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Managing Sustainability Challenges in International Fast Fashion Supply Chains

Bachelor's thesis
in International Business

Author:
Joel Repo

Supervisor:
D. Sc. Henna Leino

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Abstract

The fast fashion industry has grown into a substantial industry in the last two decades and its growth has brought up concerns regarding its environmental, social and economic sustainability. Although sustainability has been a growing theme in business for a long time, research that directly applies sustainability themes to fast fashion is limited. Therefore, this thesis analyses the sustainability issues in international fast fashion supply chains and how they can be managed with sustainable supply chain practices. The aim of this thesis is to analyse the supply chain structure of fast fashion companies using the triple bottom line and sustainable supply chain management frameworks. Through these frameworks the thesis categorizes the issues of the industry as well as provides solutions for different steps of the supply chains to become more sustainable.

The fast fashion industry is based on speed, cost-efficiency and global supplier networks. These factors collectively contribute to the unsustainable practices of the industry such as emissions, large quantities of waste and labour exploitation. The application of the sustainable supply chain management framework into the fast fashion industry showed, that addressing these issues required for example cleaner production technologies, route optimization and transparent governance. The findings of the thesis indicate that sustainability and competitiveness can be aligned when fast fashion companies apply SSCM principles into their supply chain management. This however is possible only through a change in managerial decision making and the shift from short-term to long-term thinking in value creation.

Keywords: fast fashion, supply chains, sustainability

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Tiivistelmä

Pikamuotiteollisuus on kasvanut merkittävästi viimeisen kahden vuosikymmenen aikana, ja sen kasvu on herättänyt huolta sen ympäristöllisestä, sosiaalisesta ja taloudellisesta kestävyydestä. Vaikka kestävyys on ollut jo pitkään kasvava teema liiketoiminnassa, tutkimusta jossa kestävyyden teemoja sovelletaan suoraan pikamuotiin ja sen toimitusketjuihin on suhteellisen vähän. Näin ollen tässä opinnäytetyössä analysoidaan kansainvälisten pikamuotialan toimitusketjujen kestävyyshaasteita ja sitä, miten niitä voidaan hallita. Tavoitteena on tutkia toimitusketjujen rakennetta käyttämällä triple bottom line sekä sustainable supply chain management teorioita. Näiden teorioiden avulla työssä pyritään luokittelemaan alan kestävyysongelmat ja tarjoamaan ratkaisuja toimitusketjujen eri vaiheiden muuttamiseen kestävämmäksi.

Pikamuotiteollisuus perustuu nopeuteen, kustannustehokkuuteen sekä globaaleihin toimittajaverkostoihin. Yhdessä nämä tekijät luovat perustan alan kestämättömyydelle muun muassa päästöjen, suurien jätemäärien ja työvoiman hyväksikäytön muodossa. Soveltamalla sustainable supply chain management teoriaa pikamuodin toimitusketjuihin todettiin, että näiden ongelmien ratkaiseminen edellyttää esimerkiksi puhtaampaa tuotantoa, reittien optimointia sekä läpinäkyvää valvontaa. Tutkimuksen tulokset osoittavat, että kestävyys ja kilpailukyky voidaan sovittaa yhteen, kun pikamuotialalle sovelletaan SSCM periaatteita toimitusketjujen hallinnassa. Tämä kuitenkin edellyttää kokonaisvaltaista muutosta johdon päätöksenteossa sekä siirtymällä arvonluonnissa lyhyen aikavälin ajattelusta pitkän aikavälin ajatteluun.

Avainsanat: pikamuoti, toimitusketjut, kestävyys

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1 INTRODUCTION

1.1 Background

The global fashion industry is one of the largest industries in the world, consisting of a vast network of production, distribution and retail activities that operate across continents. While globalization has accelerated in the past decades, fashion has also evolved into a highly globalized and competitive industry, driven by international trade, technological developments and complex global supply chains. (Tokatli, 2008 25-27; Gereffe & Frederick, 2010). This has enabled companies to design products in one region, manufacture them in another and distribute them effectively into global markets (Bruce et al., 2004, 155). However, while the internationalization of the fashion industry has created economic growth and innovation, it has also introduced new ethical and environmental challenges, for example due to fast fashion (Niinimäki et al., 2020, 1-3).

Fast fashion refers to a business model in which clothing is designed, produced and distributed rapidly and at a low cost to meet constantly changing consumer demands and trends. It's defining characteristics are short production cycles, affordable prices and a continuous flow of new collections that imitate current fashion trends (Cachon & Swinney, 2011, 778-780). Companies such as H&M and Zara are great examples of fast fashion companies that introduce new products to stores within weeks rather than months, allowing them to respond quickly to market demand (Tokatli, 2008, 21-23).

The fast fashion model emerged during the late twentieth century as a response to the growing globalization of production and the rise of consumer culture. Advances in logistics, technology and communication as well as the relocation of manufacturing to low-cost countries such as China and Bangladesh enabled brands to reduce lead times while maintaining low prices (Bhardwaj & Fairhurst, 2010, 166-167). The traditional two season fashion calendar was replaced by multiple micro-seasons and therefore creating a shift toward continuous consumption and production. This operation model has created significant sustainability challenges in the industry (Diantari, 2021, 25-32).

Previous studies such as Niinimäki et al. (2020), Tokatli (2008) and Hobson (2013) have thoroughly highlighted the industry's unsustainable practices, such as overproduction and poor labour conditions especially in supplier countries. While these studies offer valuable insights into the nature of the challenges in fast fashion, there is little research on how fast fashion companies can strategically integrate sustainability into their supply chain management processes. This thesis

attempts to fill this research gap by applying two theoretical frameworks, which will be introduced in the next chapter, to examine the practices of fast fashion companies. To create an understanding of the industry and the study, this thesis will first go over the theoretical frameworks that will be used to examine the supply chains in the fast fashion industry. Then, it will go over the structure of the supply chains and highlight the challenges that are caused by the industry's practices. After examining the sustainability challenges of the fast fashion industry, the thesis will analyze how can companies change their operation models in order to reduce the ethical and sustainability-related harms caused by the industry's operations. Lastly, it will conclude the findings and go over future research that could be conducted on the topic.

1.2 Aim of the thesis

The aim of this thesis is to examine how fast fashion companies can manage the ethical and environmental challenges arising from their international supply chain operations. In order to do so, this thesis will use the research question "How can sustainability challenges in the supply chains of the fast fashion industry be managed?" as well as the following sub questions:

- What theoretical frameworks can be used to analyze the sustainability of supply chains in fast fashion?
- How do international supply chains operate in the fast fashion industry and what sustainability challenges do they face?
- How can companies in the fast fashion industry change their operation models to combat the sustainability challenges

This thesis is conducted as a literature review and therefore relies on existing academic literature. The findings are therefore shaped by existing research, which may emphasize certain regions, brands or sustainability challenges more than others. In addition, the complexity of the fast fashion supply chain networks means that some sustainability issues are underreported, which creates gaps in existing literature. These limitations should be considered when interpreting the findings of the thesis.

2 SUSTAINABILITY FRAMEWORKS

This chapter introduces the theoretical frameworks that are used to examine the sustainability challenges of the supply chains in the fast fashion industry. This thesis will be based on two main theoretical frameworks, which are sustainable supply chain management (SSCM) and the triple bottom line (TBL). These theoretical frameworks together provide an understanding of the sustainability challenges that are present in the supply chains of fast fashion, and how these challenges can be managed with the implementation of SSCM.

2.1 Triple bottom line (TBL)

The Triple Bottom Line (TBL) framework is one of the most foundational theories for analyzing and understanding corporate sustainability. The TBL framework was based on the idea that companies should not be evaluated only on their economic performances but also on how they impact social and environmental aspects. Therefore, the framework expands the focus of business performance from only financial metrics to include social and environmental dimensions. This framework encourages organizations to manage their business on three different levels: people, planet and profit, the three pillars of sustainability according to the TBL. At its core, the TBL framework reflects a shift from short-term financial thinking to a holistic model of organizational performance. It recognizes that in order to achieve long-term success, the well-being of employees, communities and ecosystems need to be ensured. (Elkington, 1997, 69-94.) Figure 1 illustrates the TBL framework and shows how all the levels are connected and together create sustainability.

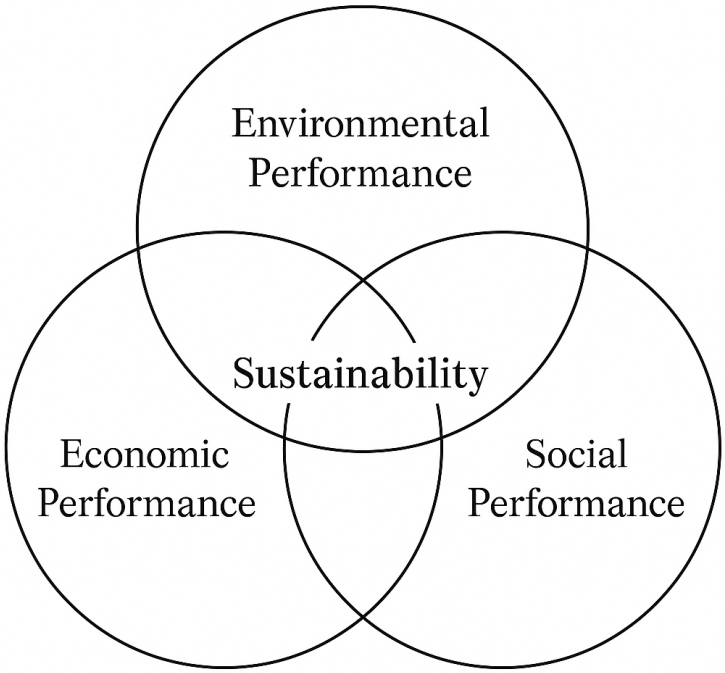

Figure 1 Sustainability: The triple bottom line (Carter & Rogers, 2008, 365)

Over time, scholars have refined the model to address its practical challenges, for example measuring non-financial outcomes and balancing trade-offs between the dimensions of people, planet and profit (Milne et al., 2014, 14). But as Elkington (2018) later reflected, the TBL was never meant to serve as a simple accounting tool but as a transformation framework for redefining capitalism to account for social and ecological prosperity.

2.2 Sustainable Supply Chain Management (SSCM)

Supply chain management (SCM) can be defined as the strategic coordination of business functions both within and across organizations to improve long-term performance for individual companies and for the supply chain as a whole. It involves managing relationships in a network of interconnected firms through business processes that create value for customers and stakeholders. Essentially, SCM integrates activities such as sourcing, production and logistics to achieve efficiency and responsiveness across the entire supply chain. (Lambert et al., 1998, 1-19.)

Sustainable supply chain management adds another layer to SCM by implementing sustainability into the framework (Carter & Rogers, 2008, 368). Sustainable supply chain management can be defined as "the strategic, transparent integration and achievement of an organization's sustainability goals within the coordinated management of its key business processes and relationships". The aim

is to improve both the company's own long-term performance and the sustainability of its wider supply network. (Carter & Rogers, 2008, 368-371.)

The theoretical roots of SSCM come from the TBL concept, which as explained in the section 2.1, emphasizes the three levels of sustainability: people, planet and profit. SSCM however, extends the idea of TBL by directly applying it to supply chain management. SSCM views sustainability not as separate factor, but an important part of decision making in sourcing, production, logistics and distribution (Seuring & Müller, 2008, 1699-1710). Figure 2 illustrates the different levels and dimensions of SSCM including strategy, organizational culture, risk management and transparency.

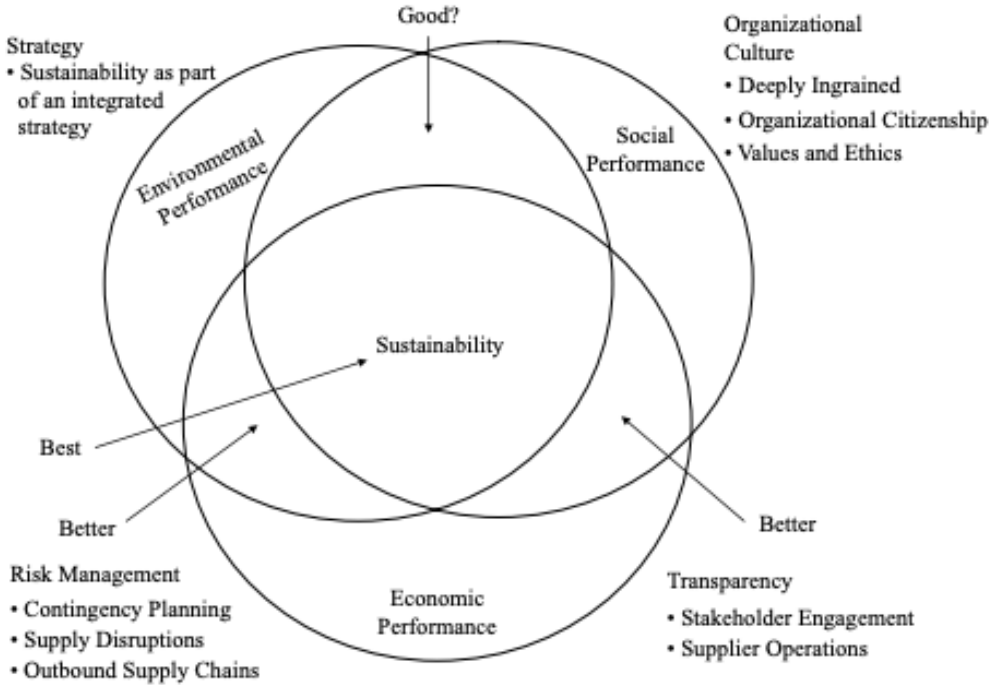

Figure 2 Sustainable supply chain management (Carter & Rogers, 2008, 369)

Figure 2 also shows what aspects do each of the dimensions include within the SSCM framework and how these dimensions work together. The more dimensions a company includes in their operations, the better the result is according to SSCM.

In the past two decades, SSCM has become a central concept in operations and supply chain strategy (Carter & Easton, 2011, 47). Early research in the 1990s mainly focused on isolated areas such as green logistics, reverse logistics and corporate social responsibility (CSR) (Murphy et al., 1994, 46-53). However, these studies often saw sustainability as a bonus to existing business operations rather than as an integrated management system. The integration of sustainability into supply chain management emerged when scholars began to recognize that many social and

environmental challenges, such as pollution and labour exploitation, happen within global supply chain networks rather than within individual firms (Cartet & Easton, 2011, 48).

A major theoretical contribution for SSCM came from Carter and Rogers (2008), who combined principles of supply chain management, CSR and sustainable management into a single framework. Their model put sustainability as a strategic capability that was to be integrated into each step of the supply chains to reach long-term competitiveness and sustainability. This shifted how sustainability was perceived within companies, going from a constraint to profitability to an enabler of operational efficiency and stakeholder trust (Carter & Easton, 2011, 48-49). As Carter and Easton (2011, 49) also note, sustainability requires collaboration and transparency between all actors within the entire supply chain.

3 SUPPLY CHAINS IN FAST FASHION

Global supply chains are one of the defining features of modern production and trade, enabling firms to manage complex networks of activities across multiple countries and continents. As globalization has increased, production processes of global supply chains have become more fragmented, with different stages of design, manufacturing and distribution allocated to different regions based on cost advantages. (Gereffi et al., 2005, 78-81.) This shift in the production processes has given rise to what is referred to as global value chains (GVCs). Global value chains are connected systems of production, logistics and governance that connect firms, suppliers and consumers across countries. Within these networks, value is usually created through the coordination of specialized tasks, governed by lead firms that control for example design and branding and outsource manufacturing to suppliers in developing countries (Gereffi, 1999 38-43).

3.1 The fast fashion business model

The supply chains of the fast fashion industry are designed to prioritize speed, flexibility and cost-efficiency. By doing so, companies can respond to fast changing consumer trends and bring new products to markets in a matter of weeks. Unlike traditional fashion models, which operate in seasonal cycles, fast fashion functions through a continuous product flow that is supported by a coordinated supply network. This operational model is the main reason for the fast fashion industry's success, as it allows firms to minimize the distance between design and consumption (Cachon & Swinney, 2011, 778-780)

Fast fashion supply chains operate as demand-driven networks rather than linear production systems. They do not use a fixed production schedule, but rather use real-time data from retail sales to determine which products to manufacture and when to manufacture them (Bruce et al., 2004, 151-170). Barnes and Lea-Greenwood (2006, 1-17) on the other hand describe the defining feature of fast fashion as the compression of lead times throughout the full supply chain. They also note that shorter cycles are achieved with close coordination between designers, buyers and manufacturers supported by sharing information. This approach forms the basics of the quick response (QR) model, which allows companies to quickly adapt to change and change their inventories multiple times per month (Christopher et al., 2004 13-17).

3.2 Sourcing

Sourcing is one of the most important factors in enabling fast fashion's responsiveness. Fast fashion companies use hybrid sourcing strategies, in which most of their manufacturing is outsourced to developing countries to achieve low costs. (Arrigo, 2020, 2) Most common locations for manufacturing are in Asia, in countries such as China, Vietnam, India and Indonesia, where labour and material costs are low (World Trade Organization, 2023, 80). This often leads to poor labour conditions and raises ethical questions regarding the workers (Köksal, 2021, 14-15). For example, one of the biggest fast fashion retailers; H&M from Sweden, works with only three factories in Sweden and the rest of the nearly 6000 factories are located across the world, most factories being in Asia (H&M, 2025).

This sourcing approach is supported by strategic supplier partnerships, in which companies do not own the factories they manufacture their products in. This applies to for example the previously mentioned H&M, which works with countless suppliers across the world (Shen, 2014, 6236-6249). Companies frequently work with a network of suppliers that meet specific quality and delivery standards. For example, Zara has outsourced its labour-intensive processes to outside suppliers but has maintained partial ownership of some of its suppliers to keep control over critical stages of production (Tokatli, 2008, 21-38).

3.3 Logistics

Efficient logistics are crucial to maintaining the speed and responsivity of fast fashion operators. Essentially the entire system is built on rapid movement, and it requires for global suppliers, regional warehouses and retail outlets to be synchronized. Therefore, logistics are an important part of the fast fashion model, and they ensure that new products reach stores quickly and consistently (Barnes & Lea-Greenwood, 2006, 23). To ensure this, companies use a combination of lean and agile logistics strategies. Lean supply management focuses on minimizing all waste and maximizing value through streamlining processes and reducing costs. Agile supply management on the other hand is an operation where minimal lead times are required to be able to service volatile consumer demand with high levels of availability. By combining these two strategies companies in the fast fashion industry can optimize their logistics operations to match the pace of the fast fashion markets (Bruce et al., 2004 151-170). Transportation is also similarly optimized in the fast fashion industry with the use of multimodal logistics. This means that companies use all of air, sea and

ground transportation modes depending on the urgency of the product. Fast fashion companies often prioritize the use of air freight to achieve fast delivery times and to minimize delays (Matuszak-Flejszman et al., 2024, 7749).

3.4 Summary of the fast fashion supply chain structure

To conclude the structure of international fast fashion supply chains, they operate as highly responsive and demand-driven global networks. They do that by integrating design, sourcing, production and distribution into a continuous and synchronized process. Their efficiency is based on the compression of lead times, hybrid sourcing strategies and agile logistics strategies. While these features allow firms to deliver new products to markets in record times, by doing so they create significant sustainability challenges, including overproduction, waste generation and labour exploitation (Niinimäki et al., 2020, 1-10).

4 SUSTAINABILITY CHALLENGES IN FAST FASHION SUPPLY CHAINS

This chapter analyses the sustainability challenges through the lens of the Triple Bottom Line framework. The TBL approach, introduced by Elkington (1997), allows for the examination of the industry and supply chains beyond financial meters to include social and environmental responsibilities into the evaluation. By assessing the fast fashion industry across the three Ps of people, planet and profit, it provides us with a thorough understanding of the challenges in each step of the supply chains, which will later allow us to analyse the operational changes that are needed in the industry.

The purpose of this chapter is to identify and analyse the main ethical, environmental and economic issues that arise from the structure and operations of the fast fashion supply chains. It highlights how the industry's pursuit of rapid production cycles and cost minimization creates both social and ecological consequences that challenge the industry's long-term sustainability. The discussion is divided into three sections, each discussing one of the three pillars of the TBL framework. The People section explores labour-related ethical concerns and the lack of transparency. The Planet section focuses on the emissions of the industry, caused largely by materials, overproduction and transportation. Lastly, the profit section discusses the economic drivers that sustain these practices such as orientation towards short term-profits. Together, these perspectives provide us with an understanding of what challenges are there in the supply chains of the industry.

4.1 People

The "people" dimension of the TBL framework goes over the social and ethical aspects of business activities, focusing on how the practices of an organization affect workers and communities (Elkington, 1997 84-85). The fast fashion industry's rapid and cost-driven supply chains are largely based on outsourced production and low-wage labour, which creates challenges regarding working conditions, labour exploitation and child labour, especially in developing economies such as Bangladesh and India. The pressure of fast production cycles forces suppliers to operate within tight time and cost restrictions, which results in violations of basic labour standards such as low wages and physically demanding environments. (Seidu et al., 2024, 1-8.)

Studies have shown that working environments in garment factories are often poor and include for instance poor ventilation, low safety standards and limited access to protective equipment (Seidu et al., 2024, 6-7). Seidu et al. (2024)'s review of the working conditions in textile manufacturing also

revealed widespread illnesses and psychological stress among factory workers, directly linked to exposure to dust, heat and toxic chemicals. On top of the health issues caused by poor working conditions, accidents are very common in the fast fashion industry (Hobson, 2013, 317-319). For example, the 2013 Rana Plaza disaster in Bangladesh, which killed over 1100 garment workers (International Labour Organization, 2023). The disaster was caused by both structural negligence and regulatory failures. The construction of the site was made with poor quality materials, additional floors were added to the building illegally and there was weak enforcement of building codes and laws (Jacobs & Singhal, 2017, 63). This case highlights the lack of regulations, governance and the presence of informal subcontracting, which together allow these violations to continue.

Another defining feature of the fast fashion industry's labour practices is extremely low wages. Workers in supplier countries such as Bangladesh and Vietnam often earn far below a living wage and are often paid by the number of garments they produce without any overtime bonuses. Workers often do not also receive any sick, personal or maternity leave (Nayak et al., 2019, 102-111). This economic exploitation is accelerated by a lack of union representation and social protection. In many of these developing countries, factory workers are legally prevented from joining unions and if the workers try to organize, they face retaliations (Maitland, 1997, 597-606). This results ultimately into the workers being trapped in the workplace and while fast fashion provides job opportunities, it simultaneously sustains a cycle of poverty and economic insecurity that heavily contradict with social sustainability (Suarez-Visbal et al., 2022, 779).

Lastly, is the existence of child labour in the fast fashion industry. Even though global brands publicly heavily condemn the use of child labour, it continues to exist in parts of the garment industry, particularly within the less governed subcontract networks (James, 2022, 247-259). In countries such as Bangladesh and India, children are employed in various stages of garment production, often working long hours for minimal or no pay. These children are usually drawn into labour due to poverty and the absence of accessible education, which showcases how social inequality impacts the problem. The lack of transparency in the supply chains allows child labour to remain hidden, especially in smaller workshops that do not have direct governance over their operations. (U.S Department of Labor, 2012, 1-2, 44)

4.2 Planet

Next, section will move onto the environmental issues of the supply chains, the “planet” dimension of the TBL framework. This section will go over the main factors of the supply chains that contribute to causing environmental harm, which are pollution caused by textile production, greenhouse gas emissions from transportation as well as resource losses from constant overproduction (Rukhaya et al., 2021, 517-523).

The biggest contributor to the environmental impacts of fast fashion is the materials that dominate its production. The industry relies heavily on cotton and synthetic fibres, both of which impose large scale ecological impact (Niinimäki et al., 2020, 2-4). Cotton farming is one of the most water-intensive agricultural activities in the world as it requires heavy irrigation and the use of chemical inputs. A single cotton T-shirt is estimated to need over 2700 litres of water, causing issues on ecosystems and communities in the regions of production (Chapagain et al., 2006, 186-203). In addition, many companies in the fast fashion industry have replaced the use of natural fibres with polyester and other synthetic materials. This has replaced water dependency with fossil dependency, as these synthetic materials are made from petrochemicals and they contribute straight to greenhouse gas emissions at the production stage by creating significant carbon dioxide (CO2) emissions (Sandin et al., 2018, 354).

The environmental impacts from fast fashion continue beyond production. The industry’s logistics are designed for responsiveness rather than efficiency in order for products to reach consumers as fast as possible and this comes with high carbon emissions. Even though maritime transportation remains as the primary mode for bulk shipments, many fast fashion companies increasingly rely on air freight to fulfil orders as fast as possible, especially for short-lived cycle items. This is a problem, since air freight-related carbon emissions are up to 44 times higher than ocean freight-related emissions due to the high energy consumption of jet fuel (Matuszak-Flejszman, 2024, 7749).

Lastly, probably the most visible aspect of environmental impacts for consumers; overproduction and the waste that it causes. The industry’s reliance on rapid production and constant new products encourages fast fashion companies to produce far more clothing than the market demands. As a result, billions of unsold clothing are either incinerated or sent to landfills and very few are recycled (Sandin et al., 2018, 353-365). Even the clothes that do go to use have increasingly short lifetimes. For example, the average use life of three different garment types (T-shirts, knit collared shirts and

woven pants) in six countries (China, Germany, Italy, Japan, the UK and the US) is only just over three years per garment (Daystar et al., 2019, 8). The short garment lifetimes as well as increased consumption have led to a 40% increase in landfilled textile waste in the US between 1999 and 2009, and globally textiles account for up to 22% of mixed waste worldwide (Nørup et al., 2019, 454-464; Office of Solid Waste, 2010). Even when clothing does enter recycling, the mixed fibres used make textile-to-textile recycling difficult and economically unviable (Sandin et al., 2018, 353-365). Therefore, most discarded textiles are downgraded into low-grade materials rather than made into new fabrics. This leads to a linear consumption loop in which resources go from withdrawal to waste almost immediately, adding to the environmental challenges of the fast fashion industry (Niero et al., 2017, 552-565).

4.3 Profit

Lastly, the "profit" dimension of the TBL illustrates the economic aspects on which the fast fashion business model is built on. While profitability is essential for the existence of companies, in the case of fast fashion, it has become an objective that overshadows social and environmental consideration. The industry's operational and strategic decision making is driven by short-term financial gains, sustained by price pressures on suppliers as well as economic inequality within the global value chains. These dynamics create the foundation of a system that rewards cost minimization and volume growth rather than long-term sustainability and ethical responsibility. (Taplin, 2014, 246-264.)

The first defining feature of the fast fashion operation model is its short-term profit orientation. Companies such as H&M and Zara have built their success on the ability to act on rapidly changing markets with short response times. This quick response model maximizes profitability and keeps the demand of the consumers stimulated (Barnes et al., 2006, 259-263). However, this operation model generates high returns in the short-term and drives on a cycle of overproduction and overconsumption, making companies prioritize speed and volume over quality and durability in their products (Niinimäki et al., 2020, 10). The profit orientation of fast fashion companies is also seen in the metrics used to measure success. As Perry and Towers (2013, 493-496) note, fast fashion companies measure success through quarterly performance indicators such as sales growth, turnover and profit margins, rather than through metrics of long-term sustainability or social value creation.

This focus on financial metrics directly translates into intense price pressure on suppliers, who carry the operational and ethical costs of sustaining the system. To meet cost targets and delivery schedules, suppliers are forced to operate on minimal margins and carry most of the financial risk. Brands often dictate contract prices, quantities and production timelines, leaving suppliers very little flexibility to invest in working conditions or other aspects of sustainable innovation (Köksal et al., 2017, 15). This imbalance showcases the economic inequality within fast fashion's global production networks. While the fast fashion industry generates billions in revenue annually, wealth distribution across its supply chains remains extremely uneven. As mentioned in section 4.1, workers in fast fashion production earn wages far below living standards despite working long hours in unsafe conditions (Nayak et al., 2019, 102-111). At the same time, brands report record profits and continue expanding into new markets. Scholars describe this phenomenon as the "race to the bottom", where companies knowingly lower the standards on for example worker safety to gain competitive advantage in the markets (Vogel, 1995, 5-6).

4.4 Summary of the three P's

In summary, this chapter has examined the sustainability challenges in fast fashion supply chains through the lens of the TBL framework. The people section revealed how the industry's dependency on low-cost labour and weak governance results in poor working conditions and labour exploitation. Second, the planet section demonstrated the severe environmental impacts caused by textile production, means of transportation and the unsustainable cycle of overproduction. Lastly, the profit section showcased how the industry's short-term financial orientation, price pressure on suppliers and unequal distribution of wealth in the supply chains add to economic inequality and stand in the way of progress towards sustainability.

5 SUSTAINABLE SUPPLY CHAIN MANAGEMENT IN FAST FASHION

This chapter analyses different steps of the supply chains through the sustainable supply chain management (SSCM) theory (Carter & Rogers, 2008) and how it can be implemented in the fast fashion industry to combat its sustainability challenges. In the context of the fast fashion industry, SSCM helps to explain how companies can design and manage supply networks more responsibly. As highlighted in chapter 4, the industry's globalized production structure often exposes workers to unsafe conditions while also contributing to pollution and resource depletion (Perry & Towers, 2013, 478). By using SSCM as a theoretical lens, it allows for the evaluation of how companies can attempt to reduce these problems through measures such as ethical sourcing or the adaptation of transparent supplier relationships. It also helps to explore the practical difficulties of implementing sustainable operations in an industry that largely relies on rapid production and frequent product turnover.

The chapter is divided into three sections of environmental, social and economic performance. By doing so, the chapter will go over the three levels of SSCM and therefore creating an understanding of what companies in the fast fashion industry could do as a whole, to change their operation models to become more sustainable.

5.1 Reducing the ecological footprint

This section will go over the ways fast fashion companies can minimize their ecological footprint through changing their operation models in the supply chains. The section will start from sourcing, then move onto production and lastly go over logistics.

5.1.1 Sustainable sourcing

Sourcing is one of the central areas where the implementation of SSCM is needed in fast fashion. As discussed in chapter 4, the industry relies heavily on global outsourcing to achieve low costs and speed. This dependence has resulted in fragmented supply networks with limited visibility beyond first-tier suppliers, which makes it difficult to manage and govern the suppliers (Perry & Towers 2013, 478-500).

Sustainable sourcing addresses this issue by integrating environmental and social standards into supplier selection. It promotes the use of metrics such as resource efficiency and emission management in the supplier evaluation process (Seuring & Müller, 2008, 1705). According to Köksal et al. (2017, 2-32), effective sustainable sourcing depends on supplier monitoring, third-

party auditing and the development of long-term partnerships that are built on mutual trust rather than for example price competition. Pagell and Wu (2009, 41) add to this by emphasizing that firms must engage suppliers in joint improvement efforts, such as training programs, technology transfer, and fair-payment mechanisms that enable them to adopt sustainable practices without compromising economic viability. Through these joint efforts and governance mechanisms, fast fashion companies could enhance transparency and accountability with their suppliers, reducing the risk of environmental harm and unethical practices in production.

5.1.2 Cleaner production

Sustainable production represents another important dimension of environmental performance. It focuses on minimizing the environmental impact of manufacturing activities with cleaner technologies, resource efficiency and waste reduction (Köksal et al., 2017, 14-19). As showcased in chapter 4.2, conventional garment production in fast fashion relies heavily on synthetic fibres, which generate large ecological impacts (Niinimäki et al., 2020, 2-4). Sustainable production strategies address these issues by implementing for example cleaner production methods and more sustainable materials.

With adopting ecological and low-impact materials to production, the garment production process can be made significantly more sustainable. For example, the use of organic cotton reduces the need for pesticides while conserving water compared to conventional cotton farming (Brydges, 2021, 26). Another effective approach to sustainable production is the adoption of closed-loop supply chain management. It would manage reverse logistics processes to recycle and remanufacture used products (Morana et al., 2011, 682). By recovering and reusing materials, companies could significantly reduce waste generation and the dependency to raw materials. Shen (2014, 6246) also supports this by concluding that sustainable production in fashion involves a shift towards resource-efficient, circular systems that would minimize both environmental impact and production waste.

Such practices align with the SSCM model by integrating environmental and economic performance through long-term resource optimization (Carter & Rogers, 2008, 369). By investing in cleaner technologies, using ecological materials and adopting circular systems, fast fashion companies can move towards a more responsible production model that reduces environmental harm.

5.1.3 Efficient logistics

Logistics is the last component of environmental performance within the supply chains in fast fashion. Fast fashion's logistic systems are designed for speed rather than efficiency, often relying on air transportation to meet fast turnover demands. This approach is effective in maintaining short lead times, but it significantly increases the carbon footprint of the supply chain. (Matuszak-Flejszman et al., 2024, 7749.) Sustainable logistics on the other hand integrate environmental and economic efficiency across transportation, warehousing and distribution processes (Nagy et al., 2024, 30–31).

A key transition toward more sustainable logistics in the fast fashion industry involves shifting from air freight to sea and rail transportation, supported by smarter regional distribution strategies. This structural change allows firms to reduce greenhouse gas emissions without compromising delivery efficiency. According to Bhatia and Srivastava (2021, 452–454), multimodal transportation, which is the combination of different transport modes such as sea, rail, and road can significantly cut both costs and emissions by optimizing load capacity and minimizing empty runs. In addition, nearshoring, the relocation of production closer to major consumption markets, improves flexibility while further reducing the emissions associated with long-distance transportation (Turker & Altuntaş, 2014, 844).

These operational improvements can be further supported through digital tools such as route optimization systems, traceability software, and real-time data analytics. Such technologies improve coordination between suppliers, distributors, and retailers, and therefore they make transport scheduling more efficient and reduce unnecessary shipments (Agrawal et al., 2021, 107130). Ultimately, by combining multimodal transport networks, nearshoring strategies, and digital coordination tools, fast fashion companies can achieve environmental sustainability and operational efficiency within their logistics systems.

5.2 Ethical governance and worker welfare

The social dimension of SSCM emphasizes the human side of production. It attempts to make sure that worker's rights and well-being are ensured throughout all stages of the supply chain (Carter & Rogers, 2008, 368-371). In the context of fast fashion, where production networks extend across continents, social sustainability requires a change from cost-driven management towards a governance system which prioritizes transparency and ethical responsibility (Perry & Towers, 2013, 478-500).

5.2.1 Ethical governance and transparency

Ethical governance is the foundation of social sustainability in fast fashion's global supply chains. It involves establishing systems of accountability, transparency as well as fair management practices that extend across all supply chain levels (Carter & Rogers, 2008, 368). Within fast fashion, effective governance begins with codes of conduct, supplier standards and CSR frameworks that define the expectations related to worker treatment, safety and fair compensation (Perry & Towers, 2013, 495-500). Governance could be improved through for example multi-tier supplier monitoring systems, which instead of limiting governance to direct suppliers, companies could expand visibility to subcontractors, where most social violations occur. This could be achieved through supplier relationship management (SRM) or third-party certifications (Köksal et al., 2017, 3). Furthermore, Pagell and Wu (2009, 38-39) state that long-term supplier partnerships based on shared values and mutual investment encourage suppliers to maintain high ethical standards.

Transparency is an equally important component of ethical governance. Recent technological developments such as blockchain traceability systems and digital supplier mapping would allow brands to monitor multi-tier supply chains in real time and more efficiently, which would improve visibility and accountability (Agrawal et al., 2021, 107130). In addition, according to Köksal et al. (2017, 14-15), public disclosure of supplier lists, and audit results increases stakeholder trust while making suppliers follow higher social standards, therefore mitigating for example child labour and unhealthy working conditions. Therefore, fast fashion companies should aim to shift from voluntary reporting to transparent third-party verified systems to ensure the accuracy of social sustainability reports.

5.2.2 Labour rights and stakeholder collaboration

Ensuring labour rights and fair working conditions is the continuum from efficient governance and transparency and an important dimension of the social aspects of SSCM. As discussed in section 4.1, garment workers in key supplier countries often face unsafe work conditions and excessive hours in the workplaces. To address these issues, fast fashion companies must move toward integrated social governance that includes international labour standards in supplier relations. This can be accomplished with the use of standards such as the International Labour Organization (ILO) and the UN Guiding Principles on Business and Human Rights (UNGPs), which provide widely recognized benchmarks for eliminating forced and child labour as well as ensuring fair wages for employees (Rombouts, 2019, 102-103). Implementing these standards into supplier contracts and

policies would help to align business objectives with worker welfare and ensure that working conditions are up to international standards.

However, social progress requires collaboration beyond the firm and the supplier relationship. Multi-stakeholder initiatives such as the Better Work Programme, which is a partnership between the ILO and the International Finance Corporation dedicated to improving working conditions, have shown that cooperation between different stakeholders such as brands, unions and governments can improve the commitment to sustainability within suppliers and producer countries (Alois, 2018, 145-149; Lupo & Verma, 2020, 6). For the fast fashion industry, adopting such initiatives would create a structured framework for addressing its social, and other sustainability issues in the supply chains.

5.3 Long-term value creation

Lastly, the economic dimension of SSCM redefines profitability from short-term profits to long-term value creation. (Carter & Rogers, 2008, 370). By applying the SSCM model to the fast fashion industry's supply chains and managerial decision making, the industry would see a shift from rapid production cycles and low-cost outsourcing to a more sustainable and efficient business model.

This kind of managerial shift would involve including sustainability into strategic decision making and not treat it as a separate corporate responsibility. Seuring and Müller (2008, p. 1708) highlight that companies integrating environmental and social aspects into financial planning gain both operational efficiency and reputational benefits. For fast fashion companies, this could mean for example performance metrics such as supplier scores, carbon reduction targets and ethical sourcing metrics, that would directly influence managerial decisions. Nigam et al., (2018, 571-576) support this by stating that with tying sustainability outcomes to managerial decision making, companies can ensure that long-term value creation is prioritized over short-term profits.

Innovation also plays an important role in achieving economic sustainability. By investing in for example digitalization and circular models, fast fashion companies can simultaneously reduce environmental impact and costs. Technologies such as the previously mentioned blockchain systems would simultaneously improve supply chain transparency, while also making them more efficient. Furthermore, through the adaptation of circular initiatives companies would be able to extend the lifecycles of products and diversify revenue streams. (Agrawal et al., 2021, 107130; Abdelmeguid et al., 2024, 143).

To conclude, applying the economic dimension of SSCM into the supply chains calls for the shift to long-term value creation and efficiency. However, achieving this requires a fundamental shift in managerial thinking in the fast fashion industry. By aligning managerial motives with sustainability performance within the supply chains through ethical sourcing, cleaner production and effective logistics, companies can improve sustainability and long-term profitability.

5.4 Summary of SSCM in fast fashion

The analysis illustrated how SSCM can be implemented into the fast fashion supply chain processes. Figure 3 summarizes the concrete actions that should be taken in each dimension of the supply chains in order to achieve sustainability within them. Figure 3 also illustrates how all the dimensions are linked to each other which means that in order to achieve change and sustainability in the industry, all parts of the supply chains need to be taken into account.

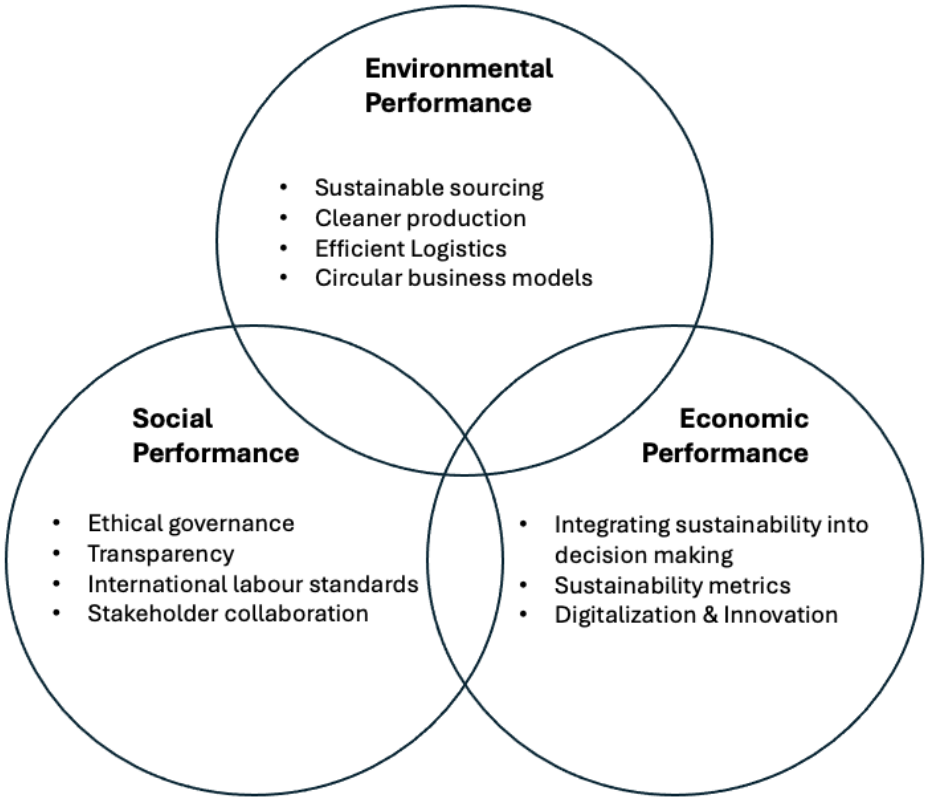

Figure 3 Sustainable supply chain management in fast fashion

6 CONCLUSIONS

This thesis examined how companies in the fast fashion industry can manage the ethical and environmental challenges within their international supply chains. The main research question was "How can sustainability challenges in the supply chains of the fast fashion industry be managed?". To answer this question the study used two theoretical frameworks, which were the Triple Bottom Line (TBL) and Sustainable Supply Chain Management (SSCM). By using these frameworks, this thesis aimed to evaluate how sustainability could be integrated into the structure and management of fast fashion supply chains.

The study identified how the fast fashion model creates sustainability challenges on the social, environmental and economic levels. The findings showed that the pressure to produce quickly and cheaply often leads to poor working conditions and weak governance within supplier networks. Environmentally, the industry's dependence on overproduction and resource intensive materials leads to pollution and waste. Economically, the industry's short-term profitability adds to these unsustainable practices and increases inequalities in the global value chains.

Compared with previous research on the subject, this thesis confirmed many well documented issues in fast fashion, such as labour exploitation and environmental challenges, but also offered an understanding of how these problems are connected across the supply chain stages. By combining the TBL and SSCM frameworks, the study showed that sustainability cannot be achieved with isolated improvements and that it requires a total transformation of supply chain governance, strategy and collaboration.

In practice, the findings suggest several measures that fast fashion companies can adopt to move towards a more sustainable operation model. These include responsible sourcing practices, cleaner production methods, efficient logistics and improved transparency through the supply chain and supplier networks. Furthermore, the use of sustainability metrics in managerial decision making can shift the industry from short-term financial goals to long-term value creation.

Although this study was limited to theoretical analysis and was relatively broad, it outlined the methods that could be implemented into fast fashion for it to become more sustainable. Therefore, this study provides a solid foundation for future research. Further studies should examine how these strategies could be implemented in practice and measure their true impacts on sustainability through

empirical analysis, which would give managers and decision makers in the industry concrete data to base their decisions on regarding sustainability.

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Appendix

Artificial intelligence (ChatGPT 5) was used in this thesis in structuring the thesis and in the checking of spelling mistakes. ChatGPT gave ideas for the structure and helped to make sure the thesis progressed logically forwards. Also, individual chapters were sent to ChatGPT to check for spelling errors and to make sure the thesis held an academic tone.

Prompts:

-Is this structure logical for a bachelor's thesis?

-Are there spelling mistakes in this section?

-How can this sentence be written in an academic tone?

In addition, Scopus AI was used to find academic references of the topic. As Scopus AI is an academic database itself, the sources it provided were academically claimed. The truthfulness of these sources was also ensured by my own evaluation of the sources.