Unveiling Sustainable Practices in German Fashion Brands:

A Comparative Analysis of Strategies and Communication Approaches

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Abstract

The concept of sustainability has gained significant attention among people globally, and it is a major concern for various industries, including the fashion industry. Fashion companies have been criticized for their negative impact on the environment and society, such as high carbon footprints, water waste, and other related harmful impacts on the environment and society. Additionally, concerns about greenwashing have emerged, where companies only talk but do not take any action, or they do not disclose information to consumers. However, many fashion brands have taken steps to increase sustainability and share information about their practices with customers through various communication channels. This study employed a qualitative, inductive methodology to analyze how six German fashion brands approach sustainability initiatives and communication strategies with customers, and how they align with German government policy. The results show that the brands prioritize different SDGs, and there is significant variation in strategies to increase customer awareness and their alignment with German government sustainable policy. This study offers valuable insights for stakeholders, policymakers, and consumers and highlights the need for greater transparency and collaboration between fashion brands and governments.

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CHAPTER 1

1. INTRODUCTION

1.1 Background

Even though the sustainability concept is not a new term now, there has been a hot global discussion over the concept in recent years. Many organizations, business owners, NGOs, governmental organizations, and scholars have begun some programs in line with sustainability plans in a variety of industries and segments, including the fashion industry. As an integral part of our daily lives, fashion allows all individuals to exercise their own unique preferences. As a form of expression, fashion is decided by the predominant style of consumer goods and the behaviors adopted temporarily by some social group members since they are socially acceptable for the conditions and time (Kaczorowska-Spychalska, 2018). Despite the whole positive/beautiful dimensions of fashion, experts complain about/criticize its dark background and negative image over the past decades (Brun, Karaosman, and Barresi, 2020). As a result, in the experts'/individuals' viewpoints, sustainability is regarded as a crucial concern in the fashion industry, such as accessories, textiles, apparel, footwear, etc.

Many negative and positive aspects have been related to the fashion value chain. thus, the fashion industry is regarded as an industry with challenging and complicated procedures in its business value chain (Cerny-Scanlon and Agnes 2016; WEF 2021). In addition, sustainable fashion and its performance and business operations have no general widely accepted definition. Several different definitions have been proposed by the researchers. For example, Joergens (2006:361) stated that eco-fashion can be considered as "fashionable apparel that incorporates the principles of fair trade along with sweatshop-free labor conditions while not inflicting damage to the environment or workers by employing organic and biodegradable cotton" (Davies and Lundblad, 2015).

Nonetheless, (evidently) no specific/exact metrics exist to measure/assess the sustainability performance of fast fashion corporates. Another challenge is the fact that "sustainable fashion" is a paradoxical term at some points, more significantly in the field of the fast fashion industry (Lundblad and Davies, 2015). This becomes more complicated in the segment of fast fashion and textiles (because of its business model, which offers a greater variety and quantity, lower prices, and a shorter production cycle (Vehmas et al., 2018)).

In accordance with the above discussion the management of fashion businesses the textile and fast fashion industry, is a challenging task because it involves accepting great transparency and responsibility from a variety of players, such as employees, government, and business owners. Beyond any doubt, lack of ethical actions, transparency and greenwashing are the events that take place at the global level. As a result, many experts have concentrated their studies on the notion of performance of the sustainable fashion companies.

It is noteworthy that such a growing concern is not constrained to the United States and Europe but also involves Asia and developing countries as well. Most of the European countries are dependent on developing countries and Asia to produce and manufacture consumer goods (where we find a number of-major threats to the community and the environment) as a result, beyond any doubt, these countries with massive consumption must be responsible for all activities in the supply chain (Maldini, Iran, and Laitala, 2021). Similarly, many companies cooperate with suppliers, which are in poor economy countries. Such suppliers may benefit from child labor or other human violation acts to make the production cycle as cheaper and faster as possible (Brun, Karaosman, and Barresi, 2020).

To address the above-mentioned concerns, the European Union attempts to support the Sustainable Development Goals (SDG) at the global level by putting emphasis on environmental and social sustainability and strengthening global value chains (European commission/Measuring up 2.0). As a result, a considerable number of fashion brands have chosen to have close cooperation with the SDG plan in Europe and Germany (despite all cited challenges). Among the EU countries, Germany is regarded as a major producer of clothing which exports textiles and advanced machinery.

In addition, Germany has been reported as among the nations with the highest number of consumers of fashion products. It is noteworthy that Germany is regarded as an early adopter of sustainable fashion. The original movement dates to the 1970s, and according to the reports, German shoppers were somehow taking to consideration the adverse effects of the clothing industry on the environment (Oxford Economics, The Status of German Fashion 2021). As a result, it is not surprising that Germany is one of the big players following the plans for Sustainable Development Goals.

Notably, the sustainability concept is an interdisciplinary one (Diekamp and Eifler, 2013), and at the same time, Sustainable Development Goals (SDG) contain 17 dissimilar categories

(Measuring up 2.0). Nonetheless, the author of this research is heavily concentrated on the specific Sustainable Development Goals, which seem related to fashion sustainability in the mentioned nation:

- SDG1: poverty

- SDG 3: Well-Being and Good Health

- SDG5: Gender equality

- SDG 6: sanitation and clean water

- SDG 8: Economic Growth and Decent Job

- SDG 12: Responsibility for Production and Consumption

- SDG 13: Climate Action

- SDG 14: Life beneath Water

- SDG 15: Life on Lands

1.2 Problem Statement

The fashion industry, particularly brands which are known as fast fashion and the textile sector, has recently come under increased scrutiny by researchers and scholars due to its harmful consequences related to the environment and society (Goworek et al., 2018). Two primary challenges arise in this context: the lack of transparency by fashion brands concerning their sustainability initiatives, current practices, and future objectives; and the inadequate collaboration between fashion brands and governments in sharing data (Henninger et al., 2016).

In Germany, few fashion brands publish their corporate social responsibility (CSR) reports on their websites, which hampers consumer trust and loyalty towards these brands (Koszewska, 2018). Moreover, accusations of greenwashing further obscure the true efforts of brands in implementing social, economic, and environmental sustainability measures (Walker & Wan, 2012). For the public, it becomes increasingly difficult to discern genuine actions from mere rhetoric.

Governments, in turn, need to establish clearer goals and outline strategies to support fashion brands in their pursuit of sustainability (Weller, 2017). By offering incentives to companies that disclose information to the public, governments can encourage transparency and foster a more responsible fashion industry (Perry & Towers, 2013).

To address these issues, it is critical to investigate the extent of transparency within the fashion industry, examine the role of governments in promoting sustainable practices, and identify effective strategies for fostering collaboration and information sharing between stakeholders. This research aims to contribute to the understanding of these challenges and offer practical recommendations for enhancing sustainability in the fashion industry.

1.3 Research Question

The primary objective of this research is to conduct an in-depth analysis of six fashion brands in Germany, focusing on their efforts to achieve sustainability, raise consumer awareness, and align with government policies and incentives related to Sustainable Development Goals (SDGs). The research questions are as follows:

- What specific sustainability initiatives are being implemented by the six fashion brands in Germany, and how do these initiatives relate to the 17 SDGs?

- How are these six fashion brands working to increase consumer awareness of their sustainability initiatives and the broader topic of sustainability within the industry?

- To what extent do customer feedback and perceptions reflect the sustainability initiatives undertaken by these six fashion brands in Germany, including the customers' overall attitude towards each brand's sustainability practices?

1.4 Research Objectives

This study aims to investigate the sustainability practices and strategies employed by six selected fashion brands in Germany, with a focus on how these practices align with German government incentive policies. Specific objectives include:

- To examine and compare the sustainability initiatives and future goals of six different fashion brands in Germany.

- To analyze the strategies used by these brands to increase consumer awareness of their sustainable initiatives and to evaluate the effectiveness of these strategies based on customer feedback.

- To assess the alignment of these fashion brands with German government policies and initiatives related to sustainability and the Sustainable Development Goals.

1.5 Research Significance

This research provides the insight into the extent to which fashion brands are aligning with SDGs and government policies, and how this alignment can contribute to the achievement of SDGs. It can also help to identify the gaps and challenges faced by fashion brands in achieving sustainability goals and how these can be addressed in the future.

1.6 Conceptual Framework

The conceptual framework presented in Figure 1.1 forms the heart of this research, the framework addresses the mentioned research questions.

In this study, the dependent variable is the sustainability of the six selected German fashion brands. The sustainability will be measured through various factors such as alignment with German government incentive policies, sustainability initiatives and goals, and customer feedback. The independent variables are:

- Technology: The technologies implemented by the brands to enhance their sustainability practices.
- Consumer awareness: The level of awareness among consumers about the sustainability initiatives and goals of the brands.
- Government incentive policy: The German government's policies and incentives related to sustainability and the Sustainable Development Goals (SDGs).
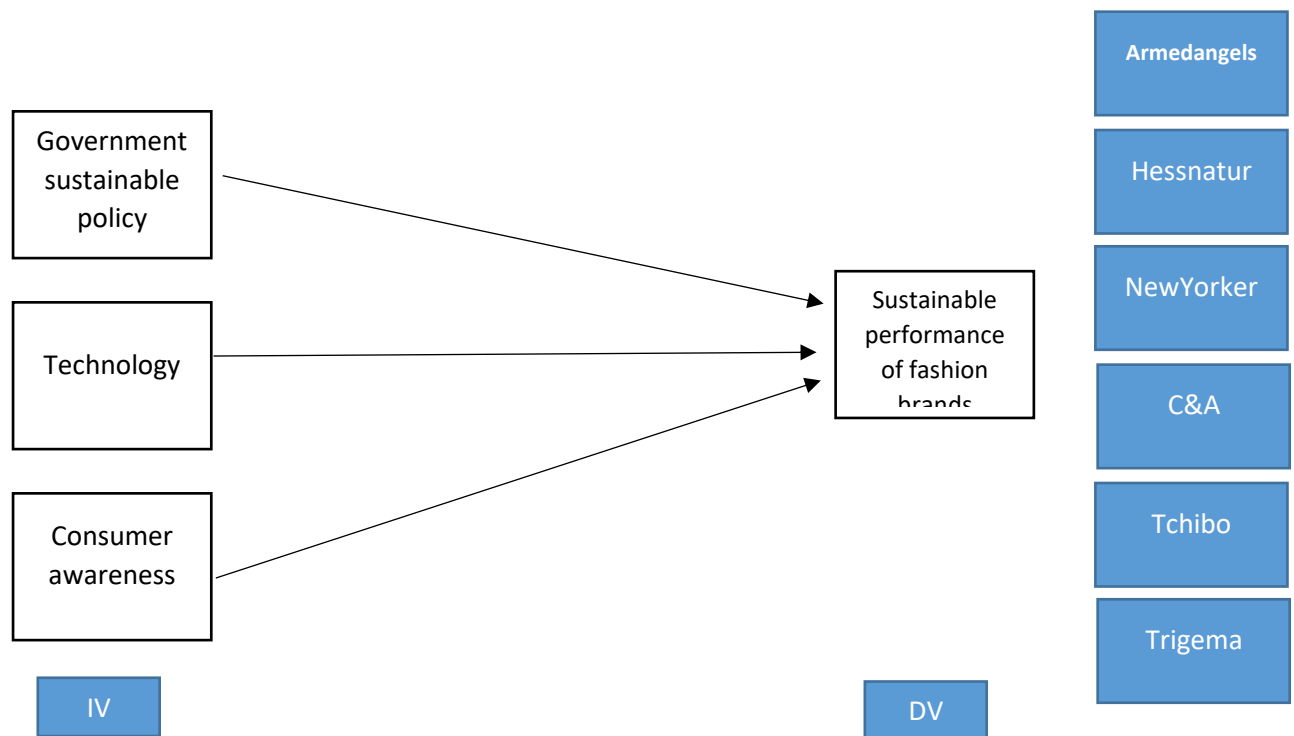
Figure 1.1: Conceptual Framework

1.7 Thesis Structure

This research is organized into five chapters. The first chapter provides an overall introduction to the research and contextual background related to the concept of sustainability, the dark side of the fashion industry, and the application of the Sustainable Development Goals (SDG) program in Germany. Additionally, problem statements, research questions, objective and significance of study have been provided. Chapter Two assesses the literature and prior related academic works underpinning this research. Chapter Three explores the research design, methodology, and the rationale for qualitative research. Chapter Four is related to the discussion and, finally, Chapter Five concludes what the researcher has drawn from the overall study, providing a summary, recommendations for future research, and related research limitations.

CHAPTER 2

2. LITERATURE REVIEW

2.1 Concept of Sustainable Development

In recent decades, there has been a notable rise in the exploration of research pertaining to sustainability, an area of inquiry closely linked to the field of sustainability science. and has become increasingly relevant globally. Its primary aim is to identify solutions to complex social problems and propose effective strategies to ensure better lives for individuals today and in the future.

When considering sustainability research, there are numerous challenges that must be taken into account, such as the integration of knowledge from multiple sources and disciplines, as well as the development of innovative methods and stakeholder-oriented approaches. In order to adequately address urgent issues, stakeholder engagement and access to knowledge are essential to ensure successful and effective solutions. Consequently, various activities[1] have been implemented to collect information and mobilize experts from multiple fields to focus on the concept of sustainability, both nationally and internationally. Significantly, the United Nations has placed considerable emphasis on this notion by introducing the 17 Sustainable Development Goals (SDGs) as a framework to advance the pursuit of sustainable development. (Leal Filho et al., 2017).

2.1.1. Emergence of Sustainable Development Goals (SDG)

In 2015, the United Nations delineated a collection of 17 worldwide objectives, known as the Sustainable Development Goals (SDGs), With the objective of addressing urgent worldwide challenges, global challenges, e.g., inequality, poverty, environmental protection, climate change, and responsible production and consumption. These goals were developed in order to make sure that all individuals may enjoy a prosperous and sustainable future (United Nations, 2015).

In a reinvigorated Global Partnership for Sustainable Development, the previous eight Millennium Development Goals (MDGs) from the initial 15-year development cycle have been

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[1] (e.g. Future Earth, Initiative for Science and Technology for Sustainability ISTS, SDG Academy, International Council for Science ICSU, National Research Council – Board on Sustainable Development, Sustainable Development Solutions Network SDS)

succeeded by 17 Sustainable Development Goals (SDGs) implemented in January 2016. These newly established objectives signify a change emphasize more on a broader aspiration compared to those outlined in the Millennium Development Goals (Palmer, 2015). Accordingly, the eight MDGs are as below:

Millennium Development Goals (MDGs): (2000–2015)

1. The elimination of both hunger and extreme poverty
2. Achieving education for all at the primary level
3. Strengthening women's capabilities and advancing equality between genders
4. Decrease in the number of deaths among children
5. Enhancement of the health of mothers
6. Fighting against illnesses such as malaria, HIV/AIDS, and other related diseases
7. Guaranteeing the continuity of the environment's natural resources and systems
8. Establishing an international collaboration aimed at promoting development.

Sustainable Development Goals (SDGs): (2016–2030)

1. The complete elimination of all types of poverty in all regions.
2. The elimination of hunger, attainment of food security and improved nutrition, and advancement of sustainable agriculture.
3. Ensuring the health and well-being of individuals across all age groups
4. Ensuring that all individuals have access to high-quality education that is inclusive and equitable, as well as promoting lifelong learning opportunities.
5. Attaining gender equality and enabling the empowerment of all females.
6. Guaranteeing the availability and sustainable management of water and sanitation for all individuals.
7. Ensuring that all individuals have access to dependable, affordable, sustainable, and modern sources of energy.
8. Advancement of sustainable, inclusive, and continued economic growth, productive employment, and the availability of decent jobs for all individuals.
9. Building resilient infrastructure, promoting sustainable and inclusive industrialization, and encouraging innovation.
10. Decreasing inequality both among nations and within them.

11. Guaranteeing that human settlements and cities are secure, welcoming, sustainable, and adaptable.

12. Guaranteeing that production and consumption patterns are sustainable.

13. Taking immediate measures to address climate change and its effects.

14. Preservation and sustainable utilization of oceans, seas, and marine resources to promote sustainable development.

15. Preserving, renewing, and advancing the sustainable administration of forests, along with the sustainable exploitation of land-based ecosystems. Combating the spread of deserts, reversing the decline of land quality, and stopping the loss of biodiversity.

16. Encouraging the creation of welcoming and peaceful societies that can be maintained over time, ensuring that every person has the ability to obtain fair treatment through the legal system, and setting up transparent, inclusive, and capable organizations at every level.

17. Enhancing the resources and methods of implementation and revitalizing the global partnership for sustainable development. (Palmer, 2015).

The following pictures shows the labels used for the 17 Sustainable Development Goals.

Figure 2.1: UN SDG Goals (Labels)

Source: GUIDELINES FOR THE USE OF THE SDG LOGO INCLUDING THE COLOUR WHEEL, AND 17 ICONS.

2.1.2 Goal Setting and Measurement

The Secretary General of the United Nations offers an annual Sustainable Development Goal Progress report developed in cooperation with the United Nations System on the basis of the data generated by national statistical systems and the data gathered at the regional levels and global indicator framework. Furthermore, the SDGs Progress Chart 2022 provides an overview of the advancement made at both regional and global levels towards achieving the targets established under the 17 Goals of the 2030 Agenda for Sustainable Development. The progress is assessed based on the latest available data, and some of the SDGs reflect the influence of the COVID-19 pandemic. As a result of the challenges associated with data collection related to pandemic-related measures, the evaluation of the total impact of COVID-19 pandemic on other objectives is limited (United Nations, 2022).

According to the "Sustainable Development Goals Progress Chart 2022, it becomes apparent that advancements have regressed in relation to numerous goals, such as food security, poverty, immunization coverage, terminating the epidemic of malaria resulting from the impacts of climate change, conflicts, and the COVID-19 pandemic. The onset of these interconnected crises has underscored the difficulties in achieving the Sustainable Development Goals. It is imperative for all countries to undertake intensified, coordinated, and immediate actions to expedite the implementation of the SDG objectives and avert detrimental consequences, thereby realigning with the correct path and devising an improved recovery strategy.

2.2 Overview of Fashion Industry

Through the analysis of the fashion concept, it becomes clear that this concept is an ever-changing one, and different groups adopt and perceive it differently. For more than 500 years, authors and scholars with different backgrounds have attempted to present a precise and detailed explanation for fashion and its associated origin. This concept is deeply rooted in different fields, including psychology, the business field (for instance, consumer behavior and marketing), cultural studies, and economics. It is noteworthy that each field has its own specific understanding and viewpoint on the fashion concept (Welters and Ablillethun, 2018). As an example, a number of authors, e.g., Guillaume Erner (2015), claimed that the "Fashion" dates back to the middle ages when bourgeois (individuals coming from the upper class of society) tried to put on different dressings so that they were not to be confused with other

people belonging to the lower or middle classes of the society (Solino, Teixeira, and Dantas, 2020).

It should be noted that the emergence of fashion theories in the course of the mid-19th century is greatly attributable to the well-known German writer, Walter Benjamin whose works on fashion were very influential and explored the topics, e.g., uniqueness, the need for novelty, and imitation. Subsequently, more theorists suggested their ideas about how fashion could help to shape the individuals' identities and be linked to social development, (additionally) as the concept of a "new" fashion history was presented by Valerie Steele later in the 80s decade. It is evident that fashion development has experienced diverse and intricate overall path, which encompasses the research works presented by a great number of different authors (Welters and Ablillethun, 2018).

Fashion has evolved significantly over the centuries, from handmade clothing to the introduction of technology which made stylish clothing more accessible to the public. It has also become a social instrument, reflecting changes in certain time frames and contexts (Pizzoglio, 2018; Lipovetsky, 2009; Solino, Teixeira and Dantas, 2020).

At the moment, the fashion industry can be categorized into four distinctive categories: contemporary fashion, luxury fashion, fast fashion, and industrial-brand fashion. Luxury fashion refers to high-end brands, e.g., Gucci, Hermes, Dior, Louis Vuitton, and Chanel, which generally segment their own products in order to generate unattainable and exclusive symbols of status for rich people belonging to the upper classes of society (Kaczorowska-Spychalska, 2018). Also, contemporary fashion refers to more modernized fashion. Industrial-brand fashion is the moderately priced fashion fabricated by the entrepreneurs, and fast fashion refers to the quickest and most affordable alternative.

Given their concentration on reduction of the lead time and provision of products as quickly as possible, fast fashion companies, e.g., Mango, Zara, H&M, and OVS, have experienced a surge in popularity recently (Kaczorowska-Spychalska, 2018). Such a phenomenon has made fashion more affordable for various social classes and provides all individuals with the chance to express their own interests and styles. Thanks to the technological advancements, the fashion industry has evolved and offered various choices to customers from luxury fashion to fast fashion. At present, individuals can select the fashion type that best suits their budget

and demands, which allows them to show how they fit into the world surrounding them and who they are (Kaczorowska-Spychalska, 2018).

2.3 Fashion industry and Sustainability

In recent years, the fashion industry has undergone significant transformations, primarily attributed to the environmental consequences of clothing manufacturing, which first caught consumers' attention in the 1960s. This change in perception was further accelerated by industrial catastrophes like the 2013 Rana Plaza collapse in Bangladesh, which led to 1,130 fatalities and more than 2,500 injuries, bringing the concerns surrounding fast fashion to the forefront. Despite this, it was only after people made the connection between their everyday behaviour and the tragedies that action in a sustainable manner was taken.

Hence, research into the fashion industry has intensified to become closer to the demands of a fast-changing market, with the focus now on industrial sustainability due to the environmental consequences of the industry's long and complex supply chain, such as water and energy consumption, air or chemical pollution and generation of large amounts of waste (Henninger et al. 2016; Moorhouse and Moorhouse 2019; Jacometti 2019; Yang et al. 2017; Kusá and Urmínová, 2020.Thus, the role of industrial sustainability seems to be much more important here than in any other field (Kusá and Urmínová, 2020).

2.4 Fashion and its Adverse Impacts

2.4.1 Societal Negative Impacts

This industry has had an adverse impact on the well-being of customers and engendered a false perception of a constantly demand for something new. The enticing visuals and ads in the media increase the desire of individuals to update their wardrobe constantly. Fast fashion retailers use the same opportunity by constantly offering new items for people to purchase and take on a variety of personas. Such a phenomenon raises a moral discussion about this industry: is the fashion industry in the best interest of the industry itself or its consumers? Such a tendency toward the earliest trends may result in reduced self-confidence, body image issues, poor eating habits, and a totally declined quality of life (Ertekin and Atik, 2020).

Moreover, the fashion industry has been criticized for the shameful working conditions and exploitation in clothing manufacture, in particular, for child labor and low wages. As a result of the short lead times, excessive overtime or subcontracted or temporary workers are required to meet inconsistent deadlines. In the garment production course, the non-unionized and privatized work is conducted, and the basic human rights are generally violated (Ertekin and Atik, 2020).

2.4.2 Environmental Adverse Impacts

Positioned as the second-most ecologically damaging section and generating million tons of waste equals to 1.5, the fashion industry annually contributes a substantial amount of resources to landfills (Mahajan 2012). It is noteworthy that this industry is characterized by the second-highest level of contribution to global pollution and also consumes 70 million barrels annually in order to manufacture polyester, which is a fiber that takes 200 years approximately to decompose completely (Seibel, Tybusch, and Gregory, 2019), (Solino, Teixeira and Dantas, 2020).

The United Nations has emphasized that the fashion industry tremendously affects our planet. The fashion industry's consumption of resources is staggering, using 93 billion cubic meters of water per year and requiring 2,000 gallons of water to produce a single pair of jeans, accounting for 20% of total global wastewater. Furthermore, each second, a garbage truck's worth of textiles is incinerated or discarded in landfills. The production of apparel and footwear contributes up to 8% of the total global greenhouse gas emissions, which can be partly attributed to oil-based pesticides, cotton crop irrigation systems, and transportation and harvesting machinery (Nijman, 2019). The environmental ramifications of the fashion industry are extensive throughout the supply chain management and production processes, encompassing resource utilization, chemical usage, dyeing, and finishing and drying procedures (Kong et al., 2016).

2.5 Challenges of Sustainability in the Fashion Industry

The sustainability concept presents a number of challenges in the field of fashion industry, which will be explained and addressed in more details in the paragraphs that follow.

2.5.1 Sustainable Fashion as a Paradoxical term

At the first glance, sustainability and fashion seem to be two completely contradictory ideas (Lundblad and Davies, 2015). Sustainability and fashion are apparently two inherently contrasting constructs; while the latter is definable through short product life cycles and hedonism, mass production, in particular, in fast fashion, the former indicates durability, reuse of products, and the ethics (Lundblad and Davies, 2015).

2.5.2 Emergence of Fast Fashion

As already mentioned, fashion industry has experienced a great number of changes. This industry has moved towards fast fashion, which provides customers with the chance of purchasing the latest and most up to date trends (fashion products) at affordable and lower costs. As a result, this leads the fashion companies to seek a variety of strategies in comparison with the preceding decades, concentrate on disposable items, and reduce the high quality of their products (Ertekin and Atik, 2020). In addition, as a governing segment of fashion industry, the textile and apparel is well-known for its short cycle of goods production and its speed (Ertekin and Atik, 2020).

2.5.3 Managing the Fashion Industry Supply Chain

Most of the European nations are dependent on Asian and developing nations to manufacture and produce consumer goods (where some main threats to the environment and community are witnessed). Therefore, it is evident that these nations with such a massive consumption must be considered responsible for the entire activities of the supply chain (Maldini, Iran, and Laitala, 2021).

In addition, some companies cooperate with suppliers, which are located in poor economy nations in essence. The same suppliers may take advantage of child labor or other kinds of human violation acts in order to turn the manufacturing cycle into a faster and cheaper one (Brun, Karaosman, and Barresi, 2020). Hence, fast cycles of consumption and production processes and the highly complicated global supply chain networks should be considered (Hur and Cassidy, 2019).

As a result, the western companies that procure their resources from "low-cost nations" force their suppliers to do things better, cheaper, and faster. Under the same pressure, their suppliers may adopt risky behaviors with child labor or excessive overtime that may damage the brand of the company (Sodhi and Tang, 2019).

2.6 Fashion User Sustainable Behavior

Purchasing behaviors encompass consumers' choices of eco-friendly products, demonstrating social responsibility, and engaging in additional activities that contribute to environmental preservation (Mandarić, Hunjet and Kozina, 2021).

2.6.1 Sustainability-Minded Fashion Consumers

Millennial consumers are progressively demanding that their favored fashion brands undertake tangible measures to positively influence the environment. These shoppers are prepared to pay a premium for items sourced from sustainable brands and anticipate that their selected brands will align with their personal values. Consequently, fashion enterprises are inclined to embrace more ethical, sustainable, and circular business models to captivate and retain this demographic (Gazzola et al., 2020).

Furthermore, Gazzola et al. (2020) found that women, particularly those aged 18-34, are more likely than men to be knowledgeable, conscious, and enthusiastic about sustainability principles. Factors such as women's heightened sensitivity and female altruism may contribute to the discrepancy between genders regarding sustainability. Additionally, a psychological association exists between sustainability and femininity, which may cause men to shun environmentally friendly practices in order to preserve a masculine identity.

2.6.2 Sustainable Fashion Consumers; Buying Unsustainable Products:

Even though it is clear that the engagement of consumers and sustainable fashion has increased, according to the research findings, a large gap still remains between behaviors and attitudes in that the actual shopping behavior does not reflect the attitudes toward environmental degradation, including fast fashion (Liu, 2022).

Studies indicate that consumers frequently opt for products from fast fashion brands that cater to cost-conscious shoppers (e.g., Zara, Primark, H&M). Although consumers express concern for climate change and pollution, the act of purchasing garments from sustainable brands is not typically observed in their buying habits. Although they hey perceive their responsible consumption as having a positive effect on the environment, it does not impact

their decision-making process when purchasing apparel, which underscores a disparity between attitude and behavior. (Soyer and Dittrich 2021).

2.7 Fashion Companies' Sustainable Initiatives

Although the overall public awareness of fashion's environmental impact remains limited, the issue of sustainability is progressively becoming the focal point of public interest. There is a growing trend among consumers to look for products that have minimal negative effects on the environment and society. This demand from fashion users, especially from institutions such as non-governmental organizations (NGOs) and the media, has played a crucial role in driving the fashion industry to adopt sustainable practices. This pressure from consumers is ongoing and continues to push the industry towards greater sustainability. (Gordon and Hill, 2015; Jacometti, 2019).

2.7.1 Corporate Social Responsibility (CSR)

Boulstridge and Carrigan (2000) assert that a mere 20% of consumers support Corporate Social Responsibility (CSR) and do not regard it as a crucial factor influencing their purchasing decisions, which may stem from a lack of awareness about CSR initiatives (Smith, 2000). Moorthy, Arokiasamy, and Chelliah (2010) contend that consumers are more susceptible to the influence of brand names and peer pressure rather than a company's CSR endeavors. However, when customers are furnished with information concerning a firm's socially responsible practices, it can lead to an increased intention to purchase from that particular brand (Mohr and Webb, 2005).

Consequently, CSR serves as an effective instrument in outlining a company's obligations concerning its societal and environmental impacts. Niinimäki (2013) suggests that businesses should consider society, environment, and ethics, as well as every right related to human beings/customers, in their strategic planning and work with stakeholders to address the environmental and social risks associated with the fashion industry.

2.7.2 Transition to Circular Economy (CE)

The prevailing economic model of linear consumption (where resources are taken, products are made, and then disposed of) is now widely acknowledged to have significant drawbacks and appears insufficient in accomplishing the sustainable development objectives that are

now a top priority on the global policy-making agendas. Consequently, there is a growing emphasis on creating policies that enable the shift towards a circular economy model. As there are various definitions of circular economy, one potential starting point is the description provided by the European Commission's Action Plan for a Circular Economy, which defines it as "an economy that prioritizes maintaining the value of products, materials, and resources within the economy for as long as possible, while minimizing waste generation" (European Commission, 2015).

Fundamentally, the circular economy model proposes prolonging the utilization of natural resources to decrease future reliance on primary resources and minimize waste production (Murray et al., 2017; Winans et al., 2017). The circular economy model is a multi-faceted concept with several areas of emphasis. Firstly, it prioritizes waste management and avoids landfill disposal whenever possible. Secondly, it aims to enhance by-products and establish connections between waste, deployment and production of new raw materials, known as the "end-of-waste" approach. Lastly, it focuses on the production step and transitioning towards a sustainable bioeconomy model, which utilizes renewable resources instead of non-renewable ones like fossil fuels, ultimately replacing the linear economy model of "production-use-disposal" (Koszewska, 2018; Gazzola et al., 2020; Jacometti, 2019).

To put it concisely, the circular economy approach follows the "reduce, reuse, and recycle" (3R's) principles, which need to be adopted across all stages of production, consumption, and resource recovery as highlighted in studies by Koszewska (2018), Gazzola et al. (2020) and Jacometti (2019). the European Union's initiative to promote a circular economy through its Action Plan. The plan includes both horizontal and vertical measures, which are aimed at regulating and improving the impact of economic activities on the environment. These measures are also aligned with better regulation principles, which include impact assessments as needed. Overall, the goal of the Action Plan is to promote sustainable economic growth and reduce waste and pollution. (Jacometti, 2019). Mishra, Jain, and Malhotra (2020) examine the process of moving away from a linear economy (LE) towards a circular economy (CE).

Nonetheless, the academic discourse on the concept of CE is still in its infancy, and the literature on the subject is only beginning to emerge. Consequently, there is a need for more

in-depth analysis of the concept, its units of analysis, and the theoretical foundation that supports it (Korhonen et al., 2018).

2.7.3 Technology Application:

The connection between fashion and technology has always been evident, with the constant evolution of fashion being directly influenced by technological advancements (Scaturro, 2008). Throughout history, technology has facilitated the progression of fashion by improving production techniques, developing new materials, and enabling creative experimentation by designers such as Hussein Chalayan.

Mid-twentieth-century fashion was particularly impacted by technology, with advancements in machinery and manufacturing leading to the creation of innovative fibers and plastics (Scaturro, 2008). Designers like Paco Rabanne and Pierre Cardin produced futuristic, space-age clothing, while fiber manufacturers turned to technology to meet the increasing demand for clothing as the global population grew.

However, the optimistic view of technology as a solution for social and environmental challenges did not persist entirely (Scaturro, 2008). The rise of fast fashion, characterized by cheap, disposable clothing, has been facilitated by technology, leading to negative consequences such as environmental damage, wastefulness, and ethical issues in manufacturing.

In recent years, sophisticated technologies such as blockchain have emerged as potential solutions for sustainability issues in the fashion industry (Guo, Sun, and Lam, 2020). Blockchain is a digital ledger that uses complex cryptography to store blocks of data, allowing all participants to securely access and share information without the need for trust. It has been used in the fashion industry to track materials and products from raw materials to finished products (Guo, Sun, and Lam, 2020). Additionally, blockchain simplifies the process of verifying environmental efforts claims by making the information immutable and publicly accessible (Guo, Sun, and Lam, 2020).

The relationship between technology and environmental sustainability is complex (Scaturro, 2008). Technology can be seen as a driving force behind consumption and environmental degradation, but it can also be a solution to some of these issues. The challenge lies in

developing sustainable technological systems that prioritize environmental justice and equitable distribution of resources.

2.8 EU Strategies for Aligning Textile and Fashion Industries with Sustainability

The European Union (UN) has created laws and regulations designed to encourage the textile and clothing industries to focus on sustainability, even when their businesses involve multiple countries (Jacometti, 2019). Which are listed below:

2.8.1 Eco-labeling

The European Union has implemented measures to guarantee appropriate labeling and marking of textile products. The EU Ecolabel was established to enable consumers to recognize products with minimal environmental impact throughout their life cycle. To be permitted to display the Ecolabel logo, companies must satisfy criteria related to biocide usage, water consumption, air emissions, and product safety. At present, 23 categories of products and services, encompassing footwear and textiles, are eligible to apply for the European Eco-label.

2.8.2 REACH Regulation

The European Union introduced the REACH Regulation with the objective of protecting human health and the environment from potential hazards associated with chemicals. This regulation is relevant to the fashion industry, as it mandates that companies identify and evaluate the risks presented by the chemicals employed in their products and processes, and implement measures to manage and control these risks.

2.8.3 Integrated Pollution Prevention and Control (IPPC)

The 2003 Integrated Pollution Prevention and Control (IPPC) was formulated to offer guidance to the industry on mitigating environmental pollution. The document is currently being revised to ensure its guidance remains relevant and up to date. (Jacometti, 2019).

2.9 Government Policy of Germany Regarding Sustainability in the Fashion Industries

2.9.1 German Fashion Industry

Germany holds a prominent position in the global fashion market, hosting numerous leading fashion brands. The spending by German consumers has a significant environmental impact worldwide. As indicated in the Status of German Fashion 2021, Germany plays a crucial role in the international fashion scene, being the world's fifth-largest economy and Europe's largest consumer market. In 2019, German citizens spent €76 billion on clothing and footwear, ranking just below the United Kingdom as the highest fashion spenders in Europe and the sixth-highest globally. To fulfill this demand, Germany must import a considerable portion of fashion products from other nations; in 2018, it was the second-largest importer of apparel and footwear worldwide.

Domestic clothing production in Germany has sharply declined during the previous decades, the manufacturing of apparel within Germany has significantly decreased, with the actual economic result of the German clothing manufacturing industry dropping by 91% from 1980 to 2020. In 2011, it was estimated that under 5% of clothing sold in Germany was produced domestically. Nonetheless, the fashion industry continues to make a substantial contribution to the German economy.

According to a 2021 Oxford Economics report, the German fashion industry directly contributed €28 billion to the nation's GDP in 2019, which amounts to approximately 1% of the national GDP. Furthermore, the sector supported employment for 770,000 individuals in Germany. Considering the effects of supply chain spending and worker wages, it was estimated that the German fashion industry accounted for a GDP contribution of €66 billion and the employment of nearly 1.3 million people within the country (Oxford Economics, 2021).

2.9.2 Government Initiatives for Sustainable Fashion

The German government has played a leading role in promoting sustainable fashion initiatives. Established in 2014, the Partnership for Sustainable Textiles brings together businesses, associations, non-governmental organizations, standard organizations, trade unions, and the German Federal Government to enhance the sustainability of the textile and fashion sector. In 2019, the government-run textile certification label, the Green Button, was

introduced. This label requires responsible business practices from companies and sets out requirements for sustainable production.

Over 150 million textiles products have been sold carrying the Green Button label and 40% of people in Germany are familiar with it. To ensure further protection of people and the environment, the requirements have been further developed since its introduction. Small businesses often find it difficult to devote significant resources to sustainability initiatives, so support from the government is needed to provide them with the necessary tools and knowledge to calculate environmental impacts (Oxford Economics, 2021).

CHAPTER 3

3. METHODOLOGY

This study aims to examine the sustainability initiatives and strategies implemented by six German fashion brands. The investigation will focus on the alignment of these practices with German government policies and the effectiveness of communication strategies used by the brands to promote their sustainable practices to fashion consumers. The related-research questions were presented in the previous chapter.

3.1 Research Framework

Developing a research framework is a critical process in conducting the research that bridges the gap between defining research objectives and determining research questions. The main objectives of the research are: (i) To analyze and compare the sustainable initiatives and future goals of six leading fashion brands in Germany and categorize them according to the three pillars of sustainability - economy, society, and environment - while also exploring their alignment with the 17 Sustainable Development Goals (SDGs) proposed by the United Nations. (ii) To analyze the strategies used by these brands to increase consumer awareness of their sustainable initiatives and to evaluate the effectiveness of these strategies based on customer feedback. (iii) To assess the alignment of these fashion brands with German government policies and initiatives related to sustainability and the Sustainable Development Goals. In the present study, the research case study includes the sustainable initiatives, marketing strategies, and business models of six different German fashion brands.

3.2 Research Methodology

To address the research questions posed in this study, a qualitative and inductive approach was employed. The primary aim was to investigate the effectiveness of communication strategies utilized by German fashion brands in informing their target audience about their sustainable practices. Specifically, the study sought to identify the channels of communication employed by these brands and evaluate the comprehensiveness of the information provided. In addition, the study conducted an in-depth analysis of the sustainable practices adopted by these brands. Thus, the researcher used content analysis/thematic analysis as a tool to analyze the sustainability reports, company's official websites, and customer reviews to identify themes and patterns.

3.2.1 Qualitative Analysis

The researcher used content analysis or thematic analysis to identify themes and patterns in the sustainability reports, company's official websites, and customer reviews. Content analysis is a systematic and objective means of analyzing and interpreting qualitative data. It involves analyzing the content of the data and categorizing it into themes or patterns. Analyzing the themes and ideas is a strategy to discover, analyze and classify themes within the collected dataset. (Vaismoradi et al. 2013).

3.3 Research Strategy

The researcher used a multiple case study research strategy for the present study. This technique helps the researcher to discover the events happening in real world context (Yin, 2018). In this case, the researcher investigated six German fashion brands to understand their sustainable practices and their business models.

3.4 Data Collection/Sampling

The researcher adopted a non-purposive sampling technique to select six German fashion brands for this study. The sample includes both slow and fast fashion brands that prioritize environmental and social sustainability in addition to economic sustainability. To select these brands, the researcher considered various factors such as sustainability initiatives, company values, certifications, and customer reviews. The selected brands follow sustainability practices that they directly or indirectly promote. Consequently, two factors were considered for the sample selection: the company's sustainability values and relevant sustainability certifications. Therefore, the six brands included in this research are Armedangels, Hessnatur, Trigema, NewYorker, Tchibo, and C&A.

Armedangels:

Sustainability: Armedangels emphasizes its commitment to sustainability by sourcing organic and eco-friendly materials, ensuring fair working conditions and wages throughout their supply chain, and promoting transparency in their production processes.

Certifications: The brand holds several certifications, including GOTS (Global Organic Textile Standard), Fairtrade, and PETA-approved Vegan.

Hessnatur:

Sustainability: Hessnatur is committed to sustainability throughout its supply chain, from the selection of raw materials to the final product. They work with eco-friendly materials such as organic cotton, linen, and wool, as well as recycled materials. They also maintain high social and environmental standards in their production processes, ensuring fair working conditions, wages, and ecological responsibility.

Certifications: The brand holds various certifications, including GOTS (Global Organic Textile Standard), IVN Best, Cradle to Cradle Certified, and Fairtrade Cotton.

Trigema:

Sustainability: Trigema is committed to sustainability and social responsibility. They focus on using environmentally friendly materials, such as organic cotton, and innovative production techniques to reduce waste and energy consumption. The company also emphasizes the importance of fair wages and safe working conditions for its employees.

Certifications: Trigema has received various certifications, including GOTS (Global Organic Textile Standard), Öko-Tex Standard 100, and Made in Germany certification. These certifications showcase the brand's commitment to sustainability and high-quality production.

Tchibo:

Sustainability: Tchibo is committed to sustainability across its operations, focusing on responsible sourcing of coffee and other products. They have set up initiatives to promote fair working conditions, environmental protection, and social responsibility in their supply chains. Tchibo is a member of the Ethical Trading Initiative (ETI) and aims to ensure that all their products meet high ethical and ecological standards.

Certifications: Tchibo has several certifications and partnerships related to sustainability. For example, their coffee products are Rainforest Alliance Certified, UTZ Certified, or Fairtrade, showcasing their commitment to sustainable and responsible coffee sourcing. Their non-food products are also tested and certified for quality and safety by external institutions.

NewYorker:

Company Values: The New Yorker website does not explicitly mention sustainability initiatives or a dedicated mission and vision statement. The focus seems to be primarily on providing affordable and fashionable clothing options for young adults.

C&A:

Company Values: C&A is committed to sustainability, as evident in their mission and vision statement. Their mission is "to make sustainable fashion the new normal" and their vision is "to be the most sustainable and inspiring fashion brand in the world."

Sustainability Initiatives: C&A is dedicated to sustainability and has implemented various initiatives, including the use of more sustainable materials, improving working conditions in their supply chain, reducing their environmental impact, and promoting circular fashion. They have a dedicated section on their website.

3.5 Research Boundary

The choice of Germany as the context for this research on sustainable fashion brands is well-justified due to the country's environmental awareness, sustainability leadership, innovative fashion industry, and strong government support for sustainable practices. Studying the German market will enable the researcher to understand the factors that drive sustainable fashion brands; success and identify best practices that can be applied to other European countries and industries.

3.6 Data Analysis

After data collection, the researcher analyzed the data using document analysis, online customer reviews analysis, and comparative analysis.

3.6.1 Document Analysis

In this section, a comprehensive analysis was conducted on the strategies employed by six distinct German fashion brands, focusing on the communication channels they utilized to convey their sustainability initiatives to customers. The primary aim of this analysis was to enhance customer awareness regarding the brands' commitment to sustainability and the specific measures they undertake in this regard. The examination was based on the available data for each brand, encompassing various aspects such as their official websites, Corporate Social Responsibility (CSR) reports, the adoption of specific technologies, marketing strategies, social media platforms, and workshops.

By adopting an academic approach, the study sought to provide a holistic understanding of the ways these brands incorporate sustainability into their business practices while effectively engaging with customers. The investigation involved a systematic review of the brands' communication channels, identifying patterns and trends that could potentially offer insights into the most effective methods for promoting sustainability awareness. Furthermore, the analysis highlighted the extent to which these brands align their sustainability strategies with their overall business objectives, demonstrating their commitment to responsible and ethical practices in the fashion industry.

3.6.2 Online Customer Reviews Analysis

This study utilized R software to analyze the sentiment of customer reviews and examine the extent to which customers are knowledgeable about the sustainability practices of fashion brands and their overall feedback about the brand. To gather data on consumer awareness and interest in sustainability, the researcher extracted customer reviews from Trustpilot[2] for each brand. By applying natural language processing (NLP) and sentiment analysis methods, the researcher was able to extract valuable insights from the textual data. These techniques enabled the identification of key themes and sentiments expressed in the reviews, providing a nuanced understanding of customer perspective related to sustainable performance of the brand in the fashion industry.

3.6.2 Comparative Analysis

In this section of the analysis, the main goal was to draw comparisons among various brands by extracting keywords from the textual data, which enabled the determination of each brand's commitment to specific Sustainable Development Goals (SDGs) and the three pillars of sustainability (society, economy, and environment). Additionally, the investigation sought to evaluate the extent to which these brands align with German government policies on sustainability and assess their financial performance. This comparative analysis was carried out to offer a comprehensive understanding of the sustainability practices and strategies implemented by different brands within the German fashion industry.

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[2] The Trustpilot website is an ideal source of data for customer reviews related to fashion users because it is a well-known, reputable platform where customers can leave honest and unbiased reviews. The website is easy to use, and it has a comprehensive search feature that allows users to quickly find the reviews they are looking for. Additionally, the website is regularly updated and monitored by Trustpilot staff to ensure that all reviews are accurate and up-to-date.

By systematically examining the textual data from each brand and identifying relevant keywords, the analysis was able to establish connections between the brands' sustainability initiatives and their adherence to the SDGs and the three pillars of sustainability. This approach provided valuable insights into the brands' commitments to responsible and sustainable business practices and their contributions towards achieving broader national and international sustainability objectives.

3.7 Analytical Framework
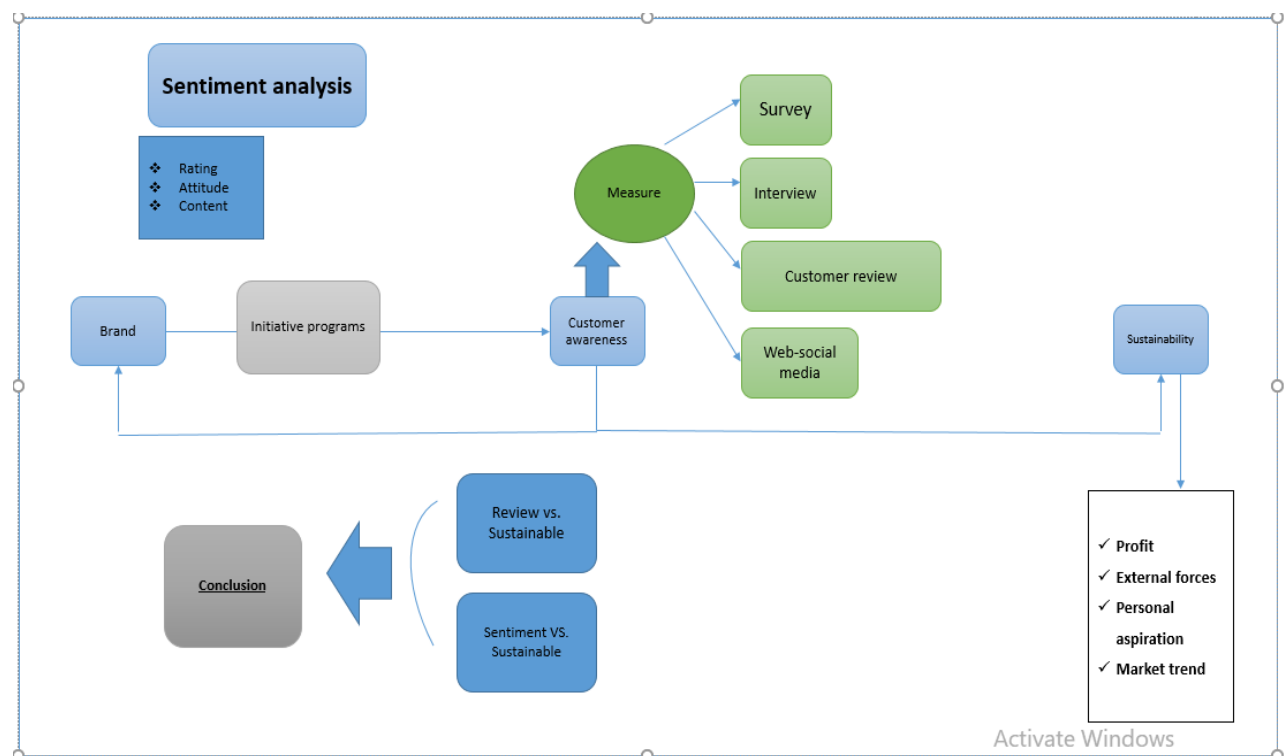
The roadmap of the research analysis is as shown below:

Figure 3.1: Analytical Framework

Chapter 4

4. FINDINGS

4.1 Document Analysis

In this section, the researcher investigates how six German fashion brands communicate with customers to increase their awareness of the sustainability of their products and their overall strategies. Carrington, Neville, and Whitwell (2014) highlight the "attitude-behavior gap," which refers to the gap between positive attitudes towards sustainability and actual purchasing behavior. Companies can bridge this gap by increasing consumer awareness of their sustainable initiatives. The researcher analyzed in-depth the strategies and channels employed by each brand to increase consumer awareness, with Armedangels having the most comprehensive approach, implementing repair guides, take-back systems, NFC-tags for product traceability, promoting counter-models to Black Friday, and offering unparalleled supply chain transparency.

Hessnatur focuses on communication and information-sharing, providing comprehensive information on sustainability topics across various channels, labeling products with relevant certifications, organizing events to raise public awareness, and launching a microsite and podcast on sustainability. Trigema has no specific mention of any strategy to increase consumer awareness, while NewYorker faces challenges in communicating their sustainable clothing to customers. C&A simplifies sustainable fashion choices for customers both online and in stores, offers vouchers for customers who recycle their old clothes, and Tchibo emphasizes transparency and communication, engaging in partnerships and memberships to promote sustainability efforts and raising awareness about biodiversity among customers and employees. Further details on each brand's strategies can be found in the appendix A.
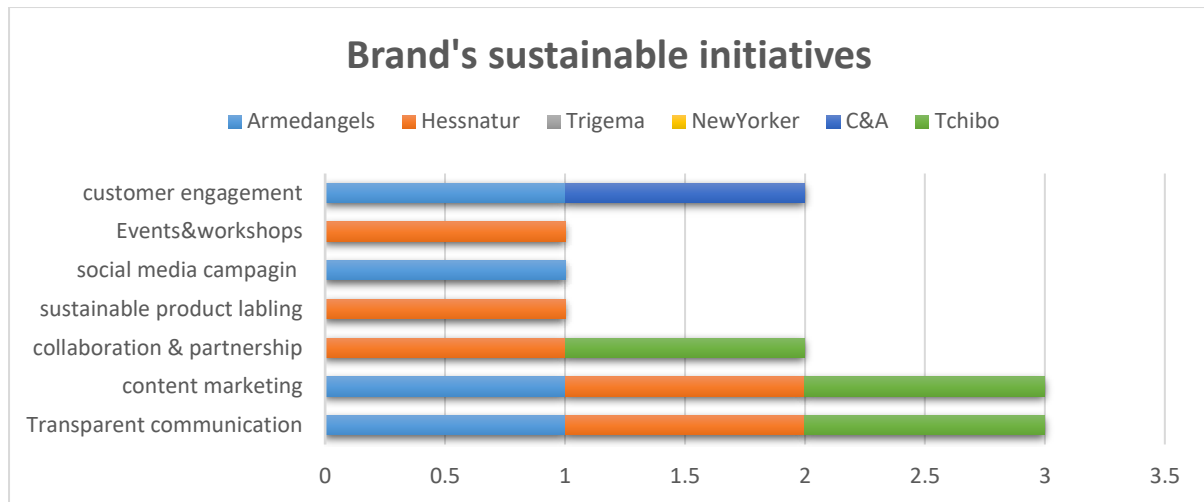
Figure 4.1: Brand's Sustainable Initiatives

The analysis of the above chart (Figure 4.1) reveals that there is a significant variation in the strategies employed by the six German fashion brands to increase customer awareness of their sustainable practices. While Armedangels and Hessnatur stand out as the most proactive brands, Trigema and NewYorker appear to have little emphasis on increasing customer awareness. Moreover, C&A and Tchibo implement some strategies to increase customer engagement and promote their sustainability initiatives.

It is important to note that the effectiveness of these strategies in increasing customer awareness and sustainable behavior cannot be determined solely by their presence or absence. There is a need for further research to assess the impact of these strategies on customer awareness and behavior.

Overall, this analysis provides a useful snapshot of the various strategies used by the six brands to enhance customer awareness. Further research could examine the effectiveness of these strategies in bridging the attitude-behavior gap and explore additional strategies that could promote sustainable consumer behavior. It is also important to note that the data provided may not be exhaustive, and readers are encouraged to seek additional information on the brands' sustainability initiatives.

4.2 Online Customer Reviews Analysis

In this section, the primary aim was to investigate the extent to which sustainability-related words were mentioned in customer reviews of selected fashion brands. To achieve this, the researcher collected customer reviews from the Trustpilot website and conducted a

sentiment analysis and natural language processing (NLP) task using R software. The selected brand 'Armedangels' was chosen as a case study due to its reputation for sustainable practices. The results of the sentiment analysis showed that customers who purchased products from Armedangels mentioned the word "sustainable" 68 times, which might indicate a high level of awareness and importance placed on sustainability by customers of this brand. To provide tangible example, some of the customer's feedbacks are listed below showing both positive and negative attitude about Armedangels: Feedback #1: "A very transparent brand with good quality clothes! I have had issues in the past where sustainable brands claiming to have amazing quality clothes have been very disappointing. So I was a little worried when ordering, but the skirt I got is amazing quality! Very thick (in the best way), and I feel like it's gonna last me a lifetime. It is worth the money". Feedback #2: "I am so dissapointed. I thought I found an accessible, ecological brand which makes beautiful clothes. Nothing about it is ecological if you can only wear it till the first wash. I followed the instructions exactly on the label and my sweater was nothing like before the wash, I will not be able to wear it again".

Additionally, five other brands were analyzed, but no specific result was obtained, which could be attributed to various factors required to be analyzed in-depth. Overall, the sentiment analysis provided valuable insights into the customer perception of sustainability-related

practices and can be used by fashion brands to improve their sustainability initiatives and communication strategies.

Figure 4.2: Word Cloud (Customers' review)

To investigate the extent to which words related to sustainability were mentioned in customer reviews and to assess overall customer views of each company's product, the researcher conducted a sentiment analysis using R software. Additionally, the researcher used a function to analyze the most frequent positive and negative words to compare the customer perception of the 'Armedangels' brand with five other brands. The resulting word cloud showed that words such as "sustainability", "quality", "great", "friendly", "fast", "fair" and "recommended" were among the most frequently mentioned terms for the 'Armedangels' brand, which is consistent with expectations for a brand with a strong focus on sustainability. By comparing the word clouds of the brands, the study highlights the differences in customer perception regarding sustainability and other key attributes.

Figure 4.3: Word Cloud (Sentiment analysis)

The sentiment analysis was extended to explore the proportion of positive and negative comments for the selected brands. The aim was to assess and compare the overall sentiment towards each brand, with particular focus on Armedangels due to its strong reputation for sustainability. Preprocessing the customer reviews by removing numbers and punctuation marks, the sentiment score for each comment was calculated using the sentiment function. The comments were then categorized into three groups based on their sentiment scores, and the distribution of sentiment scores and the proportion of positive and negative comments for each brand were visualized using the ggplot2 package.

The analysis revealed that the proportion of positive comments for Armedangels was significantly higher than the proportion of negative comments, indicating a strong positive perception of the brand (as a result of various factors including customer service, sustainable products, quality, etc.) by the customers. However, brands such as Tchibo and C&A had a notably higher proportion of negative comments, suggesting a more negative perception of these brands by customers. While the results are limited to the dataset used, the insights gained from this analysis can still inform marketing strategies and identify areas for improvement in sustainable fashion brands.

To summarize, the sentiment analysis provided valuable insights into the importance of sustainability in customer reviews and helped understand customer perception related to the selected brands. While these findings cannot be generalized, they can still guide future
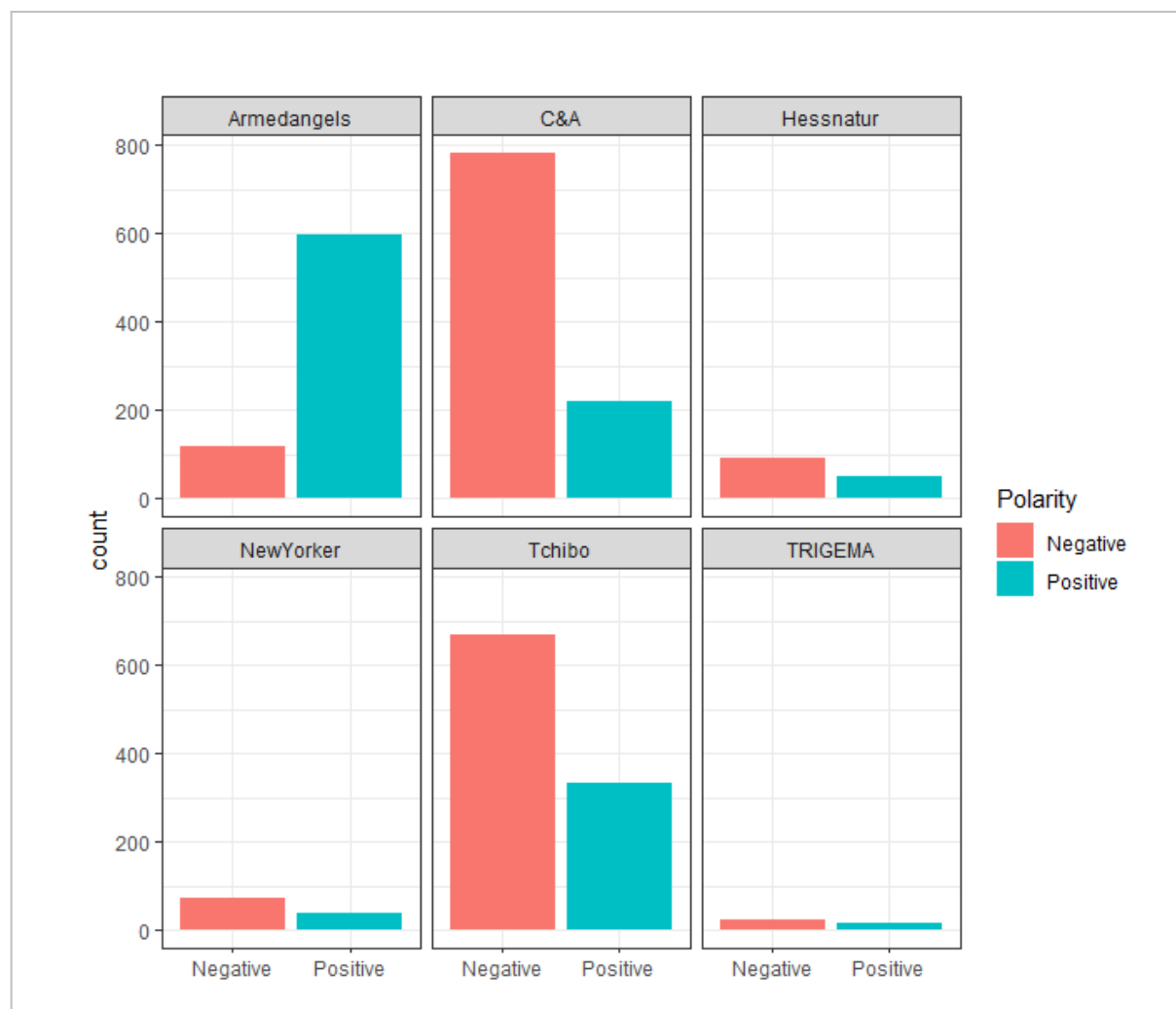

Figure 4.4: Customers' Review Polarity

research on sustainable fashion brands and inform marketing strategies to improve customer perception.

4.2 Comparative Analysis

At this stage, the researcher is conducting a comparative analysis of the selected fashion brands to obtain an overview of their sustainable practices and compare related factors. The aim is to extract key sentences from the text and identify major codes in order to find correlations between the codes and the 17 Sustainable Development Goals (SDGs). The analysis involves cross-referencing the codes with the SDGs to determine which SDGs are being addressed by each code. The codes are also classified into three major categories/pillars: society, environment, and economy to provide a comprehensive understanding of the sustainability efforts of the brands and identify areas for improvement.

Additionally, the researcher aims to analyze if the brands' strategies are aligned with German Government incentive policy or not. This analysis will provide insights into whether the brands' sustainability efforts are in line with government goals and whether they are taking advantage of any available incentives.

Overall, this stage of the research process involves a systematic analysis of the selected brands' sustainability strategies, with a focus on identifying their strengths and weaknesses, and determining how they align with government policies. This analysis will provide valuable insights into the effectiveness of the brands' sustainability efforts and help identify areas for improvement.

4.2.1 Brand's Sustainability Strategies

Brand	SDG-Number	Description (Example)
Armedangels	SDG12 - SDG 13 - SDG 6	Uses organic and sustainable materials, reduces carbon emissions, and implements water conservation and management measures. Promotes fair labor practices, community involvement, and diversity and inclusion.
Hessnatur	SDG 9 -SDG 12 - SDG 14 -SDG 15	Promotes sustainable and innovative solutions, uses sustainable denim to reduce waste, creates new products from production scraps, avoids harmful chemicals in production, supports fair labor practices and biodiversity protection.
Trigema	SDG 12 -SDG 8 - SDG 9 -SDG13 - SDG 15	Protects the environment and promotes healthy and environmentally friendly clothing, provides fair wages and working conditions, uses state-of-the-art production technology and applies innovative solutions, reduces water and energy consumption, and uses organic cotton.
NewYorker	SDG 12	Focuses on regenerative agriculture, reducing overproduction, and offering an in-house resale program called Renew. Promotes low employee turnover.
C&A	SDG12 - SDG 13	Focuses on using sustainable cotton and recycled materials, producing recyclable denim responsibly, and increasing the use of recycled fibers. Reduces CO_2 emissions through sourcing sustainable viscose. Offers vouchers for recycling old clothes.
Tchibo	SDG 7 – SDG12 - SDG 13 - SDG 15	Uses renewable energy sources, implements energy reduction targets, and offers aftersales services and repair options for products. Implements environmental management standards, reduces waste, and increases the use of certified raw materials. Calculates and reduces carbon footprint, participates in global alliances, and promotes biodiversity protection. Aligns with German government policies on renewable energy, waste reduction, climate action, and environmental conservation.

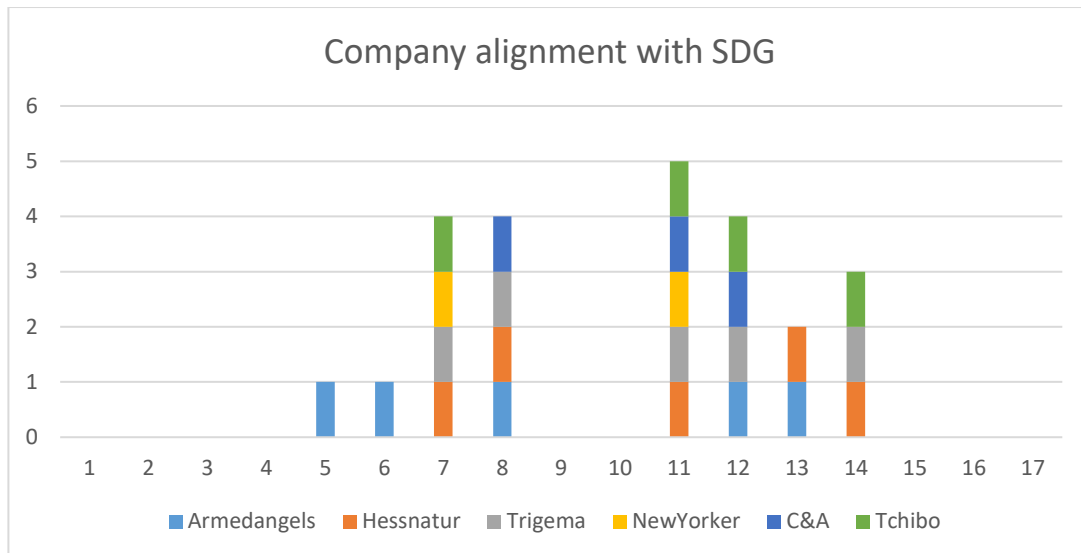**Figure 4.5: Brand's sustainability strategies**

Figure 4.6: Company alignment with SDGs

The above information and visualization suggest that the six selected fashion brands have varying levels of involvement in the United Nations' Sustainable Development Goals. Most of the companies seem to prioritize SDGs 7, 8, 11, and 12, which are related to clean energy, decent work and economic growth, sustainable cities and communities, and responsible consumption and production, respectively. This shows that these goals are particularly relevant to the fashion industry's sustainability efforts.

On the other hand, there are no initiatives mentioned for SDGs 1, 2, 3, 4, 9, 10, 11, or 16. This implies that the companies may not be directly addressing issues related to poverty, hunger, health and well-being, education, industry innovation and infrastructure, reduced inequalities, peace, justice, and strong institutions. However, it's important to note that this information is based on the limited data provided and the companies may have initiatives related to these SDGs that are not mentioned. Overall, the information highlights the varying sustainability practices and priorities of different fashion brands and the importance of considering multiple SDGs in assessing their sustainability efforts.

4.2.2 Brand's alignment with German Government Policy

The information provided on the companies' alignment with the German government's incentive policy in terms of sustainability highlights their commitment to responsible sourcing, environmental standards, and improving working conditions. The companies, Armedangels and Hessnatur, demonstrate their alignment with the policy by supporting the German Partnership for Sustainable Textiles, the "Green Button," the Supply Chain Act, and

receiving Leader Status at the Fair Wear Foundation. This is in line with the German government's broader goals of promoting sustainability in the economy. On the other hand, TRIGEMA's sustainability initiatives do not have a direct relation with the German government incentive policy. However, their focus on environmental protection, fair wages and working conditions, and sustainable production can contribute to promoting sustainability in the German economy.

For NewYorker, there is no mention of any direct relation with the German government incentive policy in terms of sustainability. However, the company's focus on regenerative agriculture and reducing overproduction and the in-house resale program called Renew aligns with the broader goals of promoting sustainability. Similarly, C&A's initiatives related to SDGs 12 and 13 align with the goal of promoting responsible consumption and climate action.

Tchibo is working to align its human rights management system with various international guidelines and reporting requirements. The development of a human rights risk analysis for its supply chains and internal procurement, as well as the human rights and environmental policy in agricultural supply chains, demonstrate Tchibo's commitment to promoting sustainable and ethical practices in their operations.

Overall, the information provided on the companies' alignment with the German government's incentive policy in terms of sustainability highlights the importance of promoting sustainability in the economy and the various ways in which companies can contribute to this goal through their operations and initiatives.

4.3 Brand's Financial Performance

The researcher attempted to analyze the six fashion brands' financial performance to gain a better understanding of their current standing in the industry. However, despite going through various sources, no useful information was found for comparison purposes. The researcher searched through sources such as Google Finance, company websites, Orbis Directory, OpenCorporates, and regional business registries to obtain financial data for the companies. Unfortunately, not all of the mentioned brands are publicly traded or have detailed financial data available. While financial information is crucial to analyze companies' financial performance, the researcher will have to rely on other factors such as size,

sustainable initiatives, and alignment with government policies to make comparisons between the brands.

4.4 Discussion

The focus of the present study is threefold: Firstly, to shed the light on investigating the strategies and channels employed by six German fashion brands to increase customer awareness of sustainable practices. The analysis reveals that each company approaches customers differently to increase awareness of their sustainability initiatives. Additionally, the sentiment analysis shows that customers have both positive and negative attitudes about each brand, with some brands having a higher proportion of negative comments. While proactive brands like Armedangels and Hessnatur have a high level of customer satisfaction, this could be attributed to various factors beyond sustainability, such as quality, delivery, and customer service. The analysis also reveals that most companies prioritize SDGs 7, 8, 11, and 12, which are related to clean energy, decent work and economic growth, sustainable cities and communities, and responsible consumption and production. Finally, the study highlights that the ways in which these companies introduce their alignment with German government regulation in terms of sustainability activities differ. It emphasizes the importance of promoting sustainability in the economy and the various ways in which companies can contribute to this goal through their operations and initiatives. Overall, this research provides valuable insights into the sustainability efforts of German fashion brands, their alignment with government policy, and their communication strategies with customers**.**

CHAPTER 5

CONCLUSION

The present study has shed light on various issues surrounding sustainability in the fashion industry. The concept of sustainability has gained significant attention among business owners, people, various institutions, government, and academic communities. However, sustainability in the fashion industry is a more challenging issue due to the industry's nature, which is known for its polluting activities, human rights violations, and unsustainable practices. This study highlights the urgent need for more research to gain insights into sustainability in the fashion industry and to develop effective sustainability strategies within various fashion brands.

The analysis of academic papers related to sustainability in the fashion industry revealed that the concept is relatively new in academia, with research papers related to this issue emerging only around 2013.
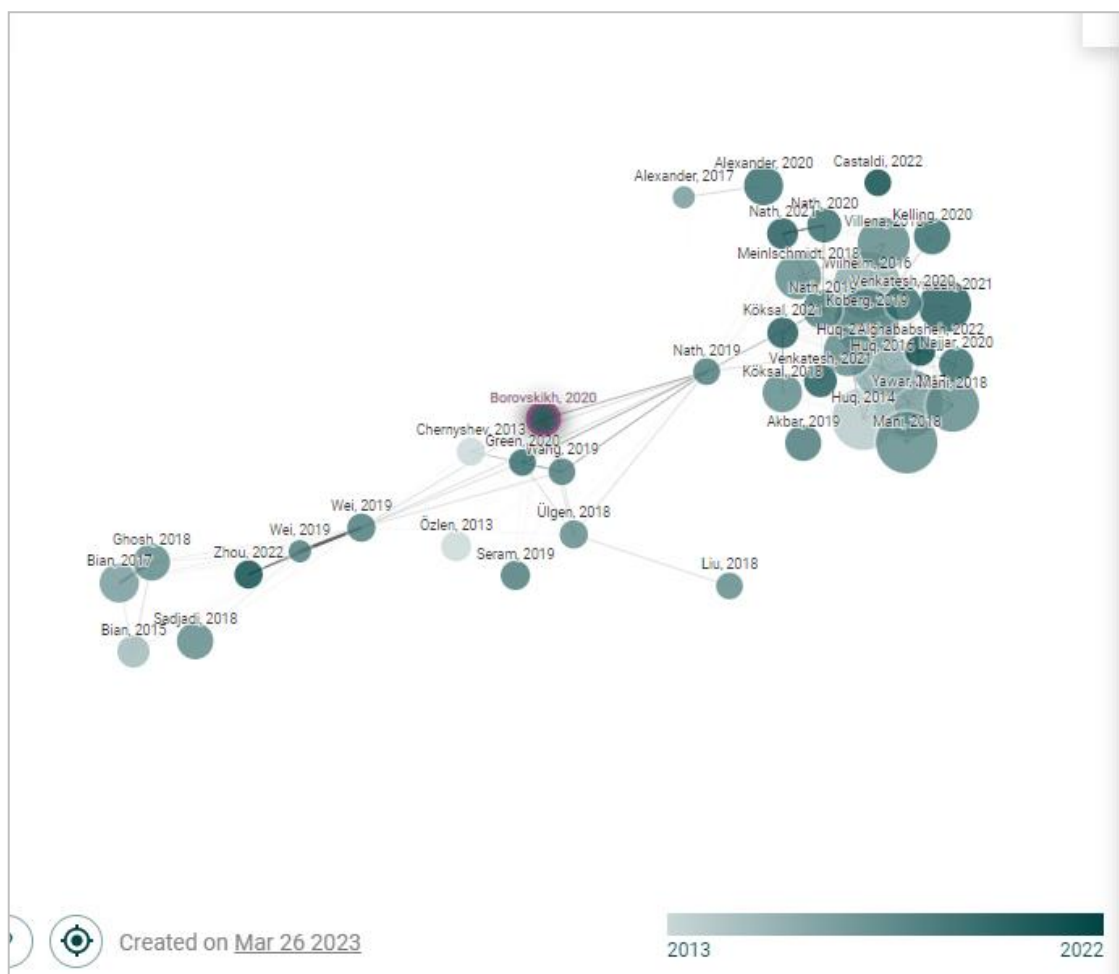

Figure 5.1: Emergence of relevant studies

Furthermore, the accessibility of data is a major challenge in this area, as companies have varying levels of transparency and disclosure of their sustainability practices. Regarding the financial performance analysis, we faced challenges in obtaining relevant and reliable data from open and free sources. Similarly, analyzing customer perception towards sustainability was also a challenge, as we were limited to analyzing customer reviews on Trustpilot. While this method provided some insights, it was not comprehensive and may not accurately represent the wider customer perception. The technical analysis also encountered challenges in dealing with unstructured and unlabeled data

Notably, while various studies have been conducted on sustainability in the fashion industry, they have their strengths and weaknesses. For instance, de Aguiar Hugo, de Nadae, and da Silva Lima's (2021) paper, "Can Fashion Be Circular? A Literature Review on Circular Economy Barriers, Drivers, and Practices in the Fashion Industry's Productive Chain," provides an in-depth examination of circular fashion and its current state. However, the paper does not focus on a specific case study to support its major findings.

Furthermore, numerous studies have been conducted up to now focus on consumer-purchasing behavior and sustainable fashion users, but they do not analyze other related factors or critically evaluate the factors involved in consumer purchase decisions in different countries. For example, Hur and Cassidy's (2019) study, "Perceptions and attitudes towards sustainable fashion design: challenges and opportunities for implementing sustainability," and Chan and Wong's (2012) study, "The consumption side of sustainable fashion supply chain: Understanding fashion consumer eco-fashion consumption decision," focus on consumer behavior but not on other related factors.

Moreover, other academic papers such as: Similarly, Mosca, Civera, and Casalegno's (2018) study, "The Communication of Sustainability by Italian Fashion Luxury Brands: A Framework to Qualitatively Evaluate Innovation and Integration," and Lopez and Rangel's (2022) study, "How Luxury Fashion Brands Contribute Efficiently to Sustainable Development, have been provided the insight for the only specific segment of fashion industry and is not applicable to other sectors related to non-luxurious brands.

Its worthy to mention that, several studies focus on countries such as Italy, the UK, and Hong Kong and do not conduct an in-depth study of sustainable fashion brands in Germany. For

example, Hur and Faragher-Siddall's (2022) study, "Young Consumer Perspectives on Government Policy Interventions for Sustainable Fashion Consumption in the UK.

Hence, despite the mentioned limitations and existing gaps, the study provides valuable insights into the sustainability initiatives of the six selected German fashion brands and their communication strategies with customers. It also sheds light on the need for more structured and organized datasets to conduct effective analysis and make valid decisions.

FURTHER RECOMMENDATIONS

In this section the researcher aims to provide the recommendation and suggestion on the basis of findings and conclusions for practitioners involved in the fashion industry:

1. **Prioritize sustainability initiatives:** It is essential for fashion brands to prioritize sustainability initiatives and take concrete steps to reduce their impact on the environment and society. This includes implementing sustainable practices in their supply chain, using eco-friendly materials, reducing waste and emissions, and promoting transparency and ethical practices.

2. **Invest in research and development:** There is a need for more research and development in the area of sustainability in the fashion industry, both in the business context and academia. This can help to identify best practices, innovative solutions, and new technologies to address the challenges of sustainability.

3. **Enhance accessibility of data:** Fashion brands should make sustainability information more accessible and transparent to the public. This includes providing more detailed information about their sustainability initiatives, using clear and consistent communication channels, and making data available in a structured and organized format.

4. **Listen to customer feedback:** Brands should listen to customer feedback and take into account their concerns and preferences regarding sustainability. This can help to identify areas for improvement and guide future sustainability initiatives.

5. **Use technology to streamline data analysis:** Fashion brands should consider using technology to streamline data analysis and improve their sustainability efforts. This includes using artificial intelligence and machine learning to analyze large datasets, identify patterns, and make data-driven decisions.

Overall, the fashion industry has a significant impact on the environment and society, and it is important for brands to take responsibility and actively work towards a more sustainable future. By prioritizing sustainability initiatives, investing in research and development, enhancing data accessibility, listening to customer feedback, and using technology to streamline data analysis, fashion brands can make a positive impact and contribute to a more sustainable industry.

LIMITATION

Although the current study offers valuable insights into the sustainability practices and customer perceptions of six German fashion brands, it is essential to recognize several limitations that might impact the generalizability of the results.

Firstly, the sample size, which includes only six brands, may not adequately represent the entire fashion industry. Additionally, the data collection process faced constraints due to limited resources and time, preventing the researcher from accessing more extensive datasets and conducting more in-depth analyses.

Apart from the data sources used in this study, there are numerous ways to evaluate customer feedback, such as surveys, interviews, web analysis, and social media monitoring. However, these methods can be time-consuming and costly, making them less feasible for this research. Another limitation relates to the diverse initiatives applied by each brand, which would require significant time and resources to study in depth.

Moreover, external factors, such as global events like pandemics or other unpredictable occurrences, may cause companies to alter their sustainability strategies. Consequently, these strategies are not static and necessitate continuous monitoring for researchers to develop a valid understanding of the patterns and trends.

In addition, the financial performance analysis was also limited by the scarcity of publicly available information. The researcher attempted to analyze the financial performance of the brands but did not find useful information for comparison purposes.

Lastly, the technical analysis faced challenges due to the unstructured and unlabeled nature of the data, requiring significant preprocessing and cleaning before the analysis could commence. Despite these limitations, this study provides valuable insights into the sustainability practices and customer perceptions of the selected brands, paving the way for future research to delve deeper into these topics.

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APPENDIX

Brand	Founded	Main Focus	Sustainability Initiatives
Armedangels	2007	Sustainable Fashion	Fair wages, organic materials, climate-neutral shipping
Hessnatur	1976	Eco-friendly Fashion	Organic materials, fair wages, sustainable production
Trigema	1919	Sportswear & Casualwear	Made in Germany, eco-friendly materials, fair wages
Tchibo	1949	Coffee & Lifestyle Products	Sustainable coffee, fair wages, eco-friendly materials
NewYorker	1971	Fashion & Accessories	Energy efficiency, sustainable materials, waste reduction
C&A	1841	Affordable Fashion	Sustainable materials, fair wages, circular fashion

Appendix B:

Brand	Background	Founded	No-Employees	Main focus
Armedangels[3]	Known as the sustainable German fashion brand. The company focuses on producing eco-friendly and ethically made clothing. Their product range includes clothing for men and women.	2007	N/A	Sustainable Fashion
Hessnatur[4]	Known as the German sustainable fashion and lifestyle brand. They offer eco-friendly clothing and other types of products for men, women and children.	1968	N/A	Eco-friendly fashion
Trigema[5]	Known as a family-owned German clothing manufacturer. This company is committed to manufacturing their products exclusively in Germany, ensuring high quality and fair working conditions.	1919	1,200	Sportswear& Casualwear
NewYorker[6]	As a German Fashion brand, they offer variety of products for young adults. With over 1.000 branches in 45 countries.	1971	Over 23,000	Fashion & accessories
Tchibo[7]	Known as a German multinational company that operates in several industries. Tchibo started as coffee-mail-order business and later expanded into selling a wide range of products.	1949	11,230	Coffee &life-style products
C&A[8]	Known as the international fashion retailer. This brand has long history and has grown into global brand with over 1.400 stores across 22 countries in Europe, Brazil, Mexico and China.	1841	8,873	Affordable Fashion

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[3] (https://www.armedangels.com/)
[4] (https://www.hessnatur.com/)
[5] (https://www.trigema.de/)
[6] (https://www.newyorker.de/en/)

[7] (https://www.tchibo.com/)
[8] (https://www.c-and-a.com/)

Appendix C:

Programming Code (R):

"


```r
rm(list = ls())

library(tidytext)

library(ff)

library(tm)

library(SnowballC)

library(wordcloud)

library(RColorBrewer)

library(syuzhet)

library(ggplot2)

library(tidyverse)

library(dplyr)

library(readxl)

library(sentimentr)

library(scales)

library(reshape2)

#---------------------------------

# Initial Analysis

#---------------------------------

#comments <- read_excel(path = "Review-Translated (2).xlsx", col_names = T, sheet =
"Brands_new")

comments <- read_excel(path = file.choose(), col_names = T, sheet = "Brands_new")

# Clean up the data frame

comments <- comments %>%

  select(Brand,comment_summary,comment_text) %>%

  unite('comment', comment_summary:comment_text, remove = F, sep = " ")

# Convert our class Brand into a factor

comments$Brand <- as.factor(comments$Brand)

prop.table(table(comments$Brand))
```

```
text <- c(comments$comment)

text_df <- tibble(line=1:length(text),Brand=comments$Brand,text=text)

word_df <- text_df %>%

  group_by(Brand) %>%

  unnest_tokens(word, text)


# word_df %>%

#   count(Brand, word, sort = TRUE) %>%

#   filter(n > 100) %>%

#   mutate(Brand = reorder(Brand, n), word = reorder(word, n)) %>%

#   ggplot(aes(n, word)) +

#   geom_col(fill='blue') +

#   labs(y = NULL)+

#   facet_wrap(~Brand)+

#   theme_bw()


tidy_df <- text_df %>% group_by(Brand) %>%

  unnest_tokens(word, text) %>%

  anti_join(stop_words)


frequency <- tidy_df %>%

  mutate(word = str_extract(word, "[a-z']+")) %>%

  count(Brand, word) %>%

  group_by(Brand) %>%

  mutate(proportion = n / sum(n)) %>%

  select(-n) %>%

  pivot_wider(names_from = Brand, values_from = proportion) %>%

  pivot_longer(`C&A`:TRIGEMA,

        names_to = "Brand", values_to = "proportion")
```

```r
# expect a warning about rows with missing values being removed

ggplot(frequency, aes(x = proportion, y = Armedangels,

           color = abs(Armedangels - proportion))) +

 geom_abline(color = "gray40", lty = 2) +

 geom_jitter(alpha = 0.1, size = 2.5, width = 0.3, height = 0.3) +

 geom_text(aes(label = word), check_overlap = TRUE, vjust = 1.5) +

 scale_x_log10(labels = percent_format()) +

 scale_y_log10(labels = percent_format()) +

 scale_color_gradient(limits = c(0, 0.001), low = "darkslategray4", high = "gray75") +

 facet_wrap(~Brand, ncol = 2) +

 theme(legend.position="none") +

 labs(y = "", x = NULL)


#-------------------------------

# Text Mining

#-------------------------------

comments <- read_excel(path = "Review-Translated (2).xlsx", col_names = T, sheet = "Brands_new")

# Clean up the data frame

comments <- comments %>%

  select(Brand,comment_summary,comment_text) %>%

  unite('comment', comment_summary:comment_text, remove = F, sep = " ")

# Convert our class Brand into a factor

comments$Brand <- as.factor(comments$Brand)

prop.table(table(comments$Brand))

main_text = Corpus(VectorSource(comments$comment))

# creating a function to remove different symbols

to_space <- content_transformer(function(x, pattern){return(gsub(pattern, " ", x))})

# removing unwanted symbols

main_text <- tm_map(main_text, to_space, ":")

main_text <- tm_map(main_text, to_space, "-")

main_text <- tm_map(main_text, to_space, "'")
```

```r
main_text <- tm_map(main_text, to_space, "'")

main_text <- tm_map(main_text, to_space, '"')

main_text <- tm_map(main_text, to_space, ";")

# Switch to lower case

# Remove numbers

# Remove punctuation marks and stopwords

# Remove extra whitespaces

main_text <- tm_map(main_text, content_transformer(tolower))

main_text <- tm_map(main_text, removeNumbers)

main_text <- tm_map(main_text, removePunctuation)

main_text <- tm_map(main_text, removeWords, c("the", "and", stopwords("english")))

main_text <- tm_map(main_text, stripWhitespace)

# removing unwanted words

main_text <- tm_map(main_text, content_transformer(gsub), pattern = "can", replacement = " ")

main_text <- tm_map(main_text, content_transformer(gsub), pattern = "part", replacement = " ")

# main_text <- tm_map(main_text, content_transformer(gsub), pattern = "important", replacement
= " ")

main_text <- tm_map(main_text, content_transformer(gsub), pattern = "meaning", replacement = "
")

main_text <- tm_map(main_text, content_transformer(gsub), pattern = "thus", replacement = " ")

# main_text <- tm_map(main_text, content_transformer(gsub), pattern = "understand",
replacement = " ")

main_text <- tm_map(main_text, content_transformer(gsub), pattern = "set", replacement = " ")

main_text <- tm_map(main_text, content_transformer(gsub), pattern = "one", replacement =" ")

# main_text <- tm_map(main_text, content_transformer(gsub), pattern = "provides", replacement =
" ")

# main_text <- tm_map(main_text, content_transformer(gsub), pattern = "useful", replacement = "
")

main_text <- tm_map(main_text, content_transformer(gsub), pattern = "used", replacement = " ")

# main_text <- tm_map(main_text, content_transformer(gsub), pattern = "help", replacement = " ")

main_text <- tm_map(main_text, content_transformer(gsub), pattern = "may", replacement = " ")

main_text <- tm_map(main_text, content_transformer(gsub), pattern = "ie", replacement = " ")

main_text <- tm_map(main_text, content_transformer(gsub), pattern = "ing", replacement = " ")
```

```r
# removing less frequently occurring words

review_dtm <- DocumentTermMatrix(main_text,

                control = list(wordLengths = c(2, 20),

                        bounds = list(global = c (3, Inf)))

)

# list of most frequent terms

findFreqTerms(review_dtm, lowfreq = 100)

review_dtm2 <- removeSparseTerms(review_dtm, 0.99)

findFreqTerms(review_dtm2)[1:10]

set.seed(2)

col <- colorRampPalette(brewer.pal(12, "Paired"))

freq <- data.frame(sort(colSums(as.matrix(review_dtm2)), decreasing = TRUE))

wordcloud(rownames(freq), freq[, 1], max.words = 50, colors = col(50))

# finding correlations

findAssocs(review_dtm, "quality", 0.6)

findAssocs(review_dtm, "sustainablity", 0.2)

findAssocs(review_dtm, c("quality", "substantable"), 0.2)


# difference reviews


`%!in%` <- Negate(`%in%`)

reviews <- filter(reviews,

        reviews$word != "" & reviews$word %!in% c("the", "i","and",

                        stopwords("english")))

reviews %>%

 filter(Brand == 'Tchibo') %>%

 count(word, sort = T) %>%

 top_n(30, wt = n) %>%

 wordcloud2::wordcloud2()

reviews %>%

 filter(Brand == 'C&A') %>%
```

```r
  count(word, sort = T) %>%

  top_n(30, wt = n) %>%

  wordcloud2::wordcloud2()

reviews %>%

  filter(Brand == 'TRIGEMA') %>%

  count(word, sort = T) %>%

  top_n(30, wt = n) %>%

  wordcloud2::wordcloud2()

reviews %>%

  filter(Brand == 'NewYorker') %>%

  count(word, sort = T) %>%

  top_n(30, wt = n) %>%

  wordcloud2::wordcloud2()



reviews %>%

  filter(Brand == 'Hessnatur') %>%

  count(word, sort = T) %>%

  top_n(30, wt = n) %>%

  wordcloud2::wordcloud2()


reviews %>%

  filter(Brand == 'Armedangels') %>%

  count(word, sort = T) %>%

  top_n(30, wt = n) %>%

  wordcloud2::wordcloud2()


# TF-IDF

reviews_brands <- reviews %>%

  count(Brand, word, sort = TRUE)

total_reviews_brands <- reviews_brands %>%
```

```r
  group_by(Brand) %>%

  dplyr::summarize(total = sum(n))

review_brands <- left_join(reviews_brands, total_reviews_brands)

review_tf_idf_brands <- review_brands %>%

  bind_tf_idf(word, Brand, n)

review_tf_idf_brands %>%

  group_by(Brand) %>%

  slice_max(tf_idf, n = 15) %>%

  ungroup() %>%

  ggplot(aes(tf_idf, fct_reorder(word, tf_idf), fill = Brand)) +

  geom_col(show.legend = FALSE) +

  facet_wrap(~Brand, ncol = 2, scales = "free") + labs(x = "tf-idf", y = NULL)+

  theme_bw()

#----------------------------------

# Sentiment Analysis - sentences

#----------------------------------

comment_df <- comments

comment_df$comment <- removeNumbers(comment_df$comment)

comment_df$comment <- removePunctuation(comment_df$comment)

comment_df$sentiment <- sentiment(comment_df$comment)$sentiment

# for(i in 1:length(comment_df$comment)){

#   sent <- sentiment(comment_df$comment[i])

#   comment_df$sentiment[i] <- sent$sentiment

#   cat("the iteration is at", i, "\n")

# }

comment_df <- comment_df %>%

  mutate(polarity=case_when(

    sentiment < 0.2 ~ "Negative",

    sentiment > 0.2 ~ "Positive",

    sentiment == 0.2 ~ "Neutral"

  ))
```

```r
comment_df$sentiment <- as.numeric(comment_df$sentiment)

ggplot(comment_df, aes(x = sentiment, group = Brand, fill = Brand)) +
  geom_histogram(position = "identity",alpha = 0.6) +
  theme_bw()

comment_sent <- comment_df %>%
  filter(polarity!='Neutral') %>%
  group_by(Brand,polarity) %>%
  summarise(count=n(), prop=count/nrow(comment_df) * 100)

ggplot(comment_sent, aes(x = polarity, y=count, fill=polarity)) +
  geom_bar(stat = "identity") +
  theme_bw() +
  scale_y_continuous(n.breaks = 10)+
  facet_wrap(. ~ Brand)+
  labs(x=NULL, y='frequency',fill='Polarity')

ggplot(comment_sent, aes(x = polarity, y=prop, fill=polarity)) +
  geom_bar(stat = "identity") +
  theme_bw() +
  scale_y_continuous(n.breaks = 10)+
  facet_wrap(. ~ Brand)+
  labs(x=NULL, y='proportion',fill='Polarity')

ggplot(comment_df, aes(x = polarity, fill=polarity)) +
  geom_bar(stat = "count") +
  theme_bw() +
  facet_wrap(. ~ Brand)+
  labs(x=NULL, fill='Polarity')


#----------------------------------
# Sentiment Analysis - words
#----------------------------------
brands_word <- reviews %>%
  select(Brand, word)
```

```r
comment_df <- brands_word

comment_df$word <- removeNumbers(comment_df$word)

comment_df$word <- removePunctuation(comment_df$word)

comment_df$sentiment <- sentiment(comment_df$word)$sentiment

head(comment_df)

comment_df <- comment_df %>%

  mutate(polarity=case_when(

    sentiment < 0.2 ~ "Negative",

    sentiment > 0.2 ~ "Positive",

    sentiment == 0.2 ~ "Neutral"

  ))

comment_df$sentiment <- as.numeric(comment_df$sentiment)

ggplot(comment_df, aes(x = sentiment, group = Brand, fill = Brand)) +

  geom_histogram(position = "identity",alpha = 0.6) +

  theme_bw()

comment_sent <- comment_df %>%

  filter(polarity!='Neutral') %>%

  group_by(Brand,polarity) %>%

  summarise(count=n(), prop=count/nrow(comment_df) * 100)

ggplot(comment_sent, aes(x = polarity, y=count, fill=polarity)) +

  geom_bar(stat = "identity") +

  theme_bw() +

  scale_y_continuous(n.breaks = 10)+

  facet_wrap(. ~ Brand)+

  labs(x=NULL, y='frequency',fill='Polarity')

ggplot(comment_sent, aes(x = polarity, y=prop, fill=polarity)) +

  geom_bar(stat = "identity") +

  theme_bw() +

  scale_y_continuous(n.breaks = 10)+

  facet_wrap(. ~ Brand)+

  labs(x=NULL, y='proportion',fill='Polarity')
```

```r
ggplot(comment_df, aes(x = polarity, fill=polarity)) +

 geom_bar(stat = "count") +

 theme_bw() +

 facet_wrap(. ~ Brand)+

 labs(x=NULL, fill='Polarity')


comment_df %>%

 group_by(Brand, word) %>%

 filter(Brand=="Tchibo") %>%

 count(polarity, sort = TRUE) %>%

 acast(word ~ polarity, value.var = "n", fill = 0) %>%

 comparison.cloud(colors = c("gray20", "gray80"),max.words = 100)

mtext('Positive', side=1, col='gray80', cex=2, padj = 2)

mtext('Negative', side=3, col='gray20', cex=2, padj = -2)


comment_df %>%

 group_by(Brand, word) %>%

 filter(Brand=="C&A") %>%

 count(polarity, sort = TRUE) %>%

 acast(word ~ polarity, value.var = "n", fill = 0) %>%

 comparison.cloud(colors = c("gray20", "gray80"),max.words = 100)

mtext('Positive', side=1, col='gray80', cex=2, padj = 2)

mtext('Negative', side=3, col='gray20', cex=2, padj = -2)


comment_df %>%

 group_by(Brand, word) %>%

 filter(Brand=="TRIGEMA") %>%

 count(polarity, sort = TRUE) %>%

 acast(word ~ polarity, value.var = "n", fill = 0) %>%

 comparison.cloud(colors = c("gray20", "gray80"),max.words = 100)

mtext('Positive', side=1, col='gray80', cex=2, padj = 2)
```

```r
mtext('Negative', side=3, col='gray20', cex=2, padj = -2)


comment_df %>%
  group_by(Brand, word) %>%
  filter(Brand=="NewYorker") %>%
  count(polarity, sort = TRUE) %>%
  acast(word ~ polarity, value.var = "n", fill = 0) %>%
  comparison.cloud(colors = c("gray20", "gray80"),max.words = 100)
mtext('Positive', side=1, col='gray80', cex=2, padj = 2)
mtext('Negative', side=3, col='gray20', cex=2, padj = -2)


comment_df %>%
  group_by(Brand, word) %>%
  filter(Brand=="Hessnatur") %>%
  count(polarity, sort = TRUE) %>%
  acast(word ~ polarity, value.var = "n", fill = 0) %>%
  comparison.cloud(colors = c("gray20", "gray80"),max.words = 100)
mtext('Positive', side=1, col='gray80', cex=2, padj = 2)
mtext('Negative', side=3, col='gray20', cex=2, padj = -2)


comment_df %>%
  group_by(Brand, word) %>%
  filter(Brand=="Armedangels") %>%
  count(polarity, sort = TRUE) %>%
  acast(word ~ polarity, value.var = "n", fill = 0) %>%
  comparison.cloud(colors = c("gray20", "gray80"),max.words = 100)
mtext('Positive', side=1, col='gray80', cex=2, padj = 2)
mtext('Negative', side=3, col='gray20', cex=2, padj = -2)
"
```