Corporate sustainability is creating more pressure for organizations or firms to have sustainability adoption, even from legal compliance or governmental institutions' practices (Papasolomou et al., 2023). The pressure of sustainable development adoption also comes from international efforts toward a circular economy. The fashion process and structure have a short lead time, fast inventory cycle, and high order fulfilment (Papasolomou et al., 2023). That structure is generating more pressure on the cost structure even though the purpose is to meet customer demand (Papasolomou et al., 2023). With market competitiveness, retailers and brands are forced to release more collections to stay competitive; some brands have been increasing between two to five collections within a year to catch up with

the customer demand (Papasolomou et al., 2023). For example, Zara has been introducing more than 24 collections per year during the years 2011 and 2012. This trend makes the market more flexible with production efficiency. However, it is important to maintain a high level of employment and environmental concerns.

Sustainable fashion is not merely a trend but a strategic response to the complex demands of diverse stakeholders, including regulators, consumers, and environmental groups (Zhang et al., 2021). The supplier is represented for fast fashion brands, the customer is represented for the demand of the market, and the regulator is represented for government and industrial organizations (Zhang et al., 2021). From a Resource-Based View (RBV), sustainability acts as a rare and inimitable resource that allows SMEs to build a competitive advantage through brand authenticity and ethical differentiation. However, as noted by Islam et al. (2021), SMEs often struggle to mobilize the necessary financial and human capital to fully implement these sustainable practices, facing a constant tension between ethical goals and operational survival. This systemic challenge is particularly evident in the garment industry, where small firms must navigate high entry barriers without the institutional safety nets available to larger corporations. Consumer theory can be used to explain how customers make purchase decisions. Sustainability can be considered as an attribute of a product that is relevant to customer decisions. Therefore, it is critical for firms to understand the mechanism of the process and the indicator driving the process (Zhang et al., 2021). Traditional economics treats buying as if it were purely rational, but it misses the emotional and social dimensions of consumer behavior and is more about what people ought to do than what they do (Zhang et al., 2021). Psychology adds a different perspective, emphasizing people's thinking, human emotion, and social context, with social interactions, language shaping meaning, and personal interpretation guiding choices. In fashion, emotions can impact purchase decisions from simple pleasure to identity-building and status signaling, including conspicuous consumption (Zhang et al., 2021). Nowadays, sustainability and corporate responsibility also influence how customers evaluate fashion possessions, shaping preferences beyond looks and status to ethical considerations and environmental impact (Zhang et al., 2021).

There are more than six billion views of videos with the hashtag #Sheinhaul or 3.1 billion views with the hashtag #Zarahaul on TikTok telling numbers, showing that we still love videos showing shopping achievements from fast fashion brands like Shein, Zara or H&M. These brands have been ignoring the advantage of "beautiful and cheap", these fashion brands often only care about

the profitable aspect and abandon important factors related to labor and the environment. Therefore, making sustainable fashion is an arduous journey because it has to balance three factors, which are profit, people, and the environment (Neumann et al., 2021). Sustainable fashion means clothing made with fair trade and sweatshop-free labor, using eco-friendly materials like organic or biodegradable cotton, built to last longer, and produced in an ethical system—ideally locally—with little environmental impact and using recycled or eco-labeled materials (Neumann et al., 2021). A company that is identified as sustainable, the supply chain should be showing its sustainable products. In order to increase their competitive advantages, fashion companies should regularly review and change their supply chain to be more sustainable. It can be from material input or supplier changes (Neumann, 2021). The materials, where it is made from, and how they are produced, which is also critical for the product to be considered sustainable (Neumann et al., 2021). The place where material is made also matters; local production is the most sustainable option because it can reduce the cost of imports and other related logistic activities, but price pressures often make local production impractical for many brands (Neumann et al., 2021).

2.2.1 Sustainable fashion standard

The integration of sustainability within the corporate framework of the fashion industry necessitates a paradigm shift from a singular focus on financial profit to a holistic management approach. The accreditation of a fashion business as a 'sustainable brand' is contingent upon the comprehensive optimization of the **Triple Bottom Line (TBL)** framework. This model, originally articulated by Elkington (1997), posits that true organizational success and viability must be measured against three interdependent dimensions: Environmental integrity (**Planet**), social equity (**People**), and long-term economic viability (**Profit**).

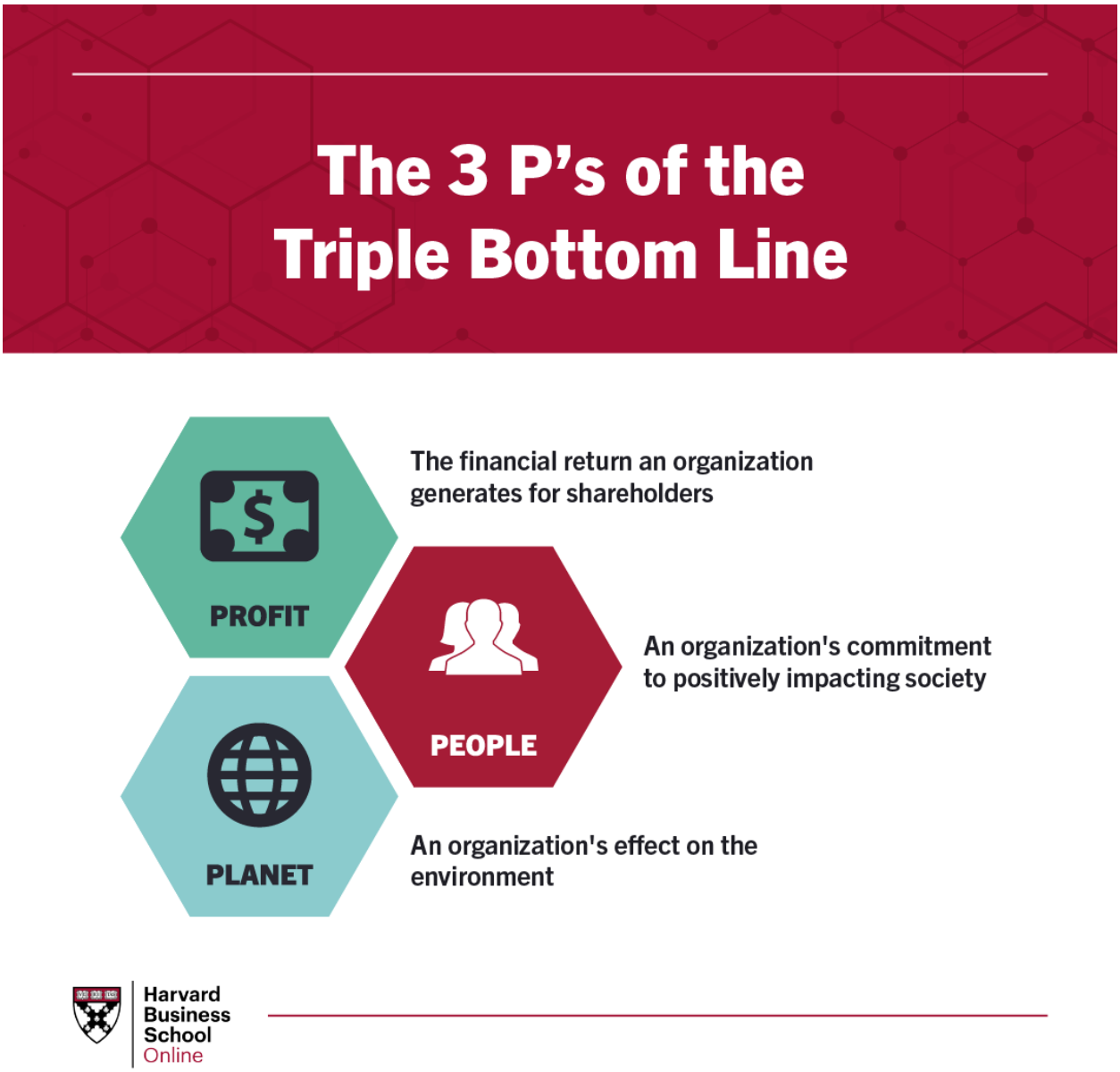

Figure 9: The 3 P's of the Triple Bottom Line. Source: Harvard Business School, 2020.

An examination of the '**Planet**' pillar reveals several critical strategic imperatives for a sustainable fashion enterprise, beginning with material sourcing and selection.

The ecological footprint of a garment is significantly determined by the raw materials from which it is constructed. A core tenet of sustainable fashion is the preferential sourcing of materials with demonstrably minimized environmental impact, which are often raw materials, have organic elements, do not use pesticides (such as organic cotton, linen, ...), or have recycled elements (from plastic bottles, old fabrics, wood pulp, ...) (Ellen MacArthur Foundation, 2017).

Beyond material inputs, the 'Planet' pillar mandates a rigorous optimization of all manufacturing and operational logistics to mitigate environmental degradation (Srivastava, 2007). This involves a multi-pronged approach, reducing clean water consumption, reducing chemicals in dyeing technology, using renewable energy sources in the factory, and reducing greenhouse gas emissions.

In contrast to fast fashion, sustainable brands need to have sustainable and circular designs; their products need to be used for a long time, be easy to repair, reuse, and recycle. Many brands require minimal waste during production, and products need to be measured and calculated in detail to meet zero-waste cutting standards, limiting plastic packaging waste.

For businesses to operate smoothly and effectively, the "**People**" factor always plays an important role. It can be said that without people, a business cannot make a profit. For sustainable businesses, managers must ensure that the working environment of employees is always safe, meets clean and hygienic conditions, and provides the best working environment for employees. In addition, employers need to pay a salary that meets the average living needs of the locality, not just the minimum wage of the area. In particular, the government strictly prohibits violations of labor laws such as using child labor, working overtime beyond the prescribed time, exploiting, and forcing workers. To combat illegal, unethical, or otherwise misleading labor practices, sustainable businesses need to open up their supply chains, letting consumers know where and by whom their products are made. The “Who Made My Clothes?” movement, spearheaded by Fashion Revolution, has been a big push for brands to be more transparent on this issue (Fashion Revolution, 2020). One of the sustainability giants, Patagonia, is transparent about its supply chain. They publish an interactive “Supplier Map” on their website that anyone can click through to see the factories (both garment and textile) they work with around the world (Patagonia, 2025). While they don’t list individual workers by name, they do provide details about the social welfare programs and Fair Trade Certifications in those factories, ensuring that the “makers” are treated fairly. Veja, Nudie Jeans, and many other brands also joined this campaign to affirm the sustainable production path they pursue.

Due to the requirement to use natural, sustainable raw materials, businesses pursuing this specific industry are required to ensure that if they use raw materials from animal fur (such as wool,

feathers), they must ensure that they come from animal sources that have not been abused (such as wool that has not been through mulesing).

The main goal of the sustainable fashion industry is sustainable, long-term development, meeting green factors. The "**Profit**" pillar here does not mean maximizing profits through large production and sales volumes (Bocken et al., 2014). Businesses will pursue a long-term survival model, promoting shared values and economic models based on circularity, longevity, repairability, and fair compensation. It is evident that, with this strategy, in the beginning, sustainable businesses will not be able to achieve the desired profit level; however, they must closely follow the proposed model and persistently pursue it to achieve long-term goals.

There is no certificate called "Sustainable Fashion Enterprise", because each enterprise will focus on a specific segment, focusing on sustainable development according to the standards of that aspect. In fact, to measure the green and sustainable factors of an enterprise, competent organizations have systematized them into prestigious certificates.

To prove their friendly production processes, fashion enterprises can be granted the "**bluesign®**" certificate, which ensures that the chemicals and processes used are the safest and most environmentally friendly and safe for workers.

Current social and ethical certifications include **Fair Trade Certified** (which ensures farmers and workers receive fair prices, safe working conditions, and a portion of the money, called “fair trade premium,” to invest in their communities), **WRAP** - Worldwide Responsible Accredited Production (which certifies factories that produce goods that comply with 12 principles of legal, ethical labor (no child labor, no forced labor, working hours, wages, etc.), or **BSCI** - Business Social Compliance Initiative (a rating system, not a certification, that helps companies monitor and improve labor conditions in their supply chains, based on International Labor Organization (ILO) standards) (Hustvedt and Bernard, 2010).

The most comprehensive certification that a sustainable fashion business pursues is **B Corp** (Certified B Corporation). To achieve B Corp, a company must meet rigorous standards for social and environmental performance, legal accountability, and public transparency.

2.2.2 Compare with Fast fashion

Fast fashion operates as the direct antithesis to the TBL framework. It is an industrial model characterized by the rapid production of inexpensive apparel designed to align with accelerated, micro-trend cycles. Its core tenets are fundamentally in conflict with sustainability:

	Sustainable Fashion	**Fast Fashion**
Planet	Minimize negative impacts and ideally create positive impacts, reducing energy, water and raw material consumption. Prioritize the use of renewable energy, minimize waste, promote recycling, reuse and responsible waste disposal, measure and reduce greenhouse gas (GHG) emissions across operations and supply chains, and protect biodiversity and ecosystems in which the business operates.	The fast fashion model is predicated on high-volume, low-cost material inputs, primarily virgin polyester and conventional cotton, which carry immense environmental burdens. Its accelerated production cycles and globalized supply chains generate a massive carbon footprint, while the low quality and disposability of its products create a crisis of textile waste.
People	Measure the social impact (positive and negative) of a business on all stakeholders, pay fair wages, safe and healthy working conditions, development opportunities, and work-life balance, ensure suppliers also adhere to ethical labor standards, do not use child or forced labor, provide safe, ethical and transparent products.	To maintain its low-cost structure, the fast fashion model has historically relied on offshoring production to regions with lax labor regulations. This has been demonstrably linked to poverty-level wages, unsafe working conditions, and the systemic exploitation of garment workers.

Profit	This profit must not be created at the expense of the other two pillars but must still be sufficient for the business to survive and thrive and include the economic value the business brings to society, such as creating stable jobs, paying taxes, and promoting economic innovation.	The economic model of fast fashion is extractive and short-term. It drives over-consumption by creating perceived obsolescence, externalizing its environmental and social costs to the public, and locking producers in a "race to the bottom" for the lowest possible manufacturing price.
Certificate	**Bluesign®** **Fair Trade Certified** **WRAP** **BSCI** **B Corp** And more	Not required

Table 1: Comparison of Sustainable and Fast Fashion.

2.3 Sustainable material

These financial resources can support the development and business activities related to material innovation, certifications, or process improvements. SMEs can participate in testing new sustainable materials or supply chain models, achieving early success in innovative technologies and building credibility. However, in practice, it is more difficult to have sustainable material resources for the long term. The demand for sustainable materials is increasing, and the opportunities for transformation through innovation are also higher. Innovation will be able to deliver the material and technologies that match the demand of economic and social needs (Van Berkel, 2006). The contribution of innovation to sustainable materials is difficult to measure;

however, there are many relevant studies of how innovation can be effective in delivering sustainable materials and products in the future (Van Berkel, 2006). In the current stage, innovation should be placed in the process and lifecycle of a product more than evaluation for the long term. Innovation is critical for the innovative process to gain breakthrough, transformative innovation that can provide significant changes in the sustainable development of materials, products, and processes (Van Berkel, 2006).

Adopting sustainable materials is a common practice in the fashion industry, which can boost efficiency, reduce water and production waste, and remove the supply chain risks, helping companies to achieve their competitive advantages (Dhir, 2020). The negative effects of fast fashion can be exposed significantly within a short period of time, but wrong buying decisions and production methods in the textile and fashion industry can make the future performance of the entire industry corrupted (Dhir, 2020). Textile and fashion wastes include waste made before clothes can be sold to consumers (pre-consumer waste), created during fiber, yarn, fabric, and garment production (Dhir, 2020). One of the most important steps in creating sustainable fashion is to use materials that are biodegradable or reusable. Natural fabrics such as cotton, linen, bamboo, or synthetic fibers recycled from used plastics are all eco-friendly options. Using sustainable material sources can reduce the pressure on natural resources (Hur and Cassidy, 2019). Sustainable fashion involves more than just materials. Using sustainable manufacturing processes, minimizing the use of toxic chemicals, and optimizing energy can minimize negative environmental impacts (Hur and Cassidy, 2019). Sustainable fashion brands often focus on monitoring and ensuring that their manufacturing processes adhere to environmental and ethical standards (Hur and Cassidy, 2019). Sustainable fashion also involves ensuring that workers in the fashion industry are treated fairly and are paid fairly for their work. Eliminating child labor and ensuring safe and ethical working conditions for those involved in production are important aspects of sustainable fashion (Hur and Cassidy, 2019). Together, these elements form the basic framework for building sustainable fashion, aiming towards a more responsible and respectful fashion industry towards the environment and people.

Research and development of recycled fabrics and environmentally friendly fibers is one of the important steps to reduce environmental pollution from the fashion industry. More and more textile companies are turning to recycled materials to reduce their environmental impact. For example, one company produces nylon from recycled fishing nets, while another focuses on post-consumer

cotton and polyester (Mukherjee and Bharti, 2025). Even more forward-thinking companies are looking to create something new from agricultural waste. It's not just textiles that help the environment through recycling (Mukherjee and Bharti, 2025). Some brands claim that their textile manufacturing processes reduce water use by 98% and cut emissions by 90%. Many conscious consumers are looking to help the planet by choosing eco-friendly clothing, and this is one way to do it (Mukherjee and Bharti, 2025). For those who love green fashion, fabrics made from agricultural waste such as pandan leaf fiber are not too strange (Mukherjee and Bharti, 2025). There are many innovative and newly designed materials found, for example, the newly launched eco-friendly silk, fiber, and fabric product called Ananas is the result of cooperation between a pineapple and silk (Mukherjee and Bharti, 2025). From these innovative materials, many companies or suppliers can think about expanding the production of fabrics from green hemp, hemp, coffee grounds, oyster shells, eucalyptus powder, oak, or algae (Sengupta and Sengupta, 2020). As one of the pioneering companies in Asia that has been researching and applying new materials in the textile industry, Faslink (an SME in Vietnam) has used fibers from coffee grounds, pineapple fibers, lotus fibers, corn husks, oyster shells, etc., as raw materials for the production of fabrics and garments (Sengupta and Sengupta, 2020). In addition, oil-free coffee grounds are crushed and mixed with plastic beads from plastic bottles to create fabrics with high elasticity and ventilation (Sengupta and Sengupta, 2020). Moreover, lotus fabric made from lotus leaf, stem, and seed powder is soft, smooth, and cool when used on underwear, shirts, and scarves. Fabric made from oyster shells - often thrown away on the beach, in restaurants - is processed into beautiful, smooth fabric that can help reduce 2 degrees Celsius if necessary (Sengupta and Sengupta, 2020). However, the sourcing and making of textiles is still complicated; it is hard to know what can be considered a sustainable material because there is no official organization or regulator that can determine that in the present. Many natural fibers might look organic, but they can get contaminated during extraction and during bleaching, dyeing, printing, and finishing (Sengupta and Sengupta, 2020). The process of producing material is still a big question mark for many distributors because they do not have a standard benchmark to base on. In addition, a single material can have both organic and technical parts—for example, blends like polyester and cotton. Because textile and clothing production is so complex, both retailers and consumers can find it hard to choose ethically (Sengupta and Sengupta, 2020).

While the manufacturing and retail sectors are providing mass production and export of low-priced clothing, customers are more aware of switching to purchase sustainable products due to their concern for environmental impact (Muzaffer, 2024). The term sourcing is likely a procurement activity, which involves working with proper suppliers. Sourcing is understood as a review more than a process, finding suitable suppliers for procuring the material for needed products (Muzaffer, 2024). In all supply chains, sourcing is the first step determining the success of the production with all raw materials and items involved (Muzaffer, 2024). The sourcing decision must be made with the evaluation of potential waste to avoid more serious issues taking place in the future (Muzaffer, 2024). In manufacturing clothes and other fashion products, the sourcing activity is encouraged to measure and evaluate the supplier performance to ensure the supplier can work with the manufacturer for the long term (Muzaffer, 2024). A product cycle should be analyzed before doing the sourcing and purchasing from the supplier, as it can help to reduce the environmental footprint. Management should always consider the impacts on the environment in manufacturing a product (Muzaffer, 2024).

The fashion industry and its operation should adopt green practices to improve community economic welfare, address health and safety issues for workers, sustainable supply chain, improve the safety and health standard, and improve employment security (Jia et al., 2015). Many workers are working under poor conditions to catch up with the production deadline, and cheap labor is also another issue in the textile and fashion industry (Jia et al., 2015). The garment manufacturer and its suppliers should have a stronger strategy and action toward discrimination, abuse of human rights, child labor, and other health concerns regarding the workplace (Jia et al., 2015). In order to enhance the sustainability performance, the product should be manufactured at a reasonable price. Non-renewable resources, waste, transport, water, and chemicals are five main indicators creating environmental concerns; therefore, the materials that are produced to reduce the impact of these five indicators can make the firm more sustainable (Jia et al., 2015). According to the sustainability of the fashion industry production operation, the supplier selection is a critical stage. There are some criteria to pick up the suitable supplier according to cost, quality, delivery timing, rejection rate, toxic chemical control, water consumption control, waste resolution strategy, energy usage, and air pollution control (Jia et al., 2015).

The development of a sustainable material portfolio is proceeding along two primary pathways: the optimization of natural fibers and the innovation of "next-generation" materials.

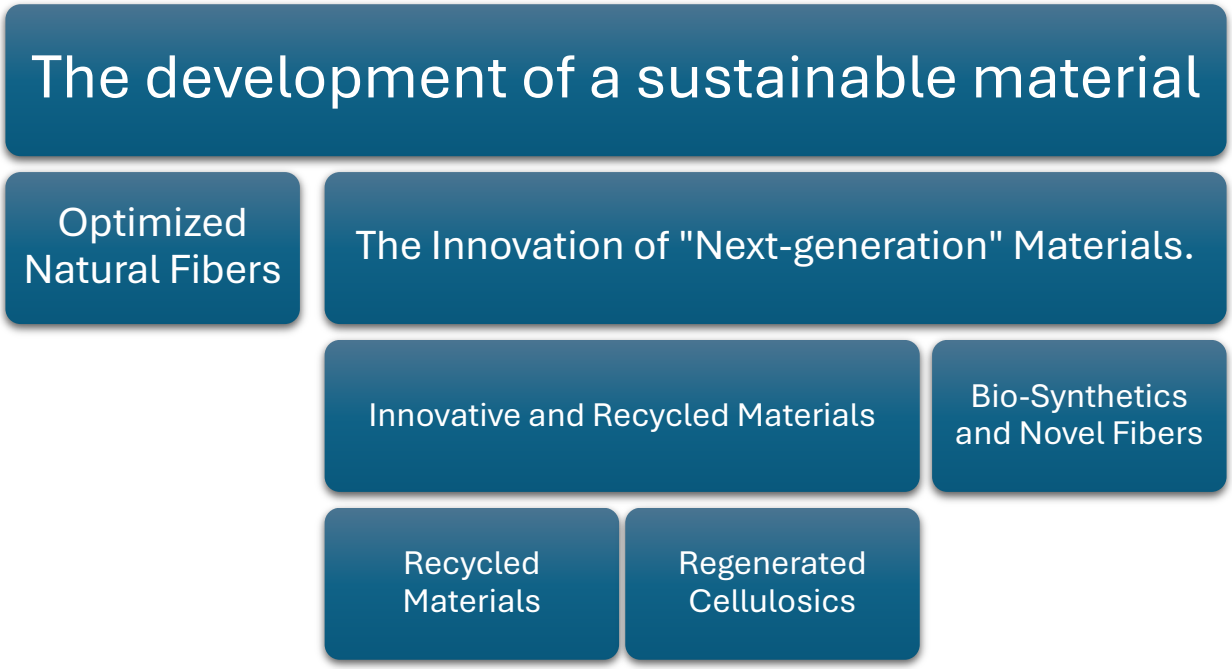

Figure 10: The development of a sustainable material portfolio.

Optimized Natural Fibers: Optimized natural fibers: This approach involves manufacturers reviving traditional, low-impact fibers (such as linen, hemp, and jute) that require little water or pesticides. It also includes scaling up organic agriculture, most notably organic cotton, which eliminates pesticides and synthetic fertilizers, protecting soil health and farmer welfare.

Innovative and recycled materials: This approach is significant, creating significant technological efficiencies in resource depletion and waste. Specifically, materials in this group include Recycled materials and Regenerated Cellulose. Recycled materials are recycled polyester (rPET), derived from post-consumer PET bottles, which helps reduce plastic waste from landfills. Recycled cotton and wool utilize pre- and post-consumer textile waste, reducing the need to grow virgin fibers. Regenerated cellulose materials such as Lyocell (e.g., Tencel™) are produced from dissolving wood pulp sourced from sustainably managed forests (e.g., FSC certified) through a closed-loop chemical process that recycles over 99% of the solvent.

Bio-synthetic and novel fibers: This area includes innovations such as Pinatex (from pineapple leaf waste), Mylo (from mycelium, the root structure of mushrooms), and biopolymers that replace fossil fuels with renewable plant sources.

2.3.1 Sustainable material standards

To substantiate sustainability claims and prevent greenwashing, a robust ecosystem of third-party certifications has been developed. Each sustainable business uses a different source of raw materials from different suppliers. Applying a framework of standards through certifications will ensure consistency and compliance with the quality of the source material. These standards provide verifiable assurance, along the chain of custody, for materials. Some typical standards and certifications include:

- Global Organic Textile Standard (**GOTS**): This is the leading global standard for the processing of textiles made from certified organic natural fibers. It rigorously assesses the entire supply chain, including ecological criteria (e.g., chemical inputs) and social criteria (based on the International Labour Organization).
- Global Recycled Standard (**GRS**): This is a comprehensive, voluntary product standard that verifies the recycled content of materials (both pre- and post-consumer). It also sets criteria for social and environmental disposal processes, as well as chemical restrictions.
- **OEKO-TEX** Standard 100: Although not a sustainability standard, it is an important safety standard. This standard tests the final product and all its components for a range of toxic substances, ensuring that textiles are safe for human health. This certification focuses on the safety of the final product. It ensures that products (from yarns, fabrics, to buttons) have been tested and are free of substances harmful to human health (such as fluff, formaldehyde, azo pesticides, etc.). OEKO-TEX® guarantees product safety, but it does not necessarily mean that the production process or materials are 100% organic or sustainable.
- Cradle to Cradle (**C2C)** Certified™: This is one of the most rigorous standards, evaluating a product's safety for human health and the environment as well as its circular design (i.e., its ability to be recycled or composted permanently).

2.3.2 Compare with fast-fashion material

The material portfolios of fast fashion and sustainable fashion are in stark contrast, reflecting their divergent economic and environmental priorities.

	Sustainable Fashion Materials	**Fast Fashion Materials**
Material portfolio	Optimized natural fibers, Recycled Materials, Regenerated Cellulosics, Bio-Synthetics and Novel Fibers	**Virgin Polyester:** A synthetic fiber derived from fossil fuels (petroleum). **Conventional Cotton:** A natural fiber
Standard	**GOTS, GRS, OEKO-TEX** Standard 100, Cradle to Cradle (**C2C)** Certified™	Not required
Affect to environment	Require little water or pesticides, eliminates pesticides and synthetic fertilizers, protecting soil health and farmer welfare, creating significant technological efficiencies on resource depletion and waste	Energy-intensive, and as a non-biodegradable plastic, it sheds microplastics with every wash and persists in ecosystems for centuries; notoriously resource-intensive, accounting for a significant percentage of the world's insecticide and pesticide use and requiring vast quantities of water for irrigation.

Table 2: Comparison of Sustainable and Fast Fashion Materials.

2.4 The current situation of sustainable material supply in the sustainable fashion industry in Sweden

The supply of sustainable materials in Sweden can be theoretically analyzed through the lens of an Innovation Ecosystem, where value is co-created by interconnected actors including government bodies, research institutes, and private enterprises. Sweden's ecosystem is characterized by a "post-industrial" model that prioritizes technological advancements in materials science over traditional agricultural solutions. Rather than focusing on agricultural-based solutions like organic cotton, the Swedish model is fundamentally post-industrial, relying on technological innovation, materials science, and a strong circular economy framework. The strategy is based on three core pillars: industrial-scale up-valorization of textile waste into new feedstocks, development of new sustainable fibers from abundant ligno-cellulose resources, and the catalytic role of local brand demand in driving these innovations.

Textile-to-Textile Supply is Sweden's biggest strength. They see textile waste as a raw resource to create new materials (Svensson, 2023). This addresses a key bottleneck in recycling: the efficient sorting of post-consumer mixed fabrics, as manual sorting is labor-intensive and error-prone. From an ecosystem perspective, infrastructure like the SIPTex plant in Malmö serves as a "platform leader," enabling other actors to access high-quality sorted textile waste. This reduces the search costs for circular materials, although the high energy and capital intensity of such technologies—as seen in the bankruptcy of Renewcell—highlights the economic fragility of radical innovation. This infrastructure is a key enabler, providing the raw material quality essential for next-generation recycling technology.

Sweden has become a hub for advanced chemical recycling technologies that break down textile waste at the molecular level to regenerate new, virgin fibers. Renewcell's Circulose® is a patented dissolving pulp made from 100% post-consumer cotton and viscose waste. This process effectively reverses the production cycle, breaking down the cellulose from old clothing and recycling it into pulp. This pulp acts as a direct replacement for raw materials in the existing viscose production supply chain. This innovation has been recognized by major global brands such as H&M Group through collections using fabrics made from Circulose® (Jansson and Olsson, 2022).

Despite being a pioneer, this field faces major financial challenges. Notably, Renewcell filed for bankruptcy in early 2024, showing that scaling up this recycling technology to the market is still difficult and expensive.

In parallel with its focus on valuing waste, Sweden is leveraging its abundant forest resources to develop new sustainable raw materials from cellulose (Swedish Agency for Economic and Regional Growth, 2023). This strategy taps the country's already developed forestry sector to create new textile fibers from wood pulp. Applying Resource Dependence Theory, the Swedish model reveals a significant power imbalance. Micro-SMEs are highly dependent on the innovations driven by a "strategic alliance" of large-scale incumbents, such as the TreeToTextile venture involving H&M Group, Inter IKEA Group, and Stora Enso. The partnership focuses on scaling up a new, low-impact process for producing man-made cellulose fibers. The technology, being demonstrated at a demonstration plant, is reportedly significantly less chemical and energy-intensive than traditional viscose production. This effort represents a concerted effort to invent a new, sustainable virgin fiber from a domestic source.

Joining the effort is Södra, a large Swedish forest industry group, which has commercialized OnceMore®. This is the world's first large-scale textile pulp that combines both virgin wood cellulose and recycled cellulose waste. OnceMore® is a hybrid material, typically combining recycled cotton from post-consumer clothing with cellulose from Södra's sustainably managed forests. This "source-blended" pulp offers a practical solution for absorbing textile waste, using high-quality wood fibers as a carrier for typically weaker recycled fibers. This innovation has been adopted in the market by brands like Filippa K, demonstrating a viable model that utilizes forest resources and provides a solution for textile waste. While these large-scale partnerships create a "market pull" effect that de-risks capital investment for new fibers like Circulose® or OnceMore®, they simultaneously reinforce the dominance of large brands that can afford the high costs of these pioneering materials.

Ultimately, the success of this entire ecosystem cannot be separated from the influence of powerful Swedish fashion and retail brands. Companies like H&M, Nudie Jeans, Houdini Sportswear, and Filippa K are key drivers of demand and important innovation partners. H&M Group, one of the world's largest retailers, has a huge influence on global supply chains. By setting ambitious public targets for recycled and sustainable materials, these brands create a stable, large-scale market for

innovators like Renewcell, TreeToTextile, and Södra. This symbiotic relationship helps to de-risk the significant capital investments required for innovation. The brands create an important "market pull" effect, acting as testbeds and platform customers, accelerating the transition from lab-scale innovation to commercial supply. This ecosystem, where local innovators are supported by dedicated local brands, is a hallmark of the Swedish model.

2.5. Gaps in Current Literature and Relevance to Swedish SMEs

Despite a growing body of research addressing sustainability in fashion, notable gaps remain, particularly regarding the micro-level practices and regional dynamics influencing small and medium-sized enterprises. In Europe, there are many countries that are restricting the fast fashion firms in the market and require them to be more sustainable (Lee and Ostberg, 2013). For example, the French National Assembly has significantly penalized fast fashion product manufacturers to reduce their environmental impact. Accordingly, the regulation is required to increase the environmental fee to 10 euros per product by 2030 and ban manufacturers from advertising these products. The EU has long been vocal about curbing fast fashion and has also issued serious environmental warnings, especially about waste. It is estimated that the EU generates 5.2 million tons of clothing and footwear waste each year. This proposal aims to reduce textile waste from now until 2030, while tightening regulations on textile waste related to the fast fashion industry. After the French National Assembly has successfully launched that regulation, it will be sent to the French Senate for further consideration and voting (Lee and Ostberg, 2013). If it becomes an official law, fast fashion brands will face more challenges from regulators. The proposal would impose new obligations on the textile sector, with the proposal to establish extended producer responsibility (EPR) schemes that would make companies that sell textile products take responsibility for the entire life cycle of their products (Lee and Ostberg, 2013). Manufacturers would be responsible for collecting, sorting, and recycling clothes and everything from carpets to mattresses, based on the responsibilities of member states (Lee and Ostberg, 2013). Sweden and its sustainability development are already at the stage that many developing countries are following. The Swedish garment industry is difficult to survive and is almost exits out of the market, moving toward a more circular business model (Lee and Ostberg, 2013). Over the last decade, Swedish fashion has caught the attention of customers and businesses all around the world. By doing that, some brands are contributing significantly, such as in H&M, which is the world's third-largest fashion retailer (Lee and Ostberg, 2013). H&M sells low-cost clothes that follow

current trends in Europe, the US, and Asia. In addition, H&M's store is catching customers' eyes with its large space and display (Lee and Ostberg, 2013). The company is known for strong supply chain management and has kept growing by running its business in new ways and using creative marketing (Lee and Ostberg, 2013). For example, it partners with artists, fashion designers, and luxury brands for some collaborations.

Current research often adopts a macro-level perspective, focusing on how large multinational brands respond to regulatory pressures like the European Green Deal. However, there is a significant theoretical gap in understanding the "micro-foundations" of sustainability within SMEs. Institutional Theory suggests that while the Swedish government provides a "sustainability ecosystem" through grants and circular economy policies , these frameworks often exert "coercive isomorphism"—forcing small firms to adopt standards (like GOTS or GRS) that are structurally designed for high-volume producers.

Islam et al. (2021) highlight that for SMEs, the lack of tailored institutional support and the high cost of compliance information create an "information asymmetry" that hinders their growth. This study addresses this gap by examining how Swedish SMEs employ "bricolage" (making do with what is at hand) to overcome these institutional voids, particularly in the sourcing of sustainable materials.

2.6 Summary

This chapter provides an overview of sustainability in the fashion industry, highlighting the challenges faced by companies as they transform and highlighting the role of Small and Medium Enterprises (SMEs), while also pointing out the gap between theory and practice in the Swedish SME environment. On the theoretical side, this chapter introduces Slow Fashion as a counterweight to Fast Fashion, prioritizing less production, better design and consumption, and reduced waste and pollution. Fundamental concepts such as Cradle to Cradle (recycling materials) and Functional Design are also highlighted. The shift to the Circular Economy (reuse, recycling) is reshaping the industry's strategy. The fashion industry faces major challenges such as pollution and significant carbon emissions. Sustainability has become a core strategic issue for textile companies, affecting every aspect from operations to supply chain management. Balancing profits, people, and the environment is a difficult task. The three main actors in this transformation are

suppliers, customers, and regulators. For SMEs, this ecosystem often feels exclusive rather than inclusive. As Islam et al. (2021) argue, without specific meso-level intermediaries to aggregate the small-scale demand of SMEs, these businesses remain "peripheral actors" in the Swedish innovation landscape, unable to access the breakthrough fibers reserved for the ecosystem's "core" players. This chapter also addresses technological trends (sustainable fibers, 3D printing) that SMEs often lead. Consumer behavior towards sustainable products is complex, influenced by economic and social factors, while the rise of digital media and fast fashion brands creates pressure to cut costs and complicate sustainability efforts. In short, SMEs need to find solutions to adopt sustainable practices and new technologies while remaining profitable and competitive in the market. Furthermore, existing literature often focuses on large-scale fashion corporations, leaving a gap in understanding how micro-SMEs navigate systemic barriers such as high certification costs and unreliable material flows (Islam et al., 2021). This study aims to fill this gap by exploring the specific survival strategies of Swedish SMEs in a resource-constrained environment.

Chapter 3 - Methodology

3.1 Introduction

This chapter presents how the research was designed and how the methodological approach was adopted to find the relevant evidence for the current study. Methodology is important because it provides a roadmap for answering research questions. Research methodology is usually how the researcher chooses the proper research method to investigate deeper into research problems. The role of methodology is to carry out the scientist's work with suitable tools and techniques, where the research problem is related (Dubey and Kothari, 2022). On the other hand, the methodology is about procedure and techniques to conduct research (Dubey and Kothari, 2022). There are two common research methods, which are the qualitative research method and the quantitative research method; both research methods are commonly used in academic research. In this study, in order to investigate how Swedish SMEs' fashion firms identify themselves in the marketplace and overcome the challenge of sustainable sourcing material, the qualitative research method is used to interview some SMEs that are operating in the Swedish market and also aim to expand into the international market. This chapter mainly discusses the rationale with support from the qualitative research method because it is suitable for the research environment of Sweden.

3.2 Research Approach

3.2.1 Rationale for Qualitative Research

The research process typically begins with activities such as identifying problem statements, reviewing relevant literature, sampling identification, measurement of sampling, data collection and data analysis, and interpreting results to conclude the entire research (Dubey and Kothari, 2022). Most academic research follows this structure, and the outcome of research is dependent on which research method is chosen, which type of sampling is picked, or what measurement can be used. Because different measurements may measure and review the data from different perspectives. It is difficult to design a research project without a research methodology; researchers always need to identify the methodology before starting any project (Dubey and Kothari, 2022). Based on the literature review, existing literature shows that understanding supply chain practices, understanding the supplier capabilities, and full awareness of innovation adoption with clear organizational strategies can help the SMEs to achieve sustainability in their business model.

However, with the challenges, in-depth interviews are useful, which benefit from qualitative methods that can make the content richer and more meaningful.

In this study, the qualitative research method is chosen because it can delve deeply into human behavior, experiences, and social events (Shrivastava et al., 2024). In addition, a qualitative research method usually concentrates on non-quantitative data from sources, involving in-depth interviews, observation, or focus groups (Shrivastava et al., 2024). The qualitative research method is different from the quantitative research method, which is more focused on numerical data. The qualitative research method can work well when it needs to evaluate the problems where context, human experience, and activities are important (Shrivastava et al., 2024). The researcher can look for people's emotions, motivation, and experience through an interview. Moreover, this method can explore some human perspectives that a quantitative research method cannot reach because it relates to human emotion (Shrivastava et al., 2024).

3.2.2 Methodological Paradigm

This research is grounded in an interpretivist paradigm, which involves understanding the phenomenon from the outcome of the research. The interpretivist is different from the positive approach because it has clear objectives. Based on human experiences and perception, the phenomenon can be extracted from the actual context. The interpretivist approach is based on the theory that researchers can think of, then find evidence from the research method to support the relevance.

The methodological model "Research Onion" of Saunders, Lewis, and Thornhill (2019) is the most intuitive and popular. It is necessary to research from the outside in, from philosophy to data collection, to ensure comprehensive coverage of the problem while still providing detail.

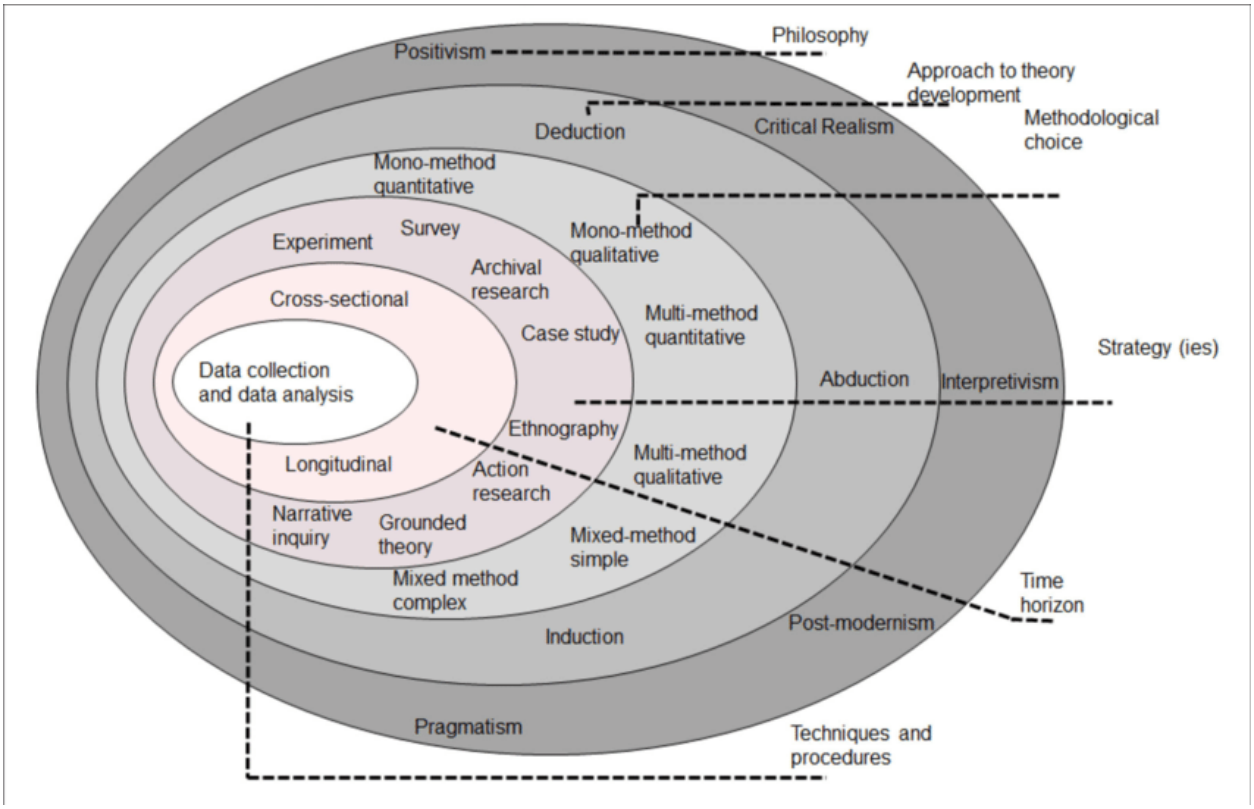

Figure 11: Research Onion. Source: Saunders et al., 2019, p. 108.

Level (The "Onion" Layer)	**Choice**	**Rationale (Logical Justification)**
1. Philosophy	**Interpretivism**	The aim of this study is not to measure the level of difficulties in the sustainable fashion industry, but to understand and interpret the subjective experiences and perceptions of difficulties from the perspective of businesses, and to propose optimal solutions from practice.
2. Approach	**Inductive**	Starting from specific data sources (interviews with managers), general models or themes are

		drawn out about the difficulties of finding sustainable raw material sources. That is, the theoretical framework will be built from real data, instead of verifying available theories.
3. Strategy	**Multiple-Case Study**	Each "selected SME fashion enterprise in Sweden" will be a "case". By studying many cases, similarities are analyzed, compared, contrasted and found as well as differences, increasing the depth and reliability of the results.
4. Methodological Choice	**Mono-method: Qualitative**	Since the whole focus is on understanding the context, experiences and processes (rather than statistics), the qualitative method is the only and most suitable choice.
5. Data Collection	**Semi-structured Interviews**	Conducting real interviews with a set of guiding questions but still requiring flexibility to be able to dig deep into the unexpected individual answers that the interviewee gives.
6. Data Analysis	**Thematic Analysis**	This is the core method for "analyzing the interview results" in a systematic way. the recurring themes in the interview data will be identified, analyzed and reported to draw conclusions about the most practical difficulties, from which to come up with the most practical solutions.

Table 3: Research Onion model applied.

3.3 Research setting

3.3.1 Scope

The subjects of this study are small and medium-sized enterprises in Sweden; therefore, the scope of the study is limited to geographical locations in Sweden.

3.3.2 Industry

The interviewees are said to operate in the sustainable fashion industry.

3.3.3 Business form

The selected subjects are small and medium-sized enterprises. This context is different from large corporations (like H&M), as SMEs have limited resources, more flexible processes, and lower bargaining power with suppliers.

3.3.4 Time

The research was conducted in the Spring of 2025.

3.4 Research design

This study aimed to interview SMEs in Sweden. The social network LinkedIn, which provides extensive company profiles, especially for startups and SMEs, was utilized to choose interview subjects. After identifying target SMEs via LinkedIn, a formal invitation was sent (via email or LinkedIn message) explaining the purpose of the research, ensuring the confidentiality and anonymity of participants and companies. Interviews were only conducted after receiving written or verbal consent (informed consent).

The semi-structured interview questions (attached in the Appendix) were organized around core themes (challenges, sourcing strategies, support). Before each interview, consent to be recorded was confirmed. The Zoom platform was chosen as being essential for maintaining the flexible, conversational nature of a semi-structured interview, allowing for probing and follow-up questions. Each interview lasted approximately 60-90 minutes. The interviewer maintained a flexible conversational atmosphere, allowing participants to tell their stories based on their

experiences, while using probing techniques as needed to dig into specific details related to sustainable material sourcing. After the interview was completed, the audio data was recorded and then transcribed. This transcript was then used as the basis for qualitative data analysis.

Qualitative methods were used to classify and describe the difficulties, solutions, policies, and support regimes. The recruitment of participants and the interviews were conducted in the spring of 2025.

The collected data was recorded for analysis, comparison, and results.

3.5 Participants

The research sample includes 4 SMEs operating in the sustainable fashion sector. Qualitative research emphasizes detail and depth in comprehending phenomena, as opposed to the generalizability of statistics. Therefore, dedicating sufficient time to conduct extensive interviews, meticulously analyze each case, and gather rich data allows a sample of four to encapsulate four distinct, in-depth perspectives, yielding a more profound understanding than a cursory survey of numerous companies. Furthermore, the four chosen companies exhibit no overlap, and the gathered data is sufficiently comprehensive, enabling the identification of the central subject to address the research questions. This proves the sufficiency of the data.

The scale of small and medium enterprises (under 10 employees) is appropriate to ensure resource constraints. To collect the most useful information, connections were made directly with supply source decision-makers, such as CEOs, purchasing heads, or business founders. In general, all subjects have similar characteristics in terms of scale, field of operation, many difficulties, and limited resources.

	SME 1	SME 2	SME 3	SME 4
Business Model	Local Upcycling & Redesign	Ethical & Social Enterprise	Upcycling Model	Small-Scale B2B Production
The length of operating time	10 years	3 years	3 years	3 years
Interviewee	Founder and Designer	Founder	Founder and Designer	Founder and Designer

Table 4: Participants.

3.6 Data collection tools

The primary data collection tool was the **semi-structured interview**. This method aligns directly with the study's interpretivist paradigm, as it allows for a deep and nuanced exploration of the participants' unique experiences and perspectives.

An interview guide was developed (see Appendix), which served as a flexible framework rather than a rigid script. This guide ensured that all key research topics were covered across the four cases, but it also provided the freedom to:

- Ask spontaneous follow-up questions to probe deeper into participant responses.
- Explore unexpected themes that emerged during the conversation.
- Adapt the wording or order of questions to fit the natural flow of the interview.

All interviews were conducted synchronously online via video conferencing. With participants' explicit consent, all interviews were audio-recorded and later transcribed verbatim to ensure the accuracy and integrity of the data for analysis.

3.7 Data analysis

The data collected from the interview transcripts were analyzed using **Thematic Analysis**, as identified in the research methodological paradigm. This method is a systematic process for identifying, analyzing, and reporting patterns within qualitative data. The analysis followed a rigorous, multi-stage process:

- **Familiarization:** First, the audio-recorded interviews were transcribed. The full transcripts were then repeatedly read while listening to the audio. This immersion was critical to gaining a deep and holistic understanding of the participants' accounts.

- **Initial Coding:** Each transcript was systematically reviewed, and 'codes'—short descriptive labels—were applied to text segments that captured a relevant idea or were related to the research questions.

- **Theme Generation:** The various codes were collated and grouped based on shared patterns and concepts. These initial groupings were then organized into potential overarching themes and sub-themes.

- **Reviewing and Naming Themes:** These potential themes were reviewed and refined, checking them against the coded data and the entire dataset to ensure they were a coherent and accurate representation of the participants' experiences. Comparing and contrasting the themes *across* the four SME cases at this stage helped to identify the core findings, patterns, and divergences presented in Chapter 4.

This systematic process ensured that the findings were not arbitrary but were grounded directly in the participants' lived experiences.

3.8 Ethical Considerations

The ethical concern in doing research is significant, critical to protect confidential information from participants. Principles of ethical consideration include informed consent, privacy, and the researcher must ensure minimum harm of information is not leaked (Shrivastava et al., 2024). Before conducting the interview, there is a list of SME companies in Sweden that are suitable for the sampling selection and are shortlisted. Email invitations are sent to each participant with

respect to the language. All participants provided informed consent before the interviews. Company and individual names were anonymized in all transcripts and the final thesis to protect confidentiality. Audio recordings and transcripts were stored securely and deleted after analysis, following GDPR. After the interviewees have given their consent and confirmation, the consent form is shared with each interviewee before the interview. The consent form covers all the privacy and compromise policies which are protecting information from being leaked. The data collected from each interview will be kept in the storage USB with an enabled password and will be deleted after five years after the interview.

3.9 Summary

This chapter presents the research design and methodological approach used to find relevant evidence for the current study. In this study, to understand and interpret the experiences, subjective perceptions of difficulties from the business perspective, and how these challenges are overcome, the "Research Onion" method is applied to analyze deeply from the outside in. The interviews were conducted with selected subjects based on many criteria, to access real data, qualitative analysis, model building, and thereby proposed the most suitable solution for similar SMEs.

Chapter 4 - Data Finding

Sustainable fashion SMEs all share a commitment to sustainability, but each has a unique route to development. The choice of raw materials, quality, and price of sustainable materials is determined by each company's geographical location, conditions, plans, and business model. Therefore, the four firms' interview findings provide four distinct and independent outcomes. They do, however, have certain similarities with Sweden's sociopolitical and economic status. The first firm (SME 1) concentrates on upcycling in the area where its headquarters and facilities are situated, whereas SME 2 follows a community-based handcrafted production approach. SME 3 follows a strategy that combines refinishing technology and mixed sourcing, whereas SME 4 concentrates on small-scale manufacture using high-quality materials from Vietnam.

Specifically, 4 businesses have development strategies and face difficulties in sourcing sustainable raw materials as follows:

4.1 Sourcing sustainable material strategies and challenges

The material sourcing strategy is the foundation that defines each company's sustainability model. The analysis of the four cases shows a clear differentiation into two main groups: models based on a circular economy that exploits post-consumer waste, and models based on ethical or small-scale supply chains of virgin materials.

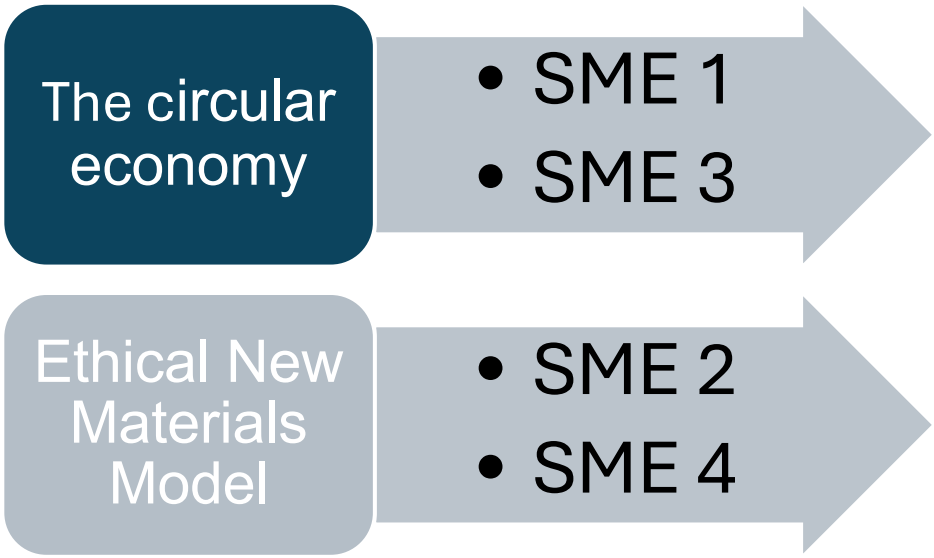

Figure 12: The material sourcing strategy.

4.1.1 The circular economy model

SME 1 represents a fundamentally circular and local model. The company relies entirely on Swedish second-hand stores (e.g., Myrorna, Stadsmissionen) and private donations for its sourcing. Its philosophy reflects a strong commitment to reuse, prioritizing high-quality, natural fabrics such as linen, cotton, and denim—materials with the mechanical strength to be recycled. Importantly, SME 1 actively excludes synthetic fibers (polyester) from its supply chain, citing concerns about microplastics and degradation times, demonstrating a deep understanding of environmental impact at the material level.

Similar to SME 1, SME 3 taps into local second-hand sources (flea markets, donations). They favor natural fabrics and avoid polyester. This combination of local and international sourcing creates a more complex, hybrid model that both utilizes local post-consumer waste and seeks to access distinctive artisanal materials from other cultural contexts.

4.1.2 Ethical new materials model

In stark contrast to the circular group, SME 2 and SME 4 focus on sourcing new materials from Vietnam, but there are fundamental differences between the two businesses.

SME 2 is currently more concerned with social impact. Their main sources of supply are from ethnic minority women and social enterprises, which are considered to be the more vulnerable communities in society. What they pursue is not only the sourcing of sustainable materials (such as hemp, linen, and batik dyeing techniques) but also the preservation of traditional crafts and supporting the livelihoods of the community. This is a deeply ethical sourcing strategy that prioritizes human and cultural values alongside ecological values. However, this model is inherently fragile, especially given its reliance on hemp—a material whose supply is limited due to legal barriers to cultivation and the decline of traditional practices.

SME 4, on the other hand, operates closer to the traditional B2B (business-to-business) supply chain, but on a micro scale. They source from fabric mills and wholesale suppliers in Vietnam. SME 4 focuses on sourcing high-quality, natural fabrics such as silk, linen, and cotton. Their strategy highlights the typical economic barriers faced by small businesses: they desire certified

materials but are hindered by high minimum order quantity (MOQ) requirements, forcing them to rely on smaller, non-certified suppliers.

Sourcing is the clearest differentiator. SME 1 and 3 position themselves as actors in the circular economy, exploiting textile waste. In contrast, SMEs 2 and 4 operate within a linear (albeit improved) economy, focusing on social ethics (SME 2) or high-quality materials at a small scale (SME 4). All four businesses share the common trait of avoiding the use of synthetic fibers, indicating a consensus towards the original sustainability goal.

4.2 Certification, Quality Assurance, and challenges

The four firms exhibit a striking homogeneity in their pursuit of raw materials: none of them employs comprehensive formal certification systems, such as GOTS or OEKO-TEX. Consequently, all four companies have developed alternative quality assurance processes.

4.2.1 Barriers to Standards Certification

The lack of certification is attributable to institutional hurdles rather than a lack of demand from enterprises. SME 4 highlights that sustainable certifications are often inaccessible. Key barriers include high costs, a lack of credible suppliers, and short validity periods. Most critically, these certifications are often restricted by high Minimum Order Quantity (MOQ) requirements. SME 2 faces another challenge when sourcing from craft villages or small suppliers in Vietnam: local manufacturers frequently lack awareness of or access to international certification processes because they are small and medium-sized, and the current Asian market does not require standard certification to operate. Standard certifications for raw material manufacturing are essentially irrelevant to SME 1 and SME 3, which operate on a post-consumer waste basis.

4.2.2 Informal Validation

Maintaining the quality of input materials is critical. In the absence of government standards certification for sustainable raw materials, firms are actively creating techniques to self-verify and assure alternative quality. They develop verification methods based on *tacit knowledge* and *trust*.

- Material Expertise: SME 1 and SME 3 are using hands-on experience. They rely on visual and tactile assessment to assess quality. Notably, both mention the use of the “burn test”—a simple,

low-cost field method to differentiate natural fibers from synthetic (plastic) fibers. This is an informal but highly effective form of quality assurance for microenterprises. In addition, checking the material label is a common method that both SME 1 and SME 3 use.

- Trust and connections: Because they work in intricate multinational supply chains, SME 4 and SME 2 place a high value on personal connections. SME 4 focuses on personal networks and online organizations, whereas SME 2 must establish long-term relationships with producer communities. This shifts quality assurance from a transactional to a relationship-based process.

- Storytelling as an Authenticity Tool: When certification was not an option for SME 2, businesses used storytelling and transparency about cultural origins to communicate product sustainability and authenticity to customers instead.

SME 4 believed their company was too small to justify standard certifications, planning to pursue them only if they scaled up.

This research demonstrates a major disconnect between worldwide sustainability certification methods and the practical reality of micro-enterprises. These methods appear to be geared for large-scale, high-cost companies, thereby excluding small, creative enterprises. This creates a significant barrier to acquiring sustainable raw materials. As a result, these SMEs are compelled to create their own quality assurance processes, using their artisanal skills and social capital.

4.3 Production process

The four companies' production processes directly reflect their sourcing strategies, which are differentiated into three models.

Figure 13 : Production process model.

4.3.1 Deep Transformative Recycling (SME 1)

SME 1 employs the most complex transformative process. The interviewee described a process that starts with the collection of old clothes, which are completely dismantled, and then restructured into new, unique products. Craftsmanship, creativity, and artistic value are important here. This model also incorporates sustainable design principles, such as offering flexible sizes (e.g., M to XL) to increase inclusivity and reduce waste due to incorrect sizing.

4.3.2 Traditional Craft Manufacturing (SME 2 and 4)

SME 2 and SME 4 focus on slow production rather than recycling. Their approach is based on conserving ancient skills (batik dyeing, hemp weaving). This suggests a lengthy production process that is reliant on artisan skills and has a high cultural significance.

4.3.3 Refinishing and Customization (SME 3 and 4)

SMEs 3 and 4 use a less labor-intensive transformation strategy that focuses on *adding value* to current goods.

- SME 3 does "refinishing," which includes putting embroidery or decorations on old sweatshirts or slacks. Notably, this company has made a strategy shift: instead of intricate, time-consuming things (such as old shirts), they now use simpler, flatter materials (such as tablecloths,

curtains, and jeans) to boost manufacturing efficiency. SME 3 also pursues severe waste reduction by repurposing excess fabric as accessories (for example, hair scrunchies).

- SME 4 creates "customization" for plain materials or new, simple clothes. Similar to SME 3, they emphasize textiles that are simple to cut and change (linen, cotton) to maximize productivity.

The production process demonstrates a balance between artistry and commercial efficiency. SME 1 and SME 3 pursue an artistic path, creating unique products. SME 2 preserves cultural values through slow production. Meanwhile, SME 4 demonstrates commercial acumen, as they proactively adjust the production process to *optimize labor time* and *material efficiency*, a key factor in maintaining the survival of small businesses.

4.4 Customer perception

All four enterprises reported highly excellent client feedback; however, the reasons differed based on each SME's business style. Customers in these niche marketplaces appear to prioritize values beyond the product itself.

4.4.1 Valuation of Artisanal Authenticity and Upcycling

The distinct ideas of uniqueness and craftsmanship were found to be the main pillars of customer valuation for SME 1, which specializes in upcycled goods. Customers of this business were already aware of and actively sought out its specialized recycling services (such as reusing their own denim clothing). The qualitative data indicate that the perceived value of the artisanal skill used effectively neutralized or overshadowed any latent consumer skepticism regarding the recycled provenance of the materials. The primary value signifier that emerged was not the origin of the raw material but rather the authenticity that is inherent in the craft process.

4.4.2 Valuation of Narrative and Ethical Impact

SME 2, on the other hand, used a narrative-driven marketing approach, communicating the cultural significance and community origins of its products through photobooks and social media platforms. Customer feedback analysis demonstrated a high appeal to the narrative feature of the offering. This idea of value was rooted in ethical and affective considerations—specifically, the

story of supporting ethnic minority women and the perceived contribution to the preservation of cultural heritage. This suggests a consumer impetus toward ethical consumption, wherein the purchase transaction is viewed as a form of social and emotional investment.

4.4.3 Valuation of Quality Perception and Eco-Consciousness

SME 3's case presents a distinct phenomenon related to perceived quality and ecological value. One important discovery was that consumers often confused the products made from recycled materials with those made from virgin materials. Upon discovering the product's recycled origins, the predominant reaction was not negative; rather, it reportedly transformed into admiration for the product's uniqueness and its positive environmental implications. This suggests that the renewal and manufacturing quality achieved by SME 3 is sufficiently high to subvert and dispel prevalent negative preconceptions often associated with second-hand or recycled goods, such as concerns over hygiene or inferior value.

4.4.4 Valuation of Supply Chain Transparency and Provenance

Supply chain transparency was clearly the foundation of SME 4's value proposition. This enterprise proactively cultivated consumer trust by disseminating verifiable information regarding its fabric suppliers via its website. Customers responded positively to detailed explanations regarding the specific provenance and unique qualities of the materials, such as the use of traditional Bao Loc silk. This indicates that for this specific consumer segment, value is constructed through access to information, material verification, and the assurance of authenticity

However, sometimes they face skepticism from consumers due to a lack of certifications and organza silk easily mistaken for polyester sheer fabric.

The sustainability aspect (whether recycling, ethics, or transparency) was a value-add. These businesses successfully positioned their products not as commodities, but as artwork (SME 1), heritage (SME 2), or smart products (SME 3, 4). They were not just selling clothes, but also the uniqueness of the sale, ethics, and transparency.

4.5 Main challenges in sourcing sustainable materials

Despite the different models, the challenges faced by the four SMEs can be grouped into core issues related to the supply chain and the economics of small-scale. Specifically, the most prominent challenges for each business are as follows:

4.5.1 Challenges of Supply Chain Stability and Authenticity

SME 2 represents SMEs that face the most significant and systemic issues. Their supply chain is extremely fragile: the supply of hemp fabric is limited and unstable; quality verification can only be done once the goods have arrived in Sweden (which is expensive and time-consuming); and manual production times are long. This is a high-risk model.

4.5.2 Economic Challenges and Barriers to Entry

The biggest challenge is the high cost of sustainable materials, as new production requires high technology or skills, time-consuming, organic silk products are more expensive than polyester, and high MOQ requirements from certified suppliers. This forces them to constantly adapt their products (e.g., switching from silk to linen) and rely on informal networks (like Bao Loc silk, which has no MOQ) to survive. This is typical of SME 4.

4.5.3 Labor Efficiency and Price Challenges

SME 3 emphasizes the contradiction between sustainability and the economy. They find the recycling process for certain items (such as shirts) too time-consuming, which directly results in a high cost that makes it unviable, leading them to adapt their strategy to materials that are easier to process.

4.5.4 Skills Challenge

Compared to other firms, SME 1 and SME 3 have the easiest time getting sustainable resources right now. Their issue, it is claimed, is in their capacity to distinguish high-quality textiles visually, by label scrutiny, or by burning. The constraints for both SME 1 and SME 2 are not raw resources, but rather the founders' professional abilities.

4.6 The official policy support system

The interview results reveal the most constant and concerning impact of institutional support policies for SMEs in the sustainable fashion industry: the full isolation of these micro-enterprises from the official policy support system.

Responses from all four SMEs, whether explicitly stated or implied, converged on one common point: policies, regulations (Swedish/EU), funding programmes, or industry support networks seemed non-existent, inaccessible, or irrelevant to their operating practices.

This disconnect was explained by various perceived and practical barriers.

SME 1's complete lack of mention of any policies or support structures reinforces the hypothesis that these systems are completely outside the firm's awareness or strategic concern. Taken together, these findings point to a significant gap between the intentions of public policy and the operational realities of niche SMEs.

This attitude is further amplified by SME 2, which actively chooses a self-management and autonomous strategy. This implies that seeking external intervention is not only not feasible, but may also be undesirable, perhaps due to concerns about losing autonomy in its unique business model.

SME 3 perceived support as limited and attributed the cause directly to the small size. This indicated a perception of an inherent mismatch between the criteria of the support programme and the operating realities of micro-enterprises.

Meanwhile, SME 4 expressed uncertainty about the regulatory implications and acknowledged a limited understanding of existing programmes. Notably, this firm expressed a desire to avoid unnecessary stress, suggesting a strategic calculation that the administrative burden and bureaucratic complexity of pursuing support may outweigh the potential benefits.

This discovery indicates a systemic failing. Policy frameworks aimed at promoting sustainability seem to be failing to reach micro-level players, who are frequently the most inventive. These SMEs operate in a parallel ecosystem, depending on resilience, personal networks, and autonomy

over institutional backing. This raises serious concerns regarding the design and reach of policies that help SMEs, particularly in the green and circular economy.

Theme	SMEs no.1	SMEs no.2	SMEs no.3	SMEs no.4
Sourcing	Second-hand, donation.	Vietnam artisan fabrics.	Second-hand, donation, flea market.	Vietnam silk factory, deadstock supplier.
Certification	None, burn test	None, storytelling	None	None, wants certification but too costly
Production	Creative upcycling, redesign	Hemp, batik textiles	Creative upcycling, redesign	Embroidery + alterations
Customer Perception	Positive, value uniqueness	Positive, storytelling	Positive, value uniqueness	Transparency builds trust, sometimes get skeptical
Key challenge	Irregular fabrics, time consuming, balance profit vs labor/ time cost.	Scarcity of hemp, no certifications, check the quality when the products arrive to Sweden.	Irregular fabrics, time consuming, balance profit vs labor/ time cost.	High cost of eco fabrics. Do not get sample of deadstock fabrics before production, check the quality when the products arrive to Sweden.
Policy	None	Low	Minimal	Low

Table 5: Theme analysis.

Chapter 5 - Further Analysis and Finding

The four interviews focus on small and medium-sized firms (SMEs) in Sweden's sustainable fashion sector. The findings give a detailed micro-level overview of not just the numerous operational tactics, but also the systemic fault lines and impediments. Beyond a basic description of company operations, the data enables us to deduce underlying causes and larger implications, particularly in the context of a highly developed, environmentally concerned, but high-cost economy such as Sweden. The four firms together represent four cases: SME 1: Local Recycling; SME 2: Vietnamese Community-Crafts; SME 3: Mixed Recycling; and SME 4: Vietnamese Small Manufacturing. This leads to theorizing on four main concerns in this study, including: (1) key sourcing barriers and challenges, (2) balancing sustainability with financial and scalability demands, (3) the role of networks, collaboration, and innovation in sourcing strategies, and (4) the impact of policy frameworks and institutional support.

5.1 Key Sourcing Barriers and Challenges

The research reveals a structural mismatch between the global sustainable materials market and micro-enterprises. While the literature suggests that third-party certifications like GOTS or OEKO-TEX are essential for credibility , this study finds they act as a barrier for SMEs due to high costs and Minimum Order Quantity (MOQ) requirements. This confirms the "exclusion" effect for small-scale actors noted by Pookulangara and Shephard (2013) regarding the difficulty of maintaining operational costs while being sustainable.

This research, however, reveals that for micro-SMEs, this formal certification system functions as a structural barrier rather than a tool. As SME 4's experience shows, the high costs and MOQ requirements of the formal system described in the literature effectively exclude them from participation.

Consequently, these SMEs have developed a parallel system of 'informal validation'. The 'burn test' is not a sign of negligence; it is a pragmatic and necessary 'proxy validation' in response to a formal certification ecosystem that has structurally failed them. Where literature presents certification as the solution, these findings show it is, in fact, part of the problem for small-scale actors. The use of burn tests by SMEs 1 and 3 highlights a critical failure of the formal certification ecosystem (GOTS, OEKO-TEX), which is designed for large corporations. This creates a parallel,

informal system of validation, forcing micro-enterprises to shoulder risks that policy and industry should be mitigating. This pragmatic approach represents a form of "bricolage" necessitated by the lack of affordable, certified local suppliers—a gap in the Swedish ecosystem previously identified by Niinimäki et al. (2020). This finding directly addresses sub-question 1 regarding traceability barriers.

Small and medium-sized enterprises are forced into an informal or secondary supply chain. This is reflected in two models, the circular economy (represented by SMEs 1,3) and the Ethical new materials model (represented by SMEs 2, 4).

- **The circular economy (SME 1, 3):** This approach is based on the post-consumer waste market, which includes charity stores (Myrorna, Stadsmissionen) and flea markets. The issue here is not the cost of raw materials (which are frequently inexpensive or free), but the variation in quality and the high labor costs necessary to sift, clean, and reorganize the resources.

- **Ethical new materials model (SME 2, 4):** The organization is based on small-scale producers, artisan communities (SME 2), and flexible suppliers (such as Bao Loc silk from SME 4). The supply chain is fragile, which presents a difficulty. SME 2 exemplifies this well, given its reliance on a limited hemp supply and issues with distant quality monitoring.

This polarization and structural disconnection have serious implications for sustainable fashion SMEs:

- First, it transfers all validation risk from the supplier to the SME. In formal supply chains, GOTS certification provides a standardized assurance. In informal supply chains, SMEs must develop their own expertise. SME 1's usage of "burn testing" is more than simply a temporary fix; it is an example of proxy validation. They are forced to rely on tacit knowledge and physical skills—assets that cannot be readily copied or transferred—rather than codified information (i.e., certification).
- Second, it introduces inherent unpredictability into production planning. SME 4 is continually "tweaking the product" (changing from silk to linen) according to material cost. SME 2 has an unpredictable hemp supply. This prohibits SMEs from creating stable, core product lines, forcing them to adopt a reactive rather than planned manufacturing style. In Sweden, where consumers demand consistency and good quality, volatility is a big competitive disadvantage.

Niinimäki et al. (2020) primarily emphasize the environmental costs of materials. In contrast, this study reveals that labor and certification expenses are the main burdens for SMEs. This creates a distinct set of sustainability challenges for smaller firms. The disparity arises from production scale; larger companies, due to their extensive output, exert a greater environmental impact and must adhere to elevated environmental protection standards. Consequently, the environmental cost of materials becomes the most concerning expense. As for SMEs like the 4 businesses above, along with their small scale of production, this is not a worrying cost.

5.2 Balancing Sustainability with Financial and Scalability Demands

As learned in the literature review, sustainable businesses need to maintain the Triple Bottom Line structure, ensuring the balance of the 3P factors (Planet, people, profit). However, research on sustainable fashion SMEs illustrates the difficult mix between ethical objectives and financial realities that is essential to their survival. According to qualitative data, these enterprises are more than just "small businesses," but rather economic entities that are continually negotiating a "value paradox". The "value paradox" is central to these SMEs: they must reconcile ethical commitments with a market that prioritizes cost efficiency. As discussed in the Triple Bottom Line framework (Elkington, 1997), a sustainable brand must balance "Planet, People, and Profit". However, for the interviewed SMEs, "Profit" is often sacrificed for "Planet" and "People". They are based on a normative commitment to sustainability but must function in a commercial environment that values cost efficiency and scalability.

The root of this tension is a mismatch between the high-cost structure of sustainable practices and the price points the market is willing to accept. These SMEs' sustainability models include considerable and unique expenses. For upcycling models (SME 1, 3), the primary burden is labor time rather than material cost. This aligns with Bocken et al. (2014), who argue that circular business models require higher internal effort to create value from waste. These firms are stuck in a "scalability trap," lacking the economies of scale enjoyed by giants like H&M to offset these labor costs. The conversion of an old product into a new, higher-value product is a time-consuming and extremely laborious operation. SME 3's strategy decision to convert from producing shirts (difficult and time-consuming) to tablecloths (simpler) exemplifies the financial efficiency imperative. They are forced to reduce labor costs per unit to protect their already slim profit margins.

In parallel, models based on ethical sourcing (e.g., SME 2, SME 4) carry the major expense of raw material intake. SME 4 points out that the foundation material, organic silk, is far more costly than polyester or normal silk. Similarly, SME 2 is allegedly paying a fair price by committing to sourcing from marginalized areas, which directly raises input prices when compared to commodity market purchases.

The issue is that the consumer market, especially in a pro-sustainability framework, is reluctant or unable to completely absorb these higher prices. This is demonstrated by SME 2's proactive endeavor to keep costs low to reach more customers and SME 4's mention of profitability as a major concern. These remarks clearly indicate that firms operate with exceedingly small profit margins. They may be self-subsidizing their sustainability goals by spending personal wealth or accepting below-market labor pay to keep operations running.

As a direct result of this continuous financial stress, survival tactics have diverged sharply, rather than following a straight, predictable route of growth.

SME 1 exemplifies the first strategy, Traditional Craft Manufacturing. This method requires careful recognition of scale constraints. By emphasizing "unique" and "handmade" things, SME 1 promotes itself in a niche market, the art/craft market, rather than the mass-produced fashion sector. In this paradigm, value is established by distinctiveness, brand narrative, and workmanship, allowing the company to charge a higher price. However, this technique is fundamentally unscalable since manufacturing capacity is rigidly restricted by the time and abilities of a single or small group of craftspeople.

The second method, shown in SME 3 and SME 4, is "Refinishing and Customization". This is the "bricolage" route, which is defined as constant patching, usage, and improvisation. These SMEs are continually adjusting the factors in their business model (materials, designs, manufacturing methods, and sourcing) to achieve a temporary financial equilibrium. SME 3's abandoning of elaborate, time-consuming designs and SME 4's sourcing of Bao Loc silk (which does not require a Minimum Order Quantity - MOQ) are both examples of pragmatic adaptation. Their existence is dependent on flexibility and adaptation to limits, but this also impedes the creation of a consistent brand and long-term growth plan.

SME 2 is pursuing the third strategy, the "Ethical new materials model". This model explicitly prioritizes social impact (supporting disadvantaged communities) over financial returns. The underlying risk here is that the firm may blur the distinction between a commercial and a social venture. The financial viability of this model may become dependent on the founder's patience and capacity to "self-fund," or it may ultimately require external investment (although SME 2 is presently refusing this option).

In Sweden, labor and living expenses are among the highest in the world, making labor-intensive company models (SME 1, SME 3) especially susceptible. These companies appear to be stuck in a "scalability trap". They are too tiny to realize economies of scale in sourcing and production. At the same time, the sustainable approach they are pursuing is prohibitively expensive in comparison to rapid fashion. Finally, they lack the brand value of luxury companies to charge a premium price that is stable and adequate to pay their expenses. They are caught in a hazardous intermediate position that is tough to maintain financially in the long run.

5.3 The Role of Networks, Collaboration, and Innovation in Sourcing Strategies

In fact, Sweden has developed many recycling technologies, such as Circulose® by Renewcell, TreeToTextile, together with the alliance of businesses such as H&M Group, Inter IKEA Group, and Stora Enso or Södra and Filippa K, as researched and analyzed in the Literature review section. However, a comprehensive study of the sourcing strategies of four small and medium-sized enterprises (SMEs) in this thesis reveals a central paradox: while innovation is a clear prerequisite for survival and addressing sustainability challenges, innovation activities are largely siloed, isolated, and reactive. The nature of this innovation is severely impeded by a distinct absence of formal collaboration networks, raising concerns about the efficacy of established corporate support ecosystems.

The primary cause of this isolation appears to be a lack of mediators between these micro-enterprises. Empirical data demonstrate that all four SMEs operate independently of existing networks that are mostly personal in character and of comparable modest size. For example, SME 4 exchanges information through informal Facebook groups, but SME 2 uses long-standing personal contacts in Vietnam. In contrast, SME 1 and SME 3 rely on anonymous and transient trade connections at flea markets, where knowledge about the origin of commodities is scarce.

Firms lack formal support mechanisms. There are no circular material hubs where SME 1 and SME 3 can consistently access sorted and validated scrap. Similarly, there are no buying consortia or industry groups that would allow SME 4 to partner with other designers, pooling their resources to achieve tight minimum order quantity (MOQ) criteria from GOTS-certified suppliers. This absence of intermediation is especially striking given Sweden's global reputation for its "triple helix" approach, which promotes tight collaboration between government, academia, and business. This conclusion offers a worrying possibility: Sweden's current innovation frameworks may have been created and optimized for digital startups or large-scale industrial firms, rather than micro-craft makers, who have different demands and limits.

This structural isolation directly shapes the nature of their innovation. Instead of pursuing strategic innovation, such as long-term expenditures in R&D of new materials, adopting supply chain innovations, or forming strategic supplier agreements, four organizations innovate by exploiting existing resources. First, we observe process bricolage in SME 3, where the designer streamlines the cutting process (changing to cutting tablecloths) to save waste. This is a nice efficiency invention, but it makes no fundamental changes to the product or material. Second, SME 1 practices validation bricolage using "burn testing." This is a great heuristic for quickly adapting to the lack of knowledge and openness in the informal supply chain. Third, SME 2 exhibits narrative bricolage by employing "storytelling" and "picture books" to compensate for his lack of professional accreditation. This was a savvy marketing and value-building innovation that converted a perceived weakness (no certification) into a perceived strength (cultural authenticity and openness in the process). Finally, SME 4 made a significant sourcing breakthrough by locating a silk supplier with no MOQ. While this was a significant logistical achievement, it was mostly a reaction to an acute crisis, rather than a purposeful effort to construct a sustainable and robust supply chain.

During the period of this innovation, these SMEs had to invest a large amount of time and effort merely to keep operations running and fix core supply chain issues. They were forced to repeat the same routine day after day, rather than allocating resources to higher-value-creating initiatives like strategic growth, premium design, or market expansion. Because of a lack of connections with intermediate groups, they are unable to achieve collective benefits and must rely on limited resources.

5.4 Impact of Policy Frameworks and Institutional Support

As established in the literature review, Sweden is a global leader in sustainability, with a robust ecosystem, government incentives, and a strong commitment to the circular economy. The literature details top-down frameworks like the European Green Deal and Extended Producer Responsibility. However, one of the most remarkable and constant results across all four firms is the apparent absence or ineffectiveness of legislative frameworks and institutional support mechanisms for micro-enterprises functioning in the sustainable fashion industry. This absence of assistance is not an accident or an accidental omission, but rather a systemic institutional emptiness. Businesses are actively pursuing circular and ethical goals as advocated by national and regional policies, but they do so in an environment with limited engagement or assistance from governmental institutions and authorities. This mismatch is caused by fundamental differences in scale, language, and operating logic between the two sides.

The studies and the actual scenario in Sweden show that there are three major explanations for this condition.

- First, the challenge stems from the nature of macro-level policy formulation. Major sustainability policies and regulations, such as the EU Sustainable Textile Strategy or the Ecodesign standards, are designed from the top down, with a focus on large-scale polluting impacts, namely huge fashion firms. As a result, all these regulations are intended to be compatible with well-resourced businesses that have specialized legal, administrative, and R&D teams. Micro-enterprises that lack these frameworks are denied admission.
- The second reason is that sustainable fashion SMEs are so few and have such a minor influence on the Swedish economy, politics, and society that they are nearly invisible or unreadable. They are too tiny to count, too geographically distributed, and, most crucially, too different in their business models (ranging from high-tech recycling, repair, and handicrafts) to benefit from consistent support measures. According to SME 3, they believe they are too small for politicians to consider as intervention targets.
- Third, the complexity, uncertainty, and time-consuming nature of the administrative process create a barrier between SMEs and support policies. SME 4's response—that seeking and applying for support would be more complex and costly than sourcing on their own—is crucial. It shows that, for a micro-entrepreneur who is managing all aspects of operations simultaneously,

the costs in terms of time, mental effort, and emotional energy of navigating the bureaucracy are perceived to be significantly greater than any potential benefits. Therefore, the autonomy chosen by SME 4 may not be a philosophical preference for independence, but rather a learned strategy to avoid unnecessary complexity.

This institutional vacuum has two profound and paradoxical negative effects on the entire Swedish sustainable fashion ecosystem. First, it privatizes the risk of sustainable transition. These SMEs are left to shoulder the financial and market risks themselves. In fact, instead of relying on resources to support sustainable businesses, they are taking a pioneering role in testing and developing new business models (circular, on-demand manufacturing, repair, and ethical materials). They are doing this innovation without any institutional safety net.

Second, and more importantly, it generates a policy contradiction. While Sweden and the EU invest billions of dollars in macro-sustainability goals, they utterly disregard assisting nimble, creative actors that are already implementing those models. The unintended effect is that present laws, by focusing solely on huge firms, may unwittingly strengthen incumbents' positions rather than supporting a diverse range of innovative business models. Large firms have the financial and legal means to meet the increasingly rigorous Ecodesign rules. Meanwhile, micro-SMEs lack the necessary resources to obtain such compliance materials. As a result, policy runs the danger of impeding the bottom-up innovation required to attain its own objectives.

5.5 Summary

Interviews and analysis of four sustainable fashion SMEs reveal a worrying reality. We see a group of resilient, innovative entrepreneurs who pioneer circular and ethical business models in the sourcing of sustainable materials. However, they are doing so independently, on their own, rather than through a system.

They are caught between being excluded from formal sustainable supply chains due to scale barriers or being isolated from institutional support mechanisms due to scale and bureaucracy incompatibility.

The result is a disconnected ecosystem of like-minded but SME businesses, characterized by reactive innovation, defensive financial strategies, and a reliance on the knowledge and personal networks of the business owners.

Without other support policies and specific, simple, and accessible collaboration platforms, these businesses will continue to be left behind the circular and fairly economy that Sweden is aiming for.

Chapter 6 – Conclusion, Recommendation and Limitation

6.1 Conclusion

SMEs create more job opportunities for local people, thus contributing significantly to the national economy. SMEs drive major factors for economic growth but face many difficulties in terms of management, organizational structure, human resource management, and financial structure (Islam et al., 2021). SMEs face common issues such as getting raw materials, low-tech capabilities, high admin costs, limited access to useful business information and policies, and a lack of policies that make it more difficult to enter the market. In addition, SMEs have opportunities because they're able to operate across many areas in the country, and they can employ different talent from different regions (Islam et al., 2021).

The results indicate that the most significant challenges are high costs and certification barriers, which means sourcing sustainable raw materials consumes a disproportionate number of resources. Although businesses themselves have proactively balanced, handled difficulties, searched for and inspected suppliers, they still need support from organizations and competent authorities to connect with resources for sustainable raw materials.

6.2 Recommendation

Based on an in-depth analysis of four SME cases and the systemic challenges they face, it is clear that single solutions (such as trying to find new suppliers) are not enough. Their difficulties are structurally related to scale, cost, isolation, and policy gaps.

The most effective solutions, therefore, need to be collaborative and strategic, aiming to build the meso-level infrastructure that previous analyses have shown is lacking.

Four strategic solutions are proposed, designed to directly address the sourcing barriers faced by these four SMEs

6.2.1 Collective Purchasing Consortium

One of the most immediate and structural barriers facing sustainable fashion SMEs is the high costs and Minimum Order Quantity (MOQ) requirements for certified materials (such as GOTS or OEKO-TEX). As the case of SME 4 illustrates, these requirements effectively exclude SMEs from

the formal supply market, forcing them to look for less optimal alternatives. To address this, a practical solution proposed is the formation of purchasing consortia. This model requires a strategic shift from SMEs operating independently to establishing transactional collaborations based on similar material needs—for example, between SME 4 with other small designers in Sweden.

The mechanism of this alliance is demanding aggregation, combining many small orders from many businesses into one large order, reaching the MOQ level. This collective order allows the group to meet the MOQ requirements, opening the door to access large-scale, certified factories and suppliers. Moreover, larger order volumes create opportunities to negotiate more competitive prices. Finally, businesses will share the costs of appraisal, ordering, and shipping with each other, significantly reducing the financial burden from complicated administrative procedures.

It is evident that the effectiveness of this solution is understandable; it directly breaks the barrier of economies of scale, allowing micro-businesses to act together as a branded customer, and most importantly, connects the micro-demand of businesses with the operational reality of the global sustainable materials supply chain.

6.2.2 Selected circular material hub

The inverse connection between the quality of raw materials and the high labor costs of their supply is a barrier for upcycling firms, as demonstrated by SME 1 and SME 3. These firms rely on post-consumer waste, which means that the cost of raw materials (sometimes extremely low) is offset by labor expenses, which are required to complete the process of sorting, cleaning, and assessing fabric quality.

To address this problem, the proposed solution is the formalization of the informal supply chain. This model requires a shift from SMEs sourcing raw materials themselves to cooperating with organized suppliers (such as Myrorna or Stadsmissionen). In terms of the mechanism of operation, SMEs (such as SME 1) will offer their expertise to train the staff of secondhand stores to recognize and pre-sort high-value fabrics, such as 100% linen, premium denim, or cashmere. In return, these charities create a curated line of Premium Materials and sell them at a slightly higher but still reasonable price to SMEs.

The impact of this solution is a clear win-win model. Firstly, SMEs save countless hours of labor (their biggest cost) and receive a quality-tested, consistent supply, allowing them to focus on design and production. Secondly, charity shops create a new, higher-value revenue stream from the same amount of donations. Thirdly, the entire circular economy benefits as the value of textile waste is effectively enhanced, preventing good materials from being overlooked or mismanaged.

6.2.3 Shared Verification Resources

SMEs are facing risks and costs in verifying the quality and ethics of international supply chains. SME 2 relies on Vietnamese craft villages, so they face huge risks as they can only check the quality when the goods arrive in Sweden. Meanwhile, SME 4 relies on trust and informal networks. These methods are too risky to scale up.

This solution proposes sharing the cost of verification instead of each SME doing it on their own. Instead of relying on individual “burn tests”, groups of SMEs (especially SME 2, 4) can jointly fund a common resource in Vietnam. The mechanism of this method is that the businesses will jointly hire an agent or an independent verification service locally. These people will visit craft villages (for SME 2) to verify ethical claims and artisanal processes, and collect documentation (photos, videos) for “storytelling”. Intermediaries will proactively seek out special suppliers (like Bao Loc silk found by SME 4) for the group. They will finally perform basic quality checks before the goods are shipped, removing risk for the SMEs in Sweden.

This solution professionalizes the informal supply chain. It reduces risk, saves on travel costs, and gives SMEs access to a wider, vetted supplier network, with a much higher level of trust.

6.2.4 Policy Advocacy & Micro-Grant Platform

There is an institutional vacuum and an invisibility of SMEs in support policies. All four SMEs think that current policies are inaccessible because they are too complex and inappropriate. They are too small to be noticed, which makes them unable to access capital, which is an important factor in paying for expensive sustainable materials.

The thesis could propose a solution to build a policy advocacy & micro-grant platform. This is the most systematic solution. SMEs must stop acting as individuals and become a collective bloc with a political voice. For example, sustainable micro-SMEs (like these four SMEs and similar

businesses) will proceed to form a formal association. Instead of SME 3 thinking that they are too small, the association will approach Swedish government agencies (like Tillväxtverket) and they will represent 50 micro-enterprises that make up the circular economy, calling for support from the competent organizations. They can then request the design of smaller but accessible funding packages with a simple application process, specifically for testing sustainable materials or covering certification costs.

This solution addresses the root cause of the financing problem. By having access to small but flexible funding, SMEs can purchase sustainable materials that were previously out of reach, directly addressing their sourcing challenges.

6.3 Limitation

A primary limitation of this study is the small sample size of four SMEs, which prevents broad statistical generalization. The number of businesses pursuing sustainable development is becoming huge, as people are increasingly aware of protecting life and the planet. Therefore, the number of surveys in this study cannot cover all types of business activities. However, they are still typical representatives of a segment of small and medium-sized enterprises in the garment industry. Should conditions develop further, future research aims to continue this work, exploiting more deeply and widely to comprehensively approach businesses and provide more optimal solutions.

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Appendix

Full interview transcripts are not included in this thesis to protect participant confidentiality and comply with GDPR. They are stored securely and can be provided to the examiner upon request.

List of interview questions:

Can you briefly describe your brand and how it incorporates remade, upcycled fashion, or sustainable fashion?

What inspired you to choose sustainable fashion as your core business model?

For sustainable fashion:

1. Material Sourcing Challenges

- Where do you source your sustainable materials (locally/internationally), and what difficulties do you face?
- How do certifications (e.g., GOTS, OEKO-TEX) impact your sourcing decisions?
- Have you struggled with the limited availability or high costs of eco-friendly fabrics?

2. Strategies to Overcome Challenges

- Have you partnered with suppliers, labs, or other brands to improve access?
- Do you prioritize local vs. global suppliers? Why?
- How do you communicate material sustainability to customers despite supply constraints?

3. Consumer Perception & Communication

- How do customers typically respond to the idea of your products?
- Have you encountered skepticism around the value, source, or material of the products?
- How do you communicate the sustainability value of your products to your customers?

4. Business Challenges & Strategy**

- How do you balance affordability and sustainability in your pricing model?

- Have you had to adapt your business model due to sourcing difficulties or consumer behavior?
- Can you share an example of a sourcing or production challenge and how you overcame it?

5. Policy & Industry Support

- Do Swedish/EU regulations help or complicate sustainable sourcing?
- Are there grants, networks, or incubators that assist SMEs like yours?

Specific examples (e.g., "Can you describe a time when sourcing failed and how you adapted?").

For remade fashion:

1. Material Sourcing Challenges

- What types of materials or garments do you use for remaking (e.g., secondhand, deadstock, donated)?
- Where and how do you typically source these materials?
- What are the biggest sourcing challenges you face (e.g., quality, volume, variety)?
- How do you ensure material quality and consistency when working with secondhand inputs?
- Are there any sustainability or certification standards you try to meet, even with non-traditional sources?

2. Production Process

- Do you face any technical or design challenges when working with pre-used materials?
- How do you manage sizing, customization, or repairs when working with irregular materials?

3. Strategies to Overcome Challenges

- Have you established partnerships with second-hand shops, donation centers, or textile sorters?

- Do you collaborate with local designers, tailors, or artisans to support your remaking process?

4. Consumer Perception & Communication

- How do customers typically respond to the idea of wearing remade or upcycled fashion?
- Have you encountered skepticism around the value or hygiene of remade clothing?
- How do you communicate the sustainability value of your products to your customers?

5. Business Challenges & Strategy

- How do you balance affordability and sustainability in your pricing model?
- Have you had to adapt your business model due to sourcing difficulties or consumer behavior?
- Can you share an example of a sourcing or production challenge and how you overcame it?

6. Policy & Industry Support

- Do Swedish/EU regulations help or complicate sustainable sourcing?
- Are there grants, networks, or incubators that assist SMEs like yours?

Specific examples (e.g., "Can you describe a time when sourcing failed and how you adapted?").