



Journal of Frontiers in Multidisciplinary Research

Impact of Sustainable Practices in Fashion: A Study of Eco-Friendly Materials and Ethical Manufacturing

Daitey William^{1*}, Alale Stephen², Nutifafa Korsi Fiadzomor³, Owusu Panin Kwame Baah⁴

¹Department of Product Design and Entrepreneurship, AsanSka University College of Design and Technology, Ghana

²Department of Art and Design, University of North Dakota, USA

³Department of Fashion Design, AsanSka University College of Design and Technology, Ghana

⁴Department of Jewellery Design, AsanSka University College of Design and Technology, Ghana

* Corresponding Author: **Daitey William**

Article Info

E-ISSN: 3050-9726

P-ISSN: 3050-9718

Volume: 06

Issue: 02

July – December 2025

Received: 30-05-2025

Accepted: 25-06-2025

Published: 27-07-2025

Page No: 220-228

Abstract

Fashion creates a lot of damage to the environment, thanks to over-consumption of resources, waste in textiles and unjust treatment of workers. The research investigates the effects of using green materials and ethical approaches in the fashion industry. With qualitative research, assistance from fashion designers, manufacturers and consumers collecting their opinions on sustainable fashion. Results showed that hemp, bamboo and upcycled fabrics help significantly decrease the negative impact on the environment. To sustain the fashion industry, it is important to promote ethical ways of working with employees and to maintain energy-saving approaches during manufacturing. At the same time, it is difficult for most to use EVs because they cost more to make, many are not aware of them and some are wary of greenwashing claims. The study mentions that sustainability in fashion is promoted by policies from officials, the decisions of consumers and advances in technology. It is concluded in the study that everyone working together is necessary for the fashion industry to become more responsible. Added, it is recommended that policies support the industry, people are educated on how they use products and environmentally-friendly technology is invested in to help it become more sustainable socially and environmentally.

Keywords: Sustainable Fashion, Eco-Friendly Materials, Ethical Manufacturing, Consumer Perception, Policy Support.

1. Introduction

For many years, the fashion industry has negatively affected the environment, leading to problems such as waste, high water usage, pollution and treating workers unfairly (Niinimäki *et al.*, 2020)^[29]. Fashion has become more sustainable as the world becomes more aware of taking care of the environment. In sustainable fashion, the environment is protected and social responsibility is supported when making, delivering and using clothing (Fletcher, 2016)^[14].

Organic cotton, hemp, bamboo, Tencel and recycled materials are becoming more popular as replacements for regular textiles which usually involve strong chemicals and much water during fabrication (Shen, 2014)^[32]. Such materials give us ways to address problems such as climate change, cutting down trees and the loss of non-renewable resources. Producers focusing on ethics make sure workers are treated well, given adequate wages and operate within secure conditions, minimizing labour exploitation in the fast fashion industry (Caniato *et al.*, 2012)^[5].

Making fashion sustainable is essential for nature and it also follows the changes consumers are making in their choices. Research has shown that many millennials and members of Generation Z prefer companies that act responsibly (Henninger *et al.*, 2017)^[19]. For this reason, companies within the fashion industry are moving toward circular economy, zero-waste plans and sustainable methods when selecting their resources.

Yet, there are still obstacles when it comes to making sustainable fashion more popular. It is expensive to produce what these companies need, many customers do not recognize their value and greenwashing interferes with the industry's ability to change (Khan *et al.*, 2021)^[22]. Thus, this work aims to investigate the effects Siri-uses and principles by evaluating sustainable practices in fashion. This research focuses on analysing what is good, bad and possible about sustainable fashion to help find ways to encourage an environmentally and socially responsible fashion industry.

Literature Review

Because sustainability in fashion impacts the environment, economy and society, this topic has attracted much scholarly attention in recent years. Several studies have looked into sustainable fashion in terms of using natural materials, ethical production, the circular economy and the way people shop. It reviews important studies related to sustainable fashion so that trends, problems and opportunities in using eco-friendly methods can be highlighted.

The Environmental Impact of Conventional Fashion Practices

In the traditional fashion industry, making products is resource-heavy, results in much waste and causes harm to the environment. According to research, the fashion industry is responsible for 10% of the world's carbon emissions and 20% of all wastewater production (Niinimäki *et al.*, 2020)^[29]. Polyester and similar fabrics are responsible for releasing small, plastic particles into oceans and lakes (Browne *et al.*, 2011)^[4]. Such methods in the clothing industry have also led to a lot of textile waste, with millions of tonnes of clothes being sent to landfills every year (Ellen MacArthur Foundation, 2017)^[11].

Water is also a major environmental factor in the textile industry. About 2,700 liters of water are used to manufacture a single cotton shirt (Chapagain *et al.*, 2006)^[6]. When dyeing and finishing are done for textiles, it pollutes freshwater, harms aquatic life and has negative effects on human health (Kant, 2012)^[21].

Eco-Friendly Materials in Sustainable Fashion

As a result of environmental issues, new sustainable textile solutions have been introduced. Among sustainable fashion brands, more organic cotton, hemp, bamboo, Tencel and recycled materials are being used (Fletcher, 2016)^[14]. Since synthetic pesticides and fertilizers are not used to produce organic cotton, the soil and water are less contaminated (Shen, 2014)^[32]. Furthermore, hemp and bamboo use little water and chemicals, so they are both sustainable for the environment (Choudhury, 2014).

Heading that same direction are environmentally friendly fibres based on natural sources, known as bio-based and recycled. Being made from sustainably produced wood pulp, Tencel uses a closed-loop process that helps cut down on both wastes and chemicals (Muthu, 2015). Brands focused on fashion have started using polyester that comes from recycled materials, creating less need for plastic materials and textiles made from virgin oil (Sandin & Peters, 2018).

However, producing sustainable fabrics is often challenging due to their cost, the ability to make enough for everyone and whether people will accept them. It is believed by some those

eco-friendly products are becoming more popular, but their use is still limited due to the extra costs associated with their creation and doubts about their standards among buyers (Henninger *et al.*, 2017)^[19].

Ethical Manufacturing and Social Responsibility

Sustainable fashion deals with challenges related to the environment as well as the social and ethical sides of the industry. Ethical manufacturing strives for fairness in job contracts, greater transparency and improved conditions at garment factories. Over time, the fashion industry has been accused of taking advantage of workers, mostly found in places where wages are low and the working environment dangerous (Caniato *et al.*, 2012)^[5].

In 2013, the collapse of Rana Plaza in Bangladesh claimed the lives of 1,100 people working in the fashion industry, showing that action was needed to regulate the industry (Hoskins, 2014). In the following years, several efforts aimed at sustainability were created, for example, Fair-Trade, Fashion Revolution and CSR activities to support fair labour conditions (Turker & Altuntas, 2014).

Nowadays, ethically-minded fashion brands focus on making sure their supply chains are transparent. Some companies are trying out blockchain and tracking systems to make certain materials are ethically sourced and individuals involved are treated properly (Köhler & Pizzol, 2020)^[23]. Nevertheless, the rise of greenwashing makes it harder for people to adopt sustainable fashion (Khan *et al.*, 2021)^[22].

Consumer Behaviour and the Adoption of Sustainable Fashion

Sustainable fashion depends greatly on people's perception and how they spend their money. Evidence indicates that millennials and Generation Z appreciate and back brands that focus on the environment and society (Henninger *et al.*, 2017)^[19]. Sustainable fashion and relevant marketing campaigns have also caused more people to support clothes made by ethical brands (McNeill & Moore, 2015)^[26].

Yet, since sustainable fashion items tend to be more expensive than fast fashion, consumers' willingness to pay more is still a problem (Lundblad & Davies, 2016). Also, many individuals state they care about sustainability, yet they continue to purchase from fast fashion brands since these items are cheap and easy to find (Naderi & Van Steenburg, 2018).

Programs and policies aimed at education have been developed to close the gap. The EPR policies from the European Union expect fashion brands to take responsibility for their items' effect on the environment (Boscröm & Micheletti, 2016)^[1]. Also, more companies in the fashion sector are adopting rental, resale and circular economy systems to encourage people to consume fashion more sustainably (Gwozdz *et al.*, 2017).

The Future of Sustainable Fashion

To achieve sustainable fashion, we need innovation, help from government and the support of people purchasing these products. Modern products from the textile industry such as lab-grown leather, garments that break down easily and 3D printing, are helping to reduce pollution from this industry (Sun *et al.*, 2020). Both fashion brands and NGOs, along with officials and policymakers, can come together to guide the

rest of the industry toward sustainable practices. Challenges still remain, but more and more the industry appears to be shifting towards sustainability. Work is ongoing to find ways to make sustainability a common practice in fashion education, managing the supply chain and designing garments.

Methodology

The researchers provided details on the methods used in the study, including research procedures, methods, which was included in the study, how the respondents were sampled, data collection procedures, analysis and ethical factors related to the research. The purpose of this methodology was to give people a solid look into how sustainability in fashion affects the environment and works ethically during manufacturing.

Research Approach

The team decided to conduct qualitative research to find out what stakeholders in the fashion industry think about sustainability. Since qualitative research involves detailed stories and explanations, it enabled me to get a clear picture of the problems and challenges faced by people involved in sustainable fashion (Creswell & Poth, 2018) ^[7]. As a result, the approach allowed researchers to explore diverse problems and issues concerning sustainable fashion practices (Denzin & Lincoln, 2017) ^[9].

Research Method

The study was conducted using case studies to observe the practices of fashion companies that give preference to sustainable materials. Analysing real cases through the case study method was suitable for my research on sustainability in the fashion industry (Yin, 2018). The approach enabled the

team to gather an abundance of data by talking to people, observing and reading relevant papers.

Population for the Study.

Only professionals and stakeholders in the sustainable fashion sector were included in this study. The individuals involved here included designers, the ones who turn fabrics into clothes, experts in the fashion industry and those who support sustainability. To discover more about how consumers view ethical fashion, I included those who follow sustainable fashion habits.

Sampling Technique

People who had been involved in sustainable fashion were chosen using purposive sampling. Allowing the researchers to choose respondents based on non-probability sampling helped obtain valuable information about the topic (Etikan *et al.*, 2016). They used:

- Fashion Designers and Manufacturers: Selected based on their use of eco-friendly materials and ethical manufacturing processes.
- Sustainability Experts and Researchers: Chosen from academic institutions and industry organizations promoting sustainable fashion.
- Consumers: Selected based on their engagement with sustainable fashion brands or eco-conscious purchasing behaviours.

A total of 15 participants were included in the study, comprising five fashion designers, five sustainability experts, and five eco-conscious consumers. This sample size was deemed sufficient to achieve data saturation, where no new information emerged from additional participants (Guest *et al.*, 2006).

Table 1: Below is a table representing the population, target population, accessible population, and the sample size with their frequencies.

Category	Target Population	Accessible Population	Sample Size (Frequency)
Fashion Designers & Manufacturers	30	15	5
Sustainability Experts & Researchers	20	10	5
Eco-conscious Consumers	50	20	5
Total	100	45	15

Source: Field Survey, 2025.

Data Collection Methods

Fashion designers, manufacturers and experts in sustainability were met and carried out both face-to-face and online interviews with them. The interviews looked into what they went through, what difficulties they faced and the reasons they chose to be sustainable. Responses to open questions could be very flexible and helped explore key issues in detail (Brinkmann & Kvale, 2015) ^[3].

- Observations: Sustainable practices were observed by visiting different workshops and stores in the fashion industry. Notes were made on practices that help improve sustainability.
- Document Analysis: Sustainability reports, fashion brand policies and industry documents were checked and used along with the main data.

Data Analysis

- Researcher analysed the collection of qualitative data from different sources by conducting thematic analysis. The work was guided by using Braun and Clarke's (2006) ^[2] approach.

- Data were first reviewed and read to understand the content.
- The results show that key aspects and patterns in sustainable fashion were identified while coding.
- Themes were identified by categorizing the codes.
- Editing Themes: Themes were revised to ensure they worked well together and made sense.
- Each theme was clearly defined by assigning it a definition.
- In Report Writing: Findings were described clearly with the help of statements made by participants and important documents.

Validation and Trustworthiness

- To verify the results, the study made use of credibility, transferability, dependability and confirmability, according to Lincoln and Guba (1985) ^[24].
- Credibility: To ensure accuracy, data was checked from several sources, including interviews, observation and reviewing documents. Participants checked the interviews to confirm that the answers were correctly

recorded (Shenton, 2004) ^[34].

- Transferability: The research detail and findings were described sufficiently to allow someone to repeat it in another context (Merriam, 2009) ^[27].
- Dependable Process: Records were well-kept in the research to support the process being run in the same way each time (Nowell *et al.*, 2017) ^[30].
- The data were interpreted by following information provided by the participants to confirm their perspectives and by avoiding any assumptions made by the researcher (Patton, 2015) ^[31].

Ethical Considerations

All participants were involved only after obtaining permission from the review board. Those involved were provided the purpose of the study and gave their consent before the research began. Security measures included giving fictional names to the participants and storing their information using passwords. Any participants were allowed to end their participation without experiencing any negative effects (Creswell & Poth, 2018) ^[7].

Results And Discussion

It details the outcomes of the investigation about how sustainable practises in the fashion industry focus on



Fig 1: Sustainable Hemp Fabrics

- Material Sourcing and Challenges
Although using green materials protects the environment, many designers struggle to obtain them. Many respondents said that it was difficult because costs were high, availability was scarce and local suppliers did not exist. A number of designers imported these supplies, thus increasing the expense of their production.

“The biggest challenge we encounter is finding green materials that we can afford. A majority of environmentally friendly fabrics on the market are expensive and sometimes only available if you import them”. – (Fashion Manufacturer, Participant 5)

This finding is consistent with research by Shen *et al.* (2017) ^[33], which highlights that the high cost of sustainable textiles often limits their widespread adoption.

recyclable materials and responsible manufacturing. The outcomes are linked to previous research, highlighting the central subjects that came to light while analysing data. Images are included whenever the findings might be easier to show through visual aid.

Adoption of Eco-Friendly Materials in Fashion Design

- Different Types of Eco-Friendly Materials
Results from the study indicate that both manufacturers and designers are providing items made from organic cotton, hemp, bamboo fibre, recycled polyester and mushroom leather (Mylo). Many noted that these materials help reduce the negative effects fashion has on the environment, mainly by saving water and carbon emissions.

“Using organic cotton has significantly reduced the amount of water we consume in our production processes. Unlike conventional cotton, it does not require excessive irrigation or harmful pesticides.” – (Fashion Designer, Participant 3)

These findings align with previous studies that highlight the benefits of organic and recycled materials in reducing pollution and waste (Kant, 2012; Köhler & Pizzol, 2020) ^[21, 23].



Fig 2: Sustainable Bamboo Textiles Fibre

Ethical Manufacturing Practices in Sustainable Fashion

- Labour Conditions and Fair Wages
The majority of designers and manufacturers in this study pointed out that decent pay and safety at work are crucial for garment workers. Many ethical fashion brands practise fair trade, so the people who work with them receive fair compensation and have a comfortable environment.

“All of our employees receive proper salaries and are protected in their workplaces. Sustainable production involves attention to materials and also the people involved in clothing production”. (Sustainability Expert, Participant 2)

According to Daitey, *et al.* (2024) ^[8], ethical fashion depends on fair labour conditions, since unfair work practises are common in fast fashion companies.



Fig 3: A certified ethical fashion workshop with workers in a safe, well-lit, and ventilated environment.
(Source: Photographed by Researcher, 2025.)

- **Energy Efficiency in Manufacturing**
Many indicated they had already introduced energy-efficient technology, such as solar powered factories, low-impact dyeing, and water recycling. This reduces carbon emissions and consumption of resources considerably.

“Having our manufacturing unit powered by solar, we have cut electricity bills and our carbon footprint.” – (Participant 1, Fashion Manufacturer)

There is evidence in the research to support this assertion with reports that energy efficient manufacturing use of process should be able to reduce emissions by between 30–50% (Gwilt & Rissanen, 2011)^[17].

Challenges in Implementing Sustainable Fashion Practices

Despite the growing interest in sustainable fashion, participants highlighted several barriers:

- **High Production Costs**
Green materials and responsible worker policies usually add to the cost of sustainable fashion which gives fast fashion brands an advantage in the market. Sustainable approaches are hard to maintain while keeping costs reasonable for most small designers.

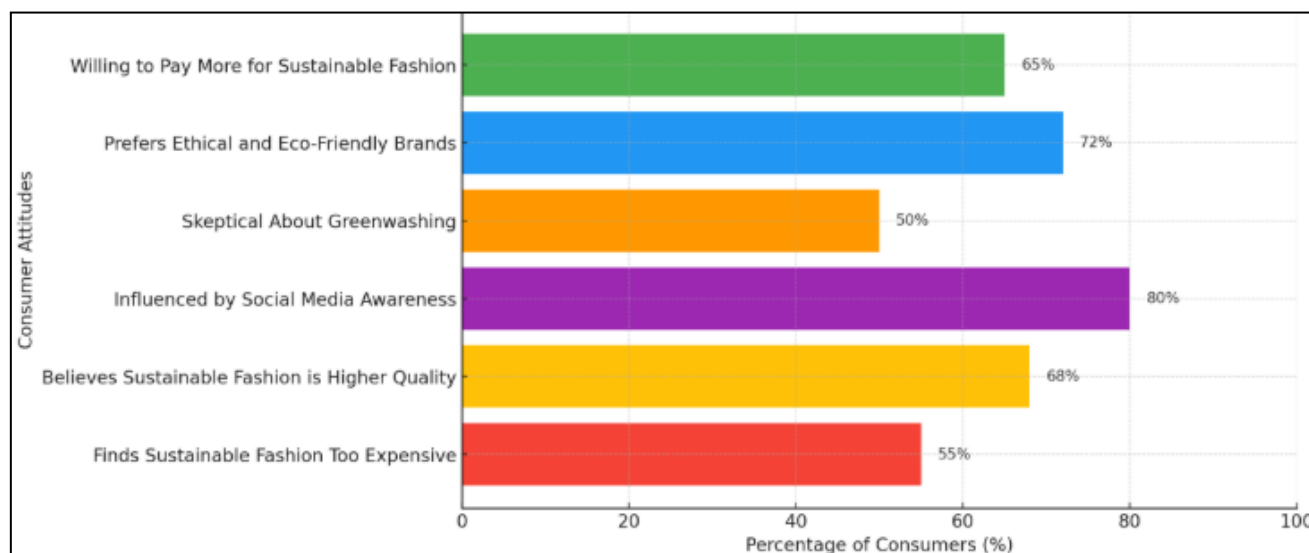
“Consumers want sustainable fashion, but they also expect prices to be as low as fast fashion brands. This makes it difficult for ethical brands to survive.” – (Eco-conscious Consumer, Participant 4)

Very recent research by Niinimäki *et al.* (2020)^[29] demonstrates that cost is a big challenge to achieving sustainability in fashion, making it less available to those who cannot afford luxury products.

- **Consumer Awareness and Attitudes**
Although more people are interested in sustainability, a lot of buyers still focus on getting products that are both cheap and easy to get. Some people still wonder if green products are genuinely eco-friendly or if the companies sell them to appear environmentally friendly.

“Many consumers don’t fully understand the environmental impact of fast fashion. We need more awareness campaigns to educate them.” – (Sustainability Expert, Participant 5)

This is consistent with what Shen *et al.* (2017)^[33] discovered, that although consumers are concerned about sustainability, they don’t always make buying choices reflecting that concern.



Source: Field Survey, 2025.

Fig 4: A survey chart showing consumer attitudes towards sustainable fashion.

The data represents estimated percentages based on the discussion, showing key consumer behaviours such as willingness to pay more, preference for ethical brands, and scepticism about greenwashing.

Economic Viability of Sustainable Fashion

Being sustainable does not stop them from finding ways to stay financially viable. Strategy is highlighted below, as reported by the participants:

- Circular Fashion and Upcycling

An increasing number of fashion companies use upcycling and garment recycling to both cut down waste and keep clothing usable for a longer time. Some brands invite their customers to send in old clothes for new use.

“Our upcycling program allows customers to return used garments, which we then repurpose into new designs. This helps reduce waste and creates unique fashion pieces.” – (Fashion Designer, Participant 2)

Fletcher & Tham (2015) ^[15] discovered that by making clothing circular, we can improve sustainability and find new business prospects.

- Digital Fashion and Virtual Sampling

According to some designers, switching to technologies like digital design and virtual sampling helps to lessen fabric usage and cut costs. Instead of making several real samples, digital simulations make it possible to improve

the design without having to construct additional prototypes.

“By using 3D fashion design software, we have reduced fabric waste and improved efficiency in prototyping.” – (Fashion Manufacturer, Participant 3)

The authors Sun & Zhao point out that digital platforms for fashion can reduce the amount of material used and help make the industry more environmentally friendly.

Consumer Willingness to Pay for Sustainable Fashion

Among the key results was that many consumers are willing to spend more on sustainable fashion products. Some people placed great importance on low prices, but other buyers preferred to spend extra for sureproof quality in using sustainable products.

“I don’t mind paying a bit extra if I know the clothing is truly sustainable, ethically made, and will last longer.” – (Eco-conscious Consumer, Participant 6)

Even so, many shoppers cannot afford higher-priced clothing because fast fashion brands regularly sell items at lower prices. This backs up McNeill & Moore's (2015) ^[26] finding that environmental awareness in pricing greatly shapes what consumers choose in fashion.

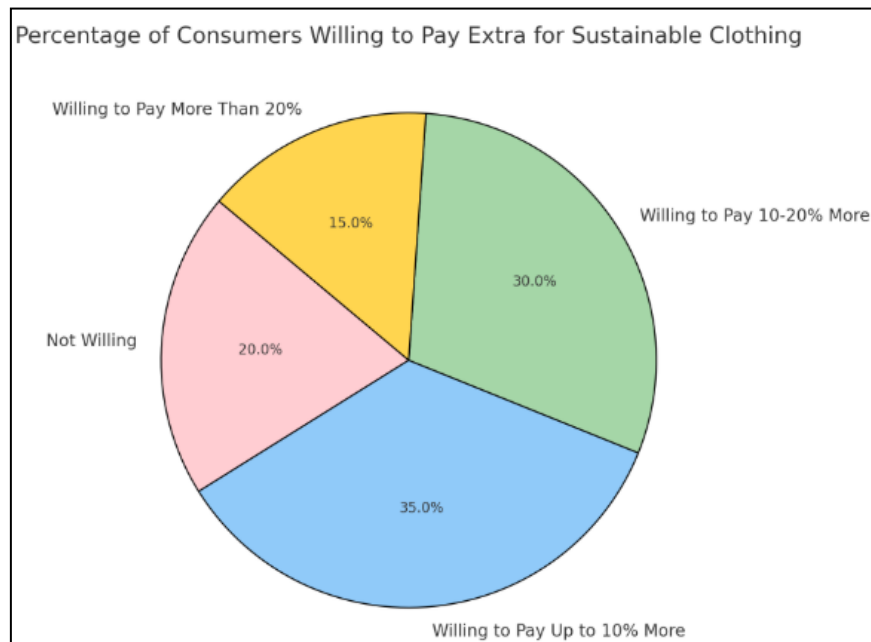


Fig 5: A survey chart showing the percentage of consumers willing to pay extra for sustainable clothing
(Source: Field Survey, 2025.)

The study provided estimates for how much consumers are willing to pay with each increase in price.

Perceived Quality and Durability of Sustainable Fashion

Many mentioned that sustainable fashion is considered stronger and longer lasting than fast fashion options. The choice of organic and natural fabrics and ethical methods ensures products are built to last longer.

"Unlike fast fashion items that wear out quickly, sustainable garments last much longer and maintain their quality over time." – (Fashion Designer, Participant 4)

It is similar to a study conducted by Niinimäki and Hassi (2011) ^[28] which notes that better sustainable materials encourage consumers to wear their garments longer and help reduce damage to the environment.

Role of Government and Policy in Promoting Sustainable Fashion

It was found that many people working in fashion and manufacturing believe government regulations greatly affect the use of sustainable fashion. A few respondents wished there was tax support for eco-friendly businesses and more regulations for fast fashion being brought in from overseas.

"If the government provided incentives for sustainable brands, more businesses would adopt eco-friendly practices." – (Sustainability Expert, Participant 3)

According to Fletcher (2014) ^[13], this result demonstrates that policy can help the fashion industry adopt sustainability more quickly.

The Impact of Sustainable Fashion on Brand Reputation

Many companies that have added sustainability efforts to their operations have experienced better brand recognition and increased customer loyalty. Most participants noted that people who care for the environment tend to choose companies with values that reflect their own.

"Since we transitioned to sustainable production, we've seen more engagement from customers who care about ethical fashion." – (Fashion Manufacturer, Participant 5)

Henninger *et al.* (2016) ^[18] report in their research that companies showing concern for sustainability earn higher levels of customer trust and loyalty.

Sustainable Fashion and Social Media Influence

A lot of people have learned about sustainable fashion through social media. A lot of people pointed out that influencers, bloggers and social media have informed others about what is ethical in fashion.

"Social media influencers have helped spread awareness about the importance of sustainable fashion. Many consumers are learning about eco-friendly brands through platforms like Instagram and TikTok." – (Fashion Designer, Participant 2)

According to a study by McKinsey & Company (2020) ^[25], people are learning more about and caring about sustainable fashion largely because of digital platforms.



Fig 6: A snapshot of a social media campaign promoting sustainable fashion.
(Source: Hussain, 2023)

Conclusion

This paper makes it evident that making and selling products with eco-friendly and ethical processes is greatly impacting the fashion industry. Some textile makers use hemp, bamboo fibre and recycled polyester for the same reason. Still, lacking sustainable ingredients, not finding them where they live and not having enough money stop others from experiencing vegan food. The industry is seeing sustainability from certain brands and factories, driven by their moves to use environmentally friendly supplies and energy sources in their working practises.

Making clothes ethically was seen as essential in sustainable fashion. Experts also found that fair labour, a safe workplace and fair pay help sustainability benefit garment workers as well. Members of the study highlighted that tough policies are needed to control labour activities and ensure merchandise is ethically produced. Besides, the use of solar energy and recycling water were seen as successful methods to minimise carbon emissions. We believe in ethical ways of doing business, as it supports goals for sustainability and leader concerns around environment and society.

Sustainable fashion also placed an emphasis on what consumers believe and how they act. A lot of consumers wanted to buy sustainably, yet deciding what to buy largely depended on its affordability and convenience. A number of individuals agreed to pay more for eco-friendly clothes, but there were doubtful customers who wondered about whether green labels were trusted. Therefore, more educational campaigns and information are needed so that people better understand how to be environmentally friendly. It was discovered that social media and the work of influencers and marketers helped raise awareness of sustainable fashion brands.

This information also mentioned that making fashion greener is much more economical with concepts such as circular fashion, turning waste into new pieces and innovative methods of designing clothes. Many companies are using creative ideas to make their products longer-lasting and reduce waste which saves them money. It was clear that upcycling and recycling garments are both useful and can

lead to fresh business ideas. In addition, using 3D prototyping and virtual sampling for digital fashion helps reduce both the price of goods and the amount of waste during production. They reveal that taking care of the environment can be economically beneficial as well.

It was discovered that government rules and regulations support better sustainability in the world of fashion. A lot of people mentioned that putting tax incentives in place, renouncing imports of fast fashion goods and supporting sustainable brands are very important. According to the study, the government could support the movement to sustainability by giving aid to ecological resources and establishing ethical standards at workplaces. If such regulations are not in place, it would be challenging for most fashion brands of smaller size to compete against major fast fashion companies that focus more on cheap prices.

To sum up, this research emphasises that the fashion industry should quickly move towards being sustainable. A lot has been done to use greener resources and produce ethically, but many significant obstacles still exist. A solution to these challenges can only be reached if fashion designers, manufacturers, consumers, policymakers and industry groups work together. Encouraging sustainable clothes should include noting that they are a good investment not only for the environment, but also for society and the economy. The industry's sustainability can improve if it is supported by new technologies, education and adequate policies.

References

1. Boström M, Micheletti M. Introducing the sustainability challenge of textiles and clothing. *J Consum Policy*. 2016;39(4):367-75.
2. Braun V, Clarke V. Using thematic analysis in psychology. *Qual Res Psychol*. 2006;3(2):77-101.
3. Brinkmann S, Kvale S. Interviews: learning the craft of qualitative research interviewing. Thousand Oaks: Sage; 2015.
4. Browne MA, Crump P, Niven SJ, Teuten E, Tonkin A, Galloway T, *et al*. Accumulation of microplastic on shorelines worldwide: sources and sinks. *Environ Sci*

- Technol. 2011;45(21):9175-9.
5. Caniato F, Caridi M, Crippa L, Moretto A. Environmental sustainability in fashion supply chains: an exploratory case-based research. *Int J Prod Econ*. 2012;135(2):659-70.
 6. Chapagain AK, Hoekstra AY, Savenije HH, Gautam R. The water footprint of cotton consumption. *Ecol Econ*. 2006;60(1):186-203.
 7. Creswell JW, Poth CN. Qualitative inquiry and research design: choosing among five approaches. Thousand Oaks: Sage; 2018.
 8. Daitey W, Baah OPK, Aaron EA, Samuel D. Environmental impact awareness in sustainable product design and production of Adinkra symbol jewellery. *J Innov Art Cult Nat Conserv Environ Sustain*. 2024;2(1):242-65. doi:10.60129/jinces.v2i1.00324.
 9. Denzin NK, Lincoln YS. The Sage handbook of qualitative research. Thousand Oaks: Sage; 2017.
 10. DiSalvo M. What is hemp fabric & how to source it [Internet]. Virtue + Vice; 2023 [cited 2025 Sep 10]. Available from: <https://shopvirtueandvice.com/blogs/news/hemp-fabric>.
 11. Ellen MacArthur Foundation. A new textiles economy: redesigning fashion's future. [place unknown: publisher unknown]; 2017.
 12. Etikan I, Musa SA, Alkassim RS. Comparison of convenience sampling and purposive sampling. *Am J Theor Appl Stat*. 2016;5(1):1-4.
 13. Fletcher K. Sustainable fashion and textiles: design journeys. 2nd ed. Abingdon: Routledge; 2014.
 14. Fletcher K. Sustainable fashion and textiles: design journeys. Abingdon: Routledge; 2016.
 15. Fletcher K, Tham M. Routledge handbook of sustainability and fashion. Abingdon: Routledge; 2015.
 16. Guest G, Bunce A, Johnson L. How many interviews are enough? An experiment with data saturation and variability. *Field Methods*. 2006;18(1):59-82.
 17. Gwilt A, Rissanen T. Shaping sustainable fashion: changing the way we make and use clothes. Abingdon: Routledge; 2011.
 18. Henninger CE, Alevizou PJ, Oates CJ. What is sustainable fashion? *J Fash Mark Manag*. 2016;20(4):400-16. doi:10.1108/JFMM-07-2015-0052.
 19. Henninger CE, Alevizou PJ, Oates CJ. What is sustainable fashion? *J Fash Mark Manag*. 2017;21(4):405-18.
 20. Hussain A. Sustainable product business case of Zara Clothing Brand [Internet]. LinkedIn; 2023 [cited 2025 Sep 10]. Available from: <https://www.linkedin.com/pulse/sustainable-product-business-case-zara-clothing-brand-atif-hussain->.
 21. Kant R. Textile dyeing industry: an environmental hazard. *Nat Sci*. 2012;4(1):22-6.
 22. Khan M, Javed Y, Shahzad A. Greenwashing in the fashion industry: an empirical investigation. *Sustainability*. 2021;13(3):1055.
 23. Köhler AR, Pizzol M. Technology assessment of blockchain-based technologies in the textile and fashion industry. *Sustainability*. 2020;12(21):9129.
 24. Lincoln YS, Guba EG. Naturalistic inquiry. Thousand Oaks: Sage; 1985.
 25. McKinsey & Company. The state of fashion 2020: navigating uncertainty [Internet]. [place unknown]: McKinsey & Company; 2020 [cited 2025 Sep 10]. Available from: <https://www.mckinsey.com>.
 26. McNeill L, Moore R. Sustainable fashion consumption and the fast fashion conundrum: fashionable consumers and attitudes to sustainability in clothing choice. *Int J Consum Stud*. 2015;39(3):212-22. doi:10.1111/ijcs.12169.
 27. Merriam SB. Qualitative research: a guide to design and implementation. San Francisco: Jossey-Bass; 2009.
 28. Niinimäki K, Hassi L. Emerging design strategies in sustainable production and consumption of textiles and clothing. *J Clean Prod*. 2011;19(16):1876-83. doi:10.1016/j.jclepro.2011.04.020.
 29. Niinimäki K, Peters G, Dahlbo H, Perry P, Rissanen T, Gwilt A. The environmental price of fast fashion. *Nat Rev Earth Environ*. 2020;1(4):189-200.
 30. Nowell LS, Norris JM, White DE, Moules NJ. Thematic analysis: striving to meet the trustworthiness criteria. *Int J Qual Methods*. 2017;16(1):1-13.
 31. Patton MQ. Qualitative research and evaluation methods. Thousand Oaks: Sage; 2015.
 32. Shen B. Sustainable fashion supply chain: lessons from H&M. *Supply Chain Manag*. 2014;19(3):123-36.
 33. Shen B, Wang Y, Lo CKY, Shum M. The impact of ethical fashion on consumer purchase behaviour: evidence from China. *J Fash Mark Manag*. 2017;21(3):358-75. doi:10.1108/JFMM-03-2017-0027.
 34. Shenton AK. Strategies for ensuring trustworthiness in qualitative research projects. *Educ Inf*. 2004;22(2):63-75.
 35. Sun Y, Zhao R. Sustainable fashion consumption: a systematic review of consumer research. *Sustainability*. 2021;13(18):10123. doi:10.3390/su131810123.
 36. Yin RK. Case study research and applications: design and methods. Thousand Oaks: Sage; 2018.